



BEAR[®]

**Model 1410
Drum Brake Lathe**

Operating Instructions

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WARNING

For Your Own Safety, Read Instruction
Manual Before Operating Tool
Wear Eye Protection

“SAFETY”

GROUNDING INSTRUCTIONS:

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

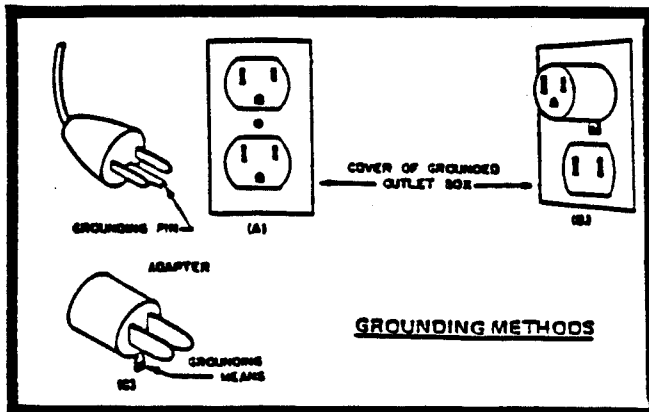
Repair or replace damaged or worn cord immediately.

Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in Sketch A. The tool has a grounding plug that looks like the plug illustrated in Sketch A. A temporary adapter, which looks like the adapter illustrated in Sketch B and C, may be used to connect this plug to a 2-pole receptacle, as shown in Sketch B, if a properly grounded outlet is not available. The temporary adapter should be used only

SAFETY (CONTINUED)

until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, etc. extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.



MACHINE MOUNTING:

The tool should be disconnected from the power supply while the motor is being mounted, connected, or reconnected. Bolt machine securely to bench or stand to prevent possibility of tipping or sliding.

SPEED ADJUSTMENT:

Brake service machines can be safely operated at any speed allowed by the original equipment pulleys. The speed of the workpiece or tool should be chosen according to the quality of work desired.

OPERATING SAFETY:

1. KEEP GUARDS IN PLACE and in working order.
2. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
3. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
4. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
5. KEEP CHILDREN AWAY. All visitors should be kept safe distance from work area.

6. MAKE WORKSHOP KID PROOF with padlocks, master switches, or by removing starter keys.

7. DON'T FORCE TOOL. It will do the job better and safer at the rate for which was designed.

8. WEAR PROPER APPAREL. No loose clothing, gloves, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

9. ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

10. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.

11. DON'T OVERREACH. Keep proper footing and balance at all times.

12. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

13. DISCONNECT TOOLS before servicing; when changing accessories such as blades, bits, cutters, etc.

14. REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.

15. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.

16. CHECK DAMAGED PARTS. A guard or other part that is damaged should be properly repaired or replaced.

17. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

18. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

UNCRATING AND INSTALLATION

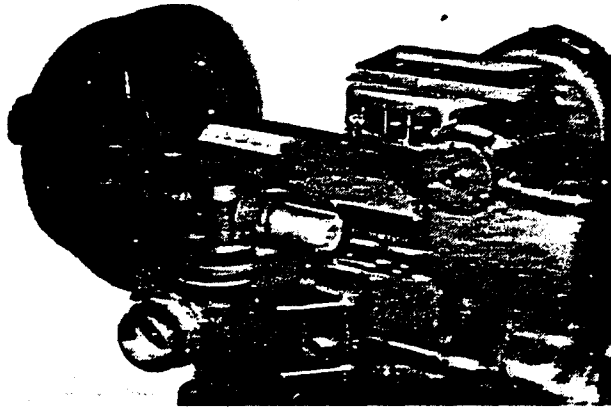


Figure 1. DRUM BRAKE LATHE

INTRODUCTION

This brake drum lathe has been adjusted and tested at the factory. As a precaution, be sure to check the oil level before operating.

The new operator should not attempt to do any work with this brake lathe until he has thoroughly read and studied this entire manual and has received thorough instructions in its care and use. Strict adherence to the recommendations included will result directly in faster setups, higher quality work and longer tool and machine life.

ACCEPTANCE FROM THE CARRIER

Immediately upon arrival, inspect the machine and if any damage is evident, notify the carrier and request that inspection be made. Carrier is legally responsible for visible as well as "concealed" damage if due to mishandling or negligence on the part of the carrier or his agents. Being the insurer of the goods, the carrier is also responsible for all losses occurring while the merchandise is in his or his agent's possession. The factory will, however, render all reasonable assistance in the preparation, filing and execution of the

claims. The factory exercises due care in the preparation and packing of the merchandise for transportation but cannot assume any responsibility for its handling in transit or its condition on arrival.

UNPACKING

If preliminary inspection indicates that the machine has arrived in good condition, the crate may then be removed, **BUT DO NOT REMOVE THE SKIDS AT THIS TIME.** Be particularly careful not to pry against any part of the machine with a bar. Remove or unwrap all packing paper.

After unpacking, take time to recheck to see if there is any damage which may not have shown up during the initial inspection, and if there is, do not fail to follow through with the proper notifications as outlined above.

CHECK PACKING LIST

Standard equipment together with any special attachments which may have been ordered with the machine have been carefully packed in the wooden box. This box should be opened and each part carefully checked against the items marked on the enclosed packing list. If parts do not check item-for-item with the list, immediately notify the factory advising in detail of all shortages. Items marked on the packing list as being backordered need not be listed as a list of these parts is already on hand and they will be shipped without unnecessary delay. **CHECK THIS NOW WHILE ALL PARTS ARE TOGETHER.**

SETTING UP THE LATHE

Remove the lathe from the skid. When mounting, allow the arbor end of the lathe to come even with the end of the bench so that tires mounted on drum will clear the bench.

VOLTAGE REQUIREMENT

Before connecting the motor to the line, be sure the line voltage is the same as the voltage stamped on the tag attached to the lead cable from the motor. If the voltages do not correspond, the motor may be seriously damaged if connected.

SPECIFICATIONS

WORK AREA REQUIRED:

Height..... 15½" (39.3 cm)
 Width 32" (81.2 cm)
 Depth 28" (71.1 cm)

ELECTRICAL

Drive motor..... ½ hp
 Requires 115 V, 60 HZ, 1-PH, 20A Service

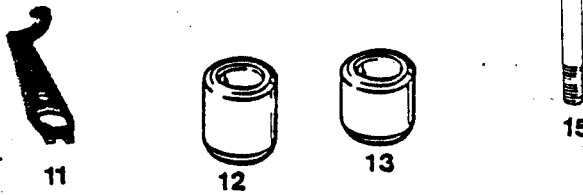
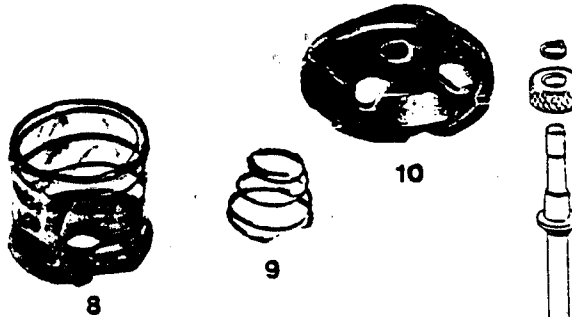
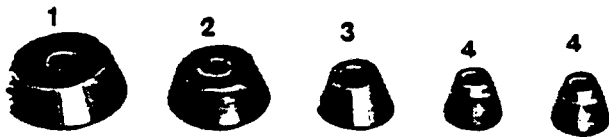
SHIPPING WEIGHT

220 lbs. (99.7 Kg)

CUTTING CAPACITY

Maximum drum diameter
 Standard Lathe/Attachments..... 12" (30.7 cm)
 With Truck Accessories..... 24" (61.4 cm)
 Minimum Drum Diameter 6" (15.2 cm)
 Maximum Drum Diameter..... 8" (20.3 cm)
 Minimum Cross Slide Feed0025" (.0064 cm)
 Maximum Cross Slide Feed020" (.0512 cm)
 Spindle Speeds 45, 90, 180 rpm

ATTACHMENT PARTS



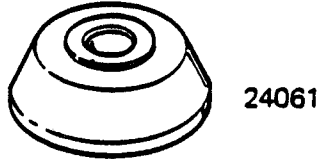
73228 Drum Attachment Group (included with Lathe)

ITEM NO.	PART NO.	DESCRIPTION
1	20722	TAPER CONE
2	20721	TAPER CONE
3	20720	TAPER CONE
4	20707	TAPER CONE (2)
5	20703	SPACER (2)
6	85939	BAND, CHATTER
7	72277	KIT, TOOL BIT
8	20932	SHIELD
9	20726	SPRING
10	20723	PLATE, FACE (2)
11	20717	WRENCH
12	20736	SPACER (2)
13	20737	SPACER (2)
14	70008	NUT, ARBOR
15	20731	ARBOR

(PARTS NOT SHOWN TO SCALE)

OPTIONAL EQUIPMENT

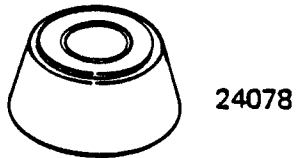
70455 Light Truck Accessory Group
Adapters for drums with hubs.



24061



24060



24078

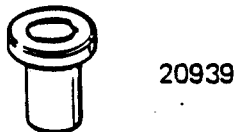


70008



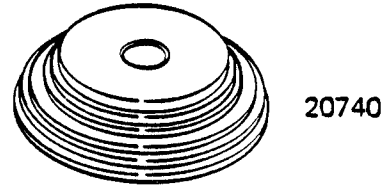
64466

20939 Volkswagen Adaptor
Fits splined rear drum hubs.

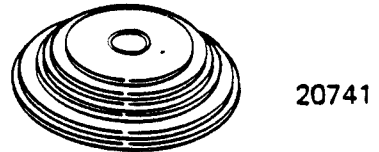


20939

21239 Light Truck Floating Drum Accessory Group
Adapters for hubless drums.



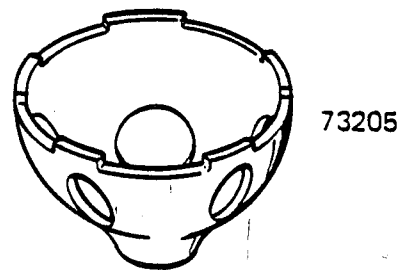
20740



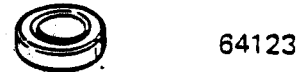
20741



20725

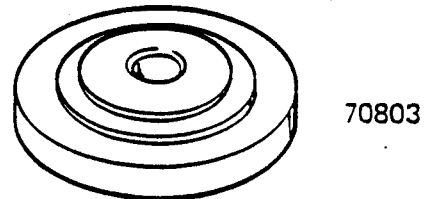


73205



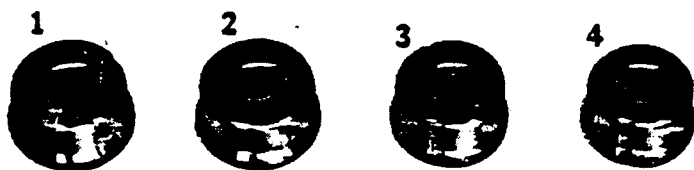
64123

70803 '73 Ford, Jeep Wagoneer Adapter

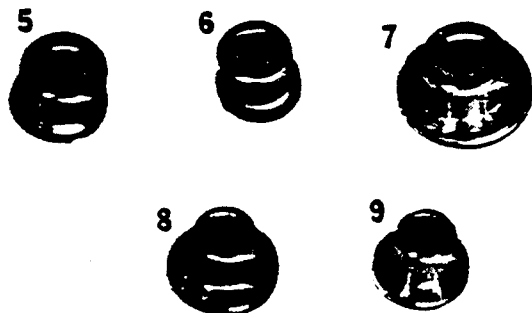


70803

OPTIONAL EQUIPMENT



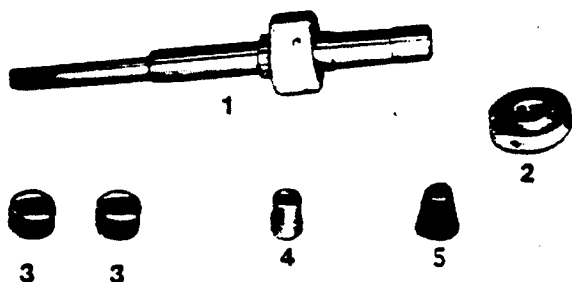
73229 Optional Radii Cone Set



ITEM NO.	PART NO.	DESCRIPTION
1	20713	RADII CONE
2	20712	RADII CONE
3	20711	RADII CONE
4	20710	RADII CONE
5	20714	RADII CONE
6	20709	RADII CONE
7	20715	RADII CONE
8	20716	RADII CONE
9	20708	RADII CONE

70858 OPTIONAL ACCESSORY GROUP

For mounting splined or tapered hub drums.



ITEM NO.	PART NO.	DESCRIPTION
1	20701	Arbor
2	20702	Arbor Nut
3	20704	Spacers
4	20705	Reducers
5	20706	Cone

INSPECTION AND REBORE LIMITS

Whenever a brake drum is removed, for any purpose, always inspect it for scoring, heat checks and raised hot spots. If it requires reboring, measure its diameter for uneven or excessive wear, "out-of-roundness" or bellmouth to decide if the drum will fall within rebore limits after machining. If not replace the drum.

Since 1952, passenger car and light truck original equipment drums up to and including 14" diameter are dimensioned to the even inch or half inch.

The rebore limit on passenger car and light truck drums is .060" over the original drum diameter.

The difference in the diameter of drums on the opposite ends of the same axle must not exceed .010", or when turning drums, it is advisable to turn them in pairs to the same oversize (within .010") to assure equal braking effort on all wheels.

CAUTION: Never rebore a drum to the maximum wear or discard diameter.

When reboring a drum, remove only enough metal to obtain a smooth, true braking surface. If the drum does not clean up when turned to the maximum rebore diameter, it must be replaced. The removal of more metal will affect the ability of the drum to dissipate heat and may cause drum distortion.

Starting in 1971, all brake drums have a maximum diameter dimension cast into them. This dimension is the maximum wear diameter (sometimes called the discard diameter) and not the rebore diameter. The following example illustrates the three diameters for a typical brake drum:

Example
 Original Diameter - 11.000"
 Maximum Rebore Diameter - 11.060"
 Wear or Discard Diameter - 11.090"

INSTALLING THE LATHE ARBOR

1. Insert the taper shank of arbor, A Fig. 2, into the spindle. Be sure the taper end of the arbor and the inside of the spindle are clean.
2. Turn arbor back and forth on taper seat before drawing it securely by tightening the arbor lock nut, B Fig. 2, with spanner wrench.
3. To remove the arbor, loosen the arbor lock nut. The lock nut serves as a puller and will loosen the arbor so that it can be pulled out by hand.
(TAPERED HUB ARBOR SHOWN)

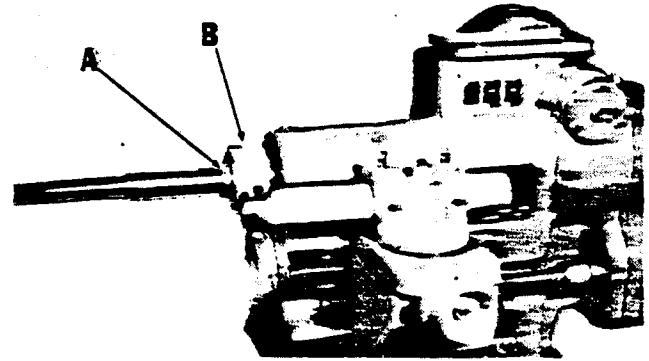


Figure 2

MOUNTING THE BRAKE DRUM

1. With the arbor installed in the lathe, the drum is now ready to be mounted. Remove the wheel bearings from the hub and wipe the bearing cups clean.

Make certain that bolts or rivets which fasten the drum to the hub are tight.

CAUTION: 1959 and later Chevrolets — Install wheel nuts before turning drums.

NOTE: Brake drums should always be installed on the hub with which they will be used before they are machined so that the braking surface will be concentric with the center of the hub.

New brake drums should always be checked for concentricity before installing on vehicle.

2. Select the taper cones to fit the inner and outer bearing cups in the front or rear wheel hub, Figs. 3 and 4.

The bores of the cones must fit the arbor on which they are mounted.

On drums that are demountable from the rear axle shaft flange the floating drum attachment is used. This attachment is standard equipment with the lathe. The attachment consists of two face plates, compression spring and three centering cones. The installation of the floating drum attachment and drum is illustrated in Fig. 5.

3. Clean the arbor and install the inner cone on the shaft.

When necessary to bring the brake drum or tire clear of the machine housing install a spacer or

two on the arbor ahead of the inner adapter or cone.

4. Mount the drum on the shaft and install the outer cone with bushing.

Check to be sure that the cones contact the hub and that the ends of the cones do not come together. This may happen when the hub is short and the bearing races are large in diameter.

5. Install spacers to fill up the space between the outer cone or adapter and the threaded end of the shaft.

NOTE: Use enough spacers behind the outer cone or adapter to fill up the arbor. Use only the equipment furnished with the lathe. Makeshift spacers will bend the arbor with the first tightening of the nut because the ends of the spacers must be machined perfectly square with the inside bore.

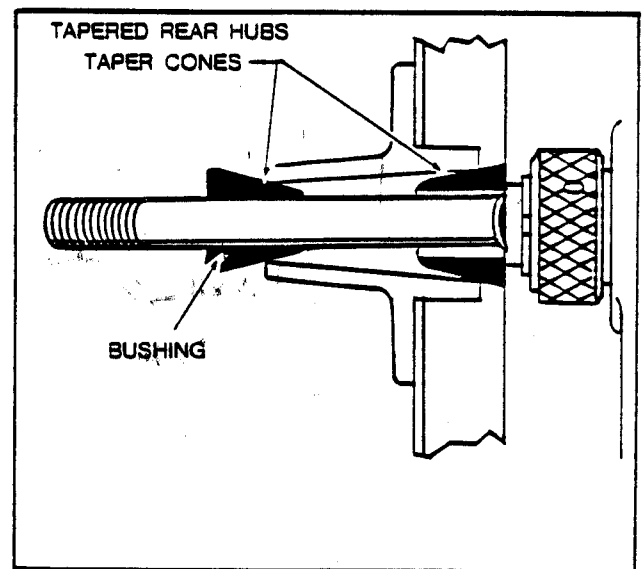


Figure 3

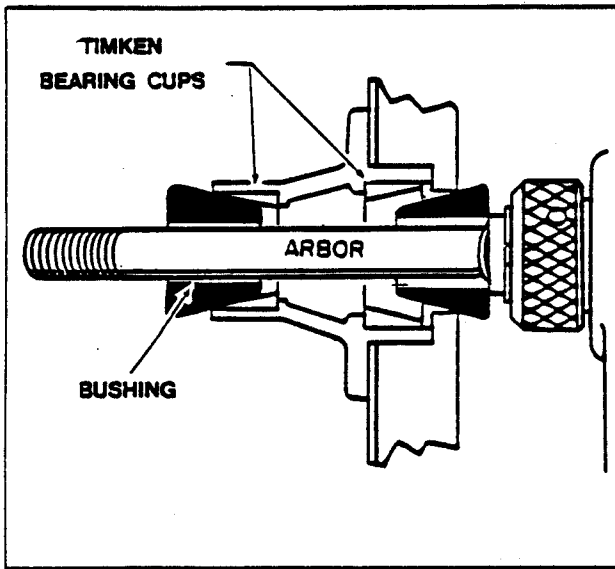


Figure 4

6. Install and tighten the nut on the end of the shaft securely.

NOTE: This is a left-hand thread.

7. Install drum silencer around the drum to eliminate ringing or chatter.

A brake drum silencer is furnished as standard equipment with the lathe and is to be used on all drums, C Fig. 6.

NOTE: Brake drums, because of their bell-like shape, tend to ring while they are being machined. The ringing is caused by the bending or vibration of the brake drum. The ringing causes a very annoying noise but what is more serious it results in a wavy rough finish of the machined surface. The silencer will dampen any vibration that might occur due to the brake drum's construction.

Properly ground tool bits held to the shortest possible overhang will prevent any vibration or chatter in the machine.

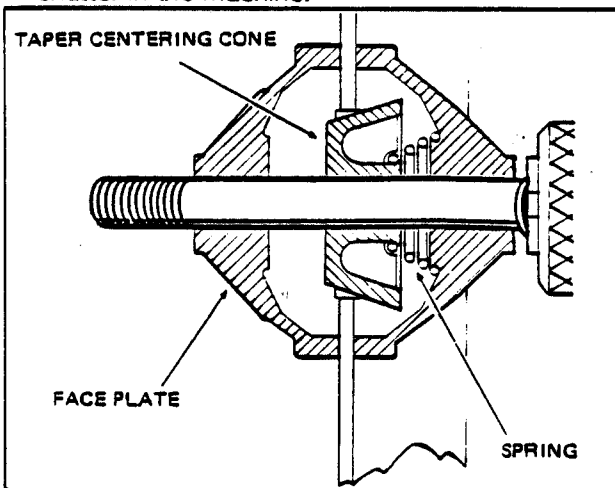


Figure 5

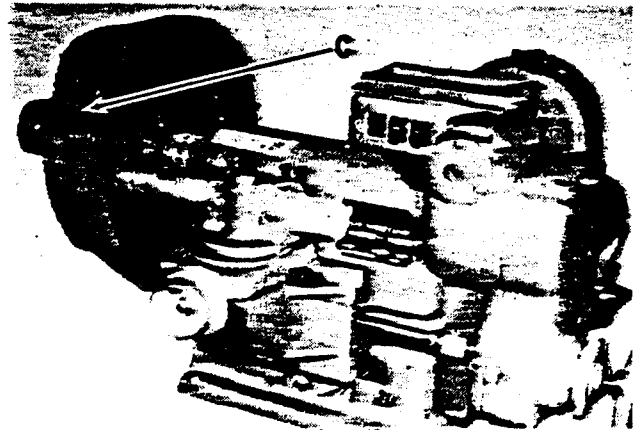


Figure 6

OPERATING THE LATHE

DANGER: FAILURE TO COMPLY WITH ALL OF THE SPECIAL SAFETY INSTRUCTIONS LISTED BELOW COULD RESULT IN SERIOUS INJURY OR DEATH.

- Never operate when floor is wet due to shock hazard.
- Never operate while wearing loose clothing, necktie or jewelry.
- Always wear safety goggles.
- Never remove metal shavings with hands.

CAUTION: CHECK OIL BEFORE OPERATING

1. Plug cord in 110 V. AC-60 cycle electrical outlet.
2. Mount the cutting tool, D Fig. 7, in the end of the tool bar and tighten cutting tool lock screws, E Fig. 7 securely.
3. Loosen tool bar lock screws, F Fig. 7 and adjust the tool bar so that enough of it extends out of the tool block to reach the inner edge of the drum when the carriage is approximately at the front of the ways. Do not, however, let it extend any further than is necessary as a short "bite" affords greater rigidity which, in turn, assures a better finish.
4. Twist the Tool Bar so the "flat" surface of bar is on top, parallel and even with the tool bar locking screws. This procedure sets tool point cutting angle. Tighten lock screws securely.

(TAPERED HUB ARBOR SHOWN)

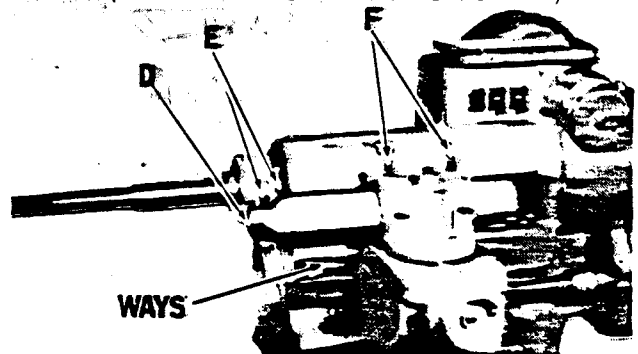


Figure 7

NOTE: Do not attempt to set the tool bit too far above the horizontal center line of rotation. With a tool bit secured in the tool bar at a 45 degree angle, it will result in practical elimination of the side clearance angle on the tool in its relationship to the work and the tool will not cut freely.

- Run the carriage, by hand, the length of the drum surface to be cut and be sure there is enough clearance. An emergency lathe shut-off switch, G. Fig. 8, is located on the lower right hand side of the lathe. When the carriage feed is set to automatic and the lathe is left unattended, the carriage will automatically turn off the lathe when it reaches the end of its travel.

CAUTION: On small drums (7", 8", 9"), run the carriage by hand until it reaches the end of its travel. Check clearance between tool bar to lathe when carriage reaches the emergency shut-off switch. To avoid damage to lathe, it may be necessary to loosen tool block and shift its position one notch (index hole) so that the tool bar rests at an angle.

On large truck drums, follow same precaution. It may require removing the tool block and reversing its position 180° so that tool bar rests squarely in line with the drum surface.

- Set the feeding speed of the carriage at the desired speed.

To make the feed selection, pull out on the knurled ring, H Fig. 8, and turn it until the desired speed aligns with the punch mark located on the casting face. Release the ring. The carriage will begin to feed automatically. If it does not, the lathe shut-off switch, G Fig. 8; has been tripped and must be reset before the carriage will feed. The feeding speed may be changed while the lathe is operating.

NOTE: The carriage feeding speeds are: .0025", .005", .0075", .010" and .0125" per spindle revolution. Generally speaking, a .005" feeding speed will give good results on drums that require less than .0125" cut to clean up and will do so in one pass. In the cases when two or more cuts are desirable by the operator, the faster speeds are used for a rough cut and either the .005" or .0025" for a finish cut.

- Set the spindle speed to the desired R.P.M. To change the belt from one set of pulleys to another, pull the belt guard down, L Fig. 8, and lift up on the motor.

After the belt has been placed on the desired pulleys, adjust the belt tension by the wing nut located on the motor mount until there is approximately one inch play in the belt when thumb pressure is exerted on it.

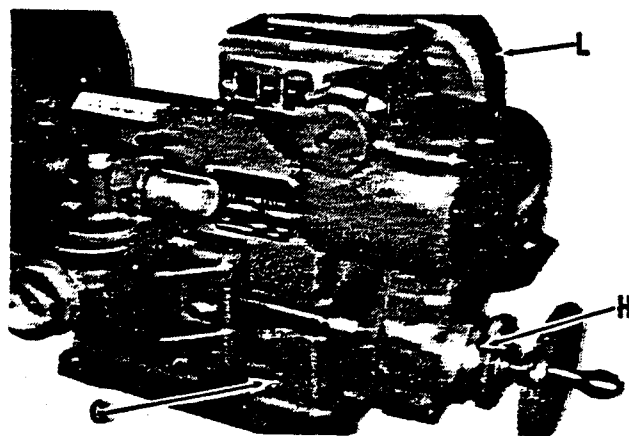


Figure 8

SPINDLE SPEED CHANGES

The following spindle speeds are recommended for conserving your carbide cutters and also to give finer drum finishes.

Drum Diameter	Speed
7 to 9	High
10 to 13	Medium
14 to max.	Slow

CAUTION: Carbide cutters occasionally break when fed carelessly into the back of the drum as back edge is not ground for cutting.

- Turn the lathe "ON", M Fig. 9, and as the spindle rotates, check the drum for run-out. If the drum run-out is more than the amount of out-of-roundness indicated from the preliminary brake drum inspection; stop the lathe; loosen the nut on the spindle and inspect the adaptors, spacers and contact surfaces of the drum to be sure that they are free from dirt and burrs.
- If drum does not wobble and is mounted satisfactorily, move the carriage in by hand until the tool bit aligns opposite to what appears to be the deepest score.

Unlock the cross slide lock, N Fig. 9, and ease the tool bit into the score by use of the cross feed handwheel, O Fig. 9, until the score appears to have cleaned up.

CAUTION: Do not plunge the tool bit into the drum. The sudden impact may break the tool bit point.

- Note the reading on micrometer dial, P Fig. 9, located on cross feed handwheel and back the tool bit away from drum approximately one turn.

11. Feed the tool bit into the drum slowly up to the dial reading noted earlier and secure the cross slide with lock provided.
12. Engage the automatic feed of the carriage by selecting feed desired. Do Not exceed .010 inch cut in one pass.

NOTE: The object is to clean up the braking surface by taking as light a cut as possible to avoid removing too much metal from the drums. A second cut may be taken so that a better finish will be obtained.

13. Complete the cut and inspect the surface for smoothness and to see that all the faults which made the turning necessary are removed.

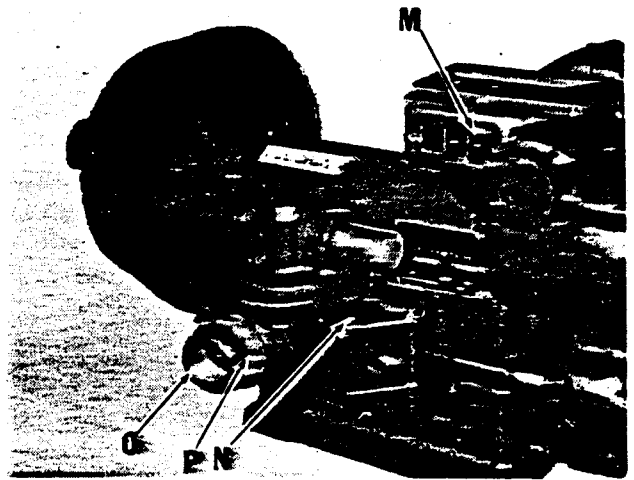


Figure 9

SERVICE AND MAINTENANCE

GENERAL CARE OF MACHINE AND ATTACHMENTS

Cleanliness is more than a virtue when it relates to machine tools. It is an absolute necessity to insure long life and correct functioning of the machine.

The carriage and cross slide ways, and the top cross slide and bottom of the tool carriage are all hand scraped for perfect bearing between mating parts. Filings and chips (particularly those of cast iron) and the dust in the machine shop are highly abrasive and if not wiped off will soon wear the ways out.

Do not assume that if the ways wear it can be taken up by adjusting the gib. The gibs are useful for adjustment only as long as the ways are straight. Worn ways, however, are never straight for the reason that they only wear at the points coming in contact with the chips or abrasives and only at the points where the carriage and cross slides are used the most. The balance of the ways remain much the same as when new. Then, if the gibs should be adjusted to cause the slides to work correctly at these worn points, the slides will work entirely too tight, or it may be impossible to pass them over the unworn portions. Worn ways can only be corrected by re-scraping.

It is important to wipe the spindle surfaces clean each time the lathe is used. Dirt, chips or other foreign matter will interfere with the fit between cones and spindle and score the taper surfaces of the spindle and arbor, destroying the lathe's accuracy.

CARE OF ARBOR AND ATTACHMENTS

Arbors, cones, bearings, spacers, bushings, etc. have been machined and ground to the closest possible limits in order to insure the accuracy of the work results on this machine. They are rugged and will stand up under service, but careless handling and abuse will destroy their accuracy. They must be kept clean, free from grit, chips, etc., not only to insure accuracy in setups but to avoid damage to the machine itself. Since some of these attachments are machined castings every precaution should be taken that they are not dropped on concrete floors.

In tightening up assemblies, avoid jerking the wrench or application of strength greater than necessary to obtain a snug fit. Always place the washer ahead of the nut when making up the assembly, otherwise spacers and cones will become scored and burred and their accuracy destroyed.

Keep all attachments clean and coated with a light oil to prevent rusting. The tapered shank of the arbor should be wiped clean and oiled before being inserted into the spindle.

Keep all attachments hung on a board or on shelves conveniently located near the machine so that setups can be made quickly and without loss of time. With everything in plain view the selection of proper attachments is a simple matter.

LUBRICATION

Correct lubrication will prolong the life and accuracy of any machine tool. This machine is no exception. This modern machine tool combines the highest grade materials with the finest possible skilled workmanship, and the design is based on years of engineering experience resulting in accuracy and the very latest methods of truing brake drums. These advantages can be destroyed by improper lubrication. Careless or excessive lubrication, however, can be just as injurious as no lubrication at all.

FOLLOW THESE INSTRUCTIONS CAREFULLY

1. The work motor is equipped with sleeve type bearings having two oilers, one at each end of the motor. Use an industrial lubricant or equal (S.A.E. #20) and add two or three drops in each oiler monthly.
2. The front main spindle bearing, a taper roller bearing, is lubricated by means of a zerk fitting located on top of main housing. This bearing should be lubricated every third day of operation with a good bearing grease.
3. The rear main spindle bearing, a tapered roller bearing, the worm, the main drive gear, and the worm shaft bearings are all splash lubricated by the lubricant in the main gear box. A gear lubricant, S.A.E. #90, is used. The filler plug is located on the top of the main housing directly over the pulley shaft. The sight gauge on the side of the lathe is used to measure the amount of oil in the main gear box. The oil should be kept up to the line that is on the gauge and at no time is the lathe to be operated when the oil does not show in the gauge. It must also be remembered that too much oil will cause excessive heat and possible permanent damage.
4. The cross slide ways are lubricated through the oilers provided on the top of the cross slide. Place 3 or 4 drops of S.A.E. #20 oil in each cup daily.
5. The carriage ways are lubricated by applying to the ways industrial lubricant S.A.E. #30 oil, or comparable as required to keep carriage feeding smoothly. At the same time dust all chips and dirt from carriage or mating dovetails.
6. All arbors, adapters, cones and spacers should be kept coated with a light film of machine oil when not in use to prevent rusting or corrosion.

If parts are nicked a light pass over the damaged surface with crocus cloth will usually remedy the damage. All parts should mate easily and should not be forced.

ADJUSTING THE CARRIAGE AND CROSS SLIDE GIBS

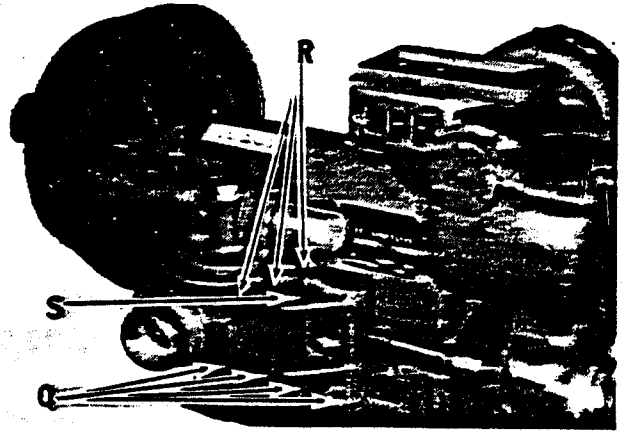


Figure 10

The carriage and cross slide should work on their ways rather snugly, therefore, do not loosen either one to make the unit work more freely. The quality of the work done on this machine depends largely on the adjustment of these gibs. These gibs may work loose either in transit or during the operation of the lathe and, therefore, it is advisable to check adjustments before operating the lathe for the first time and at two or three week intervals thereafter.

When adjusting carriage gib, proceed as follows:

1. Loosen the knurled cross feed lock knob, S Fig. 10.
2. Four allen head gib screws are located underneath the carriage, Q Fig. 10. Loosen each screw one-half turn.
3. Starting with either one of the two middle screws tighten slowly against the gib, and at the same time turn the carriage feed handwheel until you feel a slight drag. Keep this drag in mind so that when adjusting the remaining screws, the same tension can be maintained.
4. Tighten the other middle screw until the same drag is maintained on the handwheel as was present on the first adjustment.
5. Adjust the two remaining screws in the same manner as the first two.
6. When all screws have been adjusted, the handwheel should turn with considerable drag but should not be too difficult to operate.

When adjusting cross slide gibs proceed as follows:

1. Loosen each of the three (3) gib screws one-half turn, R Fig. 10.
2. Starting with the center screw tighten slowly against the gib, and at the same time turn the cross slide handwheel until you feel a slight drag.
3. Make the same adjustment on the other two gib screws maintaining the same drag on the hand-

wheel that was present when the first gib screw was adjusted.

4. When all screws have been adjusted, the handwheel should turn with considerable drag but should not be too difficult to operate.

NOTE: When adjusting gibs, do not tighten screws excessively. Tighten them only enough so that the slight drag mentioned above can be felt when handwheel is turned.

REPLACEABLE CARBIDE TIP FOR MACHINING BRAKE DRUMS

Standard cutter with a precision-ground, diamond-hard replaceable carbide tip with 6 cutting surfaces. Change tips without removing cutter in less than 30 seconds. Machines either cast iron, steel, or aluminum drums.

RECOMMENDED FOR: All shops having a drum lathe using cutter with $\frac{3}{8}$ " square shank.

72277 TOOL BIT KIT

No.	PART NAME
72299	Bit holder
72284	Carbide replaceable tips (3)
9005	Tip retaining screw

