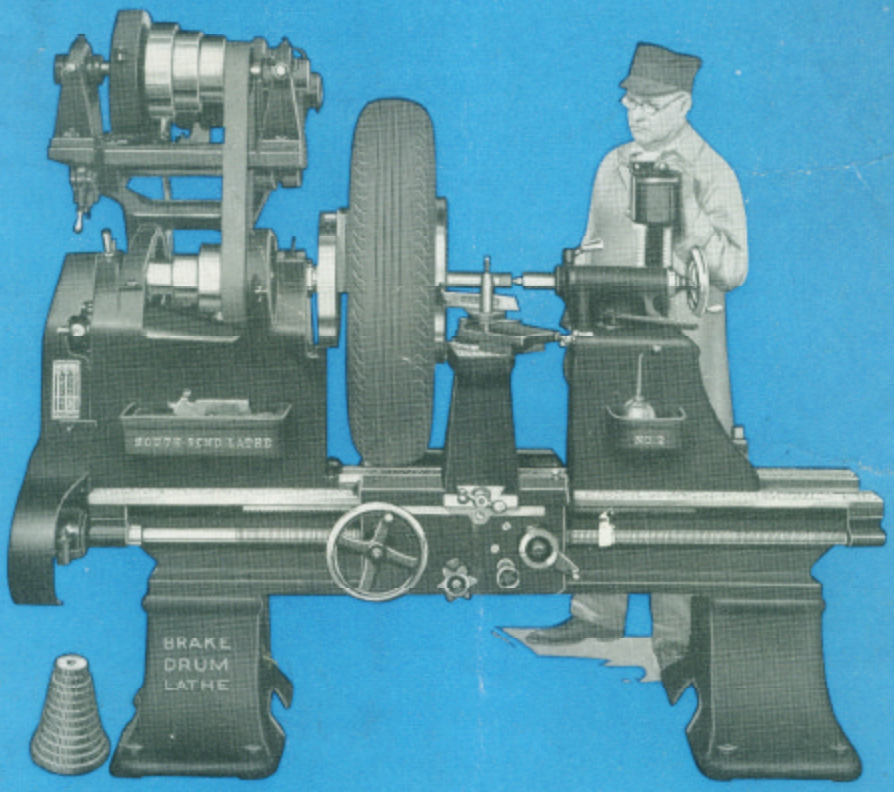
New Model South Bend
Brake Drum Lathe

A Back Geared Screw Cutting Precision Tool



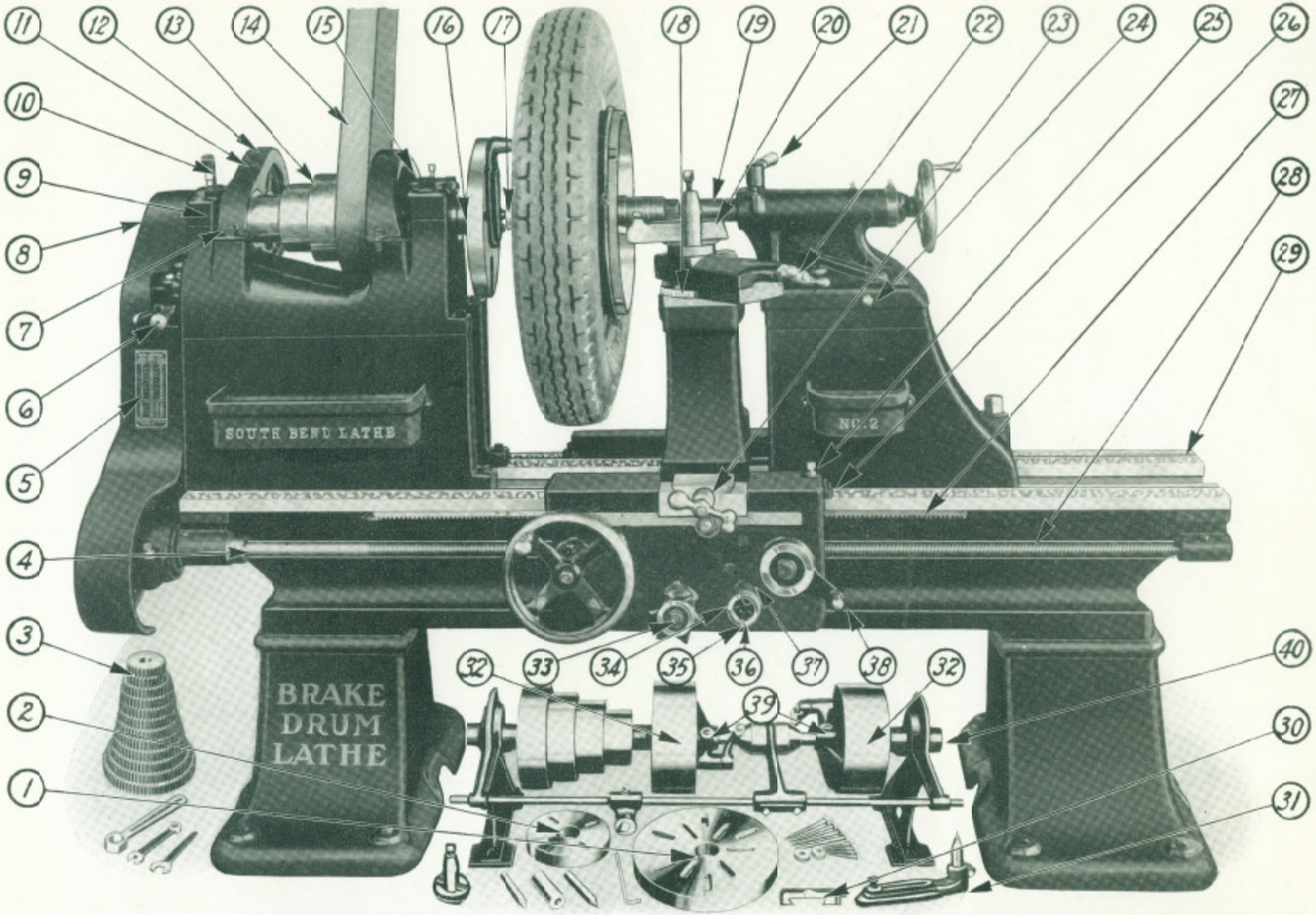
The No. 2—36" x 6' Silent Chain Motor Driven Brake Drum Lathe

Bulletin No. 29

The Self-Centering Mandrel and Adapter Method of Testing, Truing, Balancing and Machining Brake Drums and Wheels in the Service Station.

SEPTEMBER, 1928

South Bend Lathe Works
400 East Madison St., South Bend, Indiana



40 Features of the New Model South Bend Back Geared Screw Cutting Brake Drum Lathe

1—Large Face Plate.
2—Small Face Plate.
3—Change Gears for Thread Cutting.
4—Splined Screw for Automatic Feeds.
5—Index Plate for Threads and Feeds.
6—Quick-acting Latch Reverse.
7—Hardened and Ground Steel Thrust Collar.
8—Special Carbon Steel Hollow Spindle.
9—Phosphor Bronze Spindle Bearing.
10—Patent Oil Cups keep out dust.
11—Back Gears well guarded.
12—Back Geared engine lathe Design.
13—Cone Steps provide eight spindle speeds.
14—Wide belt furnishes Power for heavy roughing cuts.
15—Wrenchless Bull Gear Clamp.
16—Large Phosphor Bronze Spindle Bearing.
17—Tool Steel Lathe Centers.
18—Compound Rest graduated 180 degrees.
19—Tailstock supports outer end of mandrel.
20—Forged Steel Adjustable Tool Post.
21—Tailstock Spindle Lock.
22—Micrometer Compound Rest Screw Collar.
23—Micrometer Cross Feed Screw Collar.
24—Set-over Tailstock for taper turning.
25—Carriage Lock for facing.
26—Shear Wipers and Oilers.
27—Steel Rack, cut from the solid.
28—Precision Lead Screw, Acme Thread.
29—Semi-steel Seasoned Lathe Bed.
30—Adjustable Thread Cutting Stop.
31—Driving Dog.
32—Countershaft Friction Clutch Pulleys.
33—Automatic Friction Feed Clutch.
34—Safety Device for Threads and Feeds.
35—Knob Position for Automatic Longitudinal.
36—Neutral Position for Thread Cutting.
37—Knob Position for Automatic Cross Feed.
38—Half Nut Lever for Thread Cutting.
39—Lubricating Cups in Clutch Pulleys.
40—Double Friction Countershaft.

New Model South Bend Brake Drum Lathe Features

Which Revolutionize Methods of Servicing Wheels and Brake Drums

THE NEW MODEL SOUTH BEND BRAKE DRUM LATHE has revolutionized methods of truing brake drums and servicing wheels in the modern service station shops. It solves the brake drum problem in the service stations by taking care of the truing of brake drums with precision, speed and accuracy using the self-centering mandrel and universal adapter method which is so simple that the average mechanic can turn out a first class job in record time.

THE SELF-CENTERING MANDREL AND UNIVERSAL ADAPTER METHOD is the correct, accurate, and the most economical method of mounting wheels on the lathe for truing brake drums, testing and machining wheels. It enables the operator to do more accurate work and at less than half the cost of servicing when using old methods and equipment. This statement cannot be appreciated until you see the lathe in operation. There is a South Bend Brake Drum Lathe in your vicinity.

THE NEW MODEL SOUTH BEND BRAKE DRUM LATHE is built of standard parts of our regular Back Geared Screw Cutting Lathes that we have been making for 22 years. We have added some attachments and features to make the lathe practical for brake drum work and general purpose work in the service station.

THE BRAKE DRUM LATHE is a back geared screw cutting precision lathe rigidly constructed and is practical for all classes of heavy machine work.

A GENERAL PURPOSE LATHE that will take care of flywheel ring gears, armatures, axles, drive shafts and hundreds of other jobs. See illustrations (pages 19, 20, 21 and 22) of work that can be done on this lathe. Also list of jobs on page 24.

AUTOMATIC CROSS FEED on the tool slide for facing work, and automatic longitudinal feed on the carriage for turning and boring.

EIGHT CHANGES OF SPINDLE SPEEDS may be had through the back gears and the four step cone, which permit low speeds, great power, a variation of speeds for machining different kinds of metal and high speeds for finishing.

A RIGID TAILSTOCK with tail center for supporting mandrel and adapters, and for general machine work between centers; can be off-set for taper turning.

A GRADUATED COMPOUND REST permits the cutting tool to operate at any angle for turning or boring. The compound rest screw has a micrometer graduated collar.

PRECISION LEAD SCREW for cutting standard screw threads from 2 to 40 per inch, right or left hand, including 11½ pipe thread.

MICROMETER GRADUATED COLLAR on the cross feed screw reading in thousandths of an inch for adjusting the depth of the cut.

A SPRING LATCH REVERSE on the headstock for reversing the feed of the carriage which is sometimes necessary in turning and boring, and also in cutting left hand screw threads.

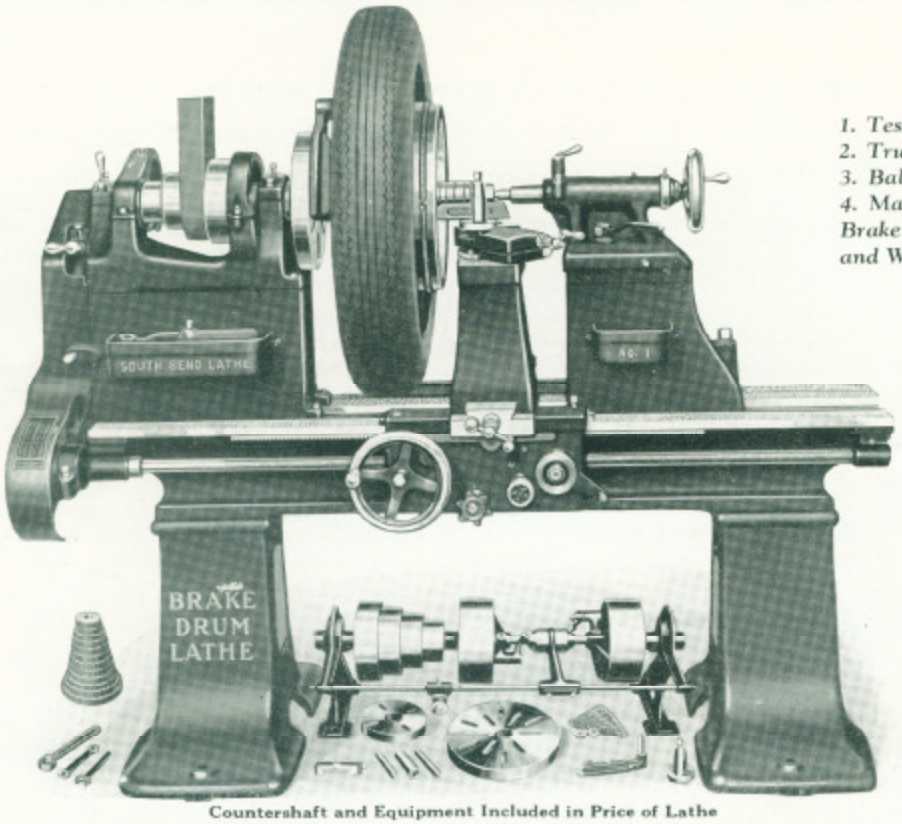
THE CENTERS of this lathe are lined up so accurately that a steel shaft 6 inches in diameter and 3 feet long can be machined on centers and not vary one one-thousandth of an inch in diameter from one end of the shaft to the other.

ATTACHMENTS FOR BRAKE DRUM LATHE such as Electric Grinder, Belt Drive Grinder and Quick Change Gear Box, are shown on page 23.

THE SOUTH BEND BRAKE DRUM LATHES have the same accuracy and precision, undergo the same tests and are covered by the same guarantee as our regular line of lathes. Machine work of the finest precision to meet the most accurate requirements can be done on the Brake Drum Lathe. In addition the lathe will handle many large jobs impossible to machine on any ordinary lathe.

THE NEW CATALOG No. 89-A illustrates and describes the entire line of New Model South Bend lathes in 210 sizes and types also a complete line of tools and attachments. A valuable reference book for anyone interested in modern shop equipment. Mailed free postpaid on request.

FOR 22 YEARS WE HAVE BEEN MANUFACTURING South Bend Back Geared Screw Cutting Lathes and now have a production capacity of 4,000 lathes per year. More than 41,000 South Bend Lathes are giving excellent service in industrial plants throughout the world.



1. Testing
2. Truing
3. Balancing
4. Machining Brake Drums and Wheels.

Countershaft and Equipment Included in Price of Lathe

No. 1 New Model South Bend Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool, Countershaft Drive

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The No. 1 Brake Drum Lathe will swing a wheel, with tire attached up to 32¼ inches in diameter. It is a back geared screw cutting precision lathe for truing brake drums, refacing hubs and servicing auto wheels of all types and makes, front and rear, single or dual, which includes the wheels of practically all makes of automobiles, and many small buses and light trucks. This lathe trues Brake Drums up to 18 inches in diameter with precision, speed and accuracy, using the self-centering mandrel and universal adapter method. See pages 10, 11, 12 and 13.

The Average Time to true a brake drum of an automobile, small bus or light truck on the No. 1 Brake Drum Lathe is from 5 to 10 minutes. See page 15.

The Self-Centering Mandrel and Adapter Method is the correct, accurate and most economical method for truing brake drums, refacing hubs and machining wheels. The wheel mounted on the self-centering mandrel, fitted with adapters, between centers on the lathe permits machining the brake drum concentric with the axis of the hub.

For the Service Station that services automobiles, small buses and light trucks, where the tire diameter does not exceed 32¼ inches, the No. 1 Brake Drum Lathe is practical for truing brake drums, refacing hubs and servicing wheels. It is also an excellent general purpose lathe for general machine work. Fly wheel and ring gear work requires the No. 2 Brake Drum Lathe.

A Cut One-Quarter Inch Deep reducing a steel shaft ½ inch in diameter in one chip can be taken on the No. 1 South Bend Brake Drum Lathe.

The Equipment Included in the Price of the No. 1 Brake Drum Lathe consists of: Double Friction Countershaft; Large Face Plate, 10¾" in diameter; Small Face Plate; Driver for Auto Wheels; Graduated Compound Rest; Tool Post, Ring and Wedge; Thread Cutting Stop; Two Lathe Centers; Spindle Sleeve; Rubber Belts and Springs, See page 23; Wrenches and a Set of Independent Change Gears for cutting Standard Screw Threads and for Automatic Feeds. Installation and erection plans, and two instruction books furnished with all lathes.

Features of Brake Drum Lathe

Back geared headstock gives 8 spindle speeds.
Automatic cross feed, automatic longitudinal feed.
Independent change gears for threads and feeds.
Hollow spindle made of special carbon steel.
Phosphor bronze bearings scraped to spindle.
Graduated Compound rest swivels to any angle.
Precision lead screw for cutting accurate threads.
Self-centering mandrel and adapter method.
Graduated collar on cross feed and compound rest screw.
Tailstock is arranged for set-over for taper turning.
Spring latch reverse for feeds and threads.

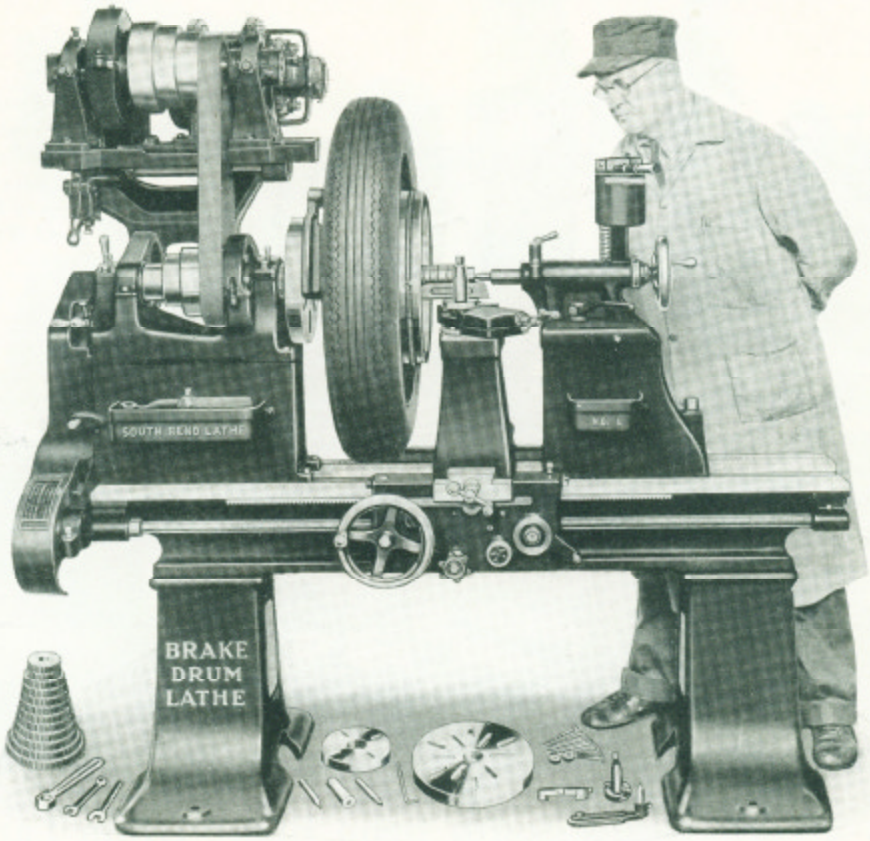
Specifications of Brake Drum Lathe

Will cut standard screw threads right or left	2 to 40 per inch
Width of cone pulley belt	1¾ in.
Spindle Speeds	11, 17, 26, 41, 78, 122, 186, 292 R.P.M.
Precision Acme lead screw	1 in. diam., 6 Threads
Angular travel of compound rest top	3⅛ in.
Size of spindle nose	1⅞ in. diam., 8 Threads
Hole through spindle	1 inch.
Head and tail spindle centers	No. 3 Morse Taper
Countershaft speed	130 R.P.M.
Countershaft friction clutch pulleys	8 in. x 2¾ in.
Size of lathe tool shank	½ in. x 1⅛ in.

Net Factory Prices of No. 1 Brake Drum Lathes Including Overhead Countershaft and Equipment

Cat. No. of Lathes	Swings Wheel, Tire Attached Clear	Length of Bed	Distance Between Centers	Hole Through Spindle	Countershaft Speed	Horse Power Required	Approx. Weight Crated	Code Word	Price F.O.B. South Bend
No. 1-BB	32¼ in.	5 ft.	24 in.	1 in.	130 R.P.M.	¾ H.P.	1300 lbs.	Batej	**$475.00**
No. 1-BC	32¼ in.	6 ft.	36 in.	1 in.	130 R.P.M.	¾ H.P.	1350 lbs.	Birds	**488.00**
No. 1-BD	32¼ in.	7 ft.	48 in.	1 in.	130 R.P.M.	¾ H.P.	1400 lbs.	Below	**501.00**

For additional cost of equipping lathe with Quick Change Gear Box see page 23.



1. Testing
2. Truing
3. Balancing
4. Machining Brake Drums and Wheels.

Regular Equipment Included in the Price of Lathe

No. 301 South Bend Silent Chain Motor Driven Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The Motor Driven Brake Drum Lathe Illustrated Above is just the same as No. 1 lathe shown on the opposite page except it is operated by silent chain motor drive instead of countershaft drive.

It is equipped with a three-quarter horse power reversing motor and a reversing switch. In this way the rotation of the spindle is controlled by the switch. Pushing the lever to the left starts the spindle; to the right reverses the spindle and center is neutral or stop.

A tilting table supports the motor drive. A lever tilts the table and loosens the belt for shifting. There is also a belt tightening device.

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

Each Motor Driven Lathe is Thoroughly Tested before shipping. We connect the motor and switch, test and inspect the wiring, then operate and inspect the Lathe under its own power. The wiring is encased in a flexible metal conduit and meets the requirements of Underwriter's specifications. It is very important that these tests be made so that when the lathe arrives it will be ready to run without the necessity of making adjustments to overcome faulty wiring, connections or similar troubles.

When Ordering a Silent Chain Motor Driven Brake Drum 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.

When giving voltage state whether 110 volt motor or 220 volt motor is wanted. Do not specify 110-220 volt motor as we cannot furnish motors for double voltage rating.

Always Give the Following Information:

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

—If Direct Current state exact voltage only.

Current Specifications can be secured from your electric meter or from the electric power company furnishing your current.

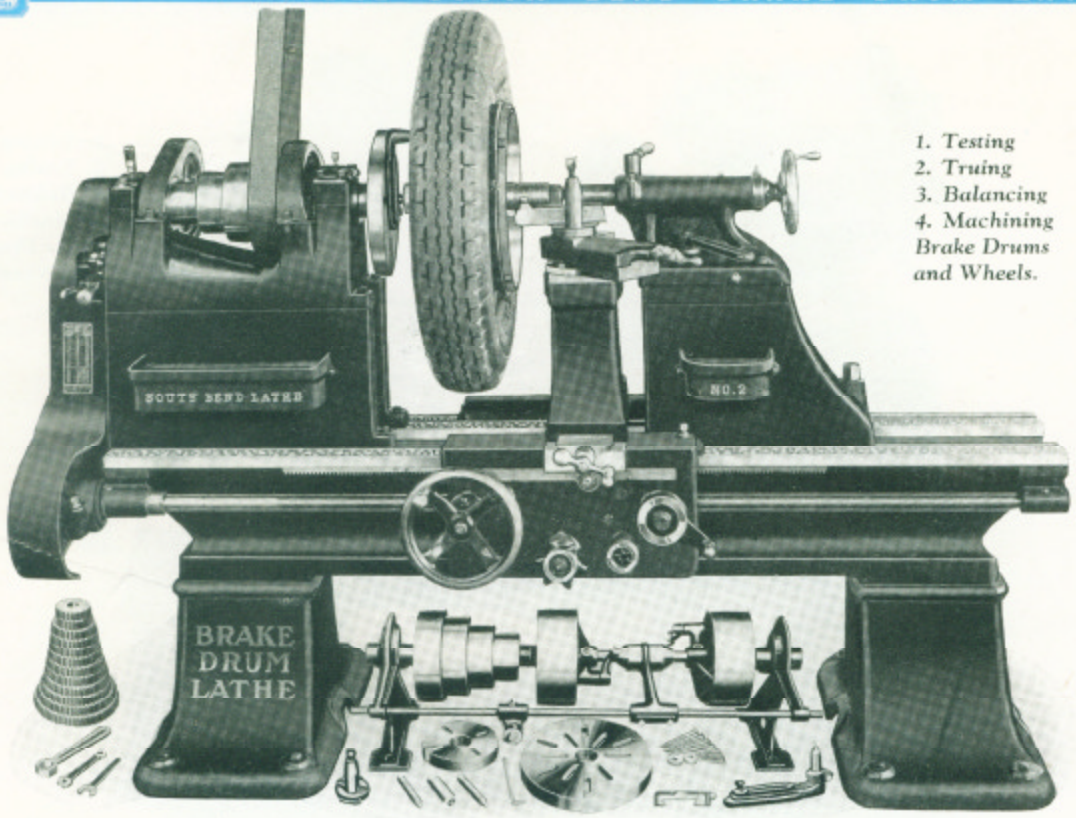
The Same Equipment Included in Price of the countershaft driven Brake Drum Lathe, except countershaft, is also included in the price of the Silent Chain Motor Driven Brake Drum Lathe. The features and specifications described on the opposite page apply equally to the motor driven lathe shown above.

Net Factory Prices of No. 301 New Model Silent Chain Motor Driven Brake Drum Lathes

Prices Include Lathe Equipment, Reversing Motor, Reversing Switch and Leather Belt

Cat. No. of Lathe	Swings Wheel, Tire Attached clear	Length of Bed	Distance Between Centers	Hole Thru Spindle	Horse Power Required	Approx. Weight Crated	Code Word	With 3 Phase 60 Cycle A. C. Motor	With 1 Phase 60 Cycle A. C. Motor	With Direct Current Motor
301-BB	32⅛ in.	5 ft.	24 in.	1 in.	¾ H.P.	1625 lbs.	Bailg	**$610.00**	**$675.00**	**$619.00**
301-BC	32⅛ in.	6 ft.	36 in.	1 in.	¾ H.P.	1700 lbs.	Beliz	**623.00**	**688.00**	**632.00**
301-BD	32⅛ in.	7 ft.	48 in.	1 in.	¾ H.P.	1775 lbs.	Bound	**636.00**	**701.00**	**645.00**

For additional cost of equipping lathe with Quick Change Gear Box see page 23.



1. Testing
2. Truing
3. Balancing
4. Machining Brake Drums and Wheels.

Countershaft and Equipment Included in Price of Lathe

No. 2 New Model South Bend Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool, Countershaft Drive

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The No. 2 Brake Drum Lathe will swing a wheel, with tire attached, up to 36¼ inches in diameter. It is a back geared screw cutting precision lathe for truing brake drums, refacing hubs and servicing auto wheels of all types and makes, front and rear, single or dual, which includes the wheels of all pleasure cars, buses and medium size trucks. This lathe trues brake drums up to 23½ inches in diameter with precision, speed and accuracy, using the self-centering mandrel and universal adapter method. See pages 10, 11, 12 and 13.

The Average Time to true a brake drum of a medium size bus or truck on the No. 2 Brake Drum Lathe is from 10 to 15 minutes. See page 15.

The Self-Centering Mandrel and Adapter Method is the correct, accurate and most economical method for truing brake drums, refacing hubs and machining wheels. The wheel mounted on the self-centering mandrel, fitted with adapters, between centers on the lathe permits machining the brake drum concentric with the axis of the hub.

For the Service Station that services automobiles, buses and medium size trucks where the tire diameter does not exceed 36¼ inches, the No. 2 Brake Drum Lathe is practical for truing brake drums, refacing hubs and servicing wheels. It is also an excellent general purpose lathe for general machine work. A cut ⅜ inch deep reducing a steel shaft ¾ inch in diameter in one chip can be taken on the No. 2 Brake Drum Lathe.

Flywheels Can be Machined for ring gears on the No. 2 Brake Drum Lathe. The lathe has the power to remove all the teeth on the flywheel in one cut. It has the capacity to handle flywheels of all automobiles, buses and trucks. See page 20.

The Equipment Included in the Price of the No. 2 Brake Drum Lathe consists of: Double Friction Countershaft; Large Face Plate, 13″ in diameter; Small Face Plate; Driver for Auto Wheels; Graduated Compound Rest; Tool Post, Ring and Wedge; Thread Cutting Stop; Two Lathe Centers; Spindle Sleeve; Rubber Belts and Springs, See page 23; Wrenches and a Set of Independent Change Gears for cutting Standard Screw Threads.

Features of Brake Drum Lathe

- Back geared headstock gives 8 spindle speeds.
- Automatic cross feed, automatic longitudinal feed.
- Independent change gears for threads and feeds.
- Hollow spindle made of special carbon steel.
- Phosphor bronze bearings scraped to spindle.
- Graduated Compound rest swivels to any angle.
- Precision lead screw for cutting accurate threads.
- Self-centering mandrel and adapter method.
- Graduated collar on cross feed and compound rest screw.
- Tailstock is arranged for set-over for taper turning.

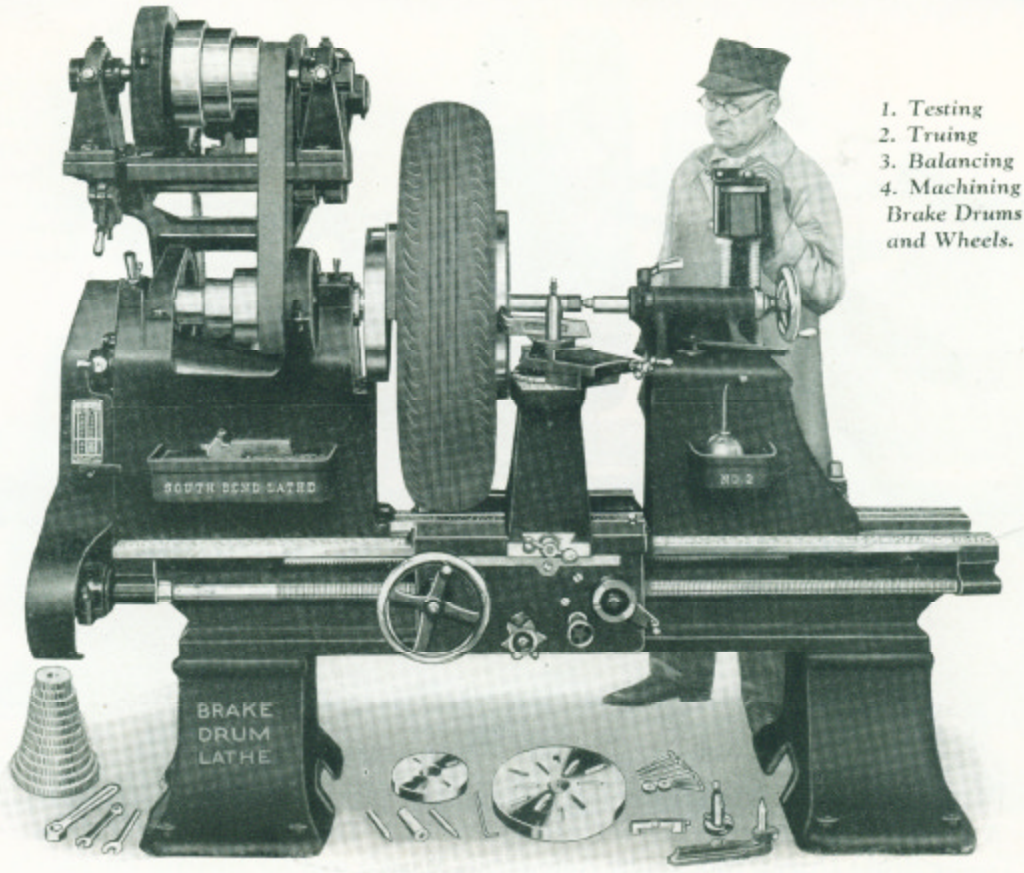
Specifications of Brake Drum Lathe

Will cut standard screw threads	2 to 40 per inch
Width of cone pulley belt	2¼ in.
Spindle speeds	10, 16, 26, 43, 81, 132, 209, 347 R.P.M.
Precision Acme lead screw	1⅛ in. diam., 6 Threads
Angular travel of compound rest top	4 in.
Size of spindle nose	2⅜ in. diam., 6 Threads
Hole through spindle	1⅜ in.
Head and tail spindle centers	No. 3 Morse Taper
Countershaft speed	130 R.P.M.
Size of lathe tool shank	⅝ in. x 1⅜ in.

Net Factory Prices of No. 2 Brake Drum Lathes Including Overhead Countershaft and Equipment

Cat. No. of Lathe	Swings Wheel, Tire Attached Clear	Length of Bed	Distance Between Centers	Hole Through Spindle	Countershaft Speed	Horse Power Required	Approx. Weight Crated	Code Word	Price F.O.B. South Bend
No. 2-BC	36¼ in	6 ft.	27 in.	1⅜ in.	130 R.P.M.	1 H.P.	2160 lbs.	Cocoa	**$650.00**
No. 2-BD	36¼ in.	7 ft.	39 in.	1⅜ in.	130 R.P.M.	1 H.P.	2240 lbs.	Cario	**666.00**
No. 2-BE	36¼ in.	8 ft.	51 in.	1⅜ in.	130 R.P.M.	1 H.P.	2320 lbs.	Cuxom	**682.00**
No. 2-BG	36¼ in.	10 ft.	75 in.	1⅜ in.	130 R.P.M.	1 H.P.	2480 lbs.	Cialr	**714.00**

For additional cost of equipping lathe with Quick Change Gear Box see page 23.



1. *Testing*
2. *Truing*
3. *Balancing*
4. *Machining Brake Drums and Wheels.*

Regular Equipment Included in the Price of Lathe

No. 302 South Bend Silent Chain Motor Driven Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The Motor Driven Brake Drum Lathe Illustrated Above is just the same as No. 2 lathe shown on the opposite page except it is operated by silent chain motor drive instead of countershaft drive.

It is equipped with a one horse power reversing motor and a reversing switch. In this way the rotation of the spindle is controlled by the switch. Pushing the lever to the left starts the spindle, to the right reverses the spindle and center is neutral or stop.

A tilting table supports the motor drive. A lever tilts the table and loosens the belt for shifting. There is also a belt tightening device.

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

Each Motor Driven Lathe is Thoroughly Tested before shipping. We connect the motor and switch, test and inspect the wiring, then operate and inspect the Lathe under its own power. The wiring is encased in a flexible metal conduit and meets the requirements of Underwriter's specifications. It is very important that these tests be made so that when the lathe arrives it will be ready to run without the necessity of making adjustments to overcome faulty wiring, connections or similar troubles.

When Ordering a Silent Chain Motor Driven Brake Drum 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.

When giving voltage state whether 110 volt motor or 220 volt motor is wanted. Do not specify 110-220 volt motor as we cannot furnish motors for double voltage rating.

Always Give the Following Information:

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

—**If Direct Current state exact voltage only.**

Current Specifications can be secured from your electric meter or from the electric power company furnishing your current.

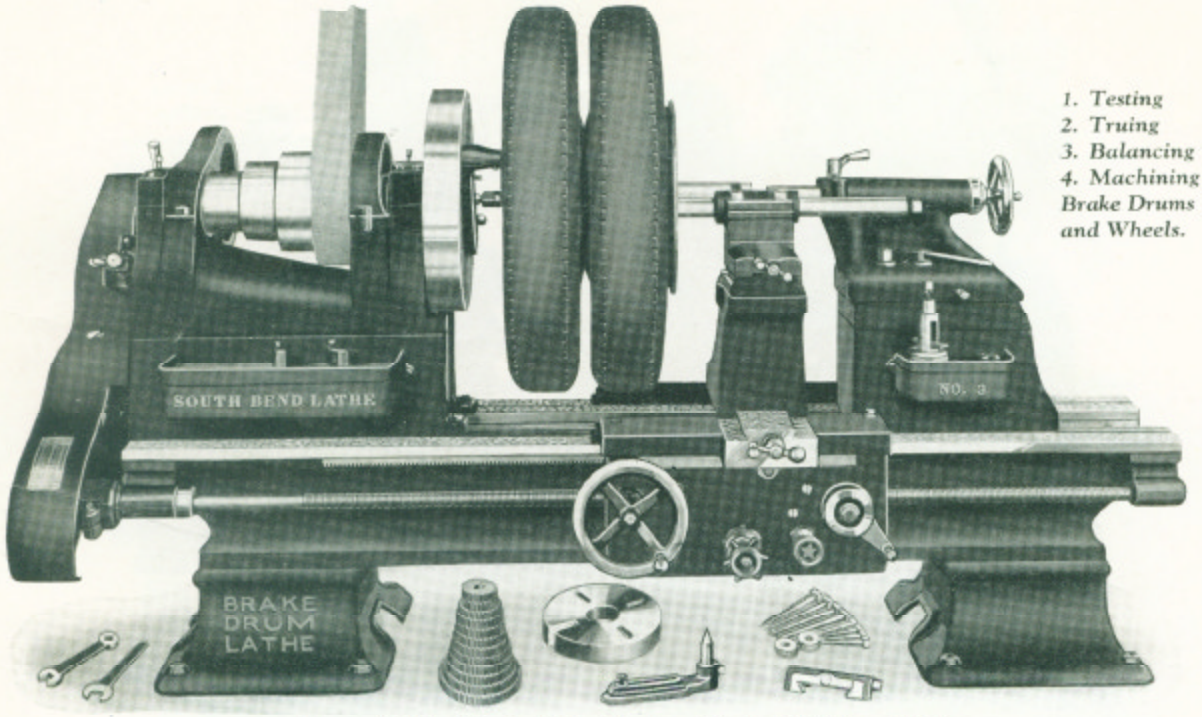
The Same Equipment Included in Price of the countershaft driven Brake Drum Lathe, except countershaft, is also included in the price of the Silent Chain Motor Driven Brake Drum Lathe. The features and specifications described on the opposite page apply equally to the motor driven lathe shown above.

Net Factory Prices of No. 302 New Model Silent Chain Motor Driven Brake Drum Lathes

Prices Include Lathe Equipment, Reversing Motor, Reversing Switch and Leather Belt

Cat. No. of Lathe	Swings Wheel, Tire Attached Clear	Length of Bed	Distance Between Centers	Hole Thru Spindle	Horse Power Required	Approx. Weight Crated	Code Word	With 3 Phase 60 Cycle A. C. Motor	With 1 Phase 60 Cycle A. C. Motor	With Direct Current Motor
302-BC	36¼ in.	6 ft.	27 in.	1⅜ in.	1 H.P	2585 lbs.	Claud	**$805.00**	**$878.00**	**$884.00**
302-BD	36¼ in.	7 ft.	39 in.	1⅜ in.	1 H.P.	2665 lbs.	Coast	**821.00**	**894.00**	**900.00**
302-BE	36¼ in.	8 ft.	51 in.	1⅜ in.	1 H.P.	2745 lbs.	Croze	**837.00**	**910.00**	**916.00**
302-BG	36¼ in.	10 ft.	75 in.	1⅜ in.	1 H.P.	2905 lbs.	Culex	**869.00**	**942.00**	**948.00**

For additional cost of equipping lathe with Quick Change Gear Box see page 23.



1. Testing
2. Truing
3. Balancing
4. Machining Brake Drums and Wheels.

Countershaft (not illustrated) and Equipment Included in Price of Lathe

No. 3 New Model South Bend Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool, Countershaft Drive

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The No. 3 Brake Drum Lathe will swing a wheel with tire attached, up to 42¼ inches in diameter. It is a back geared screw cutting precision lathe for truing brake drums, refacing hubs and servicing auto wheels, of all types and makes, front and rear, single or dual, which includes the wheels of large buses and heavy duty trucks as well as all pleasure cars. This lathe trues brake drums up to 34 inches in diameter with precision, speed and accuracy, using the self-centering mandrel and universal adapter method. See pages 10, 11, 12 and 13.

The Average Time to true a brake drum of a large bus or heavy duty truck on the No. 3 Brake Drum Lathe is from 15 to 20 minutes. See page 15.

The Self-Centering Mandrel and Adapter Method is the correct, accurate and most economical method for truing brake drums, refacing hubs and machining wheels. The wheel mounted on the self-centering mandrel, fitted wih adapters, between centers on the lathe permits machining the brake drum concentric with the axis of the hub.

For the Service Station that services automobiles, buses and heavy duty trucks the No. 3 Brake Drum Lathe is practical for truing brake drums, refacing hubs and servicing wheels, where the tire diameter does not exceed 42¼ inches. It is also an excellent general purpose lathe for general machine work. A cut ½ inch deep reducing a steel shaft 1 inch in diameter in one chip can be taken on the No. 3 Brake Drum Lathe.

Flywheels Can be Machined for ring gears on the No. 3 Brake Drum Lathe with speed and accuracy. The lathe has the power to remove all the teeth on the flywheel in one cut. It has the capacity for flywheels of automobiles, buses and trucks.

The Equipment Included in the Price of the No. 3 Brake Drum Lathe consists of: Double Friction Countershaft; Large Face Plate, 21½" in diameter; Small Face Plate, Driver for Auto Wheels; Graduated Compound Rest; Tool Post, Ring and Wedge; Thread Cutting Stop; Two Lathe Centers; Spindle Sleeve; Rubber Belts and Springs, See page 23; Wrenches and a Set of Independent Change Gears for cutting Standard Screw Threads.

Features of Brake Drum Lathe

Back geared headstock gives 8 spindle speeds.
Automatic cross feed, automatic longitudinal feed.
Independent change gears for threads and feeds.
Hollow spindle made of special carbon steel.
Phosphor bronze bearings scraped to spindle.
Graduated Compound rest swivels to any angle.
Precision lead screw for cutting accurate threads.
Self-centering mandrel and adapter method.
Graduated collar on cross feed and compound rest screw.
Tailstock is arranged for set-over for taper turning.
Spring latch reverse for feeds and threads.

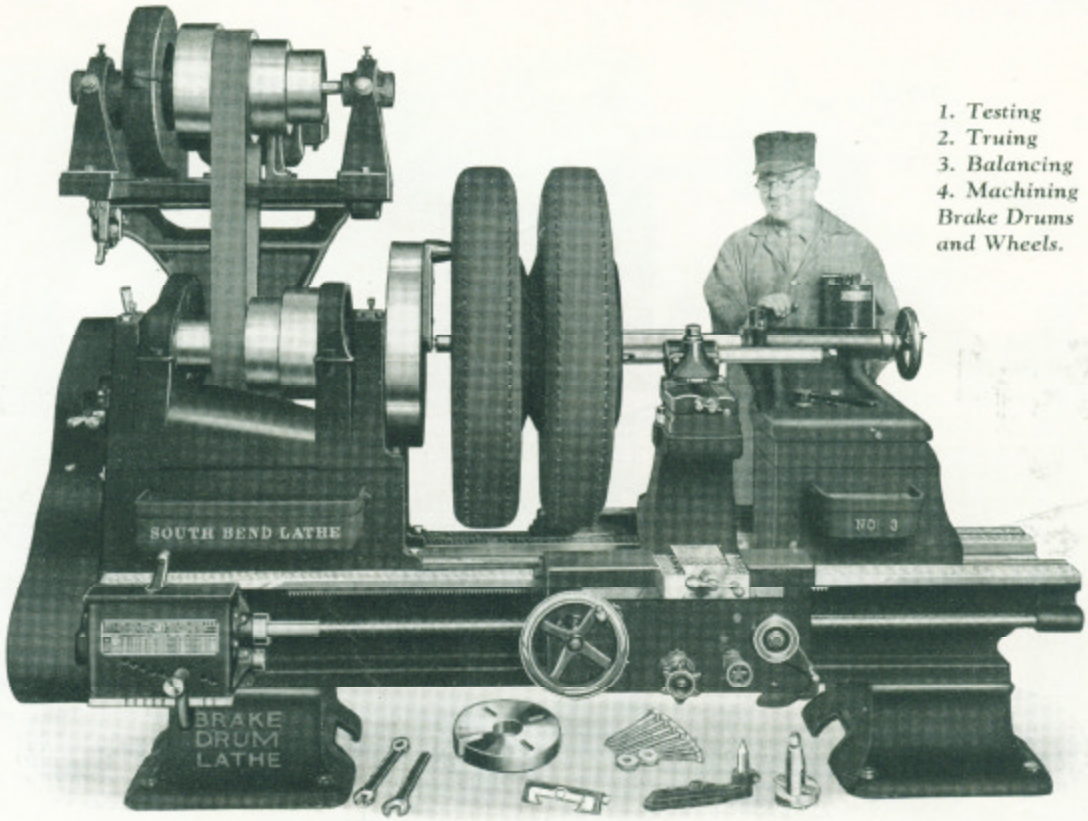
Specifications of Brake Drum Lathe

Will cut standard screw threads	2 to 40 per inch
Width of cone pulley belt	3½ in.
Spindle Speeds	9, 13, 20, 31, 82, 125, 186, 286 R.P.M.
Precision Acme lead screw	1¾ in. diam., 4 Threads
Angular travel of compound rest top	5¾ in.
Size of spindle nose	3¼ in. diam., 5 Threads
Hole through spindle	1¾ inch
Head and tail spindle centers	No. 4 Morse Taper
Countershaft speed	130 R.P.M.
Countershaft friction clutch pulleys	14 in. x 5 in.
Size of lathe tool shank	¾ in. x 1⅝ in.

Net Factory Prices of No. 3 Brake Drum Lathes Including Overhead Countershaft and Equipment

Cat. No. of Lathe	Swings Wheel, Tire Attached Clear	Length of Bed	Distance Between Centers	Hole Through Spindle	Countershaft Speed	Horse Power Required	Approx. Weight Crated	Code Word	Price F.O.B. South Bend
No. 3-BE	42¼ in.	8 ft.	38 in.	1¾ in.	130 R.P.M.	3 H.P.	4650 lbs.	Daisy	**$1400.00**
No. 3-BG	42¼ in.	10 ft.	62 in.	1¾ in.	130 R.P.M.	3 H.P.	4900 lbs.	Debar	**1482.00**
No. 3-BH	42¼ in.	12 ft.	86 in.	1¾ in.	130 R.P.M.	3 H.P.	5300 lbs.	Doubt	**1584.00**

For additional cost of equipping lathe with Quick Change Gear Box see page 23.



1. Testing
2. Truing
3. Balancing
4. Machining Brake Drums and Wheels.

Regular Equipment Included in the Price of Lathe (Except the Quick Change Gear Box)

No. 303 South Bend Silent Chain Motor Driven Brake Drum Lathe

A Modern Back Geared Screw Cutting Precision Tool

For Truing Brake Drums, Machining Automobile Wheels and for General Purpose Work

The Motor Driven Brake Drum Lathe Illustrated Above is just the same as No. 3 lathe shown on the opposite page except it is operated by silent chain motor drive instead of countershaft drive and is equipped with quick change gear box.

It is equipped with a three horse power reversing motor and a reversing switch. In this way the rotation of the spindle is controlled by the switch. Pushing the lever to the left starts the spindle, to the right reverses the spindle and center is neutral or stop.

A tilting table supports the motor drive. A lever tilts the table and loosens the belt for shifting. There is also a belt tightening device.

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

Each Motor Driven Lathe is Thoroughly Tested before shipping. We connect the motor and switch, test and inspect the wiring, then operate and inspect the Lathe under its own power. The wiring is encased in a flexible metal conduit and meets the requirements of Underwriter's specifications. It is very important that these tests be made so that when the lathe arrives it will be ready to run without the necessity of making adjustments to overcome faulty wiring, connections or similar troubles.

When Ordering a Silent Chain Motor Driven Brake Drum 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.

When giving voltage state whether 110 volt motor or 220 volt motor is wanted. Do not specify 110-220 volt motor as we cannot furnish motors for double voltage rating.

Always Give the Following Information:
—If Alternating Current state exact voltage, phase, cycle, and number of wires.
—If Direct Current state exact voltage only.

Current Specifications can be secured from your electric meter or from the electric power company furnishing your current.

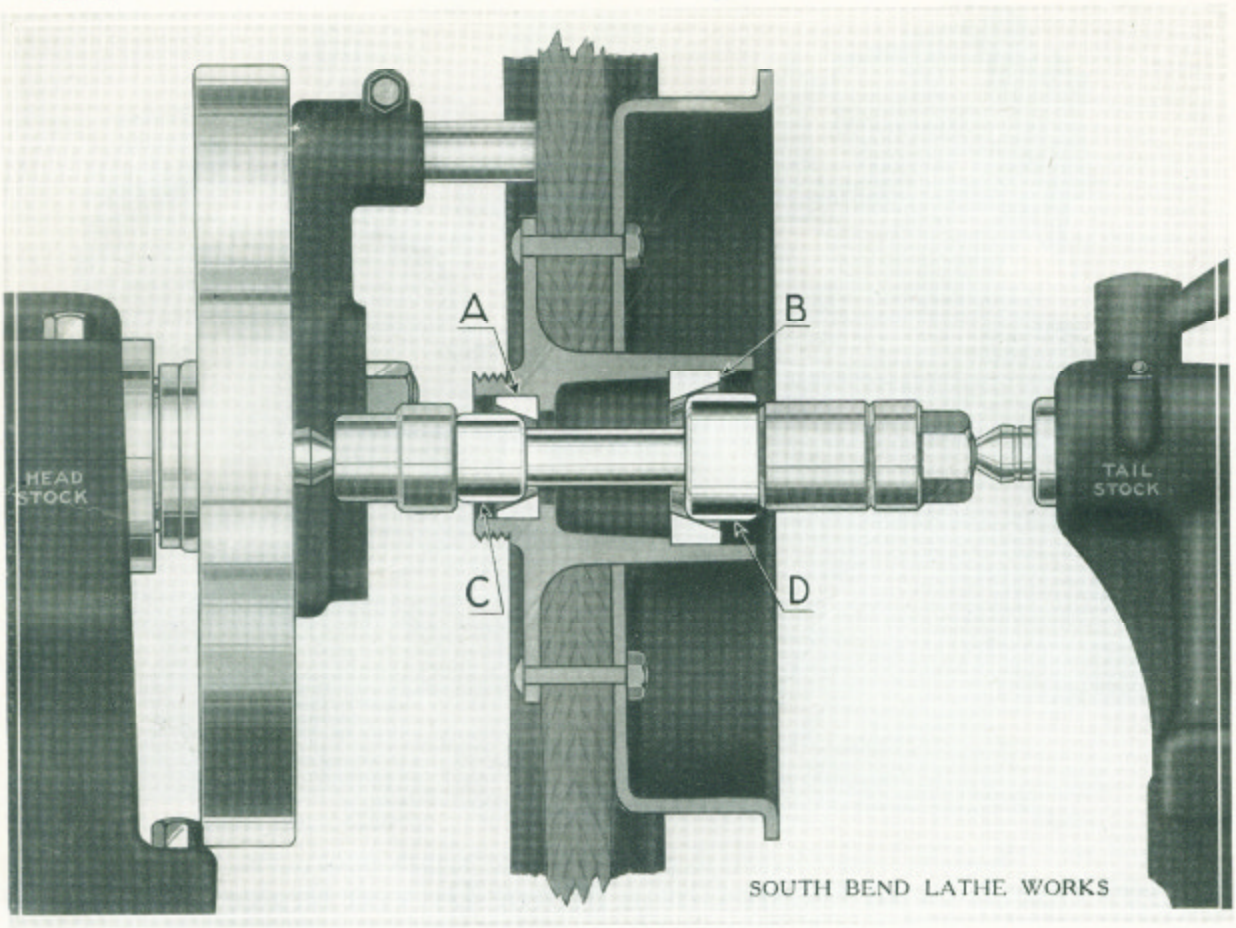
The Same Equipment Included in Price of the countershaft driven Brake Drum Lathe, except countershaft, is also included in the price of the Silent Chain Motor Driven Brake Drum Lathe. The features and specifications described on the opposite page apply equally to the motor driven lathe shown above.

Net Factory Prices of No. 303 New Model Silent Chain Motor Driven Brake Drum Lathes

Prices Include Lathe Equipment, Reversing Motor, Reversing Switch and Leather Belt but not Quick Change Gear Box*

Cat. No. of Lathe	Swings Wheel Tire Attached clear	Length of Bed	Distance Between Centers	Hole Thru Spindle	Horse Power Required	Approx. Weight Crated	Code Word	With 3 Phase 60 Cycle A. C. Motor	With 1 Phase 60 Cycle A. C. Motor	With Direct Current Motor
303-BE	42¼ in.	8 ft.	38 in.	1⅝ in.	3 H.P.	5525 lbs.	Dawdy	$1754.00	$1887.00	$1913.00
303-BG	42¼ in.	10 ft.	62 in.	1⅝ in.	3 H.P.	5775 lbs.	Ducat	1836.00	1969.00	1995.00
303-BH	42¼ in.	12 ft.	86 in.	1⅝ in.	3 H.P.	6175 lbs.	Drive	1938.00	2071.00	2097.00

*For additional cost of equipping lathe with Quick Change Gear Box see page 23.



Self-Centering Mandrel and Universal Bearing Adapter Assembled in Timken Bearing Cups.

Self-Centering Mandrel and Adapter Method of Truing Brake Drums

Mounting the Wheel between Centers on the Lathe for Testing, Truing and Machining

Insures the Greatest Accuracy and Enables the Operator to do Twice as Much Work

Explanation of Symbols in Above Illustration

A—outer Timken race cup in the hub of the wheel.
B—inner Timken race cup in the hub of the wheel.
C—outer universal bearing adapter in the Timken cup.
D—inner universal bearing adapter in the Timken cup.

The Self-Centering Mandrel and Adapter Method revolutionizes old methods of truing brake drums and servicing wheels. The mandrel and adapters center the wheel quickly, permit speed and accuracy in machining and help the operator to turn out twice the work at a much less cost than by the old style methods and equipment.

These Universal Bearing Adapters Line up Concentrically the entire wheel by their accurate contact with the cup races in the wheel hub; therefore, the method is scientific as well as practical. So accurately is the wheel centered that all machining done on any cylindrical surface, such as the felloe or the brake drum will be concentric with the axis of the axle which fits into the ball bearing or Timken races.

This Method is Economical because practically no time is lost in taking measurements and in mounting the work, therefore we can true a brake drum in one-half the time required by other machines. It is practical because this is the same method used by manufacturers of wheels and brake drums for turning out the work in the factory.

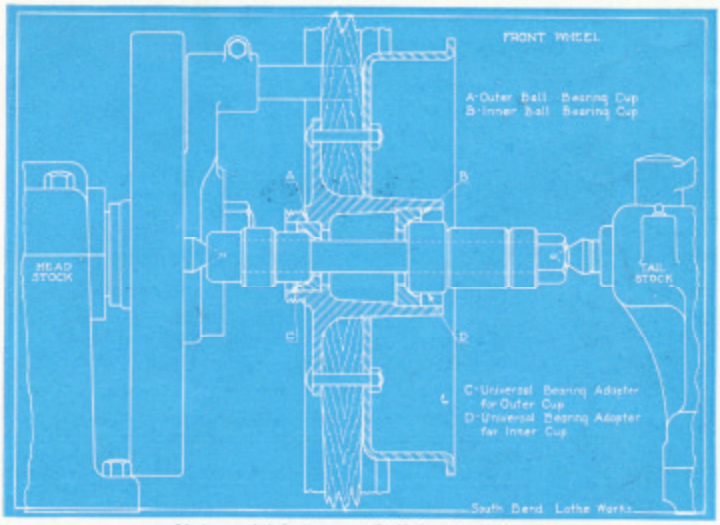
Instructions on Machining Brake Drums and wheels from the manufacturers to their service stations are as follows: The wheel of the automobile, bus or truck must be centered by the race cups in the hub when any machining is to be done on the brake drum or any of the cylindrical parts of the wheel, in order that all machined parts be concentric with the hub or axle.

The Wheel is Rotated by an adjustable driver that is fastened to the face plate, thus taking all strain off the mandrels. This driver has a stud extending through the spokes of the wheel so that the wheel is driven from the spoke at the outer diameter of the wheel and not from the mandrel, another point which insures accuracy and precision in machining.

The Universal Bearing Adapters are most practical and popular for lining up front wheels and many rear wheels that are equipped with the Timken or ball bearing cups in the hub. These universal bearing adapters are called "universal" because they will fit with equal accuracy the wheels equipped with Timken cups or with ball bearing cups, also one adapter will fit several different sizes of Timken cups.

The Rear Wheel Mounted on a Taper Mandrel is driven between centers on the lathe in exactly the same manner as the front wheel that is mounted on a straight mandrel and universal bearing adapters. The only difference is that the taper mandrel is used on some of the rear wheels having tapered hub holes.

Self-Centering Mandrel and Adapter Method of Truing Brake Drums

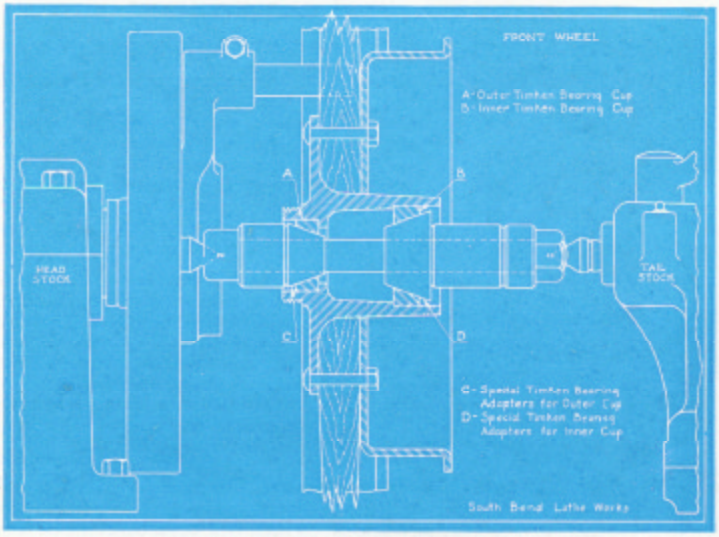


Universal Adapters in Ball Bearing Cups.

Universal Adapters
in Ball Bearing Cups

The drawing at the left shows a wheel hub fitted with ball bearing cups.

The self-centering mandrel is equipped with universal bearing adapters. This type of adapter is very practical and popular as one adapter will fit either Timken or ball bearing cups—several sizes. The specifications and prices of the self-centering mandrel and universal bearing adapters are shown on page 12.



Taper Cone Adapters in Timken Cups.

Taper Cone Adapters
in Timken Cups

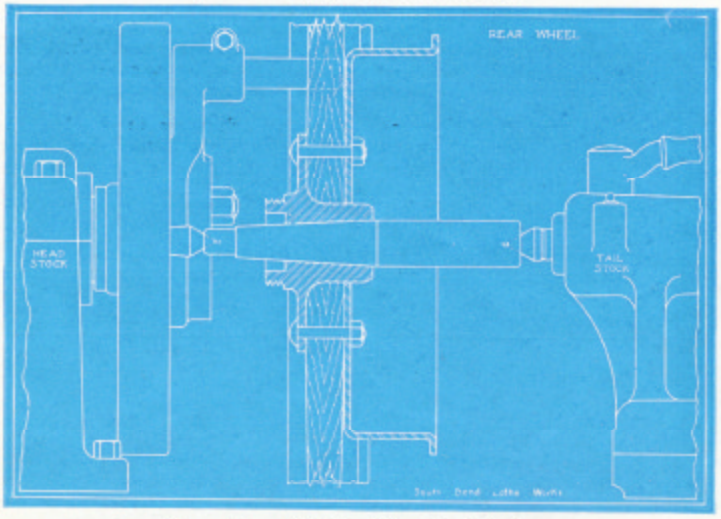
The drawing at the left shows a wheel with the hub fitted with Timken cups.

The self-centering mandrel is fitted with taper cone bearing adapters. The use of the taper cone bearing adapters is limited because from four to six times as many are required to service the same range of wheels that are handled by the universal bearing adapters.

Specifications and Prices of Timken Taper Cone Adapters

Catalog Number	To Fit Mandrel	Diameter of Adapter Hole	Code Word	Price Each
1805	No. 1800	1¼ in.	Nekoe	**$3.00**
1815	No. 1810	1¾ in.	Nemon	**3.50**

We can supply taper cone adapters but recommend the Universal Bearing Adapters as they are more practical and more economical.



Taper Mandrel in Semi-Floating Wheel.

Taper Mandrel
in Semi-Floating Wheel

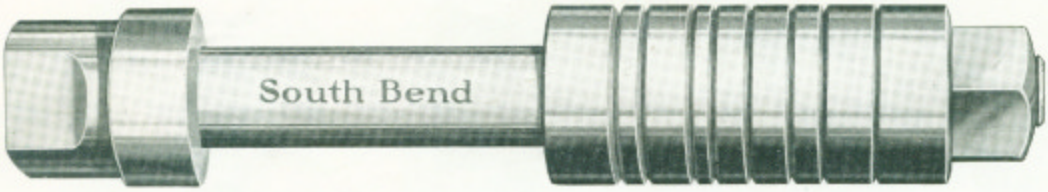
The drawing at the left shows the rear wheel mounted on a self-centering taper mandrel.

The self-centering taper mandrel is used on the rear wheels of automobiles, buses and trucks with taper hole in the hub. The length of the taper portion of the mandrel is greater than the bore of the hub of the wheels, so that the mandrel may take care of the hubs having the same taper but varying in diameter. The tapers in the hubs of the different make wheels are standard, thus four taper mandrels will fit practically all semi-floating rear wheels.

For specifications and prices of self-centering taper mandrel see page 13.

Self-Centering Mandrel and Adapter Method of Truing Brake Drums

For Mounting the Wheel Between Centers on the Lathe for Testing, Truing and Machining



Self-Centering Straight Mandrels for Wheels of Automobiles, Buses and Trucks

The South Bend Self-Centering Mandrel and Universal Bearing Adapters will take care of all front and many rear wheels, single and dual for testing the wheels and for truing brake drums of all types and makes of automobiles, buses and trucks.

The Self-Centering Straight Mandrel illustrated above is made of steel. The 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, both single and dual, to be mounted on the mandrel. The threaded nut presses the bearing adapters against the bearing cups of the hub which accurately lines up the hub in the same manner as do the bearings on the axle.

The Self-Centering Straight Mandrel

Made in Three Sizes

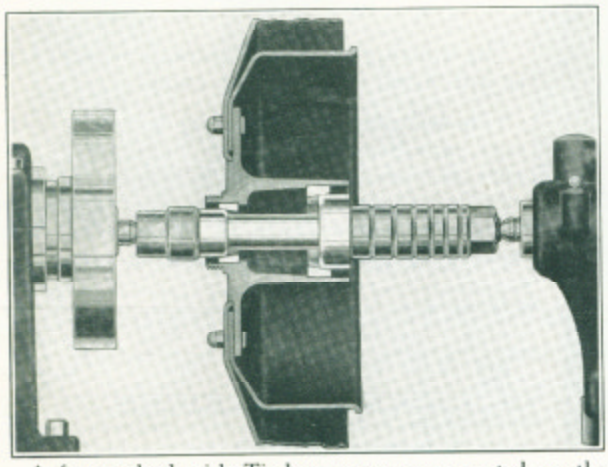
No. 1800 for all pleasure cars and light buses.
No. 1810 for medium-size buses and trucks.
No. 1840 for the heavy duty buses and trucks.

Prices of Straight Mandrels Including Spacing Collars and Nut

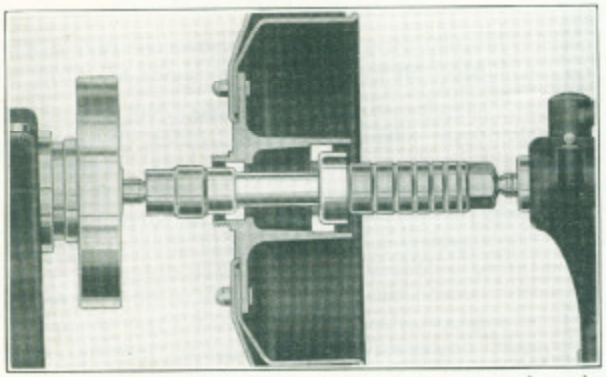
Catalog Number	Diam. of Mandrel	Length of Mandrel	For all Adapters with	Wt. of Mandrel	Code Word	Price of Mandrel
1800	1¼ inch	12 inches	1¼-in. hole	10 lbs.	Narde	$15.00
1810	1¾ inch	18 inches	1¾-in. hole	27 lbs.	Nisae	20.00
1840	2½ inch	26 inches	2½-in. hole	83 lbs.	Nizel	30.00

See pages 16 and 17 when selecting straight mandrels.

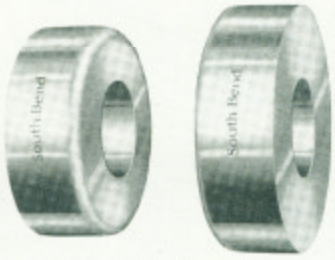
Universal Bearing Adapters for Wheels of Automobiles, Buses and Trucks



A front wheel with Timken race cups mounted on the straight mandrel fitted with universal bearing adapters, all set up between centers on the lathe.



A front wheel with ball bearing race cups mounted on the straight mandrel fitted with universal bearing adapters. The universal bearing adapters fit the ball race cups as readily as they fit the Timken race cups.



Universal Bearing Adapters

The Universal Bearing Adapters, illustrated at left, are used on straight mandrels for mounting wheels of most automobiles, buses and trucks. The rounded corners of the universal bearing adapters conform to the angle of the Timken cups and the curve in the ball bearing cups.

The Adapters are made of cast iron and will not mar or injure the surface of the hardened bearing cups. The universal bearing adapters put no strain on the bearing cups as merely enough pressure is applied on the mandrel nut to make the bearing snug. The wheel is driven by an adjustable driver on the face plate through the spokes on artillery wheels and the hole in disc wheels and against a bolt on wire wheels.

The No. 1801 Universal Bearing Adapter fits the No. 1800 Mandrel. A selection of these adapters, varying in diameter from 1⅝-inch to 3⅜-inch in steps of ⅛-inch will take care of the front wheels of all makes of pleasure cars, small buses and light trucks.

The No. 1811 Universal Bearing Adapters for the No. 1810 Mandrel are made in sizes from 2½-inch diameter to 4¾-inch diameter in steps of ¼-inch. This complete set will take care of the front and most rear wheels of all medium size buses and trucks.

The No. 1841 Universal Bearing Adapters fit the No. 1840 Mandrels and are for the wheels of large buses and trucks. They are made in diameters varying in size from 3½-inches in diameter to 7 inches in diameter in steps of ¼-inch. Larger sizes will be furnished on special order.

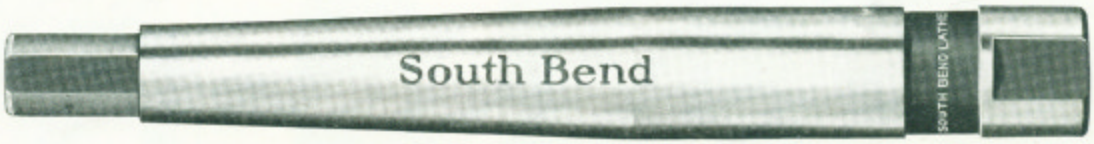
Specifications and Prices of Universal Bearing Adapters

Catalog Number	To Fit Mandrel	Outside Diameter of Universal Bearing Adapters	Diameter of Adapter Hole	Code Word	Price of Each Adapter
1801	No. 1800	1⅝, 1¾, 1⅞, 2, 2⅛, 2¼, 2⅜, 2½, 2⅝, 2¾, 2⅞, 3, 3⅛, 3¼, 3⅜	1¼ in.	Nefas	$2.50
1811	No. 1810	2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4¼, 4½, 4¾	1¾ in.	Negel	3.00
1841	No. 1840	3½, 3¾, 4, 4¼, 4½, 4¾, 5, 5¼, 5½, 5¾, 6, 6¼, 6½, 6¾, 7	2½ in.	Narug	4.00

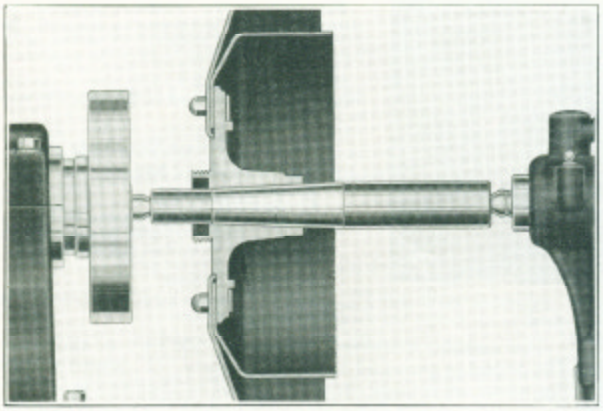
Specify Catalog Number and Diameter of Each Adapter Wanted when Ordering

Self-Centering Mandrel and Adapter Method of Truing Brake Drums

For Mounting the Wheel Between Centers on the Lathe for Testing, Truing and Machining



Self-Centering Taper Mandrels for Mounting Rear Wheels Between Centers in the Lathe



An Automobile Rear Wheel Mounted on A Self-Centering Taper Mandrel

The Regular Self-Centering Taper Mandrel illustrated above is used for mounting semi-floating rear wheels of automobiles, buses and trucks between centers on the lathe, for testing, truing and machining brake drums and wheels. The mandrel fits into the taper hole in the hub of the wheel as shown. It is made of steel, has center holes in each end to accommodate the lathe centers; the ends are hardened to preserve the center holes.

The taper of the mandrel is the same as that of the axle of the car. The wheel will be concentrically mounted when it is tight in any position on the taper of the mandrel and provided one-half the width of the hub is bearing on the mandrel.

We list below four "Regular" taper mandrels, Nos. 1820, 1821, 1822, and 1823, these will service most of the various makes and types of rear wheels of automobiles, small buses and light trucks listed on page 16.

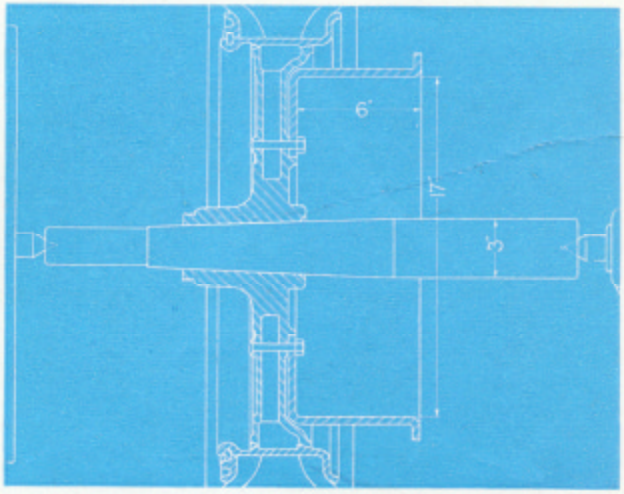
The Special Taper Mandrels Nos. 1828, 1830, 1824, 1825 and 1826 are marked "Special" because they serve only two or three makes each of trucks, buses or automobiles.

Each taper mandrel whether regular or special is capable of fitting from one to twenty different makes of wheels, because the taper of the hole in the wheel hub varies but little in diameter in many different makes. Therefore, the taper mandrel may enter the small hole three quarter way and it may enter the large hole beyond the shoulder of the taper but in each case the bearing is sufficient to hold the wheel firmly on the mandrel

The List of Automobiles and Trucks shown on page 16 indicates the correct size of taper mandrels for the different makes of rear wheels. Select the mandrels shown in the tabulation for the makes of cars you wish to service.

Only semi-floating rear wheels use the taper mandrel. All other wheels use the straight mandrels and adapters, listed in the tabulations on page 12.

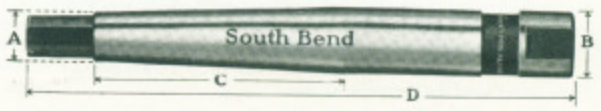
The Auto Mechanics Instruction Book on the servicing of brake drums and wheels contains full information on the selection of mandrels, both straight and taper for servicing the various types of wheels. This book is described on page 24.



The Drawing of a Rear Wheel of an International Truck SF46 Mounted on a Taper Mandrel

The blue print above shows the application of the No. 1830 special self-centering taper mandrel in mounting a rear wheel of an International Truck for machining between centers on the lathe. A mandrel will handle wheels with taper hole in the hub, that are ¼" smaller or ¼" larger in diameter on small size mandrels and ½" smaller or ½" larger on the larger size mandrels.

Dimensions of Taper Mandrels



A—Small Diameter of Taper
B—Large Diameter of Taper
C—Length of Taper
D—Length of Mandrel

Prices of Regular Taper Mandrels

For Rear Wheels (Semi-floating type) of Automobiles, Buses and Trucks

Catalog No. of Mandrel	Specifications of Mandrels					Weight of Mandrel	Code Word	Price of Taper Mandrels
	Diam. "A"	Diam. "B"	Length "C"	Length "D"	Taper per ft.			
1820	1"	1⅛"	6"	13¼"	⅞"	5 lbs.	Numbe	$7.50
1821	⅞"	1¼"	6"	11⅞"	1"	4 lbs.	Novel	7.50
1822	1"	1½"	6"	13¼"	1"	6 lbs.	Nasim	8.00
1823	1¼"	1¾"	6"	15"	1"	9 lbs.	Nough	8.00

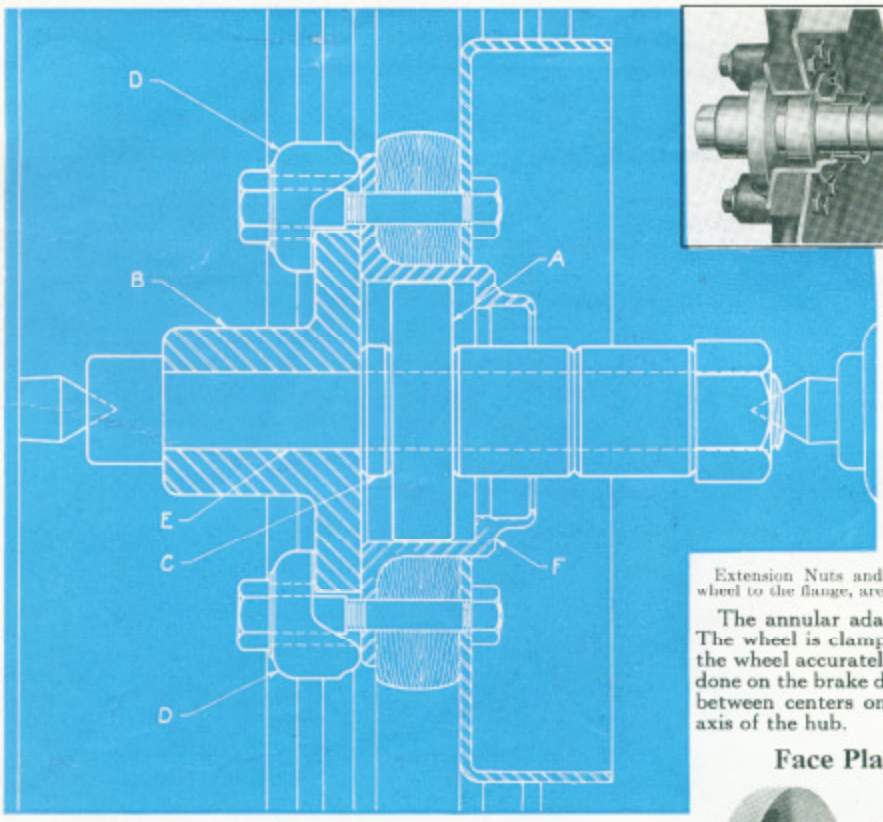
Prices of Special Taper Mandrels

1828	1¾"	2½"	9"	18"	1"	20 lbs.	Nurse	$11.00
1830	2"	3"	12"	26"	1"	36 lbs.	Nudge	15.00
1824	11/16"	17/16"	6"	11⅞"	1½"	4 lbs.	Nuper	7.50
1825	1⅝"	2"	7"	15¾"	1½"	11 lbs.	Nasal	9.00
1826	1½"	2½"	8"	18"	1½"	20 lbs.	Nerve	11.00

See pages 16 and 17.

Self-Centering Mandrel, Face Plate, and Annular Adapter Method

For Mounting Wheels With Annular Ball Bearings between Centers on the Lathe



Rear Wheel Fitted with Annular Ball Bearings Mounted on a Self-Centering Mandrel, Face Plate and Annular Adapter

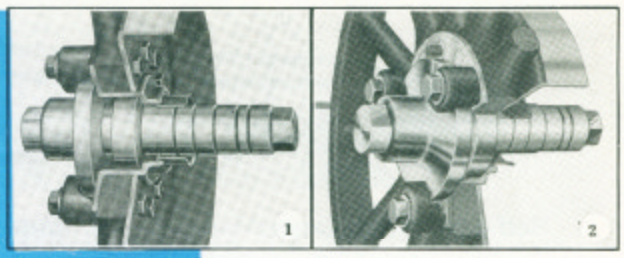


Illustration No. 1 shows a wheel hub mounted on the self-centering mandrel, face plate and annular adapter. A section of the hub has been cut away to show the application.

Illustration No. 2 is a side view of the same hub showing the method of clamping the wheel to the face plate.

Blue Print Symbols

A—the Annular Adapter
B—the Face Plate
C—Spacing Collar
D—Clamps and Extension Nuts
E—No. 1800 Straight Mandrel Illustrated, described and priced on page 12.
F—Hub of Wheel

Extension Nuts and Clamps to engage the bolts for fastening the wheel to the flange, are shown at bottom of page.

The annular adapter "A" centers the hub of the wheel. The wheel is clamped to the face plate "B" which squares the wheel accurately on the mandrel so that any machining done on the brake drum and wheel while the hub is mounted between centers on the lathe, will be concentric with the axis of the hub.

Self-Centering Mandrel for Annular Ball Bearing Wheels

There are a few makes of automobiles equipped with rear wheels fitted with annular ball bearings, such as the Buick, Chandler, Marmon, LaSalle, and Willys-Knight.

To mount wheels of this type on a Self-Centering Mandrel in order to swing them between centers in the Lathe for Testing, Truing and Machining the brake drum, we devised the Face Plate and Annular Adapter to fit on the No. 1800 Mandrel as shown in blue print and half-tones above.

To Mount The Wheel place the face plate "B" on mandrel "E," then place the spacing collar "C" and the adapter "A" on the mandrel. Now place the wheel on the mandrel having it fit over adapter "A" which centers the wheel. Force the wheel up against the face plate and put the remaining collars on the mandrel and tighten the nut.

The Flange of the Face Plate "B" is smaller in diameter than the bolt circle, therefore the adapter will permit the mounting of any size wheel. The regular clamping bolts are used to fasten the wheel to the face plate by using the extension nuts through the clamps "D."

Some wheels have from six to twelve bolts in the hub for clamping to the wheel. If six, then three clamping bolts will be sufficient; if eight, then four bolts should be used.

The Method Of Mounting The Wheel is Simple and Practical, yet accurate because the bearing adapter "A" fits closely on the mandrel and also in the hub. The fit of the adapter "A" should be accurate.

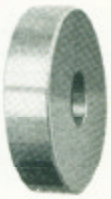
Some Wheel Hubs have a common diameter as Buick, Master 6, 120 and Willys-Knight 66 and 66A and require Annular adapter No. 1807-C, size 4.3307 inches diameter. In some cases only one car model requires a given size. All five makes of cars use the same face plate and No. 1800 Straight Mandrel.

Face Plate and Annular Adapter

Face Plate

The Face Plate is made of cast iron, accurately machined all over and fits on the No. 1800 straight mandrel; only one face plate is necessary for all five wheels.

The Annular Adapter is made of cast iron. It is accurately machined to fit the hub and is the same diameter as the annular bearing used in the hub.



Annular Adapter

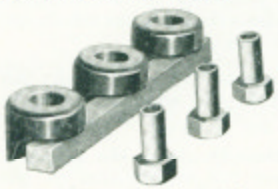
Price and Specifications of Face Plate

Catalog Number	To fit Mandrel	For use with Annular Adapter	Outside Diameter	Diameter of hole	Code Word	Price of Face Plate
1807	1800	1807C	6 inches	1¼ inches	Nafog	$5.00

Prices and Specifications of Annular Adapters

Catalog Number	To fit Mandrel	Diameter of hole	Diameters Furnished	Code Word	Price Each Annular Adapter*
1807C	1800	1¼ in.	From 3 in. to 5 in	Nadum	$3.00

* When ordering specify catalog number, make and model of car, also number and make of annular bearing.



Clamps and Extension Nuts

The illustration shows the clamp lugs and extension nuts used for clamping the wheel. The extension nuts are made of steel, case hardened, and are threaded to fit S. A. E. standard ½" bolt.

Catalog No. 1807A—Set of three clamps and extension nuts, Code Word "Nyrae" **$2.00**
Extra Clamp and Extension Nut ..... **.75**

Actual Time for Truing a Brake Drum

Actual turning or machining time for truing one brake drum, of an automobile, medium size bus, or heavy duty truck, on the South Bend Brake Drum Lathes is shown below and does not include time for mounting or dismounting the wheel.

Automobile or Light Truck
Truing Brake Drum

Truing time—5 minutes

Brake Drum, 10½ x 2 inches
Front Wheel
Car: Chevrolet 4-wheel brakes
Tire Size, 30 x 4.50 inches
Work done on No. 301 Lathe.

A rough estimate on the time to true any average brake drum is about ½-inch width of surface per minute.

Medium Size Bus or Truck
Truing Brake Drum

Truing time—12 minutes

Brake Drum, 18 x 5⅜ inches
Rear Wheel
Truck: International SF46, 2-Ton
Tire Size, 34 x 7 inches
Work done on No. 302 Lathe

It is best to have a floor crane or chainfall to mount truck and bus wheels if one man operates alone.

Heavy Duty Truck
Truing Brake Drum

Truing time—15 minutes

Brake Drum, 17 x 6 inches
Rear Wheel
Truck: G.M.C. Model K41
Tire Size, 40 x 8 inches
Work done on No. 303 Lathe

When mounting heavy wheels in the lathe a small crane will enable one man to do the job nicely.

Important Information and Instructions on Truing Brake Drums

Using the South Bend Brake Drum Lathe and the Self-Centering Mandrel and Adapter Method

How to Test a Wheel

The following tests listed in their proper sequence are made upon all defective wheels and brake drums that come into the shop for service. To make the following tests use the self-centering mandrel and adapters and mount the wheel or hub between centers on the lathe.

When the Defect is Known the correction can be made on the defective part, permitting the operator to work on the proper part. This prevents mistakes and loss of work on parts not affected. See Auto Mechanic Service Book. No. 66

1. See that the hub race cups are not cracked or worn.
2. Test the brake drum to see if it runs true.
3. Test the wheel felloe for trueness.
4. Test the hub flange face for run-out.
5. Test the wheel with tire attached for balance.
6. Test the axle shaft on centers to see if it is bent.

Correct Size of Lathe for Your Shop
And the Mandrel and Adapter Equipment for Your Work

No. 1 Lathe—The automobile dealer handling three or four makes of pleasure cars and light trucks, can service the brake drums and wheels of these cars with a No. 1 Brake Drum Lathe and about a $50.00 carefully selected equipment of self-centering mandrels and adapters.

No. 2 Lathe—The brake drum and wheel service shop that takes care of all makes and types of wheels for automobiles, buses, and medium size trucks requires a No. 2 Brake Drum Lathe and about a $75.00 carefully selected equipment of self-centering mandrels and adapters.

No. 3 Lathe—The service shop that wishes to service brake drums and wheels of the very heavy trucks in all sizes and types, in addition to automobiles and light trucks, requires the No. 3 Brake Drum Lathe with a carefully selected, self-centering mandrel and adapter equipment amounting to about $125.00.

Purchasing on Time Payments

For the convenience of those who wish to purchase the New Model Brake Drum Lathe on partial payments, they may do so through the dealer in their community that is selling our line, or they may write us direct and we will send them a copy of our Time Payment Plan which enables them to purchase the lathe by paying 20% of the amount cash with order, balance in ten equal monthly payments. Full details may be had on request.

One Man Services a Fleet of 75 Buses or Trucks

A South Bend Brake Drum Lathe and one Operator can service 75 buses and trucks without loss of schedule trips and keep the stock room supplied with parts. It is the most used and profitable machine in the shop, because of its general utility.

It permits the company to operate on less capital, as fewer well serviced vehicles are necessary in the fleet to maintain schedules. It prevents accidents and thus saves time.

Removal of Tires from the Wheel

Tires May be Removed from the Wheels that are to be machined if the mechanic wishes to try to get by with a smaller size lathe. If, however, there is much work to do the removal of tires will be found expensive, because it requires considerable time to get the tire off and replace it.

In the long run, it will be found more economical to let the tire remain on the wheel while machining the brake drum or servicing the wheel. This is especially true when you wish to balance a wheel with tire attached.

Engineering Service on Brake Drums and Wheels

We have been operating an experimental service station in our own shop for the last six years for the truing of brake drums, servicing of wheels, the automobile engine, etc.

Our Engineering Service is available to South Bend Lathe users. If you have any problems that you think our experience would help you to solve, write us, and we will give you all information we have on the subject. There is no charge for this service to users of the South Bend Brake Drum Lathe.

See a South Bend Brake Drum Lathe in Operation

The New Model South Bend Brake Drum Lathe may be seen and examined in any of the large cities of the United States, where they will be found in use in the principal service station shops, and especially those that service brake drums and wheels.

If you are interested in a Brake Drum Lathe we suggest that you see and examine the South Bend Brake Drum Lathe in operation, as its method of machining is remarkable. In machining brake drums, one cannot appreciate the efficiency and accuracy of the South Bend Brake Drum Lathe until he has seen it in operation.

How to Select the Correct Mandrels and Adapters

For Servicing the Wheels of Any Model or Make of Car, Bus and Truck

The tabulation lists the makes and models of automobiles, buses and trucks, also the year in which they were built. Opposite the name of each vehicle is shown the correct size and type of self-centering mandrels and universal bearing adapters to use for mounting the wheels between centers on the South Bend Brake Drum Lathe.

Straight mandrels with universal bearing adapters are used for front wheels and rear wheels, other than semi-floating type, of automobiles, buses and trucks. Taper mandrels are used for rear wheels of automobiles, buses and trucks having taper hole in hub. We are continually adding to this list so as to keep it up to date.

Prices on pages 12 and 13.

Automobiles

Name and Model of Automobile	Year Made	FRONT WHEEL			REAR WHEEL		
		Mandrel Catalog Number	Outer Adapter Diam. Inches	Inner Adapter Diam. Inches	Mandrel Catalog Number	Outer Adapter Diam. Inches	Inner Adapter Diam. Inches
Auburn, 6-66	'25-6	1800	1 7/8	2 1/2	1822		
Auburn, 6-66A, 8-77	'27-8	1800	1 5/8	2 5/8	1824		
Auburn, 6-66B, 8-88A	'28	1800	1 5/8	2 5/8	1824		
Auburn, 115, 8-88, 110	'26-8	1800	2	2 5/8	1822		
Buick, Std. 6	'24-8	1800	2	2 7/8	1820		
Buick, 120", Master 6	'24-8	1800	2 11/32	3 3/8	1800	F.P.A.	
Buick, 127", Master 6	'24-8	1800	2 11/32	3 3/8	1800	F.P.A.	
Cadillac, All	'24-8	1800	2 1/2	3	1800	3 3/8	3 3/8
Case, Y	'24-7	1800	3 1/4	2 3/8	1800	3 3/8	3 3/8
Chandler, Royal 8, Big 6	'27-8	1800	1 3/8	2 3/4	1800	F.P.A.	
Chandler, Special 6	'27-8	1800	1 5/8	2 5/8	1800	F.P.A.	
Chevrolet, All	'24-8	1800	1 3/4	2 11/32	1820		
Chrysler, 60, 70	'24-7	1800	1 7/8	2 5/8	1822		
Chrysler, 80	'26-7	1800	2 5/8	2 3/4	1823		
Chrysler, 50, 52	'27-8	1800	1 5/8	2 3/4	1822		
Chrysler, 62, 72	'27-8	1800	1 3/4	2 3/4	1822		
Chrysler, 80, 80L	'28	1800	2 5/8	2 7/8	1823		
Diana	'26-7	1800	1 7/8	2 3/4	1800	2 3/4	2 3/4
Dodge 25-26-27, Senior 6	'25-8	1800	1 7/8	2 3/4	1822		
Dodge, 4-cyl., Victory 6	'28	1800	1 5/8	2 5/8	1822		
Durant, A-22, B-60	'24-7	1800	1 7/8	2 3/4	1821		
Durant, E-80	'26-7	1800	2 1/8	2 3/4	1821		
Durant, M, R, 2-18	'26-7	1800	1 5/8	2 3/4	1821		
Elcar, 6-70, 8-90	'27	1800	1 5/8	2 5/8	1824		
Erskine, 51	'27-8	1800	1 5/8	2 3/4	1821		
Essex	'24-8	1800	2	2 3/4	1822		
Falcon-Knight, 10-12	'27-8	1800	1 7/8	2 5/8	1820		
Ford, T		1800	Brakes	2-Wheel	1824		
Ford, A	'28	1800	1 5/8	2 5/8	1824		
Hudson, All	'24-8	1800	2 1/2	2 7/8	1823		
Hupmobile, Big 8, E, E2, E3	'25-8	1800	2 3/4	2 7/8	1822		
Hupmobile, Century 6 and 8, A1-5	'26-8	1800	1 7/8	2 5/8	1800	2 3/4	2 3/4
Jordan, K, L	'24-5	1800	2 5/8	2 7/8	1800	3	3
Jordan, Great Line 8, A, AA	25-8	1800	2 5/8	2 7/8	1823		
Jordan, R, RE, Air Line 8, Little 8	'26	1800	1 7/8	2 3/4	1824		
Jordan J, JI, JE, JJ	'26-8	1800	1 7/8	2 3/8	1822		
LaSalle, OC, CC, FI-CC, F, Y, S, Z, F-P, F-SP, F-R, F-FI-2CV	'27-8	1800	2 11/32	3 3/4	1800	F.P.A.	
Lincoln, 8	'24-8	1800	2 1/2	3	1800	3 3/8	3 3/8
Locomobile, Jr. 8	'26-7	1800	1 7/8	2 1/2	1822		
Marmon, 34, 34B, 74	'24-6	1800	2 1/4	3	1800	F.P.A.	
Marmon, Small 8, 75	'27	1800	1 7/8	2 3/4	1800	2 5/8	2 3/4
Marmon, Little 8	'27-8	1800	1 5/8	2 5/8	1800	2 5/8	2 3/4
Moon, Aerotype, 8-80	'28	1800	1 7/8	2 3/4	1800	2 1/4	2 1/4
Moon, 6-60, 6-72	'26-8	1800	1 5/8	2 3/4	1800	2 3/4	2 3/4
Nash, Lt. 6, Std. 6	'25-8	1800	1 7/8	2 5/8	1822		
Nash Spec. 6, Big 6, Adv. 6	18-29	1800	2 1/4	2 5/8	1822		
Oakland, All Amer., 6-54	'24-8	1800	2 3/4	2 7/8	1820		
Oldsmobile, 30 Series B, C, D, E	'24-7	1800	1 3/4	2 11/32	1820		
Overland, 93	'25-6	1800	1 7/8	2 5/8	1820		
Overland, 91	'26	1800	1 5/8	2 3/8	1821		
Packard, All	'24-8	1800	2 1/4	2 7/8	1823		
Peerless, 60	'27	1800	1 5/8	2 3/4	1800	2 3/4	2 3/4
Pierce-Arrow, 80	'24-8	1800	2 3/4	3	1800	3 1/4	3 1/4
Pontiac	'26-7	1800	1 3/4	2 1/2	1820		
Reo, T6	'24-8	1800	2	3	1800	3	3
Reo, Flying Cloud	'27-9	1800	1 7/8	2 3/4	1822		
Star, C, F	'24-8	1800	1 5/8	2 3/8	1821		
Studebaker, Dic., Lt 6	'24-7	1800	1 7/8	2 5/8	1822		
Studebaker, Pres., Com	'28	1800	1 7/8	2 5/8	1823		
Studebaker, Dictator	'28	1800	1 7/8	2 5/8	1800	2 3/4	2 3/4
Stutz, All	'28	1800	2 1/2	3	1823		
Willys-Knight, 66, 66A	'25-8	1800	2 1/4	2 7/8	1800	F.P.A.	
Willys-Knight, Std. 6, 70A	'28	1800	1 7/8	2 3/4	1800	F.P.A.	
Whippet, 96, 23A, 93A	'28	1800	1 5/8	2 3/4	1821		
Yellow Cab, D1	'26	1800	2 1/4	2 7/8	1800	3 1/4	3 1/4

† Two Wheel Brakes—F.P.A. is Face Plate and Annular Adapter. See page 14.

Buses and Trucks

Name and Model of Bus or Truck	Year Made	FRONT WHEEL			REAR WHEEL		
		Mandrel Catalog Number	Outer Adapter Diam. Inches	Inner Adapter Diam. Inches	Mandrel Catalog Number	Outer Adapter Diam. Inches	Inner Adapter Diam. Inches
Chevrolet Utility Tr	'25-8	1800	1 3/4	2 11/32	1823		
Chevrolet Lt. Del	'25-8	1800	1 3/4	2 11/32	1820		
Clark Speed Tr. A	'27-8	1810	2 3/4	3 3/8	1810	4 1/2	4 1/2
Clark Speed Tr. B	'27-8	1810	2 3/4	3 3/8	1810	4 1/2	4 3/4
Fageol, Intey, 22 Pass., 3-T	'24-6	1810	2 3/4	3 3/4	1840	4 3/4	4 3/4
Fageol, 6 cyl. st. car, 29 pass. Intey	'25-6	1810	3 1/2	4 3/4	1840	4 3/4	5 3/4
Fageol, 4 cyl. spdcar, 29 pass.	'25-6	1810	2 3/4	3 3/4	1840	4 3/4	5 3/4
Fageol, 4 cyl. Intey. 22 pass.	'25-6	1810	2 3/4	3 3/4	1840	4 3/4	5 3/4
Fageol, 4-T, 454-490	'25-6	1810	3	3 3/4	1840	4 3/4	5 3/4
Fageol, 6-T, 690-645	'26	1840	3 1/2	4 3/4	1840	6 3/4	5 3/4
Federal EK	'26-7	†	†	†	1822		
Federal, 5T, X-2-4-5-6-7	'23-8	†	†	†	1840	5 3/4	6 3/4
Federal, W-2, 3, 4	'23-8	†	†	†	1840	4 3/4	5 3/4
Federal, S-1, 2	'25-6	†	†	†	1828		
Federal, FW-2; FK, F6, FW	'24-8	†	†	†	1823		
Federal, S-27	'26	†	†	†	1828		
Federal, 1KG, UL4, U4, U-2, BB7, 2BG	'28	†	†	†	1840	4 3/4	4 3/4
Federal, S26, T6B, S25	'28	†	†	†	1840	4	4
Federal, T21, T20, S30, T2W, T6W	'26-8	†	†	†	1828		
Federal, 3B6, 2KG, 3C6, UL7	'28	†	†	†	1840	5 1/2	5 1/2
Federal, A6	'28	1800	2 1/2	3	1826		
Ford, T	All	†	†	†	1825		
Garford, 51D		†	†	†	1840	4 3/4	4 3/4
G. M. C. 2-T, T50, T40	'27	†	†	†	1840	4 3/4	4 3/4
G. M. C. 2-2½T, K52, K41	'23-7	†	†	†	1840	4 3/4	4 3/4
G. M. C. 5-T, K102, K101	'23-7	†	†	†	1840	5 3/4	6 3/4
G. M. C. 3½T, K72	'26-7	†	†	†	1840	4 3/4	5 3/4
G. M. C. 1-T, T20	'27	†	†	†	1820		
Graham Bros. SD	'27	†	†	†	1822		
Graham Bros. BD, ID, DD	'27	†	†	†	1823		
Graham Bros. VD, JD, ED, MD, LD, OD, TD	'27	1810	2 1/2	3	1826		
Graham Bros. BE, IE	'28	1800	1 5/8	2 3/8	1825		
Graham Bros. SE	'28	1800	1 5/8	2 3/8	1822		
Graham Bros. YE, OE, TE, JE	'28	1800	2 1/2	3	1826		
International SF46		†	†	†	1830		
Lange Motor Tr. K	'26-8	†	†	†	1840	4	4
Lange Motor Tr. H	'26-8	†	†	†	1840	5 1/2	5 1/2
Lange Motor Tr. F	'26-7	†	†	†	1840	4 3/4	5 3/4
Lange Motor Tr. E	'26-7	†	†	†	1840	4 3/4	4 3/4
Mack, AL Bus	'26-7	†	†	†	1840	6	5 3/4
Mack, 2-2½T		†	†	†	1840	3 1/2	4 3/4
Mack, 1½, 2, 2½T, AB Dual	'24-6	†	†	†	1840	4 3/4	4 3/4
Mack, 1½, 2, 2½T, AB Bus	'26	†	†	†	1840	5 1/4	5 3/4
Moreland, AX, AXX, EXX, SX	'23-7	†	†	†	1840	4 3/4	4 3/4
Moreland 67, pass., AC, BX, EC	'24-6	†	†	†	1840	4 3/4	4 3/4
Moreland, TX, AXX	'25-7	†	†	†	1840	5 1/2	5 1/2
Noble Motor Tr. 164, 166	'27-8	†	†	†	1840	5 1/2	5 1/2
Noble Motor Tr. 134, 146B	'27-8	†	†	†	1840	4	4
Noble Motor Tr. 156	'27-8	†	†	†	1840	4 3/4	4 3/4
Olympic A, 2½T	'27-8	†	†	†	1840	4 3/4	4 3/4
Oshkosh Truck F	'26	†	†	†	1840	5 3/4	5 3/4
Oshkosh Truck H	'28	†	†	†	1840	4 3/4	4 3/4
Oshkosh Truck R	'28	†	†	†	1840	4 1/2	4 1/2
Oshkosh Truck M	'28	†	†	†	1840	4 3/4	4 3/4
Pierce-Arrow R10, 5-T	'26-7	†	†	†	1840	5 3/4	6 3/4
Pierce-Arrow XB, 2-3T, X-5, XA	'24-7	†	†	†	1840	4 1/2	4 1/2
Pierce-Arrow, WD, 4-5T, WC 3½, 4	'21-7	†	†	†	1840	4 3/4	5 3/4
White, 20-45, 20		1840	3 1/2	4 3/4	1830A		
White, 15-45, 15		1810	3 3/4	3 7/8	1827A		
White, 57, 15, 15B		1810	3 3/4	3 7/8	1823		
White, 51A		1810	3 3/4	3 3/4	1830		
White, 53		1810	3 3/4	4 3/4	1830		
White, 56		†	†	†	1830		
White, 50A, 51, 20A		1810	3 1/2	3 1/2	1830		
Will Motors Corp. 38 pass., GY	'28	1840	3 1/2	4 3/4	1840	4 3/4	5 3/4
Will Motors Corp. FW	'28	†	†	†	1840	6 1/4	5 3/4
Will Motors Corp. C.S.W	'28	†	†	†	1840	5 1/2	5 1/2
Will Motors Corp. ZW, 2 W6	'27-8	†	†	†	1840	4 3/4	4 3/4
Yellow Coach		†	†	†	1823		

† Page 17 lists car, bus and truck wheels serviced on each mandrel.

A Small Mandrel Equipment Services Many Wheels

But very few mandrels and adapters are required for servicing a large number of makes and models of automobile, bus and truck wheels because each mandrel or adapter is almost universal in its use and fits many wheels.

One No. 1800 straight mandrel will service the front wheels of more than 800 makes and models of cars and the rear wheels of more than 100 makes besides many small buses and light trucks.

One No. 1810 straight mandrel will service the front wheels of more than 75 makes and models of medium size buses and trucks, and many of these use the same mandrel for both front and rear wheels.

One No. 1840 straight mandrel is used to service the front wheels of more than 150 makes and models of large buses and heavy duty trucks and the rear wheels of more than a hundred makes and models.

One No. 1822 taper mandrel is used to service the rear wheels of more than 75 makes and models of automobiles and many makes and models of small buses and light trucks.

Prices on pages 12 and 13.

List of Automobiles

Mandrels to Be Used in Servicing Them.

No. 1800 Straight Mandrel

fits the front wheels of all cars made shown in the following list:

Front Wheels

Auburn, 8-77, 8-88, 8-88A, 115, 110
Ambassador
Buick, Std. 6, Mstr. 6-120, 8-128
Brewster
Barley
Columbia (elec.)
Cadillac, All Models
Case, Y
Cunningham
Chevrolet, AB, AA, V
Chandler, Royal 8, Big 6, Sp. 6.
Chrysler, 50, 52, 62, 72, 80, Plymouth.
Davis, 71, 83, 94
Dodge, Sr. 6, Vic. 6, Std. 6
Daniels
Dupont
Durant, 75, Big 6, M, R.
Dagmar
Elcar, 6-70, 8-80
Erskine, 51
Essex
Falcon Knight, 10-12
Franklin, 12, 11
Ford, A, T
Greeley
Gardner
Gray
Haynes
Hupp, Big 8, E, E2 & 3, Century 6 & 8, A155
Hudson
H. C. S.
Jewett, 50
Jordan, Airline 8, Little 8, J, JJ, JE, JI, A, AA
Kissel, 55, 75
Locomobile, Jr. 8
LaSalle, F, Y, S, Z, F-P
Lincoln, 8
Marmon, 78, Little 8, 68, 75
Moon, 6-72-6-60
Mercer
Moline
McFarlan, St. 8, TV6, SV
Nash, Lt. 6, Std. 6, Sp. 6, Big 6, Adv. 6
Oldsmobile, 30, Series F
Oakland, 6-54, All Amer.
Packard, All Models
Peerless, 60, 72, 80, 90
Pierce-Arrow, 80
Paige
Pontiac
Reo, Flying Cloud, Wolverine
Rauch & Lang
Reamer
Revere
Rolls Royce
Rickenbacker
Stanley (steamer)
Stearns
Studebaker, Dict., Com., Pres.
Stutz
Sterling-Knight
Star, 4, C, F
Templar
Velie, 40, 88, 66, 77
White
Wills Ste. Claire
Whippet, 96, 93A
Willys Knight, 66, 66A, Std. 6, 70A
Yellow Cab, A2, T3, OV

No. 1800 Straight Mandrel

Rear Wheels of:

Buick, 120" Master, 127" Master
Cadillac, All Models
Case, Y
Diana
Hupmobile, A1, A2, A3, A4, A5
Jordan, K, L
LaSalle, All Models
Lincoln, 8
McFarlan, D, V
Marmon, Small 8-75, Little 8-78
Moon, Aerotype, 8-80, Series A Diana
Peerless, 66 Tyre 23 70, 66-67, 60
Pierce Arrow, 80
Reo, F, V
Stearns Knight, SKL-4, SKL-6
Studebaker, Dictator
Willys-Knight, 64-65-67, 66-66A, Std. 6-70A
Yellow Cab, D1, OV, T3, A2

No. 1820 Taper Mandrel

Rear Wheels of:

Buick, Std. 6
Chevrolet, All Models
Falcon Knight, 10-12
Oakland, All American, 6-54
Oldsmobile, 30 Series B, C, D, E
Overland, 93
Pontiac, All Models

No. 1821 Taper Mandrel

Rear Wheels

Chrysler, 4-60, 58
Durant, A-22, B-60, E-80, M, R, 2-18, 55-65
Erskine, 51
Overland, 91
Star, C, F
Whippet, 23A, 96, 93A

No. 1822 Taper Mandrel

Rear Wheels of:

Aiax, 51
Auburn, 6-66, 8-88, 110
Chrysler, 60, 70, 50, 52, 62, 72
Cleveland, 40, 42, 43, 31
Davis, 71, 83
Dodge, 25-26-27, Victory 6, Senior 6
Durant, 75, Big 6
Essex, All Models
Flint, B-60, 60, E-80, Z-18
Hupmobile, Big 8, E, E2, E3
Jordan, J, JI, JE, JJ
Kissel, 55
Locomobile, Jr. 8, M80, M70
Nash, Light 6, Std. 6, Special 6, Big 6, Adv. 6
Reo, Flying Cloud
Studebaker, Dictator, Light 6, Spec. 6

No. 1823 Taper Mandrel

Rear Wheels of:

Chrysler, 80, 80L
Hudson, All Models
Jordan, Great Line 8, A, AA
Packard, All Models
Paige, 6-70
Studebaker, Big 6, Commander, President
Stutz, All Models

No. 1824 Taper Mandrel

Rear Wheels of:

Auburn, 6-66A, 6-66B, 8-77, 8-88A, 115
Elcar, 6-70, 8-90
Ford, T, A
Jordan, R, RE

List of Trucks and Buses

Mandrels to Be Used in Servicing Them.

No. 1826 Taper Mandrel

Rear Wheels of:

Auburn, 4-44

No. 1800 Straight Mandrel

Front Wheels

Chevrolet, Utility Tr. Lt. Del.

Federal, A6

Graham Bros., BE, IE, SE, YE, OE, TE, JE, DE, ME, LE

No. 1810 Straight Mandrel

Front Wheels

Clark Speed Tr., A, B

Fageol, 230A 2-T, 235 2-T. 3-T, Intercity 67 pass., Intere. 22 pass., Intere. 29 pass., (6 cyl.) st. car, (4 cyl.) spd car 29 pass., (4 cyl.) Intere. 22 pass., (4-T) 454-490, (4-6 cyl.) 19 pass.

Graham Bros., VD, JD, ED, MD, LD, OD, TD,

White, 20-45, 15-45, 15, 57, 15B, 51A, 53, 56, 50A, 51, 20, 20A, 54

Will Motors Corp. 38 pass., GY

Rear Wheels

Clark Speed Tr., A, B

No. 1840 Straight Mandrel

Rear

Fageol, 235 2T Intere. 67 pass. Intere. 22 pass., (3-T), (6 cyl.) st. car. Intere. 29 pass., (4 cyl.) speed car 29 pass.. (4 cyl.) Intere. 22 pass., (4-T) 454-490, 4-6 cyl. 19 pass., (6-T) 600-645, 56 pass.

Federal, (5T) X-2, X-4, X-5, X-6-7, W-2, 3, 4, BB-6, U-5, IK6, U-3, IBG, UL3, IKG, UL4, U4, U-2, BB7, 2BG, S-29, T2B, S26, T6B, S25, 3B6, 2KG, 3C6, UL7

Garford, 51D

G. M. C., (2-T) T50, T40, K52, K41, (5T) K102, K101, (3½T) K72

Lange Motor Truck, K, H, F, E

Mack, AL Bus, AC-5-6-7½T., 3½T. 4 SPUD, AC, 2-2½T., 4 SPUD drive, 5-6-7½T. AC 1½, 2, 2½ T. AB Dual, 1½, 2, 2½ T. AB Bus, 7½T. AC Dual

Moreland, AX, AXX, EXX, SX, (67 pass.) AC, BX, EC, TX, RX

Noble Motor Truck, 164, 166, 134, 146B, 156

Olympic, A (2½T)

Oshkosh Truck, F, H, R, M

Pierce Arrow Truck, RF6-7½T, RE5-6T, R10(5T), XB(2-3T) X-5, XA, WD (4-5T) WC (3½-4T) Z Bus

White, 45A, 52, 55, 45, 58, 40, 40A

Will Motors Corp., 39 pass., GY, FW, C, S, W., EW, 2W6, EW, ZW, ZW6

No. 1820 Taper Mandrel

Rear Wheels

Chevrolet, Light Del.
G. M. C., 1 Ton

No. 1822 Taper Mandrel

Rear Wheels

Federal, EK
Graham Bros., SD, SE, DE

No. 1823 Taper Mandrel

Rear Wheels

Chevrolet, Utility Truck
Federal, FW-2, FK, F6, FW
Graham Bros., BD, ID, DD
White, 57, 15, 15B

No. 1825 Taper Mandrel

Rear Wheels

Ford, TA
Graham Bros., BE, IE
Reo, DA, D6, V, V6, FA, FB, FE, FF

No. 1826 Taper Mandrel

Rear Wheels

Federal, S-23, A6
Graham Bros., VD, JD, ED, MD, LD, OD, TD, YE, OE, TE, JE

No. 1828 Taper Mandrel

Rear Wheels

Federal, S-1, 2, S-27, T21, T20, S30, T2W, T6W

No. 1830 Taper Mandrel

Rear Wheels

International, SF46
White, 51A, 53, 56, 50A, 51 20, 20A

Recommended Mandrel and Adapter Equipment.—With the No. 1 Lathe a $50.00 equipment. With the No. 2 Lathe about a $75.00 equipment. With the No. 3 Lathe about a $125.00 equipment.

Three Mandrels Service 45 Models of Automobiles, Light Buses and Trucks

The following three self-centering mandrels and eight universal bearing adapters will service 17 makes and 45 models of automobiles, light buses and trucks.

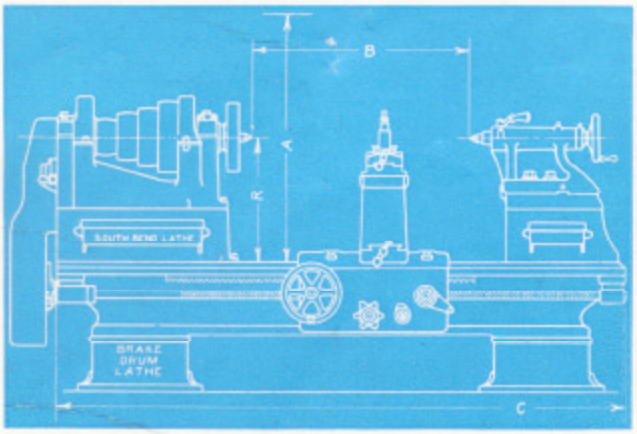
1-No. 1822 Taper Mandrel	$ 8.00
1-No. 1823 Taper Mandrel	8.00
1-No. 1800 Straight Mandrel	15.00
8-No. 1801 Universal Bearing Adapters 1⅝" dia., 1⅞" dia., 2" dia., 2¼" dia., 2⅜" dia., 2½" dia., 2⅝" dia., 2¾" dia.,	20.00
Total	$51.00

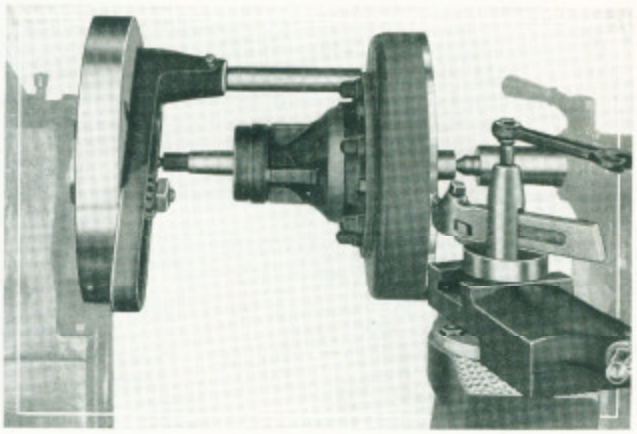
Two Straight Mandrels With Four Adapters and One Taper Mandrel Will Service 42 Truck and Bus Models

The following three self-centering mandrels and four universal bearing adapters will service 42 models of trucks.

Mandrels		Adapters	
1810	$20.00	1811, Sizes 2½", 3"	$ 6.00
1840	30.00	1841, 2 Size 4¼"	8.00
1826	11.00		$14.00
	$61.00		

New Model South Bend Brake Drum Lathes





Dimensions Which Determine Size of Lathe

A—Represents the swing over bed of any South Bend Brake Drum Lathe. It also represents the outer diameter of tire on a wheel which it is possible to rotate over the bed.

R—Represents the radius or one-half of the swing.

C—Represents the length of the bed.

B—Represents the distance between centers when the end of the tailstock is flush with the end of the bed.

European tool manufacturers determine the size of a lathe by its radius or center distance: for example, a 10″ center lathe is a lathe having a radius of 10″. What the European terms a 10″ center lathe, United States manufacturers term a 20″ swing lathe.

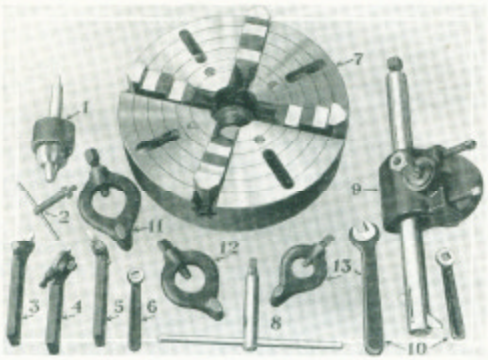
Truing Brake Drums for Wire Wheels

The above halftone shows the truing of the brake drum of a wire wheel. You will note that the drum is attached to the hub and is mounted on the self-centering taper mandrel. The hub is from an annular ball bearing wire wheel type. In this case the face plate and annular adapter shown on page 14 were not necessary as the hub was tapered and the standard taper mandrel could be used.

Brake Drums of Wire Wheels are More Easily Trued, than those on wood spoke or disc wheels, as on wire wheels the drum is attached to the hub. Remove the assembled hub and brake drum from the wire wheel, then mount the hub and attached brake drum on the self-centering mandrel between centers on the lathe, and proceed with the truing of the drum as for other wheels. The instruction book covers this subject.

The Hub Design Sometimes Differs in wheels with annular ball bearings when wire spokes are used instead of wood spokes or discs. In some instances the hub of the wire wheel can be mounted on the taper mandrel, which centers it accurately without using the face plate and annular adapter as shown in illustration above.

Brake Drums Should Never be Detached from wood spoke or disc wheels for truing, but may be with wire wheels. Wire wheel construction is such that the brake drum is attached to the hub; therefore, any machining done on the drum will be concentric with the hub when the assembly is mounted between centers on the lathe. The stud is adjusted to drive from one of the bolts on the flange, or you can attach the lathe dog to the mandrel. The former method is preferred.



Chuck ank Tool Assortment

These tools are not included in the price of the brake drum lathe but are extra as shown in tabulation below.

1, 2. 3-jaw drill chuck, ¾ inch capacity, arbor and wrench.
3. Left-hand patent turning tool.
4. Threading tool.
5. Right-hand patent turning tool.
6. Wrench for turning tools.
7, 8. 4-jaw Independent lathe chuck and wrench.
9, 10. Special boring bar complete, and wrenches.
11, 12, 13. Lathe dogs 1½″ 2″ and 2½″.

Chuck and Tool Assortment

The chuck and tool assortment illustrated at the left has been selected as the most practical group of tools for use with each size of brake drum lathe for doing the general run of work in the average service station. This includes not only tools for the truing of brake drums but also for the making of mandrels and adapters, for thread cutting and the turning of pistons, truing commutators and doing general work of various kinds. The entire assortment or any one of the items may be ordered.

Chuck and Tool Assortments For All Sizes of South Bend Brake Drum Lathes.

Size of Lathe	For No. 1 and No. 301 Lathes				For No. 2 and No. 302 Lathes				For No. 3 and No. 303 Lathes			
Name of Tool	Cat. No.	Size	Code Word	Price	Cat. No.	Size	Code Word	Price	Cat. No.	Size	Code Word	Price
4-Jaw Independent Lathe Chuck Fitted to Lathe	2112	12″	Baled	$50.00	2114	14″	Balks	$55.00	2116	16″	Bandu	$69.00
3-Jaw Drill Chuck ¾″, Fitted to Lathe	1202	¾″	Faloa	16.00	1202	¾″	Faloa	16.00	1202	¾″	Faloa	17.50
Special Boring Bar complete either size	463	15/16″	Hazel	15.00	464	1 5/16″	Helon	19.00	465	1 3/16″	Hobis	24.00
	463-A	1 5/16″	Hoist	18.00	464-A	1 3/16″	Hvrad	23.00	465-A	1 15/16″	Hindu	29.00
Right-hand patent turning tool	852-R	½″x1½″	Anmyb	3.00	853-R	⅝″x1⅝″	Amnza	3.60	854-R	¾″x1½″	Alvaz	4.85
Left-hand patent turning tool	852-L	½″x1½″	Ashtg	3.00	853-L	⅝″x1⅝″	Ariuf	3.60	854-L	¾″x1½″	Aqive	4.85
Patent threading tool	867	½″x1½″	Adtir	4.50	868	⅝″x1⅝″	Acujq	5.75	869	¾″x1½″	Abvkp	7.50
Set (3) Lathe dogs 1½″, 2″, and 2½″	15-BD	Set (3)	Xylar	3.85	16-BD	Set (3)	Xdont	3.85	17-BD	Set (3)	Xbeds	3.85

Machining Jobs on the South Bend Brake Drum Lathe

On Wheels, Brakes, Brake Drums, Flanges and Hub Assemblies

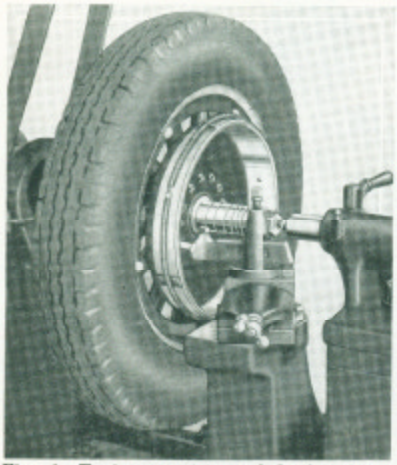


Fig. 1—Truing an internal brake drum mounted on a straight mandrel with universal bearing adapters mounted between centers on the lathe. Drum size 17".

Fig. 2—Truing an external band brake drum mounted on a straight mandrel with universal bearing adapters between centers.

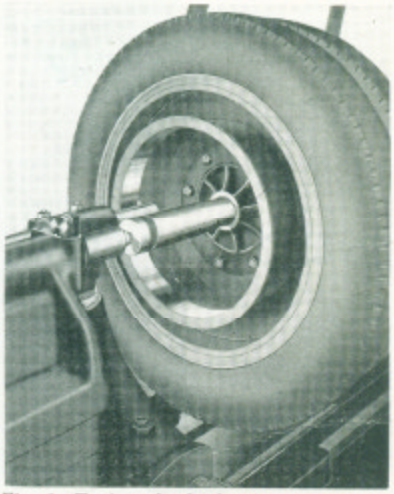


Fig. 3—Truing the brake drum of a rear dual wheel of a truck mounted on a taper mandrel between centers on the lathe.

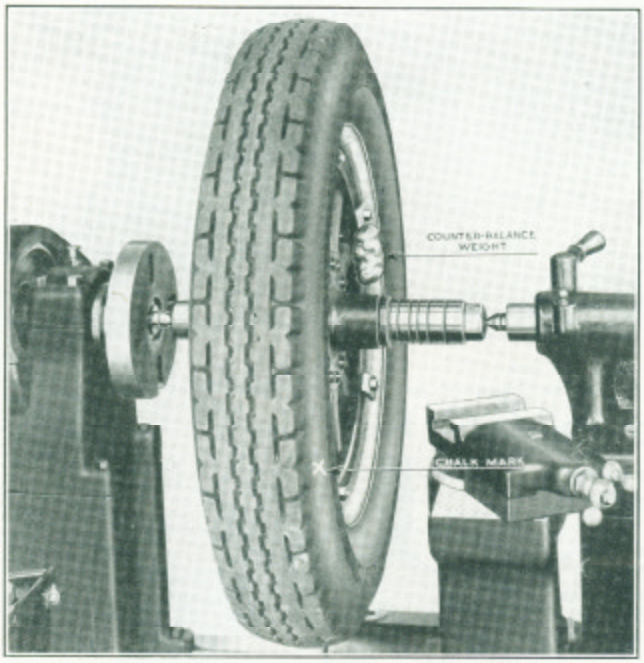


Fig. 4—Balancing an Automobile Wheel in the Brake Drum Lathe.

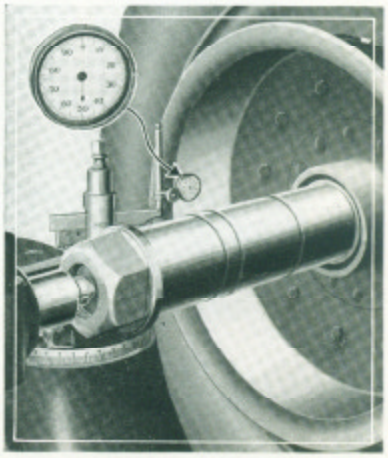


Fig. 5—Testing the brake drum with a dial test indicator. The wheel is mounted on a self-centering mandrel and mounted between centers on the lathe. The indicator will show an error of a thousandth of an inch.

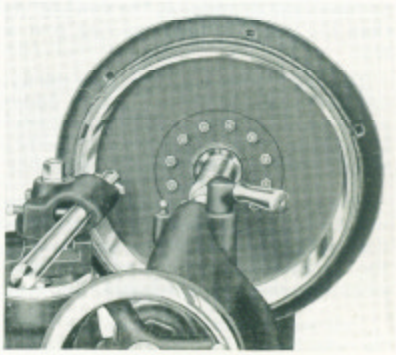


Fig. 6—A Lincoln brake drum being trued by turning in the lathe. Although the steel is a little harder than the average, the drum is turned easily on the South Bend Brake Drum Lathe. For instructions on how to handle hard drums see Auto Mechanics Service Book No. 66.

Balancing the 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. The test to learn whether a wheel is in balance or not requires but two minutes. If it is out of balance, the balancing operation can be done in from three to five minutes.

The modern service station that is equipped to balance wheels can render a great service to automobile owners by giving them precise, accurate running wheels so necessary with high powered cars and good roads.

A wheel out of balance is dangerous, especially at high speed, and is liable to cause considerable trouble, whereas the vehicle with balanced wheels runs smoothly and makes riding easy, comfortable and safe.

There is no extra equipment required with the Lathe for balancing auto wheels as the self-centering mandrel and adapters are used for truing brake drums and are also used for balancing brake drums. Auto Mechanics Service Book No. 66 contains detailed instructions on the balancing of wheels with tire attached. See page 24, where this book is described.

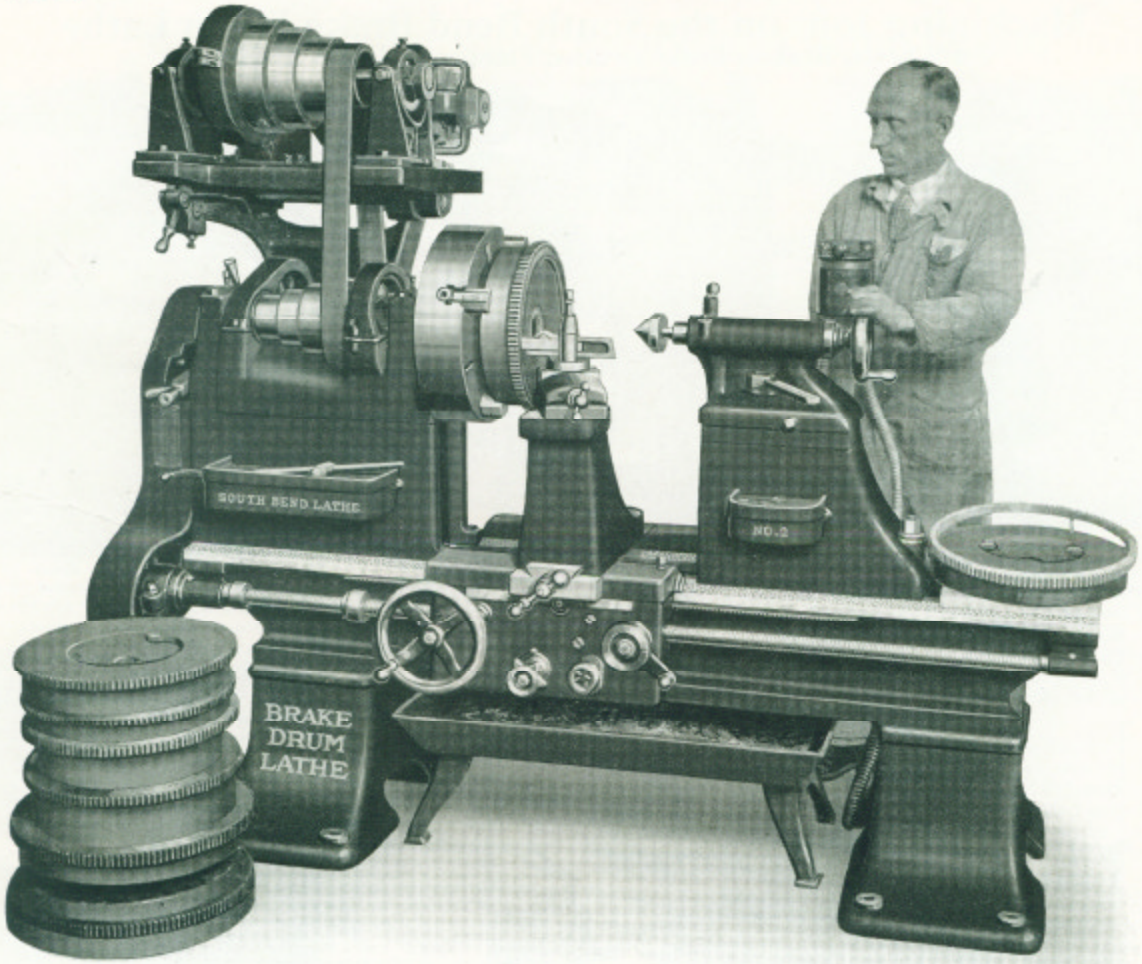


Fig. 7—One operator can machine and fit from 20 to 25 flywheels for ring gears in about eight hours.

Machining Flywheels for Ring Gears

The machining of flywheels for ring gears is practical on the No. 2, No. 302, No. 3 and No. 303 South Bend New Model Brake Drum Lathes.

The above illustration shows a No. 2 lathe in operation machining a flywheel, removing the teeth, then turning the diameter to the correct size for fitting the ring gear. After removing the teeth the shoulder on the flywheel should be larger in diameter than the inside of the steel ring gear so there will be an ample seat.

This work is done by chucking the flywheel and using a parting or cutting-off tool to cut a groove underneath the teeth as shown in the close-up below; the cut is made to a depth reaching just back of the teeth where the cut nearly reaches the surface of the wheel, usually about $\frac{3}{8}$ to $\frac{1}{2}$ inch deep.

By tapping with a hammer the entire ring with teeth attached will drop from the wheel. Then the wheel can be machined to the proper diameter to receive the steel ring gear. This permits the operator to machine and fit from 20 to 25 flywheels for ring gears in a day of eight hours.

Full instructions for mounting this job in the chuck so that the wheel will run true and for doing the work will be found in the Auto Mechanics Service book No. 66, described on page 24.

This job shows the general utility of the South Bend Brake Drum Lathe for work in the service station, the electrical shop and the machine shop where large work is to be handled. It has the precision and accuracy so necessary in automotive and electrical work.

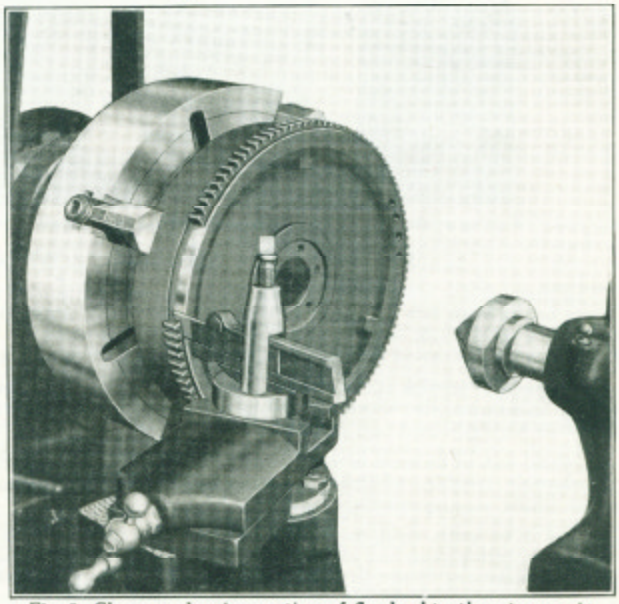


Fig. 8—Close-up showing section of flywheel teeth cut away to show the slot cut under the teeth by the parting tool.

Utility Jobs on the South Bend Brake Drum Lathe

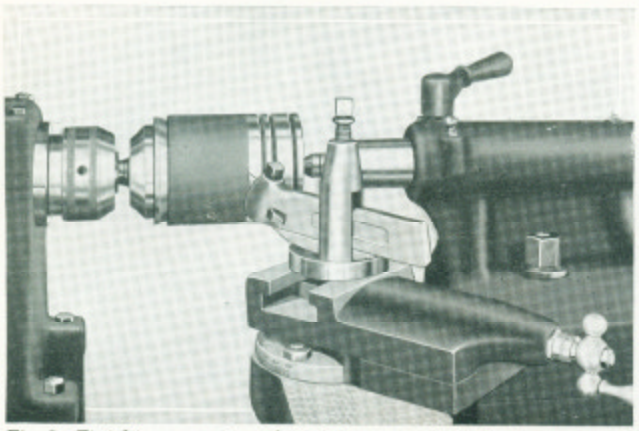


Fig. 9—Finishing a semi-machined piston on the Brake Drum Lathe

Finishing Pistons on the Brake Drum Lathe

Any one of the three sizes of South Bend Brake Drum Lathes can be used for finishing semi-machined pistons. A piston adapter fits into the spindle of the lathe. This adapter is fitted with four different sizes of cones which will handle pistons from 2⅝ inches to 5¼ inches outside diameter. The skirt of the semi-finished piston is placed on the cone of the adapter and the tail center of the lathe supports the head of the piston. The finest and most accurate work can be done in a very short time.

Metal Liners for Brake Drums

Of Automobiles, Buses and Trucks

Fig. 10—Metal liner partly fitted in a brake drum.

The illustration shows a brake drum with metal liner partly extended. When properly fitted this liner will be flush with the face of the drum. The liner is finished on both the inside and outside diameters.

These metal liners are used as a replacement part for worn brake drums and in some instances they are supplied with new brake drums. In case of a worn brake drum they can be fitted by mounting the wheel with brake drum attached on a self-centering mandrel and placed between centers on a South Bend Brake Drum Lathe. Then the brake drum is machined to receive the metal liner. The metal liner is attached to the drum by screws or pins. After the liner is attached to the brake drum it should be trued up on the brake contact surface and it will then be concentric with the axis of the hub.

We do not manufacture this metal liner, but simply state here that those who wish to use it can fit it satisfactorily on the New Model South Bend Brake Drum Lathe.

Facing Hub Flanges on the Brake Drum Lathe

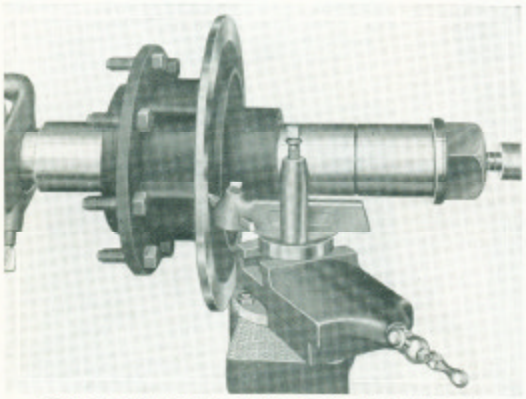


Fig. 11—Truing a hub flange of a Budd Wheel.

Hub flanges, of front or rear wheels of cars, buses and heavy duty trucks can be trued up on any size Brake Drum Lathe.

The hub flange is mounted on a self-centering straight or taper mandrel just the same as the wheel is mounted for the truing of the brake drum. Use the same mandrel and adapter that you do for wheel work.

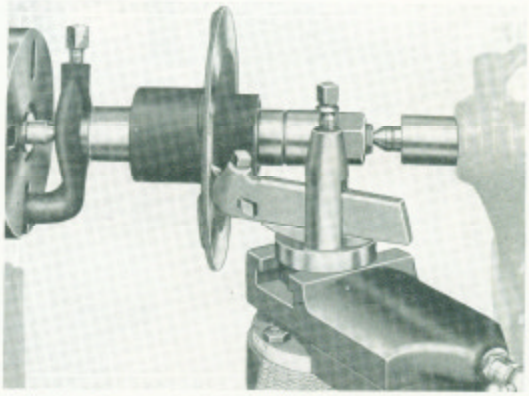


Fig. 12—Truing a hub flange on self-centering mandrel

Truing Armature Commutators on the Brake Drum Lathe

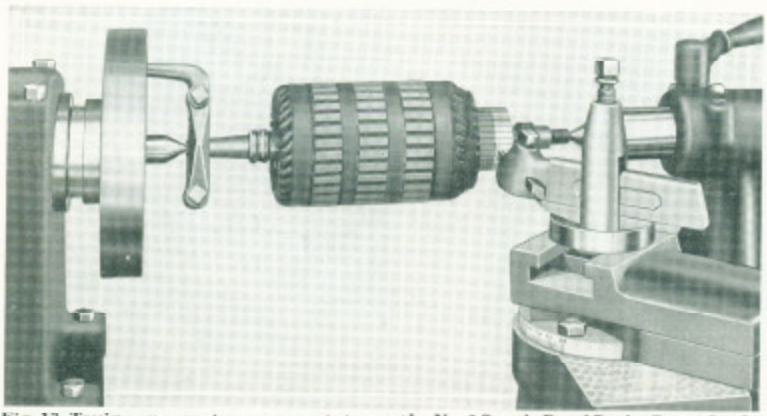


Fig. 13—Truing an armature commutator on the No. 2 South Bend Brake Drum Lathe

The illustration (Fig. 13) at the left shows an armature mounted between centers in the lathe for truing a commutator. Any size South Bend Brake Drum Lathe may be used for this work. The size of the armature that can be serviced depends on the distance between centers of the lathe. The automatic feed drives the carriage and the cutting tool leaves a fine smooth surface.

An armature weighing 500 pounds can be handled very easily on the No. 2 or No. 3 South Bend Brake Drum Lathe and the work done with precision and accuracy.

This is considered among the most common jobs in the service stations. Turning is the factory method of machining starter, generator or magneto commutators, therefore is the best way to service them. It only takes a few minutes to true up any commutator. Full instructions in the Auto Mechanics Service Book No. 66, described on page 24 of this Bulletin.

Machining Jobs on the South Bend Brake Drum Lathe

General Purpose Work in the Service Shop

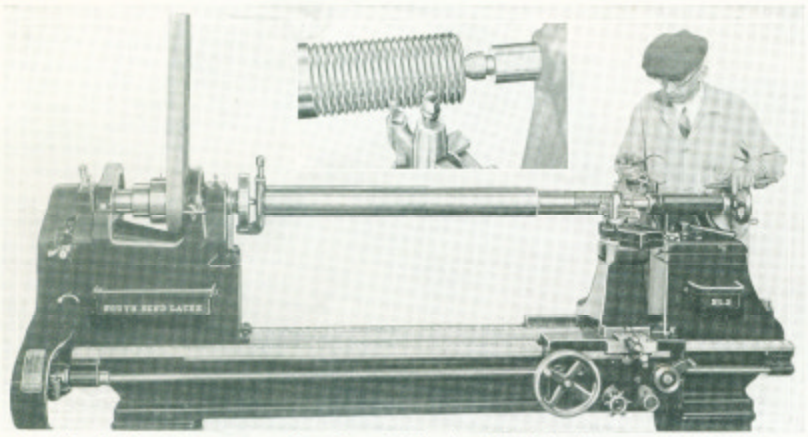


Fig. 14—Cutting a screw thread on a 3½ inch shaft, 4 feet long on a No. 2-BE South Bend Brake Drum Lathe. The insert shows a close-up of the threads.

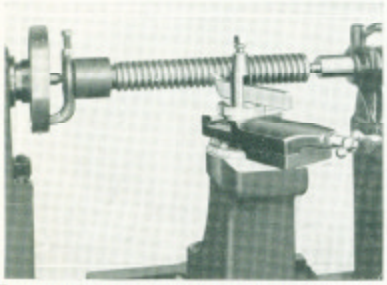


Fig. 16—Cutting a coarse thread on a jack screw on the No. 2 Brake Drum Lathe.

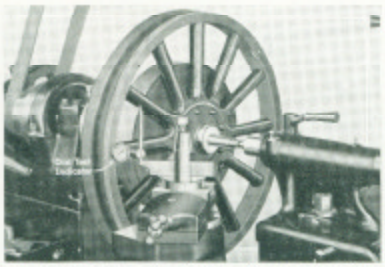


Fig. 17—Testing the felloe of a wheel. The wheel is mounted on a taper mandrel between centers on the lathe. The dial test indicator is fastened in the tool post.

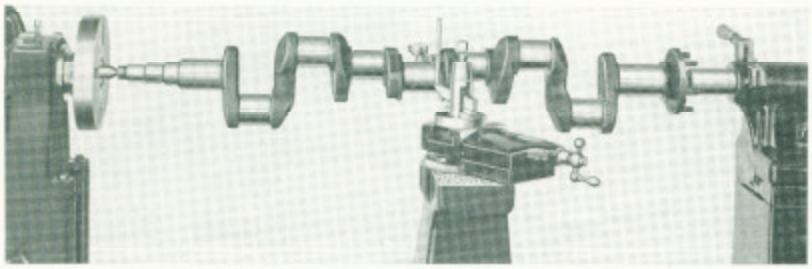


Fig. 19—Testing crankshaft which is mounted between centers on the Brake Drum Lathe. The test dial button rests on the center bearing of the crankshaft and shows exact amount of error.

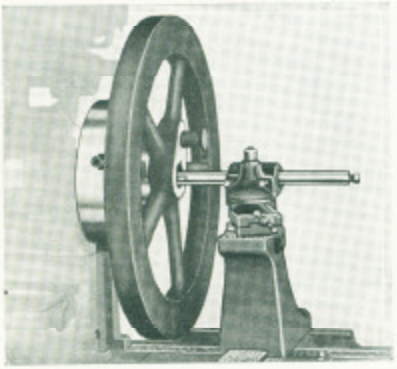


Fig. 21—Boring and bushing a fly wheel for a large gasoline engine crankshaft.

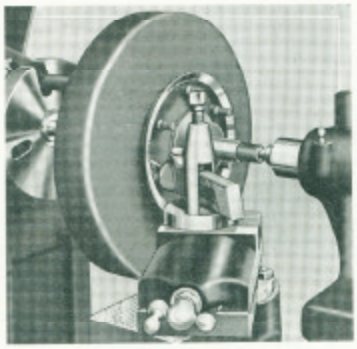


Fig. 22—Facing a flange on a Buffalo wheel which is mounted on a taper mandrel between centers of the lathe.

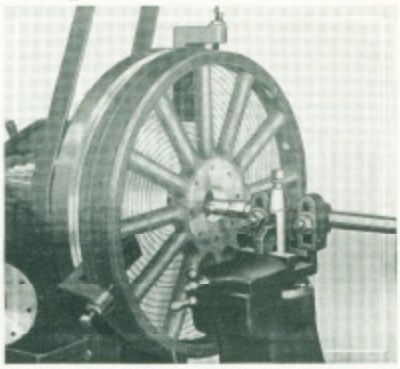


Fig. 15—Boring a wood wheel for fitting the hub. The wheel is mounted on an extra large face plate. The hub can be fitted to the hole without removing the wheel from lathe.

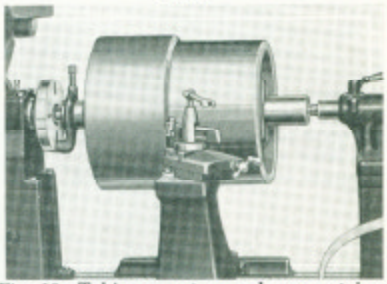


Fig. 18—Taking a cut on a large cast iron pulley held on mandrel between centers on the No. 2 Brake Drum Lathe.

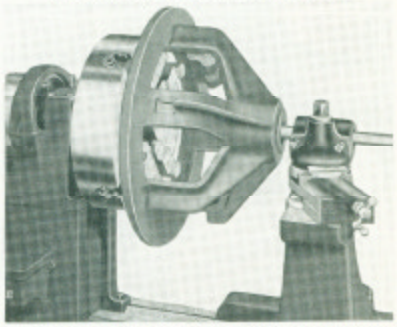


Fig. 20—Boring a bearing of a heavy cast iron motor housing held in a 4-jaw independent lathe chuck mounted on spindle nose of lathe.

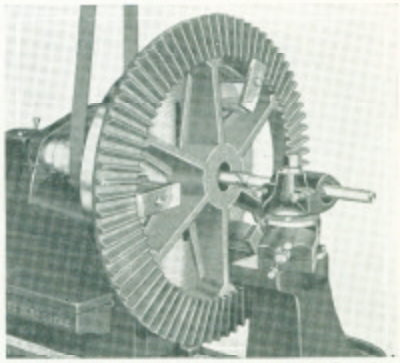
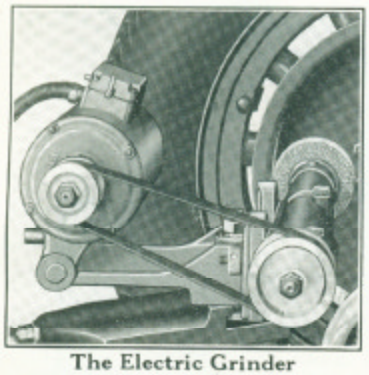


Fig. 23—Boring out the center hole of a large bevel gear. General purpose work of all kinds can be done on the South Bend Brake Drum Lathe. See page 24 for list of other jobs.

Grinding Attachments for South Bend Brake Drum Lathes



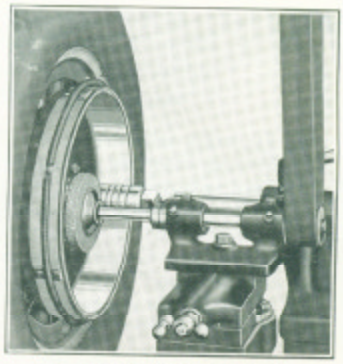
The Electric Grinder

The illustration above shows the Electric Grinder in action, truing a brake drum. It may be readily attached to lathe in two minutes.

Brake drums may be trued by grinding on the South Bend Brake Drum Lathes. We recommend, however, truing the brake drum by turning or machining because it is four times quicker and does a better job. About 95% of the successful service stations in the country are truing drums by turning on the lathe. However, if the customer insists on grinding, of course, the thing to do is to grind.

Some mechanics are not aware of the fact that Lincoln brake drums can be trued by turning. We have trued a great many Lincoln Brake Drums by turning on the No. 2 South Bend Brake Drum Lathe. See Fig. 6, page 19.

The Belt Drive Grinder is usually used on the Countershaft Driven Brake Drum Lathe. The Electric Grinder is used on the Motor Driven Brake Drum Lathe. The prices and specifications of both grinders are listed below. The prices of the Belt Drive Grinder include overhead drum countershaft.



The Belt Drive Grinder

The illustration shows the application of the Belt Drive Grinder truing brake drums. This grinder has a large spindle and is capable of doing excellent work because it is stiff and powerful. It is operated by an overhead drum countershaft from a lineshaft. Instructions for erecting both the Electric and Belt Drive Grinders, in Auto Mechanics Service Booklet No. 66.

Prices of Electric and Belt Drive Grinder for Brake Drum Lathes

Size of Brake Drum Lathe	Size of Grinding Wheel furnished	Belt Drive Grinder and Countershaft			Electric Grinder			
		Cat. No.	Code Word	Price Complete	Cat. No.	Motor Size	Code Word	Price Complete
No. 1 and 301 Lathes	6"x 3/4"	196	Covep	$ 65.00	191	1/2 H. P.	Catgy	$238.00
No. 2 and 302 Lathes	6"x 3/4"	197	Cronx	75.00	192	1/2 H. P.	Czans	238.00
No. 3 and 303 Lathes	6"x 3/4"	198	Chyle	100.00	193	1 H. P.	Cedau	275.00

Quick Change Gear Box for Brake Drum Lathes

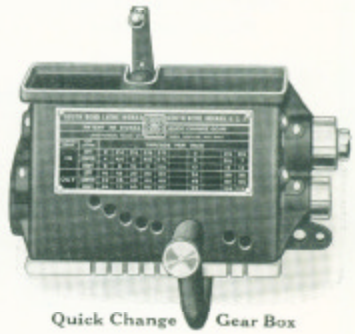
Must be Fitted to Lathe at Factory

The quick change gear box as shown on lathe No. 303, page 9, is not standard equipment, but can be put on at the factory. Add the price below to the price of the lathe desired. Annex the letters Q-C to catalog number of lathe ordered with quick change gear box.

Quick change gear boxes provide 48 changes for cutting right or left hand screw threads from 2 to 112 per inch without removing a gear. It also provides for various adjustments for the automatic feeds.

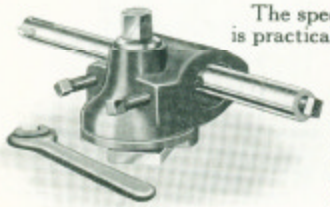
Prices of Quick Change Gear Box

Size of Brake Drum Lathes	Extra for Quick Change Gear Box
No. 1 and No. 301 Brake Drum Lathes..	$ 50.00
No. 2 and No. 302 Brake Drum Lathes..	60.00
No. 3 and No. 303 Brake Drum Lathes..	100.00



Quick Change Gear Box

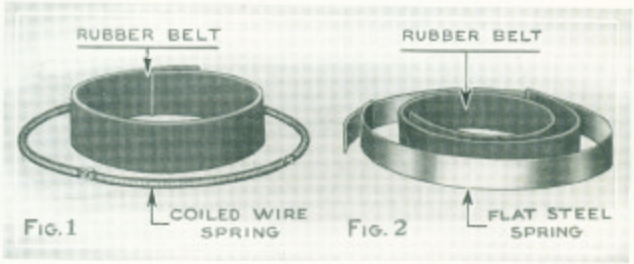
Special Boring and Turning Tool



The special boring and turning tool is practical for truing brake drums of automobiles, buses and trucks. It is designed for turning large diameters and for heavy duty boring. Price includes holder, boring bar, wrench and one high speed cutter bit. We list two boring bars for each size lathe; either one or both may be ordered.

Prices of Special Boring and Turning Tool

Size of Brake Drum Lathe	Catalog No. Boring Tool	Diameter of Bar	Size of Cutter Bit	Tool Complete		Extra Cutter Bits (Ground) each
				Code Word	Price	
No. 1 and No. 301 Lathes	463	15/16"	3/4"	Hazel	$15.00	$ .25
	463-A	1 5/16"	5/8"	Hoist	18.00	.65
No. 2 and No. 302 Lathes	464	1 5/16"	3/4"	Helon	19.00	.65
	464-A	1 1/2"	7/8"	Hvrad	23.00	1.00
No. 3 and No. 303 Lathes	465	1 1/2"	7/8"	Hobis	24.00	1.00
	465-A	1 15/16"	1"	Hindu	29.00	1.45



Rubber Belts and Springs

Figs. 1 and 2 in the illustration above show two rubber belts, a spiral spring, and a flat spring that are used in the operation truing a brake drum to muffle any tendency to vibration that some of the thinner drums are liable to exhibit. They also assist the tool in producing a smooth surface on the work. The belts and springs shown in Fig. 1 are for band brake drums; those in Fig. 2 are for internal expansion brake drums. See Figs. 1 and 2 on page 19.

Accessories, Tools, and Attachments for South Bend Brake Drum Lathe

Other attachments will be found listed in the general Catalog No. 89-A

NAME OF TOOL, ACCESSORY OR ATTACHMENT	For No. 1 and No. 301 Brake Drum Lathe			For No. 2 and No. 302 Brake Drum Lathe			For No. 3 and No. 303 Brake Drum Lathe		
	Catalog Number	Code Word	Price Each	Catalog Number	Code Word	Price Each	Catalog Number	Code Word	Price Each
Automatic Stop (Must be fitted at Factory)	466	Nutae	$25.00	467	Nulid	$30.00	468	Nozun	$45.00
Center Rest	180	Neats	20.00	181	Noath	25.00	182	Noise	35.00
Follower Rest	185	Neray	10.00	186	Nysta	12.50	187	Niche	17.50
3-Jaw Universal Chuck fitted to Lathe	2407	(Size 7 1/2")	44.00	2409	(Size 9")	52.00	2410	(Size 10 1/2")	63.00

A General Purpose Lathe for the Service Station

In addition to brake drum and wheel work the New Model South Bend Brake Drum Lathe has the power, accuracy and speed for doing all kinds of machine work on jobs that come into the modern service station shop. There are hundreds of other machine jobs which can be handled on this lathe in addition to those listed below.

Truing 4-wheel brakes.
Truing internal expanding brakes.
Truing band brakes.
Balancing wheels with tire attached.
Turning outside diameter of felloe of the wheel.
Facing the flanges of front and rear wheels.
Boring wood wheels for fitting new hub.
Making axle shafts.
Making drive shafts.
Grinding brake drums in the lathe.
Truing auto brake drums.
Truing bus brake drums.
Truing truck brake drums.
Testing a brake drum for trueness.
Making mandrels and adapters.
Turning a flywheel for new steel ring gear.
Chucking work of all kinds in the lathe.
Turning all kinds of metals.
Will work steel, cast iron, brass, bronze, aluminum etc.

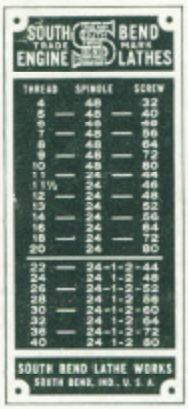
Index Plate for Screw Threads

On All South Bend Brake Drum Lathes

A metal Index Plate is attached to each New Model South Bend Brake Drum Lathe which enables the operator to select the proper gears for cutting different pitches of Screw Threads. All standard screw threads from 2 to 40 per inch, right or left, including 11½ pipe thread, can be cut.

Threads other than the ones enumerated can be cut by compounding the gears furnished with the lathe. A swinging gear guard on the lathe permits easy access to these gears.

The Change Gears included in the equipment of each Lathe also provide for a range of feeds for the Automatic Cross Feed and the Automatic Longitudinal Feed.



Index Plate

Auto Mechanics Service Book No. 66

This is an 80 Page Book, 6"x9", containing over 125 illustrations. It is intended to assist the auto mechanic in the latest shop practice on the truing of brake drums and the servicing of wheels, and 30 other service jobs. Twenty-four pages of this book are devoted exclusively to the care and operation of the Brake Drum Lathe, illustrating and describing how to true brake drums, test wheels, and make mandrels and adapters.

It contains instructions on how to set up, install, and operate the Brake Drum Lathe, the correct speeds and feeds for the work, the setting and grinding of the tools, how to make axles, drive shafts, finish pistons, turn commutators, etc. One of these books is included with the equipment of each Brake Drum Lathe and will be found very valuable as a reference book for the operator.

Price, Postpaid $0.25
Coins or stamps of any country accepted

How to Run a Lathe

A Valuable Reference Book

How to Run a Lathe is a 144 page book, containing over 300 illustrations. It is intended for machinists and apprentices in industry and school shops, guiding them in the fundamentals of caring for and operating the back geared screw cutting lathe. Over one million copies of this book are in use. Published in English, Spanish, Portuguese, and Chinese.

Lists of Subjects Covered

Grinding and Setting Tools
Cutting Standard Screw Threads Right and Left Hand
Cutting Threads, Acme and Square
Cutting Speeds and Feeds for Metal
Turning and Boring Tapers
Operating the Automatic Feeds
The Care of Lathe Centers
Reading a Micrometer Caliper
Table of Decimal Equivalents
Table of Metric Measure
Leveling a Lathe
Calculating the Size and Speed of Pulleys
300 Other Shop Kinks

Price, Postpaid $0.25
Coins or stamps of any country accepted

General Catalog No. 89-A

Mailed Free Upon Request

The New Catalog No. 89-A illustrates, describes and prices the entire line of New Model South Bend Back Geared Screw Cutting Lathes in 210 sizes and types. Also a full line of attachments, tools and chucks, and fixtures that are used in modern industry in the working of metals.

This 72 page catalog, size 6" x 9", contains more than 300 illustrations and will be found a valuable reference book to any one interested in mechanical equipment. Sent postpaid, no charge, anywhere in the world.

Partial List of Contents

Quick Change Gear Lathes, 9 in. to 24 in. Swing.
Standard Change Gear Lathes, 9 in. to 24 in. Swing.
Silent Chain Motor Driven Lathes.
Simplex Motor Driven Bench Lathes.
Self-Contained Motor Driven Bench Lathes.
Tool Room Precision Lathes.
Gap Bed Lathes.
Brake Drum Lathes.
9 in. Junior Lathes, Bench and Floor Leg types.

South Bend Lathe Works - - - South Bend, Ind.

35M 9-20-'28

Printed in U. S. A.