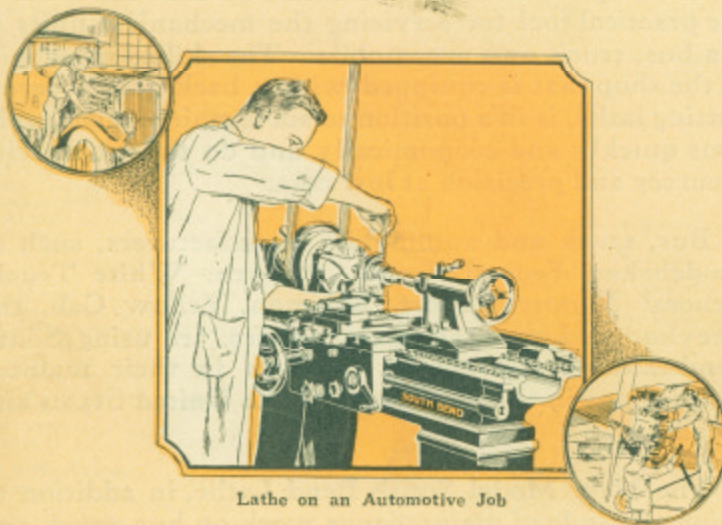


"South Bend"
Hand Book No. 33
SIXTH PRINTING
For the Auto Mechanic

MAY, 1930



Lathe on an Automotive Job

New Model South Bend Lathes
For Servicing Autos, Buses and Trucks
in the

Auto Service Station
Bus Service Station
Brake Service Station

Electric Shop
Machine Shop
Truck Service Shop

South Bend Lathe Works
330 East Madison St., South Bend, Ind., U. S. A.

Foreword

The Back Geared Screw Cutting Lathe is one of the most important machines in the factories where automobiles, buses and trucks are manufactured, and is used in these plants on work requiring the greatest accuracy and precision. The lathe which is used for manufacturing automotive units is the logical type of tool for use in servicing these parts in the Service Station Shop.

The experienced machinist knows that the lathe is the practical tool for servicing the mechanical units of the bus, truck and automobile. The skilled mechanic, in the shop that is equipped with a back geared screw cutting lathe, is in a position to solve maintenance problems quickly and economically and do the work with accuracy and precision at low cost.

Bus, truck and automobile manufacturers, such as Studebaker, Federal Truck, Auburn, White Truck, General Motors Export, Marmon, Yellow Cab, the Greyhound Lines and many others, are using South Bend Lathes and service methods in their maintenance shops in the large cities of the United States and abroad.

The New Model South Bend Lathe, in addition to doing all kinds of maintenance work on bus, truck and automobile motors, will also handle all classes of general machine work. The entire line of South Bend Lathes is illustrated and described in Catalog No. 91-A.

To familiarize the apprentice in the Service Station Shop with the latest and most correct methods of servicing the parts of the motor, and the correct machinery and tools for doing the work, we have published two Hand Books, one, "Auto Mechanics Service Book," the other, "How to Run a Lathe." For further details see page 31.

South Bend Lathe Works
May 1, 1930

152 Jobs That Can Be Done on the Lathe

When equipping the Service Shop for the maintenance of buses, trucks, automobiles, etc., the most important tool in the entire equipment is the Back Geared Screw Cutting Lathe because it can take care of not only the jobs listed on this page, but also hundreds of other machine jobs of all kinds. For "Auto Mechanics Service Book" and "How to Run a Lathe," see page 31.

	Pages		Pages
Armature Work	6	Flywheels and Ring Gears	19-23
Testing and straightening armature shafts		Truing all sizes of flywheels	
Truing armature commutators		Cutting teeth off flywheels for new ring gears	
Undercutting mica		Boring flywheels accurately	
Making armature center holes		Cutting keyseat in flywheel	
Restoring center holes		Fitting ring gears on flywheels	
Cutting old wire off armatures		Balancing flywheels	
Boring Field Poles		Making bolt circle on flywheel	
Bushing Work	7	Brake Drums	25-26
Drilling out center before boring		Testing brake drums for trueness	
Truing inside by boring		Truing brake drums of all kinds and sizes	
Truing outside by turning		Resizing brake drums for liners	
Threading inside or outside		Removing scores from brake drums	
Polishing bushing inside and outside		Fitting metal liner in brake drum	
Lapping bushings			
Reaming bushings		Miscellaneous Lathe Work	13-17-19-23
Grinding hardened bushings		Making all emergency parts	
Making bushings of brass, bronze and cast iron		Truing clutch discs	
Making wrist pin bushings		Cutting keyseats	
Machining Pistons	8-9	Tapping threaded holes	
Machining cast iron and alloy pistons		Drilling, boring and reaming holes	
Finishing semi-machined pistons		Making universal, taper and cone adapters	
Polishing pistons		Boring cylinders and pinions	
Machining piston ring grooves		Making fibre washers	
Truing warped pistons		Truing roller bearings and sleeves	
Machining split skirt pistons		Finishing gear blanks	
Machining aluminum pistons		Repairing magnetos	
Reaming and lapping wrist pin holes		Machining distributors	
Reaming piston skirts			
Making piston rings		Screws and Bolts	30
Making wrist pins		Cutting U. S. Threads, any pitch	
Grinding pistons		Cutting square threads	
Valve Work	4-5	Cutting "V" threads, any pitch	
Refacing valves		Cutting single, double, or triple threads	
Truing valve stems		Cutting all threads, right and left hand	
Testing and straightening valve stems		Cutting pipe threads, right and left hand	
Testing angle and trueness of valve face		Making machine screws, all sizes and kinds	
Truing angle of valve face		Cutting taper threads, inside and outside	
Sharpening valve seat reamers		Cutting all threads 2 to 112 per inch	
Making valve stem guides		Chasing outside and inside threads	
Making replacement valves		Making master thread dies and master taps	
Winding valve springs		Making spiral screws and nuts	
Truing valve tappets		Cutting threads on jack screw	
Grinding valves		Making thread gauges, internal or external	
Drive Shafts and Axles	15-17-19	Cutting slots in screw heads	
Making replacement axles		Grinding threads	
Testing and truing bent drive shafts		General Machine Work	
Making new drive shafts		Making dies and punches	
Threading drive shafts		Crowning pulleys	
Threading axles		Chucking all work desired	
Squaring end of drive shaft		Making knurled finish	
Milling flat shoulder on shaft		Making radio parts	
Cutting keyseat in drive shaft		Making sheaves, pulleys, blocks	
Centering drive shafts		Making rollers, all purposes	
Crankshafts	17-19	Making eccentrics	
Testing straightness		Angular turning	
Testing main bearings		Truing large diameter grinding wheels	
Truing main bearings with Weber Tool		Making wood or metal patterns	
Truing throw bearings with Weber Tool		Turning and Cutting Off Jobs	
Balancing crankshafts		Wood, bakelite and fibre turning	
Grinding crankshaft bearings		Coil winding	
Truing main bearings with lathe tool		Turning copper, gold, silver and mica	
Truing throw bearings—using throw centers		Turning lead or babbitt and rubber	
Connecting Rods	15	Turning aluminum and brass	
Boring connecting rods		Making taps and reamers	
Reaming connecting rod bearings		Making straight cutters and counter bores	
Testing alignment of piston on connecting rod		Facing ends of bars, tubing and pipes	
Making bushings for connecting rods		Cutting off pipe, steel bars and tubing	
Rounding corners of connecting rod bearings		Grinding Tools and Work	29
Wheels	23-25	Grinding spiral, straight and taper reamers	
Making mandrels for mounting wheels in lathe		Valve seat reamers and expansion reamers	
Making adapters for mounting wheels in lathe		Grinding milling cutters	
Testing and truing hub flanges		All kinds of light grinding	
Boring wheel for new hub		Grinding brake drums, pistons and valves	
Reducing felloe size of new rim		Grinding hardened plug and ring gauges	
Truing run-out felloe		Grinding points on 60 degree dead center	
Testing balance of assembled wheel		Grinding thread taps	
Balancing assembled wheel, tire attached		Grinding master thread gauges	

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

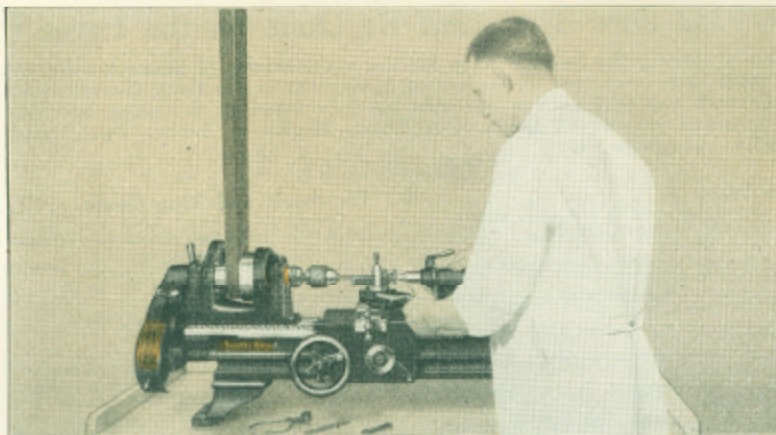


Fig. 1. Refacing a Valve by Turning in the Lathe

Refacing Valves in the 9-inch Junior Bench Lathe

The Modern Method of Refacing Valves is to machine them in the lathe. This method is six times quicker than grinding and does just as good a job. Time: two minutes per valve. All sizes of valves, tungsten, silichrome, alloy or cast iron, can be refaced in the lathe. No valve is so hard that it cannot be machined.

For Complete Details on refacing valves see pages 11 to 15 of "Auto Mechanics Service Book No. 66." The 9-inch Junior Lathe, in addition to valve work, will also turn armatures, machine pistons, make bushings, cut screw threads, machine small parts and do hundreds of other automotive jobs with accuracy and precision.

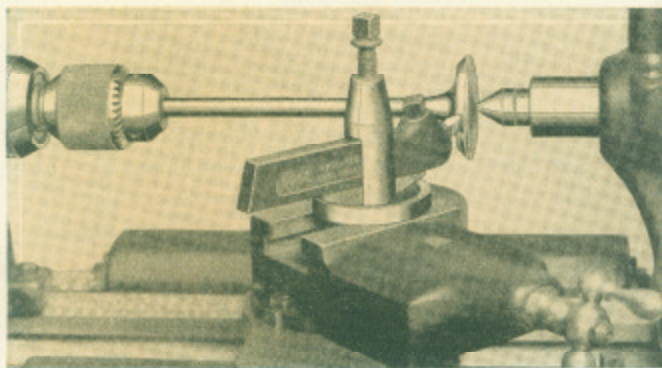


Fig. 2. Refacing a Valve at 45° Angle by Turning, Using a 3-Jaw Drill Chuck to Hold Valve

Valve Mounted in Lathe for Refacing

The Illustration at left shows refacing a valve in the lathe with compound rest set at the correct angle. The valve stem is held in a hollow spindle chuck, or drill chuck, which is fitted to the headstock spindle. The valve head is supported by the tailstock center.

Refacing a Valve at 45° Angle

The Valve can be refaced in the lathe, at any angle desired. If the angle of the valve face is 45° the compound rest swivel is set so that the graduation "45" is in line with the "0" mark on the compound rest base, as shown in the illustration at right.

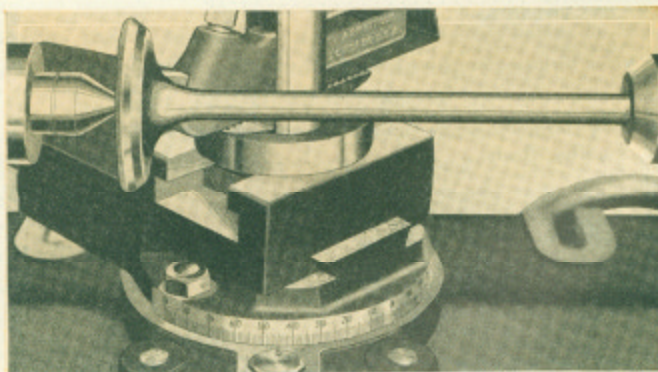


Fig. 3. Compound Rest of Lathe Set at 45° Angle for Refacing Valves

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Refacing Valves in the 9-inch Junior Bench Lathe

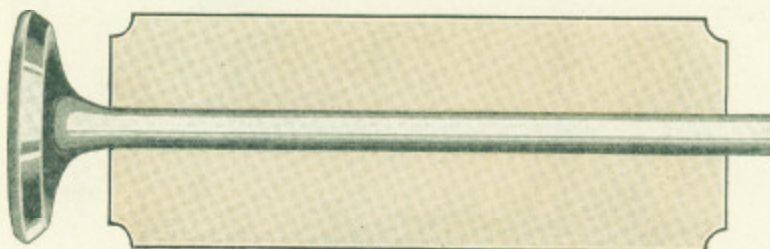


Fig. 4. Refacing Valves by turning is Six Times Faster than Grinding

The Only Equipment Needed for refacing valves by machining is a 9-inch lathe and a few tools as listed and priced below. This equipment, unlike single purpose machines, is not limited to valve work only, since the lathe, with a few additional tools, can be used for many other classes of automotive work.

For complete detailed information on refacing valves in the lathe, see pages 11 to 15 of "Auto Mechanics Service Book No. 66."

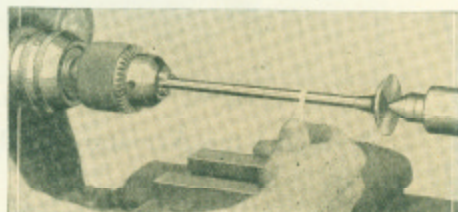


Fig. 5. Testing and Straightening a Bent Valve Stem in the Lathe

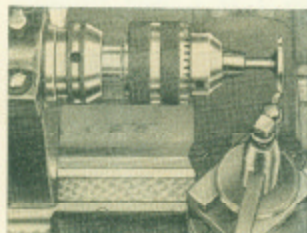


Fig. 6. Refacing a Ford Valve with Large End on Stem

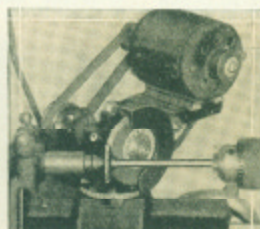


Fig. 7. Refacing a Valve with No. 15 Electric Grinder

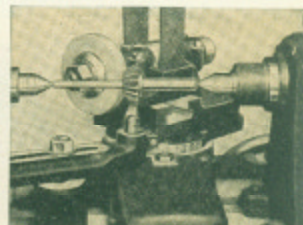


Fig. 8. Grinding a Valve Seat Reamer

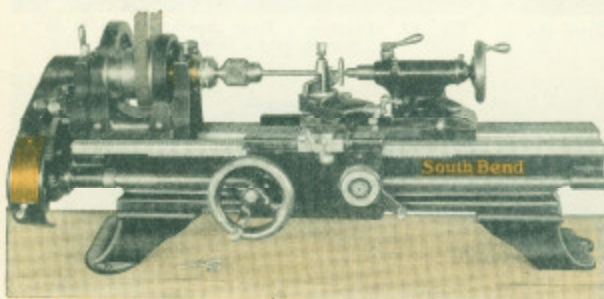


Fig. 9. Refacing a Valve in the New Model 9-inch Junior Lathe

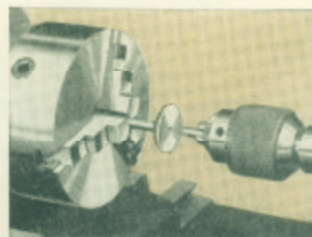


Fig. 10. Centering a Valve without Centered Head, such as Ford

Lathe and Tools for Refacing Valves*

1 No. 22-YB 9-in. x 3-ft. Junior New Model South Bend Countershaft Driven Bench Lathe.....	\$169.00
1 No. 849-S Patent Turning Tool with High Speed Cutter Bit.....	2.40
1 No. 1912 Hollow Spindle Drill Chuck, 5/8" Capacity.....	9.50
1 No. 1223 Hollow Drill Chuck Arbor, Fitted to Chuck and Lathe.....	3.00
Total Cost of Above Equipment.....	\$183.90

*THE 9-INCH JUNIOR LATHE illustrated on these two pages, is the same lathe as is shown on pages 6, 7, 8 and 9 on Armature, Bushing and Piston Work. For illustrations, descriptions and prices of the 9-inch Junior Lathe in various types, see pages 19 and 11.

"AUTO MECHANICS SERVICE BOOK No. 66" DESCRIBES MODERN SHOP METHODS

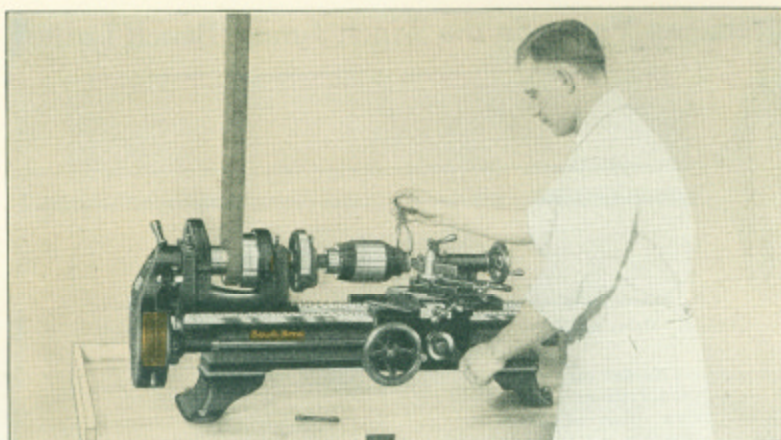


Fig. 11. Truing an Armature in a 9-inch Junior Lathe

Servicing the Armature in the 9-inch Junior Bench Lathe

The 9-inch Junior New Model South Bend Lathe is the ideal tool for servicing armatures and truing the commutator. The commutator can be trued in from two to three minutes, depending on the wear of its surface.

Machining the armature smooth and true is one of many practical automotive precision jobs which

can be handled on a screw cutting lathe equipped with automatic feeds. The lathe may be used for many other armature jobs such as undercutting mica, testing and straightening armature shafts, restoring damaged center holes, boring field poles, etc. For complete information on servicing the armature see pages 3 to 7, Auto Mechanics Service Book No. 66.

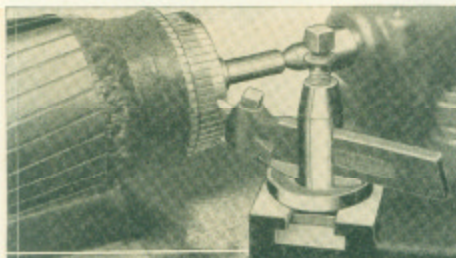


Fig. 12. Taking the Finishing Cut to True the Commutator, in the Lathe

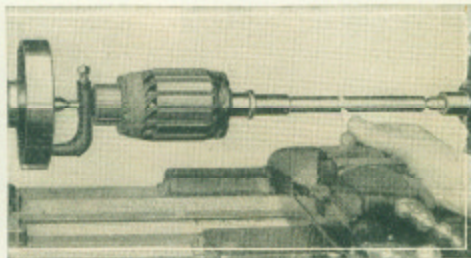


Fig. 13. Testing a Bent Armature Shaft in a 9-inch South Bend Lathe

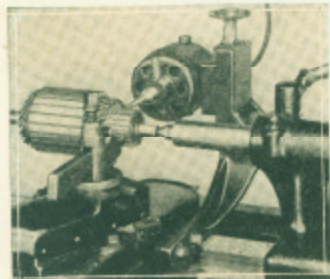


Fig. 14. Electric Mica Undercutter, Price \$50.00

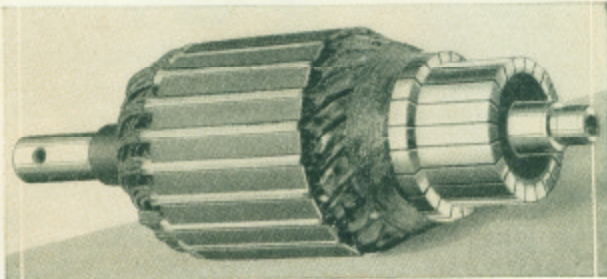


Fig. 15. Armature Commutator After Truing in the Lathe

Lathe and Tools for Armatures and Electrical Work*

1 No. 22-YB 9-in. x 3-ft. Junior New Model South Bend Countershaft Driven Bench Lathe.....	\$169.00
1 Set of Three Lathe Dogs $\frac{1}{2}$ ", $\frac{3}{8}$ ", $1\frac{1}{2}$ ".....	2.10
1 No. 849-S Patent Turning Tool with High Speed Cutter Bit.....	2.40
Total Cost of Above Equipment.....	\$173.50

*THE 9-INCH JUNIOR LATHE illustrated on this page is the same lathe as is shown on pages 4, 5, 7, 8 and 9 on valve, bushing and piston work. For illustrations, descriptions and prices of the 9-inch Junior Lathe in various types see pages 10 and 11.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

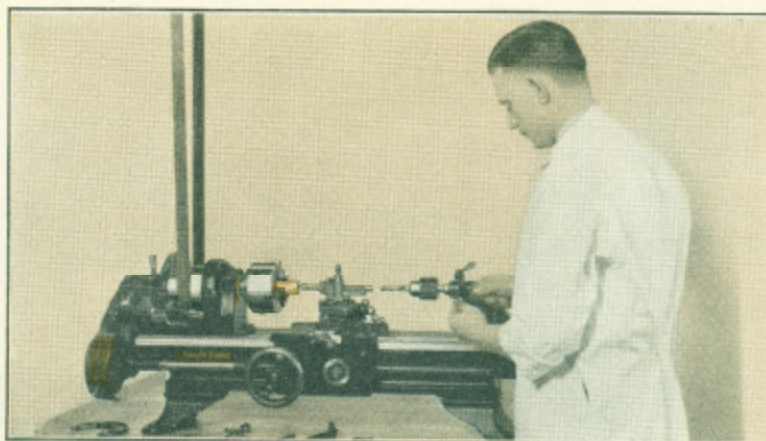


Fig. 16. Making a Bushing in the 9-inch Junior Lathe

Making Bushings of All Kinds in the 9-inch Junior Bench Lathe

The Screw Cutting Engine Lathe is the practical tool for making bushings. All kinds and sizes of bushings, brass, bronze, aluminum, steel, babbitt, fibre or hard rubber can be made accurately and quickly on the 9-inch Junior Lathe, as shown in the machining operation illustrated above.

Worn or damaged bushings and other small metal parts can be reconditioned and new parts made, when necessary. The 9-inch Junior Lathe will machine armatures, reface valves, turn pistons, cut screw threads and do hundreds of other repair jobs. For complete information on making bushings see pages 8 to 10, Handbook No. 66.

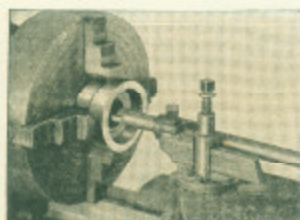


Fig. 17. Making a Large Bushing Held in a 4-Jaw Chuck

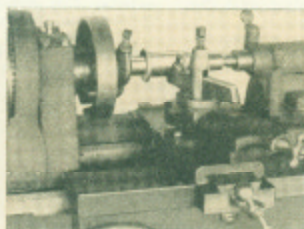


Fig. 18. Turning a Bronze Bushing on a Mandrel



Fig. 19. Finishing a Bronze Bushing in one Chucking

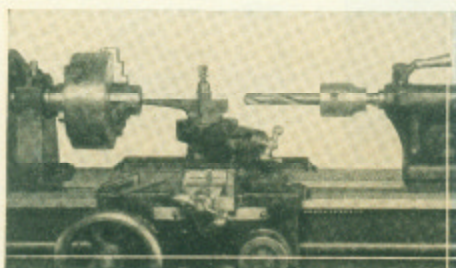


Fig. 20. Drilling and Boring a Bushing

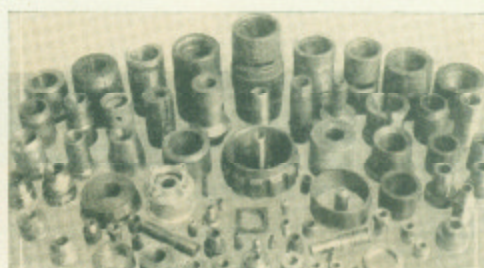


Fig. 21. Bushings Made in the 9-inch Jr. Lathe

Lathe and Tools for Making Bushings and for Electrical Work*

1 No. 22 YB	9-in. x 3-ft. Junior New Model South Bend Countershaft Driven Bench Lathe.....	\$169.00
1 No. 2106	6-in. 4-Jaw Independent Lathe Chuck.....	28.00
	Fitting Chuck to Lathe with Chuck Back.....	7.00
1 No. 1201	3-Jaw Geared Drill Chuck, 1/2" Capacity.....	8.50
1 No. 709	Drill Chuck Arbor, Fitted to Chuck and Lathe.....	1.50
1 No. 849-S	Patent Turning Tool with High Speed Cutter Bit.....	2.40
1 No. 881-R	Patent Cutting-off Tool (Right Hand).....	2.60
1 No. 429	Patent Boring Tool, Style "B".....	4.40
Total Cost of Above Equipment.....		\$223.40

*THE 9-INCH JUNIOR LATHE illustrated on this page is the same lathe as is shown on pages 4, 5, 6, 8 and 9 on Armature, Valve and Piston Work. For illustrations, descriptions and prices of the 9-inch Junior Lathe in various types and drives, see pages 10 and 11.

FREE BULLETIN No. 22 SHOWS WIDE APPLICATION OF JUNIOR LATHES

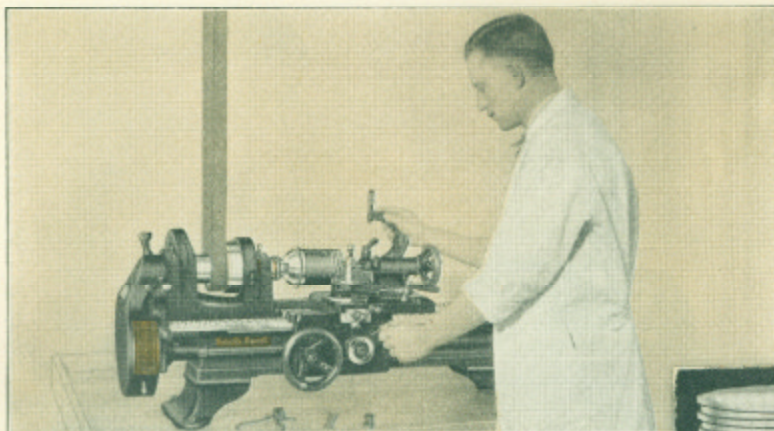


Fig. 22. Machining a Piston to Finished Diameter in the 9-inch Lathe

Finishing Semi-machined Pistons in the 9-inch Junior Lathe

Semi-machined Pistons, solid or split skirt types, made of cast iron, aluminum, or other alloys, can be quickly and accurately machined in the lathe to fit the cylinder blocks of all sizes of automobiles, buses, airplanes and trucks, etc. Turning in the lathe (the method used by piston manufacturers), is the best shop practice and the most practical way to do this work, as it is four times faster than grinding and leaves a smooth, porous surface which retains the film of oil so necessary to lubricate the cylinder.

The lathe can also be used for truing commutators, refacing valves, making bushings and hundreds of other jobs,—without additional tools or attachments. For complete information on piston work and other important automotive jobs see "Auto Mechanics Service Book No. 66." For 9-inch Junior Lathe prices see pages 10 and 11.



Permite Spiral Slot Piston

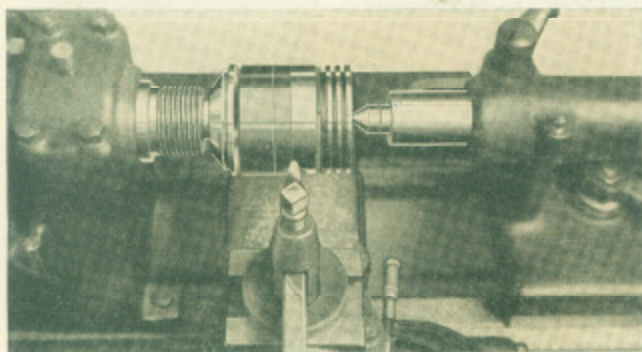


Fig. 23. Taking a Finishing Cut on a Semi-machined Piston

Roughing and Finishing Cuts

The illustration at the left shows a close-up of the finishing cut being taken on a piston. Roughing cuts have removed surplus stock to within .010 of an inch of finished diameter. Cuts can be as delicate as desired because the automatic feeds of the lathe permit an adjustment of one-half thousandth of an inch.

Application of No. 44 Piston Adapter

The cross section view at right shows a piston mounted in the lathe, on the No. 44 Piston Adapter, for turning. The skirt end of piston is centered on the cone ring and the piston head is centered by the tailstock center. For finishing pistons without center hole in head see "Auto Mechanics Service Book No. 66."

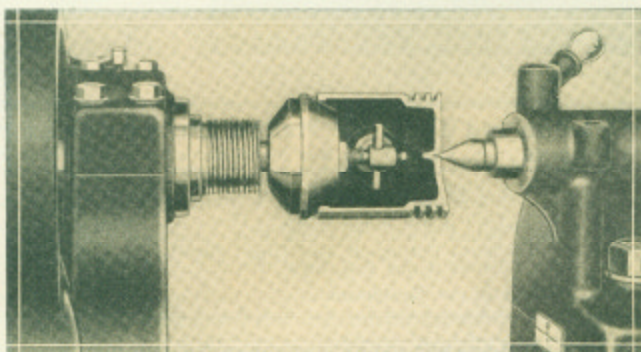


Fig. 24. Cross Section of Piston Mounted on a No. 44 Piston Adapter

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Finishing Semi-Machined Pistons in the 9-inch Junior Lathe

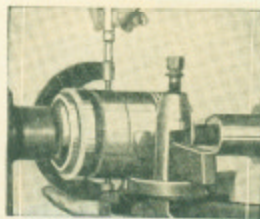


Fig. 25. Measuring Diameter of Turned Piston

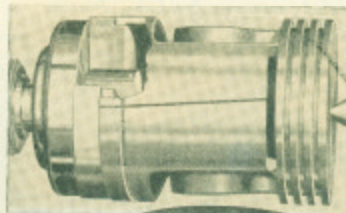


Fig. 26. Split Skirt Piston Mounted for Machining

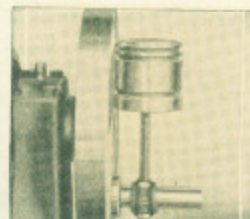


Fig. 27. Aligning Piston and Connecting Rod

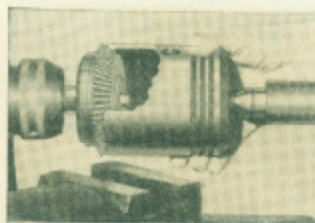


Fig. 28. Reaming the Skirt of a Piston True and Round

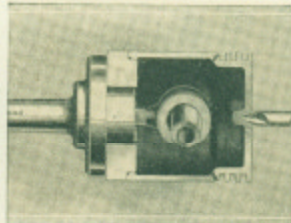
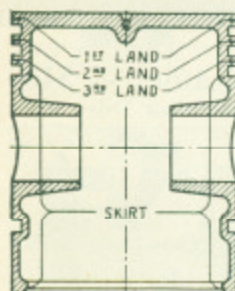


Fig. 29. Cross Section of Piston Mounted on Adapter



Fig. 30. Reaming the Wrist Pin of a Piston



Clearance of Cast Iron and Steel Strut Alloy Pistons

The tables below show the correct clearance to allow for the lands and skirt of cast iron and aluminum alloy pistons.

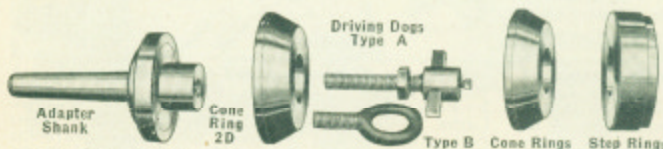
Clearance for Cast Iron Pistons

Cyl. Bore	1st Land	2nd Land	3rd Land	Skirt
2½ to 3	.011	.008	.006	.002½
3 to 3½	.013	.009	.007	.003½
3½ to 4	.015	.011	.008	.004½
4 to 4½	.017	.012	.009	.005½
4½ to 5	.019	.014	.010	.006½
5 to 5½	.021	.016	.011	.007½
5½ to 6	.023	.018	.012	.008½

Clearance for Steel Strut Alloy Pistons

Cyl. Bore	1st Land	2nd Land	3rd Land	Skirt
2½ to 3	.016	.010	.010	.002
3 to 3½	.018	.012	.012	.002½
3½ to 4	.020	.014	.014	.003
4 to 4½	.022	.016	.016	.003½
4½ to 5	.024	.018	.018	.004

Oil Land on all size Pistons ⅛" less than standard bore diameter.



No. 44 Self-Centering Piston Adapter and Adapter Rings

For mounting pistons in the lathe for machining. If piston has center hole in head use cone ring, if without center hole use step ring.

Prices No. 44 Piston Adapters

Size Lathe	Cat. No.	Price of Shank, Dog "A" and One Cone Ring	Price Drive- ing Dog "B"
9 in.	44-A	\$12.00	\$0.50
11 in.	44-B	12.00	.50
13 in.	44-C	12.00	.50
15 in.	44-D	13.00	.50
16 in.	44-E	13.00	.50

Prices of Adapter Rings

Cone Rings		Step Rings		For Pistons Outside Diameter
Cat. No.	Price	Cat. No.	Price	
1D	\$2.50	1C	\$2.50	2½ to 3¼ in.
2D	2.50	2C	2.50	3¼ to 3¾ in.
3D	2.50	3C	2.50	3¾ to 4¼ in.
4D	2.50	4C	2.50	4¼ to 5¼ in.

Piston Skirt Reamers

Piston Skirt Reamers are used on the No. 44 Piston Adapter Shank. The holes in the adapter rings and the reamers are the same size.



Prices of Piston Skirt Reamers

Reamer No.	For Pistons Outside Diam.	Price, Each Reamer
1R	2½ to 3¼ in.	\$ 7.50
2R	3¼ to 3¾ in.	9.00
3R	3¾ to 4¼ in.	11.00
4R	4¼ to 5¼ in.	13.00

Adapter Rings and Piston Skirt Reamers can be furnished in large diameters for mounting Tractor Pistons. Prices on application.

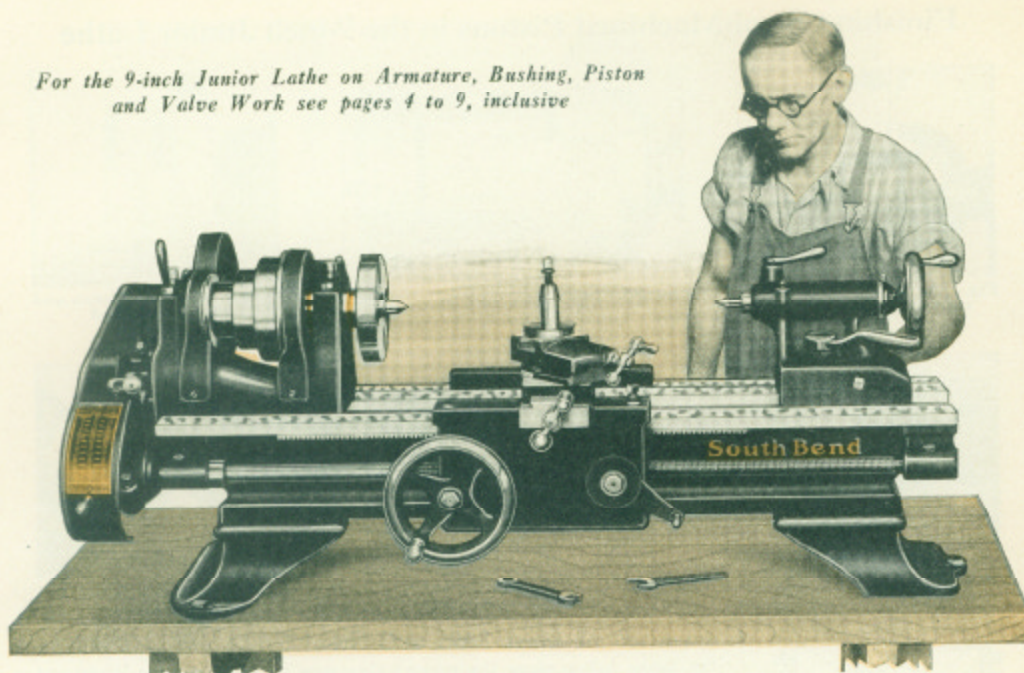
Lathe and Equipment for Finishing Pistons*

1 No. 22-YB	9 in. x 3 ft. Junior New Model South Bend Countershaft Driven Bench Lathe....	\$169.00
1 No. 849-S	Patent Turning Tool with High Speed Cutter Bit.....	2.40
1 No. 44	Piston Adapter complete with one Adapter Ring, any size or type listed.....	12.00
1 No. 1-R	Piston Skirt Reamer.....	7.50

Total Cost of Above Equipment.....\$190.90

*THE 9-INCH JUNIOR LATHE illustrated on these two pages, is the same lathe as is shown on pages 4, 5, 6, and 7 on Armature, Valve and Bushing work. For illustrations, descriptions and prices of the 9-inch Junior Lathe in various types and drives, see pages 10 and 11.

For the 9-inch Junior Lathe on Armature, Bushing, Piston
and Valve Work see pages 4 to 9, inclusive



9-in. x 3-ft. Junior New Model South Bend Bench Lathe - \$169

Back Geared, Screw Cutting Precision Tool, Bench Type—Countershaft Drive

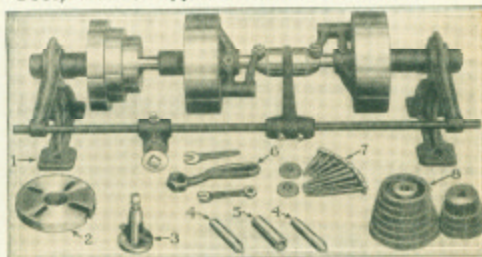
The 9-inch Junior New Model South Bend Lathe is the practical tool for the service station shop, garage, and electrical shop for taking care of all machine work on small parts of the automobile motor where the finest accuracy and precision must be maintained. It will take care of machining armatures, valves, pistons, bushings and hundreds of other jobs that come up in servicing automobiles, trucks, tractors and airplanes. See pages 4 to 9.

Motor Drives. The 9-inch Junior New Model South Bend Lathe may be had in Silent Chain Motor Drive and in Horizontal Motor Drive. See page 11.

A Metal Index Plate attached to each 9-inch Junior Lathe shows the gear arrangement for cutting threads from 4 to 40 per inch, right or left hand, including 11 1/2-inch pipe thread. Change Gears are furnished for cutting these threads and for power longitudinal feeds.

LATHE FEATURES

Back geared headstock gives six spindle speeds.
Hollow spindle made of special alloy steel.
Phosphor bronze bearings for spindle.
Graduated compound rest swivels to any angle.
Precision lead screw for cutting accurate threads.
Micrometer collar on cross feed and compound rest screws.
Tailstock set-over for turning tapers.
Quick-acting spring latch reverses carriage travel.
Power longitudinal screw feed to the carriage.
Graduated tailstock spindle.



Lathe Equipment Included in Price of the 9-inch Junior Lathe: 1—Double Friction Countershaft; 2—Face Plate; 3—Tool Post Complete; 4—Two Lathe Centers; 5—Spindle Sleeve; 6—Wrenches; 7—Lag Screws and Washers; 8—Change Gears for cutting Screw threads and for longitudinal feeds, also Installation Plans and Books, "How to Run a Lathe" and "Auto Mechanics Service Book No. 66."

The Features, Specifications and Descriptions on this page also apply to the 9-inch Junior Lathes illustrated on page 11.

LATHE SPECIFICATIONS

Countershaft Speed 300 R.P.M.
Spindle Speeds... 40, 75, 128, 246, 410, 700 R.P.M.
Width of Cone Pulley Belt..... 1 in.
Acme Thread Lead Screw..... 3/4 in. diam. 8 pitch
Size of Lathe Centers..... No. 2 Morse Taper
Screw Thread Cutting Range..... 4 to 40 per in.
Draw-in Collet Chuck Capacity..... 1/2 in. to 1 1/2 in.
Cross Slide Travel..... 7 in.
Size of Tool Shank for Tool Post..... 1/2 in. x 3/4 in.
Friction Countershaft Pulleys..... 6 1/2 in. x 2 1/2 in.

SOUTH BEND LATHE WORKS		
TRADE INDEX PLATE		
THREAD	SPINDLE	GEAR
4	64	32
5	64	40
6	64	48
7	64	56
8	64	64
9	64	72
10	64	80
11	64	88
12	64	96
13	64	104
14	64	112
15	64	120
16	64	128
17	64	136
18	64	144
19	64	152
20	64	160
22	64	176
24	64	192
26	64	208
28	64	224
30	64	240
32	64	256
36	64	288
40	64	320

Net Factory Prices of 9-inch Junior New Model Bench Lathe, Including Countershaft and Equipment*

Cat. No. of Lathe	Swing Over Bed	Length of Bed	Between Centers	Hole Thru Spindle	Swing Over Carriage	Power Required	Weight Crated	Code Word	Net Factory Price
22-XB	9 1/4 in.	2 1/2 ft.	11 in.	3/8 in.	6 1/2 in.	1/4 HP.	350 lbs.	Bylow	\$163.00
22-YB	9 1/4 in.	3 ft.	18 in.	3/8 in.	6 1/2 in.	1/4 HP.	375 lbs.	Bhorn	169.00
22-ZB	9 1/4 in.	3 1/2 ft.	23 in.	3/8 in.	6 1/2 in.	1/4 HP.	400 lbs.	Bmatx	175.00
22-AB	9 1/4 in.	4 ft.	29 in.	3/8 in.	6 1/2 in.	1/4 HP.	425 lbs.	Blear	182.00
22-RB	9 1/4 in.	4 1/2 ft.	36 in.	3/8 in.	6 1/2 in.	1/4 HP.	450 lbs.	Broil	190.00

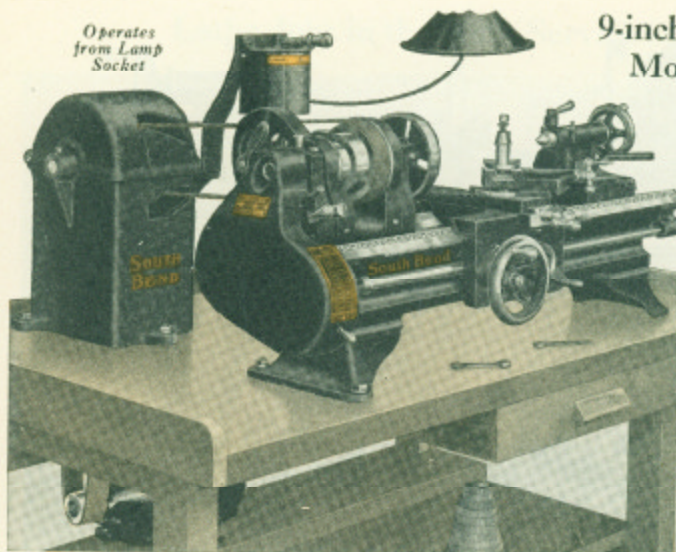
NOTE: If countershaft is not wanted deduct \$12.00 from above prices.

*Prices do not include Bench.

Write for 9-inch Junior Lathe Bulletin No. 22

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Operates
from Lamp
Socket

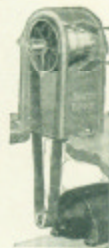


9-inch Junior Horizontal Motor Driven Lathe

The 9-inch Junior Horizontal Motor Driven Lathe is the regular Junior Bench Lathe described on page 10 except that instead of the countershaft drive it is equipped with horizontal motor drive which is driven by a motor mounted on a shelf beneath the bench. This is an improved and efficient safety motor drive that is noiseless and powerful. Operating cost averages about two cents per hour.

Electrical Equipment consists of 1/4 H.P. Reversing Motor, 1200 R.P.M., Reversing Switch (drum type), Wiring between Motor and Switch, Flexible Metal Conduit, Wiring Diagram, two Leather Belts and Drive Cabinet.

Lathe Equipment consists of Face Plate, Tool Post complete, two Lathe Centers, Spindle Sleeve, Change Gears, Wrenches, Installation Plans and book, "How to Run a Lathe."



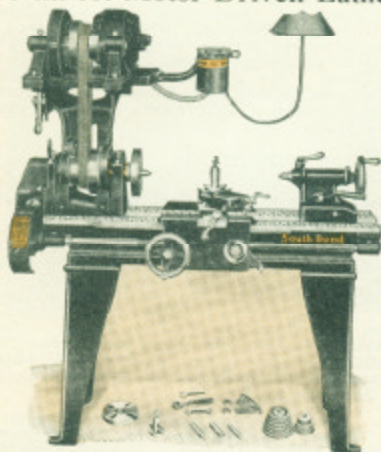
View of
Drive Unit

Prices 9-inch Junior Horizontal Motor Driven Lathe—Without Bench*

Catalog No. of Lathe	Swing Over Bed	Length of Bed	Between Centers	Size of Motor	Weight Crated	Code Word	3 Phase 60 Cycle A. C. Motor	Single Phase 60 Cycle A. C. Motor	Direct Current Motor
422-X	9 1/4 in.	2 1/2 ft.	11 in.	1/4 H.P.	435 lbs.	Radly	\$233.00	\$248.00	\$241.00
422-Y	9 1/4 in.	3 ft.	18 in.	1/4 H.P.	465 lbs.	Rijou	239.00	254.00	247.00
422-Z	9 1/4 in.	3 1/2 ft.	23 in.	1/4 H.P.	495 lbs.	Borax	245.00	260.00	253.00
422-A	9 1/4 in.	4 ft.	29 in.	1/4 H.P.	525 lbs.	Brawl	252.00	267.00	260.00
422-R	9 1/4 in.	4 1/2 ft.	36 in.	1/4 H.P.	555 lbs.	Bunco	260.00	275.00	268.00

*Prices include Lathe, Drive Cabinet, Lathe Equipment, Reversing Motor, Reversing Switch and two Belts. Price of Bench on Application.

9-in. Jr. Motor Driven Lathe



This Lathe is the regular Junior Bench Lathe equipped with the powerful Silent Chain Motor Drive. See page 20.

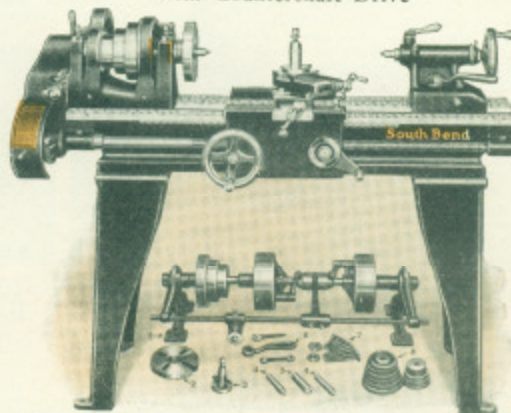
Electrical and Lathe Equipment are the same as described above except that the drive cabinet and one belt are omitted.

9-in. Jr. Silent Chain Motor Driven Lathe

No. of Lathe	Swing Over Bed	Length of Bed	Size of Motor	3 Phase 60 Cycle A. C. Motor	1 Phase 60 Cycle A. C. Motor	Direct Current Motor
322-X	9 1/4 in.	2 1/2 ft.	1/4 H.P.	\$277.00	\$292.00	\$285.00
322-Y	9 1/4 in.	3 ft.	1/4 H.P.	283.00	298.00	291.00
322-Z	9 1/4 in.	3 1/2 ft.	1/4 H.P.	289.00	304.00	297.00
322-A	9 1/4 in.	4 ft.	1/4 H.P.	295.00	311.00	304.00
322-R	9 1/4 in.	4 1/2 ft.	1/4 H.P.	304.00	319.00	312.00

If bench legs are wanted deduct \$7.50.

9-inch Junior Lathe, Floor Type with Countershaft Drive



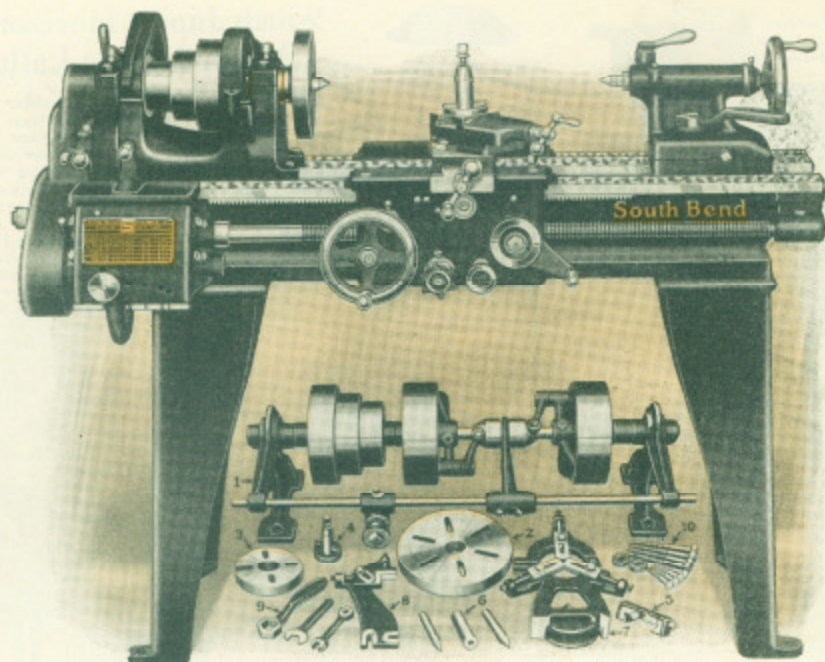
The 9-inch Junior New Model Lathe with floor legs is exactly the same lathe as shown on page 10 except that instead of the short legs for bench use, it is equipped with floor legs.

Lathe Equipment is the same as listed on page 10 for the 9-inch Junior New Model Bench Lathe.

Prices of 9-inch Junior Lathe (Floor Type)

No. of Lathe	Swing Over Bed	Length of Bed	Between Centers	Power Required	Weight Crated	Net Factory Price
22-X	9 1/4 in.	2 1/2 ft.	11 in.	1/4 H.P.	415 lbs.	\$173.00
22-Y	9 1/4 in.	3 ft.	18 in.	1/4 H.P.	440 lbs.	179.00
22-Z	9 1/4 in.	3 1/2 ft.	23 in.	1/4 H.P.	465 lbs.	185.00
22-A	9 1/4 in.	4 ft.	29 in.	1/4 H.P.	490 lbs.	192.00
22-R	9 1/4 in.	4 1/2 ft.	36 in.	1/4 H.P.	515 lbs.	200.00

SEND FOR 20-PAGE BOOKLET ON 9-INCH JUNIOR LATHES



Regular equipment, as illustrated under Lathe, is included in price

9-in. x 3-ft. Quick Change Gear New Model Lathe - \$294

Back Geared, Screw Cutting Lathe, Countershaft Drive

The 9-inch Quick Change Gear New Model South Bend Lathe, illustrated above, is a sturdy, accurate and dependable lathe capable of handling the thousand and one repair jobs that come to the Electrical Shop, Service Station, Airport Service Shop, and Garage. The Quick Change Gear Lathe has a quick change gear box for cutting standard screw threads from 2 to 112 per inch, while the Standard Change Gear Lathe has change gears for cutting threads 4 to 40 per inch.

Automatic Friction Feeds. All 9-inch Quick Change and Standard Change Gear Lathes have automatic cross and longitudinal feeds which are operated by a powerful worm drive in the apron. An automatic safety device prevents engaging of any two feeds at the same time.

Motor Drive. The 9-inch New Model South Bend Lathe can be had with Silent Chain Motor Drive. For illustration, description and price see pages 20 and 21.

Work for Which This Lathe Is Recommended

ARMATURES—True Armature Commutators; Undercut Mica; Straighten Armature Shafts; Restore Center in Shaft; Bore Field Poles.

ELECTRICAL—Repair Magnetos; Machine Distributors; Electrical Work of all Kinds; Milling and Keyway Cutting.

BUSHINGS—Make Bushings and Pins of all Kinds and Sizes; Bore Bushings; Turn Bushings; Ream, Face and Thread Bushings.

VALVES—Reface Valves at any Angle, all Sizes and Types; Straighten Valve Stems; Make Valve Stem and Push Rod Guides.

PISTONS—Finish Turn Semi-Machined Pistons, all Sizes and Types; Enlarge Piston Ring Grooves;

Ream Wrist Pin Holes.

GRINDING—Grind Valves; Back-off Valve Seat Cutters and Reamers; Grind Pistons.

THREAD CUTTING—Cut Threads (U. S. Standard, Acme, Square, Double or Triple) 2 to 112 per inch, R. or L. Hand including 1 1/2 Pipe Thread.

CHUCKING WORK, ETC.—All kinds of Chucking Work, Polishing, Filing, Lapping, Tapping, Drilling, etc., and Hundreds of other jobs.

ATTACHMENTS—For Automotive Work, page 29.

HAND BOOKS—"How to Run a Lathe" and "Auto Mechanics Service Book No. 66" free with each lathe. See page 31.

LATHE FEATURES

Back geared headstock gives 6 spindle speeds.
Automatic cross feed, automatic longitudinal feed.
Hollow spindle made of special carbon steel.
Spring latch reverse for feeds and threads.
Phosphor bronze bearings for spindle.
Graduated compound rest swivels to any angle.
Tailstock is arranged for set over for taper turning.
Graduated collar on cross feed and compound rest screws.
Precision lead screw for cutting accurate threads.

LATHE SPECIFICATIONS

Head and Tail Spindle Centers.....No. 2, Morse Taper
Size of Spindle Nose.....1 1/2 in. diam., 8 Threads
Precision Acme Lead Screw.....3/4 in. diam., 8 Threads
Width of Cone Pulley Belt.....1 1/2 in.
Spindle Speeds.....40, 75, 128, 246, 410, 700 R.P.M.
Countershaft Speed.....300 R.P.M.
Countershaft Friction Clutch Pulleys.....6 7/8 in. x 2 1/2 in.
Angular Travel of Compound Rest Top.....17 1/2 in.
Size of Lathe Tool Shank.....3/4 in. x 1 1/8 in.

Net Factory Prices of 9-inch Quick and Standard Change Gear Lathes, with Countershaft and Equipment

Lathe Specifications				Standard Change Gear			Quick Change Gear		
Swing Over Bed	Length of Bed	Between Centers	Power Required	Cat. No. of Lathe	Weight Crated	Net Factory Prices	Cat. No. of Lathe	Weight Crated	Net Factory Prices
9 1/4 in.	2 1/2 ft.	10 1/4 in.	1/4 H.P.	30-X	460 lbs.	\$243.00	80-X	470 lbs.	\$288.00
9 1/4 in.	3 ft.	17 1/4 in.	1/4 H.P.	30-Y	480 lbs.	249.00	80-Y	490 lbs.	294.00
9 1/4 in.	3 1/2 ft.	22 1/4 in.	1/4 H.P.	30-Z	500 lbs.	255.00	80-Z	510 lbs.	300.00
9 1/4 in.	4 ft.	28 1/4 in.	3/4 H.P.	30-A	520 lbs.	262.00	80-A	530 lbs.	307.00
9 1/4 in.	4 1/2 ft.	35 1/4 in.	3/4 H.P.	30-R	540 lbs.	270.00	80-R	550 lbs.	315.00

Write for Bulletin No. 9 describing the 9-inch Lathe in various types and drives.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Lathe Jobs in the Auto Service Station Shop

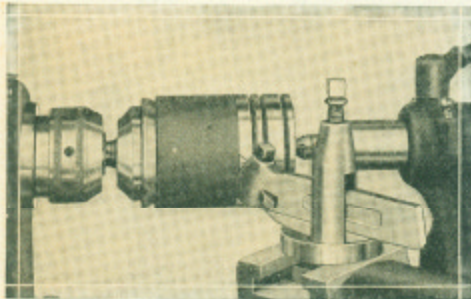


Fig. 31. Turning a Semi-machined Piston Mounted on a No. 44 Piston Adapter. See page 9

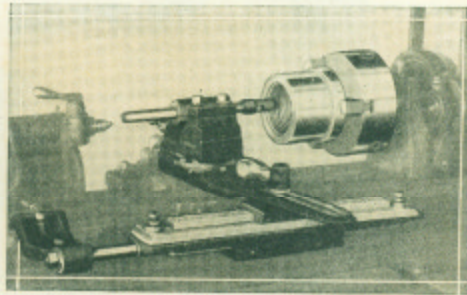


Fig. 32. Cutting an Internal Tapered Thread with the Taper Attachment



Fig. 33. Making a Valve Stem Guide

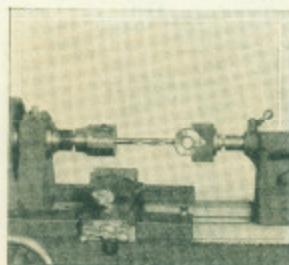


Fig. 34. Drilling Round Work Held in Crotch Center

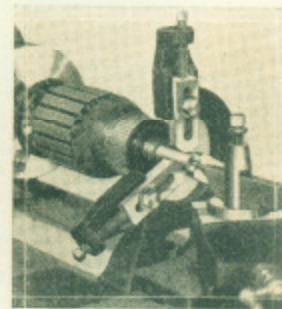


Fig. 35. Restoring a Damaged Center Hole

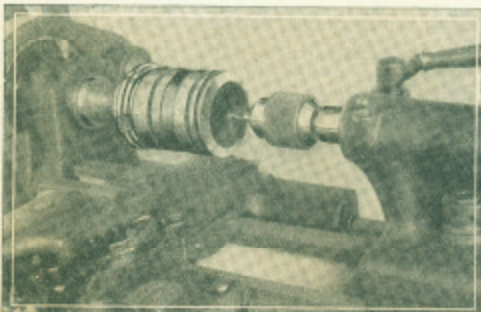


Fig. 36. Piston Mounted in Lathe for Drilling Center Hole in Head

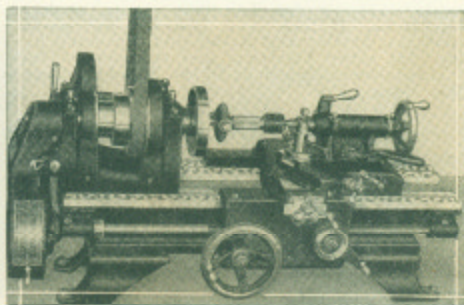


Fig. 37. Cutting the Thread on a Master Screw Thread Gauge

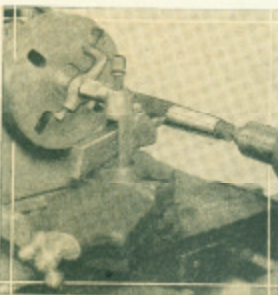


Fig. 38. Turning a Taper by Setting Over Tailstock

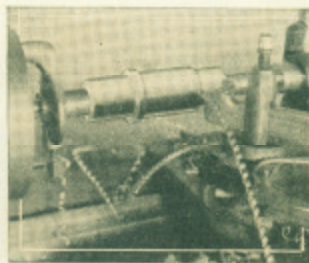
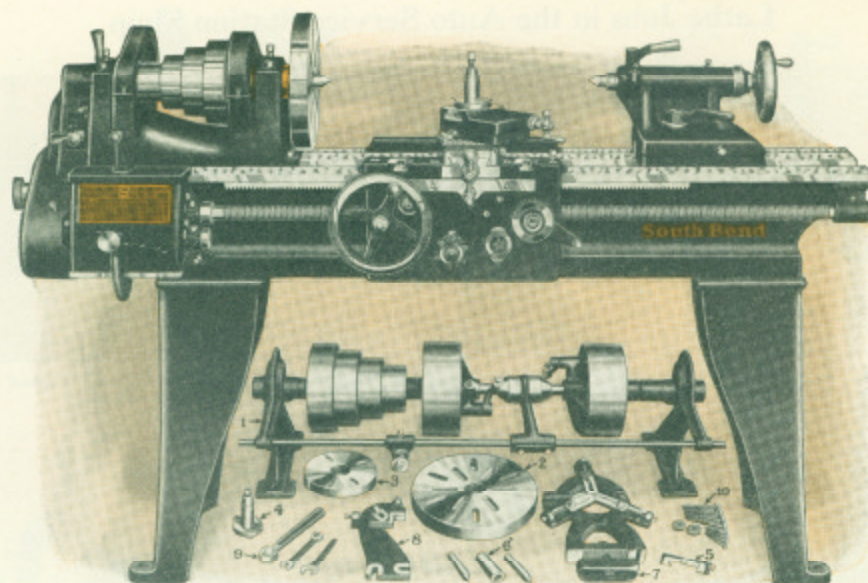


Fig. 39. Making a Steel Bushing



Fig. 40. For Details on This Book See Page 31

BOOKLET "HOW TO RUN A LATHE" INCLUDED WITH EACH LATHE



Regular equipment, as illustrated under Lathe, is included in price of Lathe

13-in. x 5-ft. Quick Change Gear New Model Lathe - \$443

Back Geared, Screw Cutting Lathe, Countershaft Drive

The 13-inch Quick Change Gear New Model South Bend Lathe illustrated above is an ideal machine for the Electrical Shop, Service Station and Garage specializing on General Auto Repair Work. This Lathe has the accuracy, power and ample capacity for handling repair work on Armatures, Pistons and Valves; for making Bushings, Screws and Bolts; and for doing hundreds of other Electrical and Automotive Jobs. This lathe is also built in the Standard Change Gear type.

Automatic Friction Feeds. All types of 13-inch Quick Change and Standard Change Gear Lathes have automatic cross and longitudinal feeds which are operated by a powerful worm drive in the apron. An automatic safety device prevents engaging of any two feeds at the same time.

Motor Drive. The 13-inch New Model South Bend Lathe can be had with Silent Chain Motor Drive. See pages 20 and 21 for illustration, description and prices.

Work for Which This Lathe Is Recommended

ARMATURES—True Armature Commutators; Undercut Mica; Straighten Armature Shafts; Restore Center in Shaft; Bore Field Poles.
ELECTRICAL—Repair Magnetos; Machine Distributors; Electrical Work of all Kinds; Milling and Keyway Cutting.
BUSHINGS—Make Bushings and Pins of all Kinds and Sizes; Bore Bushings; Turn Bushings; Ream, Face and Thread Bushings.
VALVES—Reface Valves at any Angle, all Sizes and Types; Straighten Valve Stems; Make Valve Stem and Push Rod Guides.
PISTONS—Finish Turn Semi-Machined Pistons, all Sizes and Types; Enlarge Piston Ring Grooves; Ream Wrist Pin Holes.

GRINDING—Grind Valves; Back-off Valve Seat Cutters and Reamers; Grind Pistons.

THREAD CUTTING—Cut Threads (U. S. Standard, Acme, Square, Double or Triple) 2 to 1 1/2 per inch, R. or L. Hand including 1 1/2 Pipe Thread.

CHUCKING WORK, ETC.—All kinds of Chucking Work, Polishing, Filing, Lapping, Tapping, Drilling, etc., and Hundreds of other jobs.

ATTACHMENTS—for Automotive Work, page 29.

HAND BOOKS—"How to Run a Lathe" and "Auto Mechanics Service Book No. 66" illustrating modern service methods, furnished free with each lathe. See page 31.

LATHE FEATURES

Back geared headstock give 8 spindle speeds.
Automatic cross feed, automatic longitudinal feed.
Hollow spindle made of special carbon steel.
Spring latch reverse for feeds and threads.
Phosphor bronze bearings for spindle.
Graduated compound rest swivels to any angle.
Tailstock is arranged for set-over for taper turning.
Graduated collar on cross feed and compound rest screws.
Precision lead screw for cutting accurate threads.

LATHE SPECIFICATIONS

Head and Tail Spindle Centers.....No. 3 Morse Taper
Size of Spindle Nose.....1 1/2 in. diam., 8 Threads
Precision Acme Lead Screw.....1 in. diam., 6 Threads
Width of Cone Pulley Belt.....1 3/4 in.
Spindle Speeds.....25, 40, 60, 100, 180, 275, 425, 685 R.P.M.
Countershaft Speed.....275 R.P.M.
Countershaft Friction Clutch Pulleys.....8 in. x 2 1/2 in.
Angular Travel of Compound Rest Top.....3 in.
Size of Lathe Tool Shank.....1/2 in. x 1 1/2 in.

Net Factory Prices of 13-inch Quick and Standard Change Gear Lathes, with Countershaft and Equipment

Lathe Specifications				Standard Change Gear			Quick Change Gear		
Swing Over Bed	Length of Bed	Between Centers	Power Required	Cat. No. of Lathe	Weight Crated	Net Factory Prices	Cat. No. of Lathe	Weight Crated	Net Factory Prices
13 1/4 in.	4 ft.	16 in.	3/4 H.P.	35-A	1040 lbs.	\$368.00	86-A	1060 lbs.	\$428.00
13 1/4 in.	5 ft.	28 in.	3/4 H.P.	35-B	1090 lbs.	383.00	86-B	1110 lbs.	443.00
13 1/4 in.	6 ft.	40 in.	3/4 H.P.	35-C	1140 lbs.	398.00	86-C	1160 lbs.	458.00
13 1/4 in.	7 ft.	52 in.	3/4 H.P.	35-D	1190 lbs.	415.00	86-D	1210 lbs.	475.00
13 1/4 in.	8 ft.	64 in.	3/4 H.P.	35-E	1240 lbs.	434.00	86-E	1260 lbs.	494.00

Write for Bulletin No. 13 describing the 13-inch Lathe in various types and drives.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Lathe Jobs in the Auto Service Station Shop

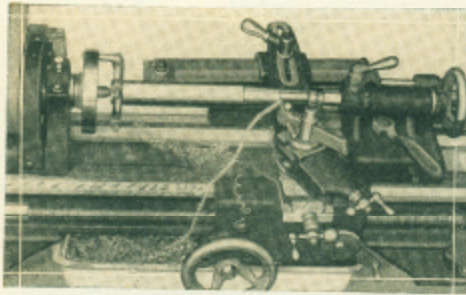


Fig. 41. Using the Taper Attachment to Turn a Long Taper

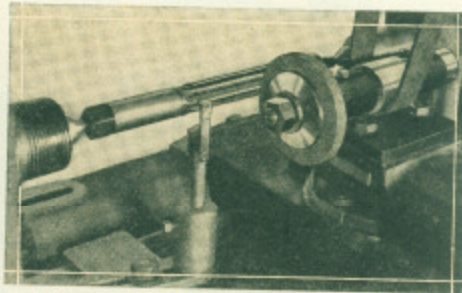


Fig. 42. Grinding a Straight Reamer. Taper Reamers Can Also Be Ground

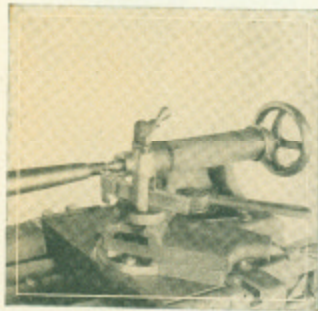


Fig. 43. Cutting Thread on an Automobile Axle



Fig. 44. Tapping a Large Nut in a 13-inch Lathe

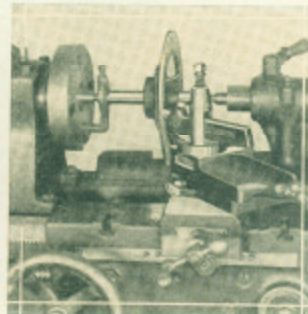


Fig. 45. Truing a Clutch Disc Mounted on an Arbor

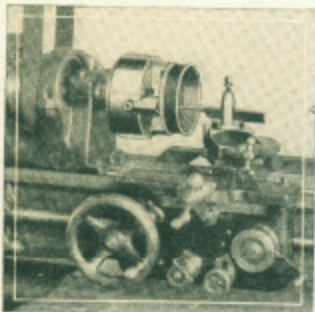


Fig. 46. Cutting an Internal Thread in a Hub Cap

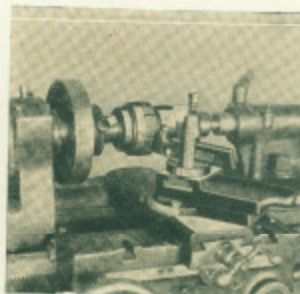


Fig. 47. Cutting a Screw Thread on a Bearing Retaining Collar

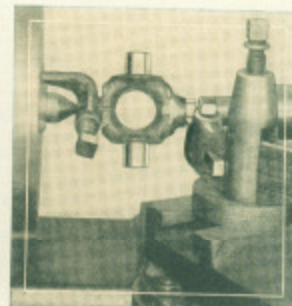


Fig. 48. Turning a Knuckle Between Centers in the Lathe

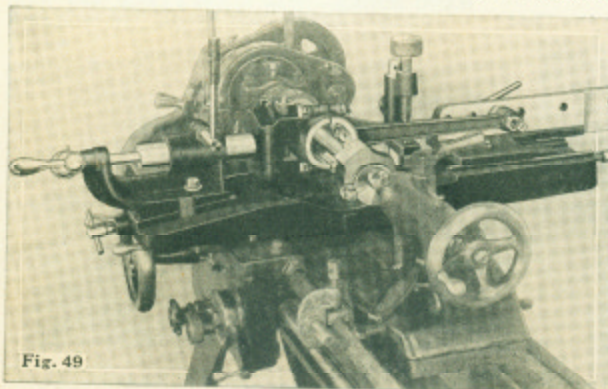


Fig. 49

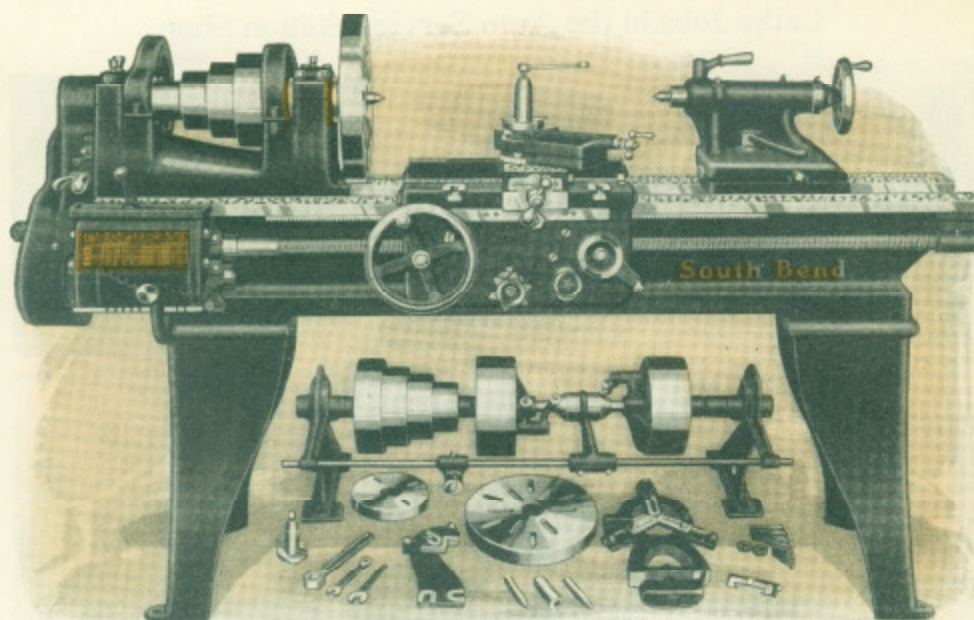
Connecting Rod Boring Attachment

The illustration shows the Hempy-Cooper Connecting Rod Boring Attachment for use on South Bend Lathes. This attachment is capable of boring all sizes and types of connecting rods for automobiles, buses and trucks. It is furnished for use on the 11-inch, 13-inch, 15-inch, 16-inch, 18-inch Lathes, 16-24-inch General Purpose Lathes, and Brake Drum Lathes. Write for special bulletin.

Prices of Attachment

Size of Lathe	Cat. No.	Weight	Code Word	Price
11 in.	1427	129 lbs.	Nulom	\$175.00
13 in.	1428	138 lbs.	Novur	185.00
15 in.	1429	151 lbs.	Nimor	195.00
16 in.	1430	168 lbs.	Nelms	205.00
18 in.	1431	189 lbs.	Noxit	215.00

MODERN SHOP METHODS DESCRIBED IN AUTO MECHANICS SERVICE BOOK No. 66



Regular equipment, as illustrated under Lathe, is included in price of Lathe

16-in. x 6-ft. Quick Change Gear New Model Lathe - \$598

Back Geared, Screw Cutting Lathe, Countershaft Drive

The 16-inch Quick Change Gear New Model South Bend Lathe illustrated above is a practical tool for the Service Station Shop, Garage, Electrical Shop and Airport Service Shop, as it will handle a wide range of automotive repair work of all kinds. In addition to the light work such as machining pistons, valves, bushings, etc., this lathe is practical for much heavier work of a general type. This lathe is also built in the Standard Change Gear type.

Automatic Friction Feeds. All types of 16-inch Quick Change and Standard Change Gear Lathes have automatic cross and longitudinal feeds which are operated by a powerful worm drive in the apron. An automatic safety device prevents engaging of any two feeds at the same time.

Motor Drive. The 16-inch New Model South Bend Lathe can be had with Silent Chain Motor Drive. See pages 20 and 21 for illustration, description and prices.

Work for Which This Lathe Is Recommended

ARMATURES—True Armature Commutators; Undercut Mica; Straighten Armature Shafts; Restore Center in Shaft; Bore Field Poles.

ELECTRICAL—Repair Magnetos; Machine Distributors; Electrical Work of all Kinds; Milling and Keyway Cutting.

BUSHINGS—Make Bushings and Pins of all Kinds and Sizes; Bore Bushings; Turn Bushings; Ream, Face and Thread Bushings.

VALVES—Reface Valves at any Angle, all Sizes and Types; Straighten Valve Stems; Make Valve Stem and Push Rod Guides.

PISTONS—Finish Turn Semi-Machined Pistons, all Sizes and Types; Enlarge Piston Ring Grooves; Ream Wrist Pin Holes.

GRINDING—Grind Valves; Back-off Valve Seat Cutters and Reamers; Grind Pistons.

LATHE FEATURES

Back geared head stock, gives 8 spindle speeds. Automatic cross feed, automatic longitudinal feed. Hollow spindle made of special alloy steel. Spring latch reverse for feeds and threads. Phosphor bronze bearings for spindle. Graduated compound rest swivels to any angle. Tailstock is arranged for set-over for taper turning. Graduated collar on cross feed and compound rest screws. Precision lead screw for cutting accurate threads.

THREAD CUTTING—Cut Threads (U. S. Standard, Acme, Square, Double or Triple) 2 to 112 per inch, R. or L. Hand including 1½ Pipe Thread.

CHUCKING WORK, ETC.—All kinds of Chucking Work, Polishing, Filing, Lapping, Tapping, Drilling, etc., and Hundreds of other jobs.

GENERAL AUTO WORK—Test Crankshafts; Machine Clutch Discs; Machine Ring Gear Flange on Differential Housing; Re-turn Throw Bearings of Crankshafts using Weber Tool; Taper Turning and Taper Boring.

ATTACHMENTS—For Automotive Work, see page 29.

HAND BOOKS—"How to Run a Lathe" and "Auto Mechanics Service Book No. 66" free with each lathe. See page 31.

LATHE SPECIFICATIONS

Head and Tail Spindle Centers.....No. 3, Morse Taper
Size of Spindle Nose.....2½ in. diam., 6 Threads
Precision Acme Lead Screw.....1½ in. diam., 6 Threads
Width of Cone Pulley Belt.....2½ in.
Spindle Speeds.....20, 30, 50, 75, 140, 225, 360, 610 R.P.M.
Countershaft Speed.....225 R.P.M.
Countershaft Friction Clutch Pulleys.....10 in. x 3½ in.
Angular Travel of Compound Rest Top.....3½ in.
Size of Lathe Tool Shank.....½ in. x 1½ in.

Net Factory Prices of 16-inch Quick and Standard Change Gear Lathes, with Countershaft and Equipment

Lathe Specifications				Standard Change Gear			Quick Change Gear		
Swing Over Bed	Length of Bed	Between Centers	Power Required	Cat. No. of Lathe	Weight Crated	Net Factory Prices	Cat. No. of Lathe	Weight Crated	Net Factory Prices
16¼ in.	6 ft.	34 in.	1 H.P.	41-C	1840 lbs.	\$518.00	92-C	1875 lbs.	\$598.00
16¼ in.	7 ft.	46 in.	1 H.P.	41-D	1920 lbs.	538.00	92-D	1955 lbs.	618.00
16¼ in.	8 ft.	58 in.	1 H.P.	41-E	2000 lbs.	558.00	92-E	2035 lbs.	638.00
16¼ in.	10 ft.	82 in.	1 H.P.	41-G	2160 lbs.	602.00	92-G	2195 lbs.	682.00
16¼ in.	12 ft.	106 in.	1 H.P.	*41-H	2320 lbs.	665.00	*92-H	2355 lbs.	745.00

*Lathe with 12-foot bed is equipped with center leg which is included in the price of the lathe.
Write for Bulletin No. 16 describing the 16-inch Lathe in various types and drives.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Lathe Jobs in the Auto Service Station Shop

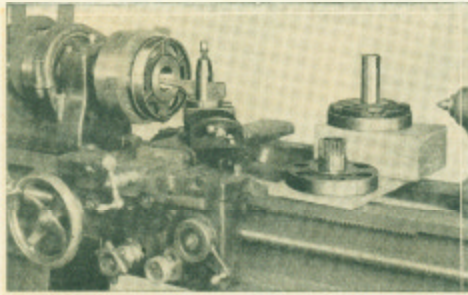


Fig. 50. Boring a Transmission Drum to Make a Bushing Repair

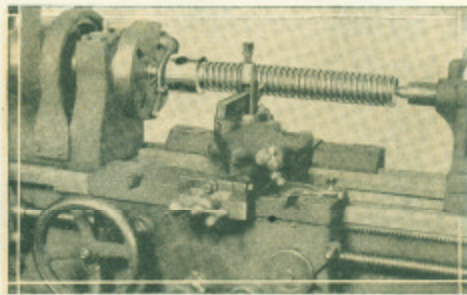


Fig. 51. Cutting a Square Thread on a Jack Screw



Fig. 52. Turning a Drive Shaft Supported by a Center Rest

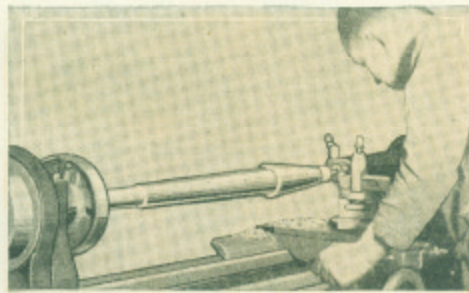


Fig. 53. Making an Automobile Axle in the Lathe

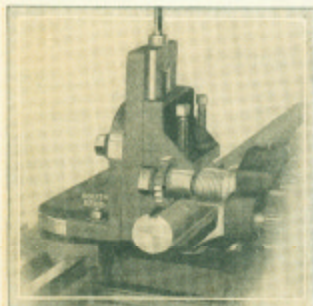


Fig. 54. Cutting a Standard Keyway in a Long Shaft

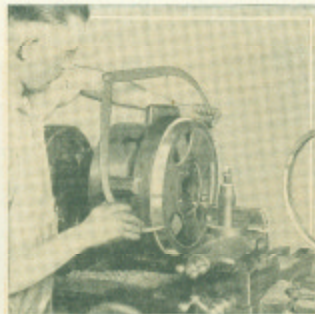


Fig. 55. Measuring the Diameter of a Turned Flywheel

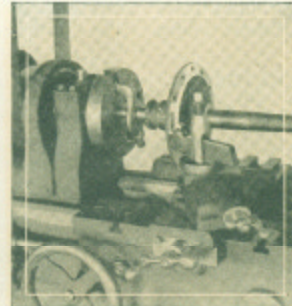


Fig. 56. Machining a Damaged Truck Wheel Flange on Its Own Axle

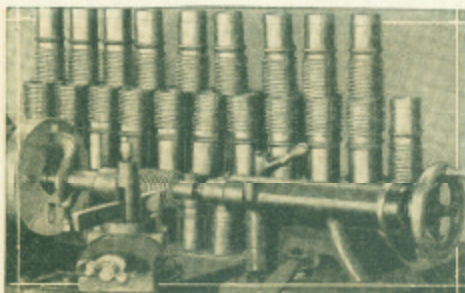


Fig. 57. Cutting an Acme Thread on a Steel Worm

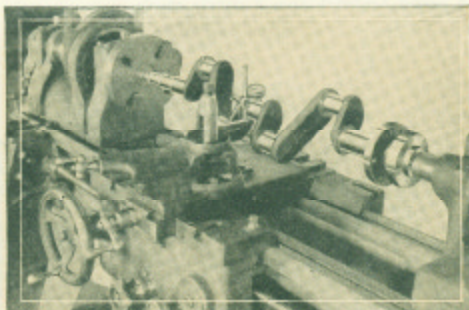
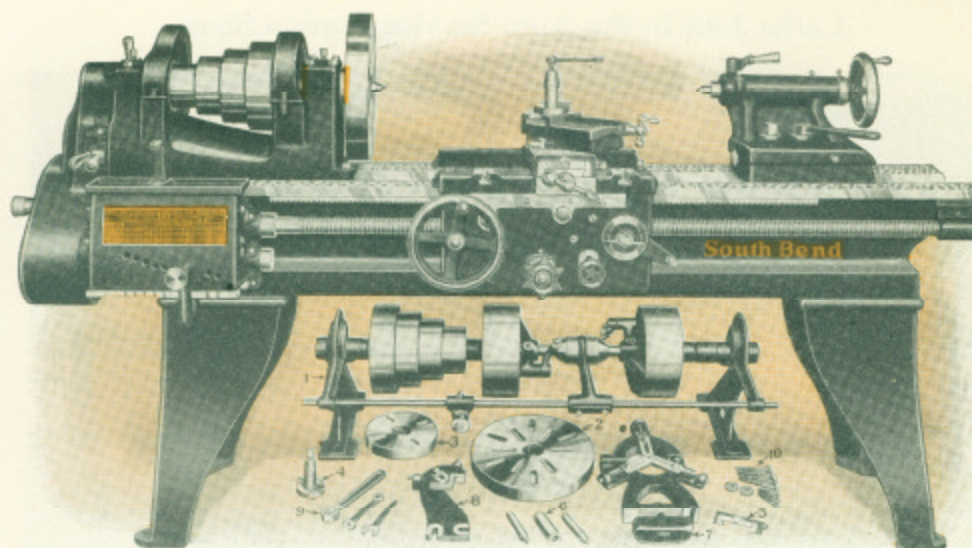


Fig. 58. Testing the Main Bearings of a Crankshaft with a Dial Indicator

INTERESTING BOOKLETS ON EACH SIZE LATHE MAILED FREE



Regular equipment, as illustrated under Lathe, is included in price

18-in. x 8-ft. Quick Change Gear New Model Lathe - \$763

Back Geared, Screw Cutting Lathe, Countershaft Drive

The 18-inch Quick Change Gear New Model South Bend Lathe illustrated above is a practical tool for the Service Station Shop, Garage, Electrical Shop and Airport Service Shop, for heavy machine work of all kinds in the servicing of large size buses, trucks, tractors, airplanes, etc. This lathe has the power and rigidity necessary for heavy duty work and in addition will handle such light work as machining pistons, valves, bushings, milling, thread cutting, etc.

Automatic Friction Feeds. All types of 18-inch Quick Change and Standard Change Gear Lathes have automatic cross and longitudinal feeds which are operated by a powerful worm drive in the apron. An automatic safety device prevents engaging of any two feeds at the same time.

Motor Drive. The 18-inch New Model South Bend Lathe can be had with Silent Chain Motor Drive. See pages 20 and 21 for illustration, description and prices.

Work for Which This Lathe Is Recommended

ARMATURES—True Armature Commutators; Undercut Mica; Straighten Armature Shafts; Restore Center in Armature Shaft; Bore Field Poles.

ELECTRICAL—Repair Magnetos; Machine Distributors; Electrical Work of all Kinds; Milling and Keyway Cutting.

BUSHINGS—Make Bushings and Pins of all Kinds and Sizes; Bore Bushings; Turn Bushings; Ream, Face and Thread Bushings.

VALVES—Reface Valves at any Angle, all Sizes and Types; Straighten Valve Stems; Make Valve Stem and Push Rod Guides.

PISTONS—Finish Turn Semi-Machined Pistons, all Sizes and Types; Enlarge Piston Ring Grooves; Ream Wrist Pin Holes.

GRINDING—Grind Valves; Back-off Valve Seat Cutters and Reamers; Grind Pistons.

THREAD CUTTING—Cut Threads (U. S. Standard, Acme, Square, Double or Triple) 2 to 112 per inch, R. or L. Hand including 11½ Pipe Thread.

CHUCKING WORK, ETC.—All kinds of Chucking Work, Polishing, Filing, Lapping, Tapping, Drilling, etc., and Hundreds of other jobs.

STARTER RING GEARS—Turn Starter Ring Teeth off of Fly Wheels to fit new Starter Ring Gears.

GENERAL AUTO WORK—Test Crankshafts; Machine Clutch Discs; Machine Ring Gear Flange on Differential Housing; Re-turn Throw Bearings of Crankshafts using Weber Tool; Taper Turning and Taper Boring.

ATTACHMENTS—For Automotive Work, page 29.
HAND BOOKS—"How to Run a Lathe" and "Auto Mechanics Service Book No. 66" show modern shop methods. Copies free with each lathe.

LATHE SPECIFICATIONS

Head and Tail Spindle Centers.....No. 3, Morse Taper
Size of Spindle Nose.....2½ in. diam., 6 Threads
Precision Acme Lead Screw.....1½ in. diam., 4 Threads
Width of Cone Pulley Belt.....2½ in.
Spindle Speeds.....18, 28, 45, 70, 135, 200, 300, 465 R.P.M.
Countershaft Speed.....200 R.P.M.
Countershaft Friction Clutch Pulleys.....12 in. x 4½ in.
Angular Travel of Compound Rest Top.....4½ in.
Size of Lathe Tool Shank.....½ in. x 1½ in.

LATHE FEATURES

Back geared headstock gives 8 spindle speeds.
Automatic cross feed, automatic longitudinal feed.
Hollow spindle made of special alloy steel.
Spring latch reverse for feeds and threads.
Phosphor bronze bearings for spindle.
Graduated compound rest swivels to any angle.
Tailstock is arranged for set-over for taper turning.
Graduated collar on cross feed and compound rest screws.
Precision lead screw for cutting accurate threads.

Net Factory Prices of 18-inch Quick and Standard Change Gear Lathes, with Countershaft and Equipment

Lathe Specifications				Standard Change Gear			Quick Change Gear		
Swing Over Bed	Length of Bed	Between Centers	Power Required	Cat. No. of Lathe	Weight Crated	Net Factory Prices	Cat. No. of Lathe	Weight Crated	Net Factory Prices
18½ in.	6 ft.	29½ in.	2 H.P.	43-C	2400 lbs.	\$623.00	94-C	2440 lbs.	\$713.00
18½ in.	7 ft.	41½ in.	2 H.P.	43-D	2500 lbs.	648.00	94-D	2540 lbs.	738.00
18½ in.	8 ft.	53½ in.	2 H.P.	43-E	2600 lbs.	673.00	94-E	2640 lbs.	763.00
18½ in.	10 ft.	77½ in.	2 H.P.	43-G	2800 lbs.	727.00	94-G	2840 lbs.	817.00
18½ in.	12 ft.	101½ in.	2 H.P.	*43-H	3100 lbs.	805.00	*94-H	3140 lbs.	895.00
18½ in.	14 ft.	125½ in.	2 H.P.	*43-K	3500 lbs.	867.00	*94-K	3540 lbs.	957.00

*Lathes with 12-foot and 14-foot beds are equipped with center leg which is included in price of lathe.
Write for Bulletin No. 18 describing the 18-inch Lathe in various types and drives.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Lathe Jobs in the Auto Service Station Shop

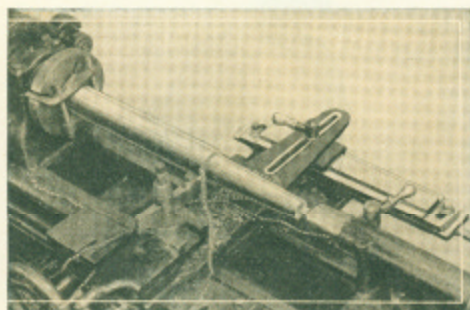


Fig. 59. Turning a Long Taper, Using the Taper Attachment to Determine Degree of Taper



Fig. 60. Taking a Heavy Roughing Cut on a Steel Shaft

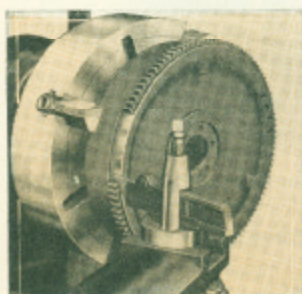


Fig. 61. Section of Flywheel Teeth Removed to Show the Groove Cut Under the Teeth by the Tool

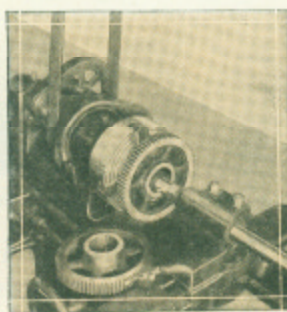


Fig. 62. Cutting a Keyway in a Gear on an 18-inch Lathe

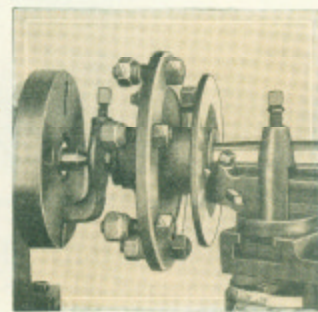


Fig. 63. Truing a Hub Flange of a Rear Auto Wheel

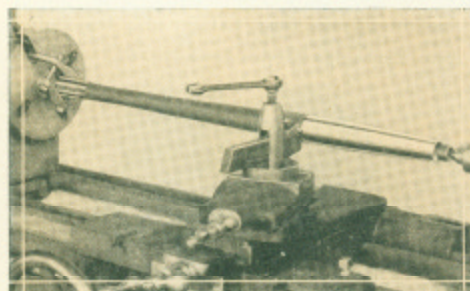


Fig. 64. Turning Taper of Automobile Axle, Using Tailstock Set Over to Degree of Taper

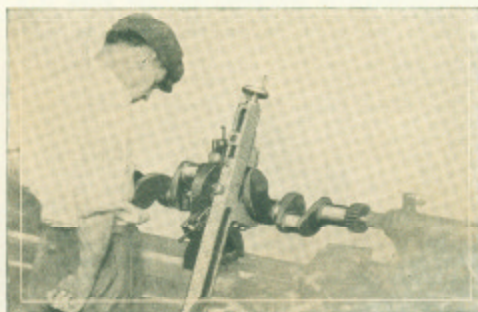


Fig. 65. Truing Crankshaft Throw Bearings with a Weber Tool Attachment

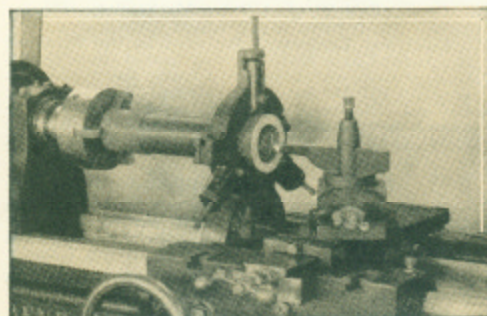


Fig. 66. Cutting an Internal Thread in a Large Piece of Work

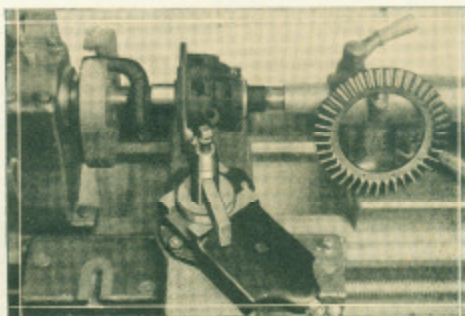
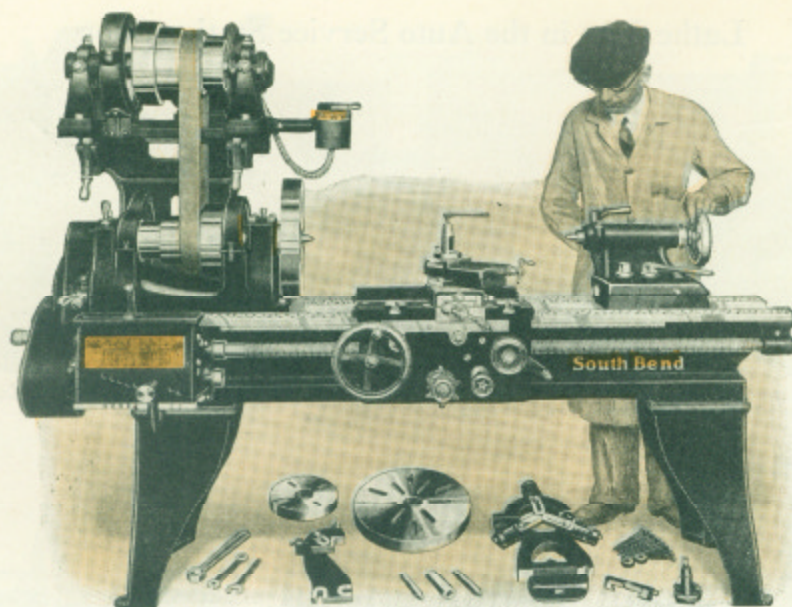


Fig. 67. Truing the Flange of a Differential Spider

OUR CATALOG No. 91-A DESCRIBES ENTIRE LINE NEW MODEL LATHES AND ACCESSORIES



Reversing Motor, Reversing Switch and Lathe Equipment are included in price

16-inch x 6-ft. Silent Chain Motor Driven Lathe - \$777

Six Sizes—9-inch to 18-inch Swing—Standard and Quick Change Gear Lathes

The New Model South Bend Silent Chain Motor Driven Lathe is a practical tool for the electrical shop, garage and service station shop and is recommended for use where power from an overhead lineshaft is not available. The lathe is a complete unit requiring no extra driving equipment of any kind. It occupies only the same amount of floor space as the regular belt driven lathe and is ready to operate as soon as it is connected to the electric current.

The Silent Chain Motor Driven Lathe shown above is exactly the same as the 16-inch Lathe illustrated and described on page 16, except that it is equipped with the Silent Chain Motor Drive. The 9", 13", 16" and 18" lathes, illustrated on pages 12, 14, 16 and 18, are also furnished in the Silent Chain Motor Driven pattern. For prices see opposite page.

The Reversing Motor is mounted above the lathe where it is free from dirt and chips. A flexible metal conduit encases wiring from motor to switch. The silent chain drive is provided with a felt wick oiler and is entirely enclosed by a gear guard of cast iron.

The Motor Table which supports the motor and driving cone is held by a heavy bracket mounted directly on the lathe bed. A small lever allows the motor table to tilt forward and relieve belt tension for easy shifting. An independent adjustment takes up the stretch in belt.

Start, Stop and Reverse positions are provided on the switch; left for forward motion of the lathe spindle, center for stop, and right for reverse.

The Silent Chain Motor Drive used on South Bend Lathes was developed in the shops of the General Electric Company several years ago. It is the ideal electric drive for the screw cutting lathe as it is practical and powerful and eliminates vibration and noise. Power is delivered from the motor through the silent chain and then by belt to the lathe spindle. Driving the spindle cone by the belt does away with all vibration and permits the cutting tool to work efficiently and to leave a smooth surface on the work. The Silent Chain Motor Drive is by far the most popular form of motor drive.

Regular Lathe Equipment included in price of Silent Chain Motor Driven Lathes, Quick Change and Standard Change Gear types, consists of: Large Face Plate, Small Face Plate, Tool Post Complete, Adjustable Thread Cutting Stop, two Lathe Centers and Spindle Sleeve, Center Rest, Follower Rest, Wrenches and Change Gears with Standard Change Gear Lathes, also Installation Plans and Books, "How to Run a Lathe" and "Auto Mechanics Service Book No. 66."



End View of Drive Mechanism

Electrical Equipment Included in the Price of the Silent Chain Motor Driven Lathes, both Quick Change Gear and Standard Change Gear, consists of 1200 R.P.M. Reversing Motor (Westinghouse, General Electric, or equal make), Reversing Switch, wiring between motor and switch, flexible metal conduit, wiring diagram, and leather belt.

Electric Current Specifications

When Ordering a Motor Driven Lathe give the following information regarding the electric current to be used, so that the proper style and type of reversing motor can be fitted to the lathe.

- If Alternating Current state exact voltage, phase, cycle, and number of wires.
- If Direct Current state exact voltage only.

You Can Secure your current specifications from the electric power company furnishing your current.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

96 Popular Sizes and Types of New Model South Bend Lathes

Net Factory Prices F.O.B. Cars, South Bend, Indiana; Crated for Domestic Shipment

Prices of Countershaft Driven Lathes include Countershaft and Lathe Equipment. Prices of Motor Driven Lathes include Lathe Equipment, Reversing Motor, Reversing Switch, and Leather Belt.

9-inch South Bend Bench Lathes—Motor Drive Types

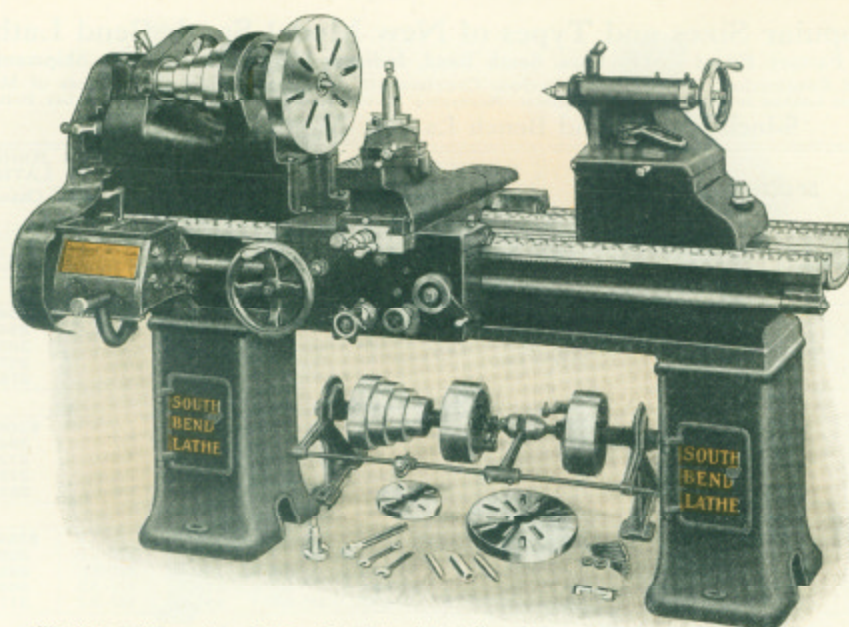
SPECIFICATIONS					9-INCH REGULAR BENCH LATHES				9-INCH JUNIOR BENCH LATHES	
					Quick Change Gear		Standard Change Gear		Standard Change Gear	
Swing Over Bed Inches	Length of Bed Feet	Between Centers Inches	Power Required H.P.	Weight Crated Pounds	Catalog No. of Lathe	1-Phase 60-Cycle A.C. Motor	Catalog No. of Lathe	1-Phase 60-Cycle A.C. Motor	Catalog No. of Lathe	1-Phase 60-Cycle A.C. Motor
9-inch Horizontal Motor Driven Bench Lathes										
9 $\frac{1}{4}$	2 $\frac{1}{2}$	10 $\frac{1}{4}$	$\frac{1}{4}$	490	480-X	\$363.00	430-X	\$318.00	422-X	\$248.00
9 $\frac{1}{4}$	3	17 $\frac{1}{4}$	$\frac{1}{4}$	510	480-Y	369.00	430-Y	324.00	422-Y	254.00
9 $\frac{1}{4}$	3 $\frac{1}{2}$	22 $\frac{1}{4}$	$\frac{1}{4}$	530	480-Z	375.00	430-Z	330.00	422-Z	260.00
9 $\frac{1}{4}$	4	28 $\frac{1}{4}$	$\frac{1}{4}$	550	480-A	382.00	430-A	337.00	422-A	267.00
9 $\frac{1}{4}$	4 $\frac{1}{2}$	35 $\frac{1}{4}$	$\frac{1}{4}$	575	480-R	390.00	430-R	345.00	422-R	275.00
9-inch Self-Contained Motor Driven Bench Lathes										
9 $\frac{1}{4}$	2 $\frac{1}{2}$	10 $\frac{1}{4}$	$\frac{1}{4}$	490	780-X	\$375.00	730-X	\$330.00	722-X	\$260.00
9 $\frac{1}{4}$	3	17 $\frac{1}{4}$	$\frac{1}{4}$	520	780-Y	381.00	730-Y	336.00	722-Y	266.00
9 $\frac{1}{4}$	3 $\frac{1}{2}$	22 $\frac{1}{4}$	$\frac{1}{4}$	550	780-Z	387.00	730-Z	342.00	722-Z	272.00
9 $\frac{1}{4}$	4	28 $\frac{1}{4}$	$\frac{1}{4}$	580	780-A	394.00	730-A	349.00	722-A	279.00
9 $\frac{1}{4}$	4 $\frac{1}{2}$	35 $\frac{1}{4}$	$\frac{1}{4}$	610	780-R	402.00	730-R	357.00	722-R	287.00
9-inch Silent Chain Motor Driven Bench Lathes										
9 $\frac{1}{4}$	2 $\frac{1}{2}$	10 $\frac{1}{4}$	$\frac{1}{4}$	605	380-XB	\$399.50	330-XB	\$354.50	322-XB	\$284.50
9 $\frac{1}{4}$	3	17 $\frac{1}{4}$	$\frac{1}{4}$	625	380-YB	405.50	330-YB	360.50	322-YB	290.50
9 $\frac{1}{4}$	3 $\frac{1}{2}$	22 $\frac{1}{4}$	$\frac{1}{4}$	645	380-ZB	411.50	330-ZB	366.50	322-ZB	296.50
9 $\frac{1}{4}$	4	28 $\frac{1}{4}$	$\frac{1}{4}$	665	380-AB	418.50	330-AB	373.50	322-AB	303.50
9 $\frac{1}{4}$	4 $\frac{1}{2}$	35 $\frac{1}{4}$	$\frac{1}{4}$	690	380-RB	426.50	330-RB	381.50	322-RB	311.50

9" to 18" South Bend Floor Leg Lathes—Countershaft and Motor Drive

SPECIFICATIONS					COUNTERSHAFT DRIVE LATHES				MOTOR DRIVE LATHES	
					Quick Change Gear		Standard Change Gear		Quick Change Gear	
					Catalog No. of Lathe	Net Factory Price	Catalog No. of Lathe	Net Factory Price	Catalog No. of Lathe	1-Phase 60-Cycle A.C. Motor
Swing Over Bed Inches	Length of Bed Feet	Between Centers Inches	Power Required H.P.	Weight Crated Pounds						
9-inch Junior New Model South Bend Standard Change Gear Screw Cutting Lathes										
9¼	2½	11	¼	415	Not Made in Quick Change Gear Type	22-X	\$173.00	322-X	\$292.00*	
9¼	3	18	¼	440		22-Y	179.00	322-Y	298.00*	
9¼	3½	23	¼	465		22-Z	185.00	322-Z	304.00*	
9¼	4	29	¼	490		22-A	192.00	322-A	311.00*	
9¼	4½	36	¼	515		22-R	200.00	322-R	319.00*	
9-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
9¼	2½	10¼	¼	470	80-X	\$288.00	30-X	\$243.00	380-X	\$407.00
9¼	3	17¼	¼	490	80-Y	294.00	30-Y	249.00	380-Y	413.00
9¼	3½	22¼	¼	510	80-Z	300.00	30-Z	255.00	380-Z	419.00
9¼	4	28¼	¼	530	80-A	307.00	30-A	262.00	380-A	426.00
9¼	4½	35¼	¼	550	80-R	315.00	30-R	270.00	380-R	434.00
11-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
11¼	3	12	½	675	84-Y	\$345.00	33-Y	\$295.00	384-Y	\$512.00
11¼	3½	18	½	700	84-Z	352.00	33-Z	302.00	384-Z	519.00
11¼	4	24	½	725	84-A	359.00	33-A	309.00	384-A	526.00
11¼	5	36	½	805	84-B	375.00	33-B	325.00	384-B	542.00
13-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
13¼	4	16	¾	1060	88-A	\$428.00	35-A	\$368.00	388-A	\$630.00
13¼	5	28	¾	1110	88-B	443.00	35-B	383.00	388-B	645.00
13¼	6	40	¾	1160	88-C	458.00	35-C	398.00	388-C	660.00
13¼	7	52	¾	1210	88-D	475.00	35-D	415.00	388-D	677.00
15-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
15¼	5	24½	1	1475	88-B	\$525.00	39-B	\$450.00	388-B	\$731.00
15¼	6	36½	1	1550	88-C	543.00	39-C	468.00	388-C	749.00
15¼	7	48½	1	1625	88-D	561.00	39-D	486.00	388-D	767.00
15¼	8	60½	1	1735	88-E	581.00	39-E	506.00	388-E	787.00
16-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
16¼	6	34	1	1875	92-C	\$598.00	41-C	\$518.00	392-C	\$806.00
16¼	7	46	1	1955	92-D	618.00	41-D	538.00	392-D	826.00
16¼	8	58	1	2035	92-E	638.00	41-E	558.00	392-E	846.00
16¼	10	82	1	2195	92-G	682.00	41-G	602.00	392-G	890.00
18-inch New Model South Bend Quick Change and Standard Change Gear Screw Cutting Lathes										
18¼	7	41½	2	2560	94-D	\$738.00	43-D	\$648.00	394-D	\$1024.00
18¼	8	53½	2	2640	94-E	763.00	43-E	673.00	394-E	1049.00
18¼	10	77½	2	2840	94-G	817.00	43-G	727.00	394-G	1103.00
18¼	12	101½	2	3140	94-H	895.00	43-H	805.00	394-H	1181.00

*Prices are for 9-inch Junior Silent Chain Motor Driven Standard Change Gear Lathes. The 9-inch Junior Lathe is not made in Quick Change Gear Type. We can furnish 11-inch lathes and larger sizes with 0-phase, 00 cycle, A.C. Motors, also with D.C. Motors. Prices on request.

CATALOG No. 91-A DESCRIBES ENTIRE LINE NEW MODEL LATHES AND ACCESSORIES



Regular equipment, as illustrated, is included in price

16-24-inch x 6-ft. General Purpose New Model Lathe - \$740

Quick Change and Standard Change, Back Geared Screw Cutting Lathes

The 16-24-inch General Purpose Lathe will swing 24 inches over the bed and 17 inches over the saddle. It is a practical tool for the auto service shop and garage handling all classes of automotive work, and has many advantages over the gap lathe. It permits the increased swing for the entire distance between centers, whereas on the gap lathe the increased swing is limited to the width of the gap. When doing chuck work on the gap lathe the chuck itself sometimes extends the entire distance over the gap. The straight bed design is more efficient and stronger, and there is no overhang to the carriage when machining close to the spindle.

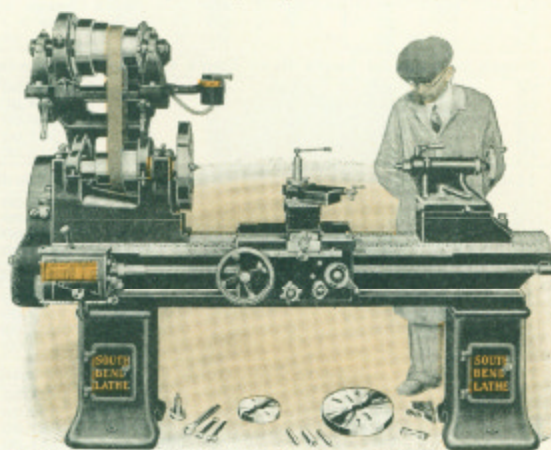
The 16-24-inch General Purpose Lathe is our regular 16-inch Lathe as described on page 16, except that it is equipped with a special compound rest, extra heavy saddle and raising blocks under the headstock and tailstock to obtain the increased swing.

The Silent Chain Motor Driven General Purpose Lathe, illustrated at the right, is exactly the same as the Countershaft Driven Lathe shown above except that it is equipped with a Silent Chain Motor Drive. See page 20.

The Regular Lathe Equipment included in the price consists of: Double Friction Countershaft (with Countershaft Driven Lathes only). Large and Small Face Plates, Tool Post complete, Adjustable Thread Cutting Stop, two Lathe Centers and Spindle Sleeve, Wrenches, a set of Independent Change Gears with Standard

Change Gear Lathe, also Installation Plans and book, "How to Run a Lathe."

Electrical Equipment included in price of Motor Driven Lathe consists of: 1 H.P. Reversing Motor, 1200 R.P.M. (Westinghouse, General Electric or equal make), Reversing Switch (drum type), Wiring between Motor and Switch, Flexible Metal Conduit, Wiring Diagram and Leather Belt.



16-24-inch General Purpose Silent Chain Motor Driven Lathe

Prices of 16-24-inch South Bend General Purpose Lathes - Countershaft and Motor Drive Types

Specifications of Lathes				Countershaft Drive Type						Silent Chain Motor Drive Type					
Swing Over Bed	Length of Bed	Between Centers	Power Required	Standard Change Gear			Quick Change Gear			Standard Change Gear			Quick Change Gear		
				Cat. No. of Lathe	Weight Crated	Net Factory Price	Cat. No. of Lathe	Weight Crated	Net Factory Price	Cat. No. of Lathe	Weight Crated	3 Phase 60 Cycle A.C. Motor*	Cat. No. of Lathe	Weight Crated	3 Phase 60 Cycle A.C. Motor*
24 1/4 in.	6 ft.	38 in.	1 H.P.	58-C	2960 lbs.	\$660.00	76-C	2035 lbs.	\$740.00	358-C	2450 lbs.	\$839.00	376-C	2485 lbs.	\$ 919.00
24 1/4 in.	7 ft.	42 in.	1 H.P.	58-D	2080 lbs.	681.00	76-D	2115 lbs.	761.00	358-D	2530 lbs.	860.00	376-D	2545 lbs.	940.00
24 1/4 in.	8 ft.	54 in.	1 H.P.	58-E	2168 lbs.	702.00	76-E	2195 lbs.	782.00	358-E	2610 lbs.	881.00	376-E	2645 lbs.	961.00
24 1/4 in.	10 ft.	78 in.	1 H.P.	58-G	2320 lbs.	748.00	76-G	2355 lbs.	828.00	358-G	2770 lbs.	927.00	376-G	2805 lbs.	1007.00
24 1/4 in.	12 ft.	102 in.	1 H.P.	58-H	2480 lbs.	813.00	76-H	2515 lbs.	893.00	358-H	3030 lbs.	992.00	376-H	3065 lbs.	1072.00

*Motor Driven Lathes can also be furnished with 1 phase, 60 cycle A.C. and Direct Current Motors. Prices on request.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Jobs Handled on the 16-24-inch General Purpose Lathe

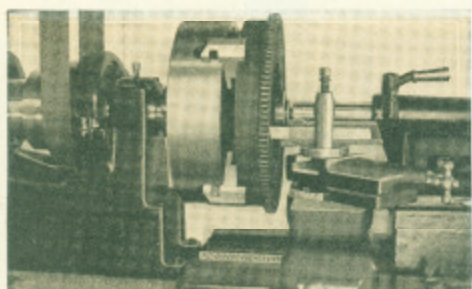


Fig. 68. Removing Teeth from Flywheel, in One Cut, for New Ring Gear

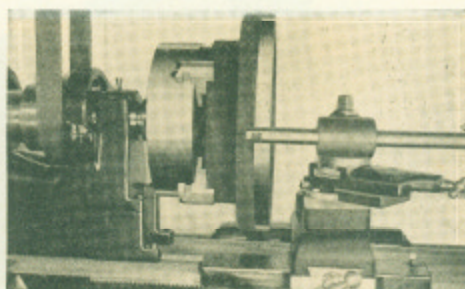


Fig. 69. Turning a Balance Wheel 22" in diam. Using Heavy Duty Turning Tool

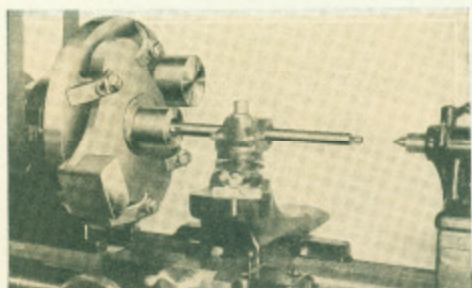


Fig. 70. Machining Work of Large Diameter and Irregular Shape Mounted on Face Plate

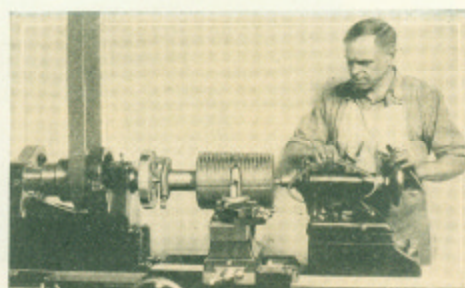


Fig. 71. Cutting a Coarse Pitch Screw Thread on Large Work

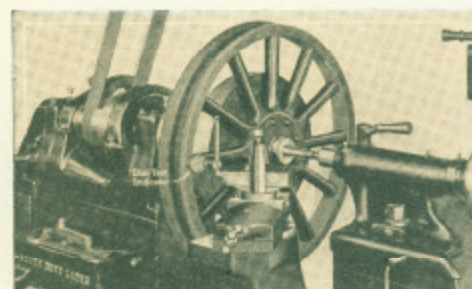


Fig. 72. Wheels and Brake Drums Can be Tested and Machined When Diameter Does not Exceed 24"

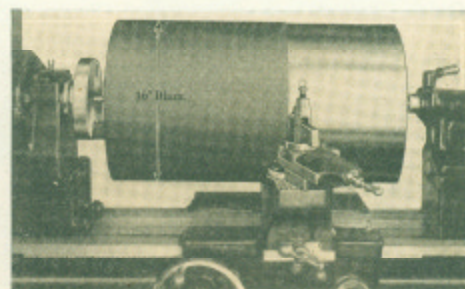


Fig. 73. Machining a Steel Roll 16" Diameter and 54" Long on a 16-24-inch x 8 ft. Lathe

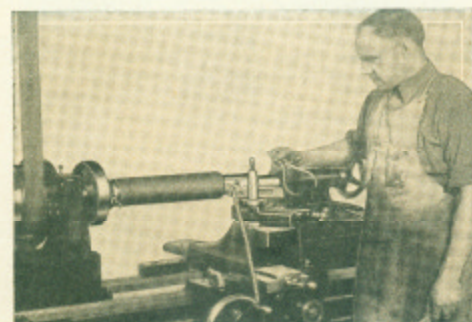


Fig. 74. The General Purpose Lathe Will Machine All Metals Such as Steel, Cast Iron, etc.

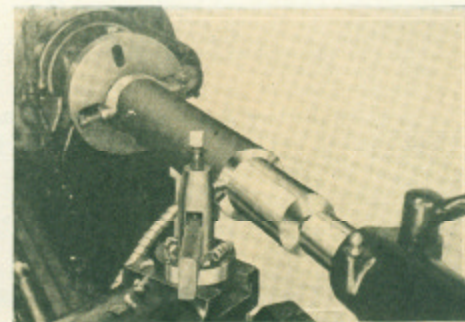
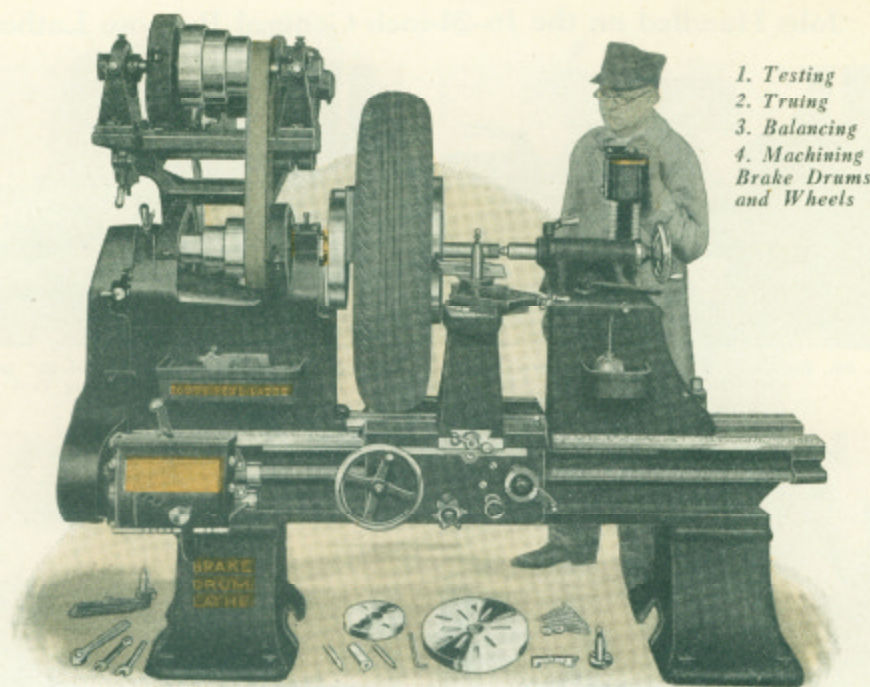


Fig. 75. Reducing a Steel Shaft $\frac{3}{4}$ -inch in Diameter in One Cut

SOUTH BEND LATHES MAY BE PURCHASED ON EASY PAYMENTS—BOOKLET ON REQUEST



Silent Chain Motor Driven Brake Drum Lathe—Above Equipment Included in Price

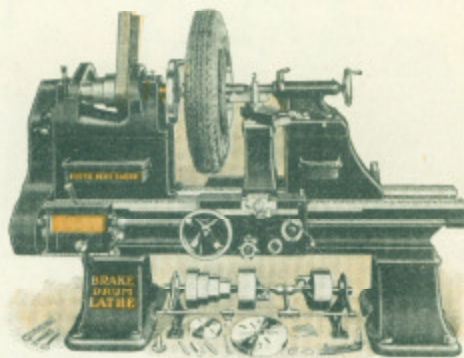
36-in. x 6-ft. New Model Brake Drum Lathe - \$976

Quick Change Gear and Standard Change Gear Lathes—Countershaft and Motor Drive Types
For Truing Brake Drums, Machining Auto Wheels, and General Machine Work

The Brake Drum Lathe, illustrated above, is a Back Geared Screw Cutting Precision Lathe, designed for truing brake drums, refacing hubs and servicing wheels for all types and makes of automobiles, buses and trucks. This lathe will also handle all classes of general machine work, such as cutting screw threads, drilling, boring, turning, chucking, etc.

Lathe Equipment consists of: Countershaft (not furnished with Motor Driven Lathes), Large and Small Face Plates, Driver for Wheels, Graduated Compound Rest, Tool Post, Thread Cutting Stop, two Lathe Centers, Spindle Sleeve, Rubber Belts and Springs, Wrenches, Change Gears with Standard Change Gear Lathe, and Books "How to Run a Lathe" and "Auto Mechanics Service Book." See page 31.

Electrical Equipment included with the Motor Driven Lathes consists of: a Reversing Motor, Reversing Switch, Wiring and Wiring Diagram, Flexible Metal Conduit, and Leather Belt. When ordering give specifications of electric current to be used. See page 20.



36-inch Brake Drum Lathe, Countershaft Drive
Equipment as illustrated is included in price

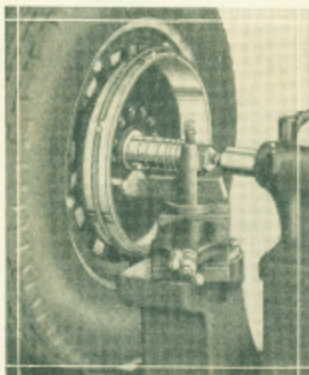
Net Factory Prices of New Model Brake Drum Lathes—Quick Change Gear

Specifications of Lathes				COUNTERSHAFT DRIVE*			SILENT CHAIN MOTOR DRIVE*			
Swings Wheel Tire Attached	Length of Bed	Distance Between Centers	Horse Power Required	Cat. No. of Lathe	Approx. Weight Crated	Net Factory Price	Cat. No. of Lathe	Approx. Weight Crated	3 Phase 60 Cycle A.C. Motor	1 Phase 60 Cycle A.C. Motor
36-inch New Model South Bend Brake Drum Lathe—Quick Change Gear										
36 1/4 in.	6 ft.	27 in.	1 H.P.	No. 4-RC	9195 lbs.	\$ 768.00	304-BC	2625 lbs.	\$ 947.00	\$ 975.00
36 1/4 in.	7 ft.	39 in.	1 H.P.	No. 4-BD	2275 lbs.	789.00	304-BD	2700 lbs.	968.00	1046.00
36 1/4 in.	8 ft.	51 in.	1 H.P.	No. 4-BE	2355 lbs.	810.00	304-BE	2780 lbs.	989.00	1018.00
36 1/4 in.	10 ft.	75 in.	1 H.P.	No. 4-BG	2515 lbs.	856.00	304-BG	2940 lbs.	1035.00	1064.00
42-inch New Model South Bend Brake Drum Lathe—Quick Change Gear										
42 1/4 in.	8 ft.	38 in.	3 H.P.	No. 5-BE	4609 lbs.	\$1390.00	305-BE	3565 lbs.	\$1975.00	\$2046.00
42 1/4 in.	10 ft.	62 in.	3 H.P.	No. 5-BG	4940 lbs.	1672.00	305-BG	3815 lbs.	2057.00	2128.00
42 1/4 in.	12 ft.	86 in.	3 H.P.	No. 5-BH	5349 lbs.	1779.00	305-BH	4215 lbs.	2164.00	2235.00

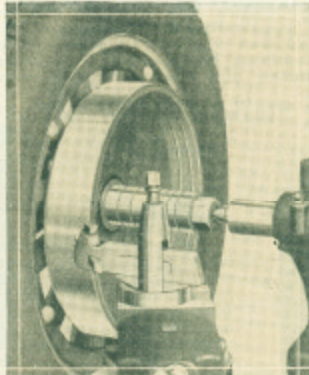
*For Standard Change Gear Brake Drum Lathe, 36-inch Lathe deduct \$89.00, 42-inch Lathe deduct \$120.00.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

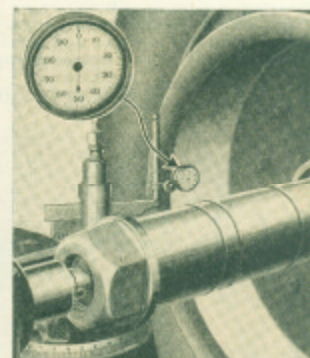
Machining Jobs on the South Bend Brake Drum Lathe On Wheels, Brakes, Brake Drums, Flanges and Hub Assemblies



Truing an Internal Brake Drum mounted on a self-centering straight mandrel with universal bearing adapters mounted between centers in the lathe. Drum size 17 inches.



Truing an External Band Brake Drum mounted on a self-centering straight mandrel with universal bearing adapters between centers in the Brake Drum Lathe.

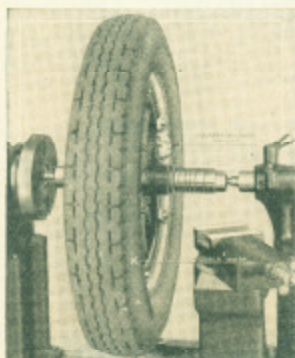


Testing the Brake Drum with a dial test indicator. The wheel is mounted on a self-centering mandrel and mounted between centers in the New Model South Bend Brake Drum Lathe.

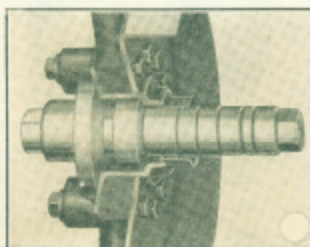
Time for Truing a Brake Drum

The average time required to true the Brake Drum of an automobile or medium size truck on the 36-inch Brake Drum Lathes is from 5 to 12 minutes, depending on the width of drum.

The average time required to true the Brake Drum of a large bus or heavy duty truck on the 42-inch Brake Drum Lathes is from 15 to 20 minutes, depending on the width of drum.

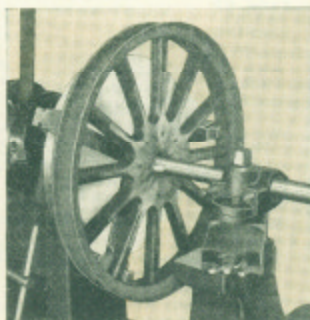


Balancing an Automobile Wheel. The automobile wheel can be balanced between centers in the South Bend Brake Drum Lathe with tire attached as shown in the above illustration.



Face Plate and Annular Adapter

The face plate and annular adapter method is used for mounting rear wheels fitted with annular ball bearings used on Buick, Chandler, LaSalle, Willys-Knight, etc. The wheel is mounted on the self-centering mandrel and centered by the annular adapter. For more complete information and prices see No. 29 Brake Drum Bulletin.



Boring a Wood Wheel. The wheel is mounted in a 3-jaw Universal Wheel Chuck. The hub can be fitted to the hole without removing the wheel from the lathe.

Wheel Chuck Price on Request.



Brake Drum Bulletin No. 29

Revolutionizes Old Methods of Truing Brake Drums

This 20-page Bulletin, 8 1/2 x 11 inches, shows the New Model South Bend Brake Drum Lathe in two sizes; 36-inch swing and 42-inch swing, in Countershaft Drive and Silent Chain Motor Drive types, complete with features, specifications and prices of each. Self-Centering Mandrels and Universal Bearing Adapters for mounting wheels for truing brake drums of buses, trucks and automobiles, are also described in detail.

Mailed Anywhere in the World, Postpaid, No Charge

PARTIAL LIST OF CONTENTS

Brake Drum Lathe in Two Sizes
Self-Centering Mandrels
Universal Bearing Adapters
List of Mandrel and Adapter Sizes for
Automobiles, Trucks and Buses
Balancing Wheels
Chuck and Tool Assortment

Machining Flywheels
Fitting Ring Gears
Brake Drum Lathe Utility Jobs
Blue Prints of Jobs
Taper Mandrels for Rear Wheels
Brake Drum Machining Time
General Brake Drum Information

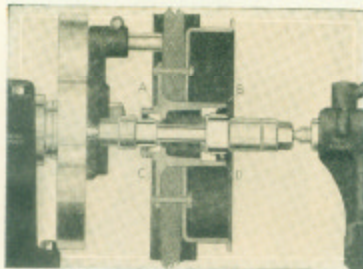
"AUTO MECHANICS SERVICE BOOK No. 66" DESCRIBES MODERN SHOP METHODS

Self-Centering Mandrel and Adapter Method For Truing, Testing and Machining Brake Drums and Wheels

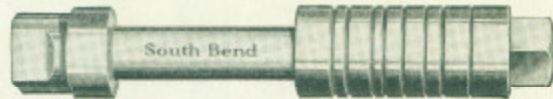
The South Bend Self-Centering Mandrels and Bearing Adapters will take care of practically all front wheels, rear wheels, single and dual wheels for testing the wheels and for machining brake drums of all types—internal expanding and ex-

ternal contracting, two-wheel and four-wheel brakes and band brakes—on all types and makes of wheels for automobiles, buses and trucks. The mandrel and adapter method is illustrated and described below.

Self-Centering Straight Mandrels for Front Wheels



Timken Races and Universal Bearing Adapters
A front wheel with Timken roller races, mounted on the mandrel fitted with universal bearing adapters, between centers in the lathe ready for testing or machining.



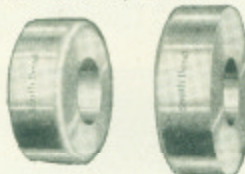
The self-centering straight mandrel will take care of all front wheels and all three-quarter and full-floating rear wheels (mounted on ball or roller bearings). Its ends are hardened to retain accurate centers. The mandrel is fitted with adjustable collars for use with the various types of bearing adapters, allowing wheels of all widths to be mounted on the mandrel. The threaded nut presses the bearing adapters against the bearing cups of the hub, making it line up accurately.

Specifications and Prices of Straight Mandrels for Front Wheels

Catalog Number	Diameter of Mandrel	Length of Mandrel	For All Adapters with	Code Word	Price Each
1836	1 1/4 in.	12 in.	1 1/4-in. hole	Narde	\$15.00
1810	1 3/4 in.	18 in.	1 3/4-in. hole	Nisse	25.00
1840	2 in.	26 in.	2 in.-in. hole	Nize	40.00

Universal Bearing Adapters for Front Wheels

The illustration shows a pair of universal bearing adapters made of steel, used on the self-centering straight mandrels for mounting all types and makes of front wheels, and rear wheels with three-quarter and full-floating axles. The rounded corner of the universal bearing adapter conforms to the curve in the ball race cup and also to the angle of the Timken cup and will center either type of wheel accurately on the mandrel.



Specifications and Prices of Universal Bearing Adapters

Catalog Number	To Fit Mandrel	Diameters Furnished	Diameter of Adapter Hole	Code Word	Price Per Pair*
1801	No. 1800	1 1/8" to 3 3/8" in eighths	1 1/4 in.	Nefas	\$ 5.00
1811	No. 1810	2 1/8" to 4 3/8" in quarters	1 3/4 in.	Negel	6.00
1841	No. 1840	3 1/8" to 7 in quarters	2 in.	Narug	10.00

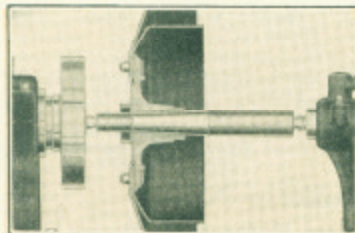
*Specify Catalog Number and Diameter of Adapters wanted when ordering.

HOW TO MOUNT WHEELS

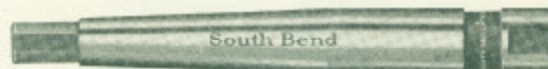
Wheels are made with 3 general types of bearing, but all of them are mounted on only 2 types of mandrels and adapters, as follows:

TYPE OF WHEEL BEARING	MOUNT WHEEL WITH	
	Mandrel	Adapter
Taper Roller such as Timken (And Ball)	Self-Centering Straight Mandrel	Universal Bearing Adapter
Annular Ball	Same as Above	Annular Adapters Page 25
Semi-Floating Rear Wheels Taper Axle	Taper Mandrel	None Required

Self-Centering Taper Mandrels for Rear Wheels



Set up of a rear wheel fitted with a taper mandrel, mounted between centers in the lathe for testing and machining.



The self-centering taper mandrel illustrated above is used for mounting semi-floating rear wheels (mounted on a taper) between centers in the lathe for testing, truing or machining brake drums and wheels. This mandrel is made in five sizes to fit the hubs of rear wheels of automobiles, buses and trucks.

Specifications and Prices of Steel Taper Mandrels for Rear Wheels

Catalog Number	Diameter of Mandrel	Length of Mandrel	Taper Per Foot	Code Word	Price Each
1820	1" to 1 1/8"	13 1/4 in.	3/4 in.	Nunbe	\$8.00
1821	1 1/8" to 1 3/8"	11 3/4 in.	1 in.	Norel	8.00
1822	1 3/8" to 1 5/8"	12 3/4 in.	1 in.	Nasim	9.00
1823	1 5/8" to 1 7/8"	15 in.	1 in.	Nough	9.50
1824	1 7/8" to 2 in.	11 3/4 in.	1 1/2 in.	Nuper	8.00

Mandrel and Adapter Equipments for Brake Drum Lathes

Assortment No. 2 for 36" Lathe.....\$53.50

For Servicing the Wheels and Brake Drums of 45 Models of Medium Size Buses, Trucks and Automobiles

1—No. 1822 Taper Mandrel	\$ 9.00
1—No. 1823 Taper Mandrel	9.50
1—No. 1800 Straight Mandrel	15.00
8—No. 1801 Universal Bearing Adapters:	
1 1/8" dia., 1 3/8" dia., 2" dia., 2 1/8" dia., 2 3/8" dia.,	
2 1/2" dia., 2 3/4" dia., 2 5/8" dia.	20.00

Total.....\$53.50

Assortment No. 3 for 42" Lathe.....\$93.00

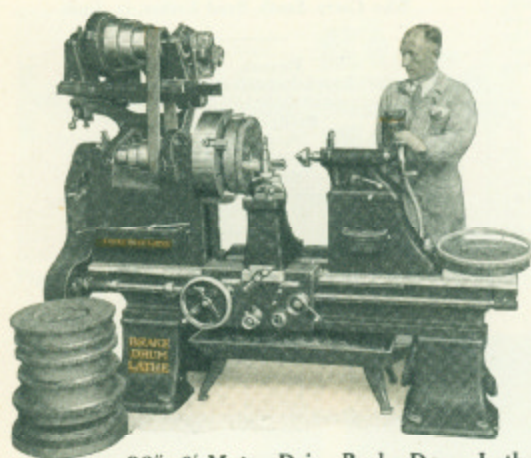
For Servicing the Wheels and Brake Drums of 42 Models of Heavy Buses and Trucks

1—No. 1810 Straight Mandrel	\$25.00
1—No. 1840 Straight Mandrel	40.00
1—No. 1826 Taper Mandrel	12.00
2—No. 1811 Universal Bearing Adapters: 2 1/2" dia.,	
3" dia.	6.00
2—No. 1841 Universal Bearing Adapters: 4 1/4" dia.,	
4 1/2" dia.	10.00

Total.....\$93.00

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

36-inch Brake Drum Lathe and Equipment



36" x 6' Motor Drive Brake Drum Lathe, with 3 Ph., 60 Cy., A.C. Motor.. \$867

*For Servicing Brakes and Wheels, and
for General Automotive Machine Work*

The 36-inch New Model Brake Drum Lathe, Standard Change Gear, illustrated at the left, is fitted with a Silent Chain Motor Drive. It is a practical lathe for the servicing of brakes, wheels, and the other mechanical units of the bus, truck and automobile. In addition it will handle all classes of general machine work.

We list below, the equipments necessary for servicing brake drums and wheels, machining flywheels for ring gears, truing armature commutators, making bushings, finishing pistons and refacing valves. We also list a Chuck and Tool Assortment for general machine work. All of this work can be done on the 36-inch Brake Drum Lathe, as illustrated at left and described on page 24.

MANDREL AND ADAPTER EQUIPMENT NO. 2

For Servicing the Brakes and Wheels of 42 Models of Medium Size Buses, Trucks and Autos

1 No. 1822	Taper Mandrel	\$ 9.00	
1 No. 1823	Taper Mandrel	9.50	
1 No. 1800	Straight Mandrel	15.00	
8 No. 1801	Universal Bearing Adapters: 1 $\frac{1}{2}$ " dia., 1 $\frac{3}{4}$ " dia., 2" dia., 2 $\frac{1}{4}$ " dia., 2 $\frac{3}{4}$ " dia., 2 $\frac{1}{2}$ " dia., 2 $\frac{5}{8}$ " dia., 2 $\frac{3}{4}$ " dia.	20.00	\$53.50
Total Cost of Above Equipment.....		\$53.50	

EQUIPMENT FOR MACHINING FLYWHEEL RING GEARS

1 No. 853-S	Patent Turning Tool (straight shank) with High Speed Cutter Bit.....	\$ 3.60*	
1 No. 884-S	Patent Cutting-off Tool, (straight shank).....	4.00	
1 No. 910-E	Pipe Center Shank "A".....	4.50	
1 No. 911-B	Pipe Center Disk "B".....	6.00	\$14.50
1 No. 2114	14" 4-Jaw Independent Chuck Fitted to Lathe.....	61.00*	
Total Cost of Above Equipment.....		\$79.10	

EQUIPMENT FOR TRUING ARMATURE COMMUTATORS

1 Set (3)	Malleable Lathe Dogs $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1".....	\$ 2.10	
1 No. 853-S	Patent Turning Tool with High Speed Cutter Bit.....	3.60*	\$2.10
Total Cost of Above Equipment.....		\$ 5.70	

EQUIPMENT FOR MACHINING BUSHINGS

1 No. 2110	10-in. 4-Jaw Independent Lathe Chuck Fitted to Lathe.....	\$49.00*	
1 No. 1303	2-Jaw Drill Chuck, 1" Capacity.....	15.00	
1 No. 716	Drill Chuck Arbor, Fitted to Chuck.....	2.00	
1 No. 853-S	Patent Turning Tool with High Speed Cutter Bit.....	3.60*	\$27.90
1 No. 884-R	Patent Cutting-off Tool (Right Hand).....	4.00	
1 No. 432	Patent Boring Tool (Style B).....	6.90	
Total Cost of Above Equipment.....		\$80.50	

EQUIPMENT FOR FINISHING PISTONS

1 No. 853-S	Patent Turning Tool with High Speed Cutter Bit.....	\$ 3.60*	
1 No. 44-E	Piston Adapter Complete with 1 Adapter Ring, Any Size or Type Listed.....	13.00	
1 Set (4)	Piston Skirt Reamers, 2 $\frac{1}{2}$ "-3" Diameter.....	40.50	
1 Set (D)	Cone Rings (4) @ \$2.50 each.....	10.00	\$73.50
1 Set (C)	Step Rings (4) @ \$2.50 each.....	10.00	
Total Cost of Above Equipment.....		\$77.10	

EQUIPMENT FOR REFACING VALVES

1 No. 853-S	Patent Turning Tool with High Speed Cutter Bit.....	\$ 3.60*	
1 No. 1212	Hollow Spindle Drill Chuck, $\frac{5}{8}$ " Capacity.....	9.50	
1 No. 1225	Hollow Drill Chuck Arbor	3.00	\$12.50
Total Cost of Above Equipment.....		\$16.10	

CHUCK AND TOOL ASSORTMENT FOR GENERAL WORK

1 No. 2114	14" 4-Jaw Independent Lathe Chuck Fitted to Lathe.....	\$61.00	
1 No. 1202	3-Jaw Drill Chuck $\frac{3}{4}$ ", Fitted to Lathe.....	16.00	
1 No. 404-A	Special Boring Bar complete	23.00	
1 No. 855-R	Right-hand Patent Turning Tool (extra long).....	5.50	
1 No. 855-L	Left-hand Patent Turning Tool (extra long).....	5.50	\$120.60
1 No. 868	Patent threading tool.....	5.75	
1 No. 16-BD Set (3)	Lathe dogs 1 $\frac{1}{2}$ ", 2", and 2 $\frac{1}{2}$ ".....	3.85	
Total Cost of Above Equipment.....		\$120.60	

*NOTE: The No. 853-S Patent Turning Tool and a few other small tools appear in several of the equipments above, and need not be duplicated when more than one of the equipments is ordered.

CATALOG No. 91-A DESCRIBES ENTIRE LINE NEW MODEL LATHES AND ACCESSORIES

Size of Lathe for Your Work

When selecting the size of lathe for your work, take into consideration the largest diameter and the greatest length of the work. Then select the lathe that has a swing over bed and distance between centers at least 10% greater than the dimensions of the largest work to be handled.

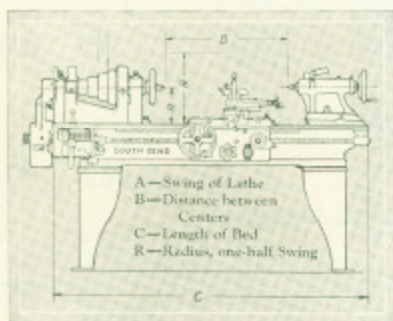
Sizes and Types of Lathes

New Model South Bend Lathes are made in nine (9) sizes: 9-inch, 11-inch, 13-inch, 15-inch, 16-inch and 18-inch, Back Geared Screw Cutting Lathes and 16-24-inch General Purpose Lathe; 36-inch and 42-inch Brake Drum Lathes; in bed lengths from 2½ feet to 16 feet and in the various types listed below. See General Catalog 91-A.

Countershaft Driven Lathes
Motor Driven Lathes
Quick Change Gear Lathes
Standard Change Gear Lathes
Tool Room Lathes
Gap Bed Lathes
Brake Drum Lathes
Large Swing Lathes
Bench Lathes

Types of Drive for a Lathe

The Overhead Countershaft Drive is used principally in factory and production work where Countershaft Driven Lathes are operated from a lineshaft which is motor driven. In the shop where there is no lineshaft the Motor Drive Lathe is more practical and efficient and less expensive because a smaller motor can be used and the cost of installing hangers and lineshafting, etc., is eliminated.



How to Determine Size of Lathe

The size of a Screw Cutting Lathe is determined by the swing over bed and the length of bed (see illustration). European tool manufacturers determine the size of a lathe by its radius or center distance. What the European terms an 8-inch center lathe, United States manufacturers term a 16-inch swing lathe.

A—The swing over bed
 R—Radius or half the swing
 C—The length of bed
 B—Distance between centers

Guarantee

WE GUARANTEE every South Bend Lathe to be accurate and mechanically perfect; to give you entire satisfaction and the service you have a right to expect.

We will replace, free of charge, anywhere in the United States, any part that proves defective, either in material or workmanship, within one year from the date of purchase.

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

Machinery Dealers

Who Carry South Bend Lathes in Stock

Boston, Mass.
 Lynd-Farquhar Company
 326-330 Congress St.

Bridgeport, Conn.
 A. C. Bisgood
 17-21 Union Sq., P. O. Box 3054

Buffalo, N. Y.
 J. L. Osgood Mach. & Tool Co., Inc.
 43-45 Pearl St.

Chicago, Ill.
 C. B. Burns Mach. Co.
 541 W. Washington Blvd.

Cincinnati, Ohio
 The E. A. Kinsey Co.
 335 Fourth St. W.

Cleveland, Ohio
 Hess-Schenck Co.
 3951 St. Clair Ave. N. E.

Dallas, Texas
 Huey & Philip Hdwe. Co.
 1029 Elm St.

Dayton, Ohio
 C. H. Gosiger Mach. Co.
 Bacon & McDonough Sts.

Detroit, Mich.
 Lee Machinery Co.
 6318 E. Jefferson Ave.

Houston, Texas
 Peden Company
 700 N. San Jacinto St.

Kansas City, Mo.
 H. J. Brunner Hdwe. & Machinists' Supply Co.
 1512 Grand Ave.

Los Angeles, Calif.
 Eccles & Davies Mach. Co., Inc.
 316-322 S. San Pedro St.

Milwaukee, Wis.
 Badger-Packard Mach. Co.
 133 W. Water St.

Minneapolis, Minn.
 F. E. Satterlee Company
 118 Washington Ave. N.

Newark, N. J.
 Cassell Machinery Co.
 28 Mechanic St.

New York, N. Y.
 A. C. Colby Machinery Co.
 183 Centre St.

Philadelphia, Pa.
 Delta Equipment Co.
 148 N. Third St.

Pittsburgh, Pa.
 Reliance Mach. Sales Co.
 1407 Brighton Road

Plainville, Conn.
 Ideal Machinery Co.
 E. Main St.

Providence, R. I.
 Brownell Machinery Co.
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San Francisco, Calif.
 Herberts-Moore Mach. Co.
 140 First St.

Seattle, Wash.
 West Coast Mach. Co., Inc.
 1006 First Ave. S.

St. Louis, Mo.
 Colcord-Wright Mach. & Supp. Co.
 1223-1229 N. Broadway

Syracuse, N. Y.
 H. A. Smith Mach. Co.
 501 E. Water St.

Montreal, Que., Canada
 Canadian Fairbanks-Morse Co., Ltd.
 980 St. Antoine St.

Toronto, Ont., Canada
 A. R. Williams Mach. Co., Ltd.
 66 Front St. W.

SOUTH BEND LATHE WORKS, 330 E. Madison St., SOUTH BEND, IND., U.S.A.

Attachments for New Model South Bend Lathes

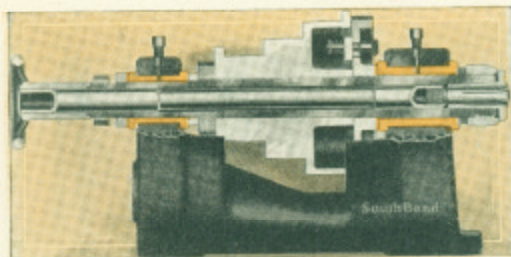


Fig. 76. Cross Section View of Lathe Headstock Showing Application of Draw-in Collet Chuck

Hand Wheel Draw-in Collet Chuck
This chuck is furnished for all sizes of South Bend Lathes. It is used extensively in the auto repair shop for holding and accurately centering small parts requiring accuracy in machining, such as rods, bars, tubing, screws, small bushings, etc.

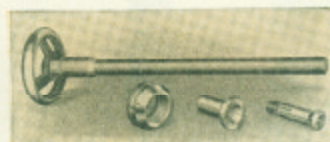


Fig. 77. Parts of Collet Chuck

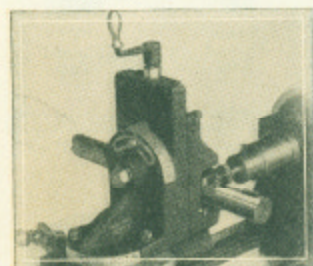


Fig. 78. Milling and Keyway Cutting Attachment

For cutting keyways and splines, milling dovetails, squaring the ends of shafts, and hundreds of other jobs.

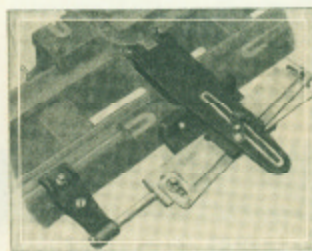


Fig. 79. Graduated Taper Attachment

For turning and boring all classes of taper work such as axles, drive shafts, hubs, pipe thread, clutch drums, etc.

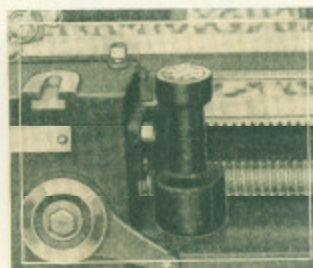


Fig. 80. Dial Thread Indicator

Shows proper position for engaging half nuts to catch thread at beginning of each successive cut.

Grinding in the Lathe With No. 15 Electric Grinder

The No. 15 Electric Grinder is practical for grinding pistons, valves, steel bushings, hardened shafts, straight, taper or spiral reamers, lathe centers, milling cutters, taps, dies, etc. If considerable stock is to be removed, use the turning tool of the lathe to reduce the work to within a few thousandths of the finished size. Two or three cuts with the Grinder will then produce a smooth, accurate surface.

Operates from Electric Light Socket

The No. 15 Electric Grinder operates from an electric light socket. No special installation of electrical service is necessary. Specify electric current when ordering—if DIRECT current give voltage, if ALTERNATING current, give voltage, phase and cycle.

Net Factory Prices of No. 15 Electric Grinder

Catalog No.	Size of Lathe	Size Grinding Wheel	Outside Diameter Will Grind	Size Motor	Code Word	Price, Each
15-I	9 in.	4"x1 1/2"	4 3/4 in.	1/4 H.P.	Caret	\$75.00
15-J	11 in.	4"x1 1/2"	7 1/2 in.	1/4 H.P.	Celts	75.00
15-K	13 in.	5"x1 1/2"	9 in.	1/2 H.P.	Chums	90.00
15-L	15 in.	5"x1 1/2"	10 1/2 in.	1/2 H.P.	Cinch	90.00
15-M	16 in.	5"x1 1/2"	11 in.	1/2 H.P.	Clove	90.00
15-N	18 in.	5"x1 1/2"	12 1/2 in.	3/4 H.P.	Coals	90.00

Prices of Special Grinding Wheels will be quoted on application.



Fig. 81. Truing a Hardened Lathe Center

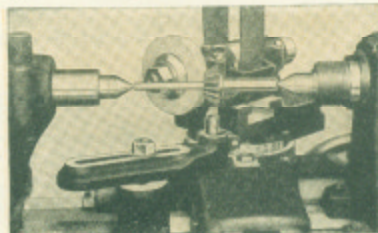


Fig. 82. Grinding an Angular Cutter

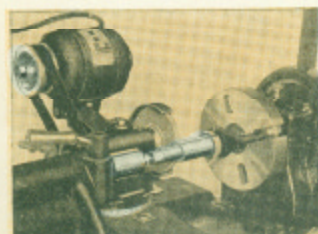


Fig. 83. Grinding a Bushing

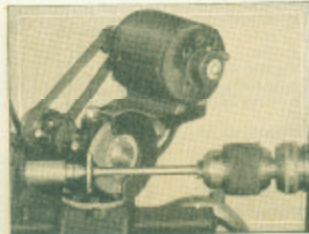


Fig. 84. Grinding a Valve

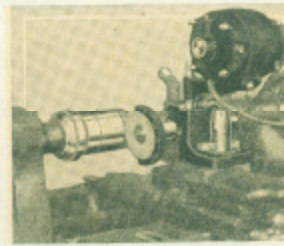


Fig. 85. Grinding a Piston

BULLETIN No. 77 DESCRIBES ENTIRE LINE OF ATTACHMENTS AND ACCESSORIES

Screw Threads Cut on the New Model South Bend Lathe



Master Thread Gauge



Limit Thread Gauge



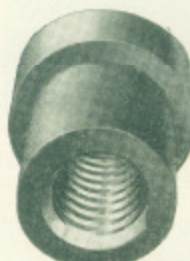
Cutting a Screw Thread



Acme Thread Tap



V-Thread Tap



Internal Square Thread



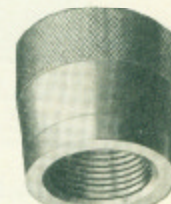
Acme Screw Thread



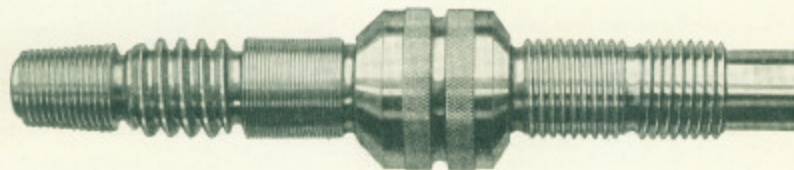
Right Hand Acme Double Screw Thread



U.S. Standard Thread

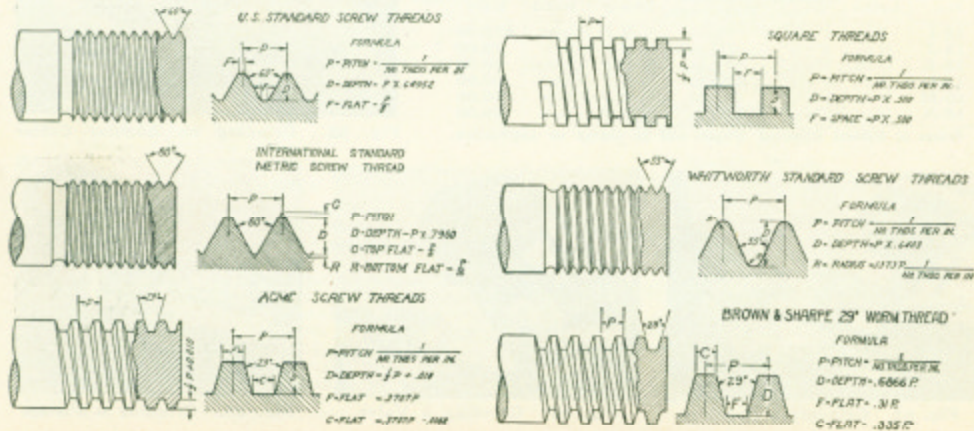


Internal U.S. Standard Thread



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Junior Bench and Floor Leg Lathes
Draw-in Collet Chuck Attachment
Milling and Keyway Cutting Attachment
Chucks, Tools and Accessories

"How to Run a Lathe"

Authoritative Manual on Lathe Work

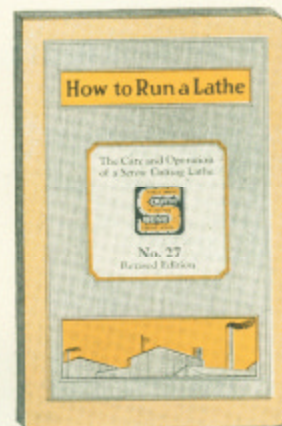
"How to Run a Lathe" covers the fundamental operations of the modern back geared screw cutting lathe. It contains instructions on how to set up the lathe, operate it and take care of it. The 144 pages of this book contain a wealth of information and include more than 300 illustrations showing how certain work is done. It is a handy reference book of lathe facts that will be appreciated by the mechanic. A copy of this book is included in the equipment of each South Bend Lathe.

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Operating Automatic Feeds
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Using Outside and Inside Calipers
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Fairchild Aircraft, Ltd.	Delco Aviation Corp.	Parks Aircraft Inc.
Fokker Aircraft Corp.	Goodyear-Zeppelin Co.	Pratt & Whitney Aircraft Co.
Rearwin Aeroplane Inc.	Spartan Aircraft Co.	Sullivan Aircraft Corp.
Stearman Aircraft Co.	Stout Metal Plane Co.	Timm, O. W. Airplane Corp.
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