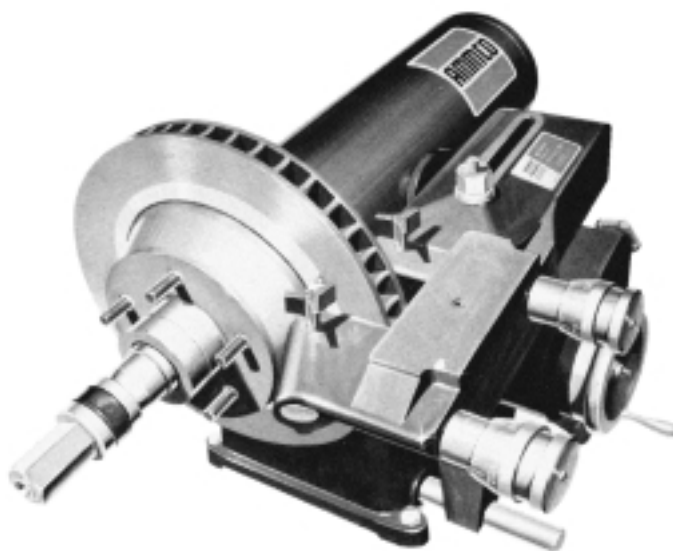




7000 Disc Rotor Lathe



Installation Instructions Operating Instructions Safety Instructions Maintenance Instructions

READ these instructions before placing unit in service. KEEP these and other materials delivered with the unit in a binder near the machine for ease of reference by supervisors and operators.

HENNESSY INDUSTRIES, INC.

1601 J. P. Hennessy Drive, LaVergne, TN USA 37086-3565 615/641-7533 800/688-6359

HENNESSY INDUSTRIES INC. Manufacturer of AMMCO®, COATS® and BADA® Automotive Service Equipment and Tools.

Manual Part No.: 910369 02

Revision: 06/01

Brake Lathes

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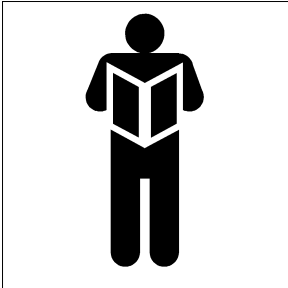
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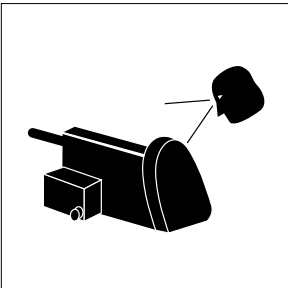
Safety

Safety Notices and Decals

For your safety, and the safety of others, read and understand all of the safety notices and decals included here and on the unit.



Read entire manual before installing, operating, or servicing this equipment.



Proper maintenance and inspection is necessary for safe operation.



Do not operate a damaged lathe.

Warning

This equipment incorporates parts such as snap switches and power receptacles which tend to produce arcs or sparks. Therefore, when located in a service facility, the unit should be in a room or enclosure provided for the purpose, or should be at least 18" or more above floor to minimize the risk of igniting fuel vapors.

Cautions and Dangers

1. Eye and face protection requirements:

"Protective eye and face equipment is required to be used where there is a reasonable probability of injury that can be prevented by use of such equipment." OSHA 1910.133 (a).

Protective goggles, safety glasses, or a face shield must be provided by the purchaser/user and worn by the operator of the equipment. Make sure all eye and face safety precautions are followed by the operator(s). Keep bystanders out of the area.

2. Do not remove any safety equipment, belt guards, or shortcut controls or operations.
3. Make sure drums and rotors are properly and squarely mounted before starting lathe, and that all parts are secure.
4. Do not wear loose clothing, jewelry, or gloves when operating or working around a lathe.
5. Do not overload the lathe. Read and understand the lathe specifications. Overloading is poor machine tool practice, shortens the life of the lathe, and could cause a failure resulting in personal injury.



Failure to follow danger, warning, and caution instructions may lead to serious personal injury or death to operator or bystander or damage to property. Do not operate this machine until you read and understand all the dangers, warnings and cautions in this manual. For additional copies of either, or further information, contact:

Hennessy Industries, Inc.

1601 J.P. Hennessy Drive
LaVergne, TN 37086-3565
(615) 641-7533 or (800) 688-6359
www.Hennessy-Ind.com

Safety

Owner's Responsibility

To maintain machine and user safety, the responsibility of the owner is to read and follow these instructions:

- Follow all installation instructions.
- Make sure installation conforms to all applicable Local, State, and Federal Codes, Rules, and Regulations; such as State and Federal OSHA Regulations and Electrical Codes.
- Carefully check the unit for correct initial function.
- Read and follow the safety instructions. Keep them readily available for machine operators.
- Make certain all operators are properly trained, know how to safely and correctly operate the unit, and are properly supervised.
- Allow unit operation only with all parts in place and operating safely.
- Carefully inspect the unit on a regular basis and perform all maintenance as required.
- Service and maintain the unit only with authorized or approved replacement parts.
- Keep all instructions permanently with the unit and all decals/labels/notices on the unit clean and visible.
- Do not override safety features.

Definitions of Hazard Levels

Identify the hazard levels used in this manual with the following definitions and signal words:

DANGER

Watch for this symbol:



It Means: Immediate hazards, which will result in severe personal injury or death.

WARNING

Watch for this symbol:



It Means: Hazards or unsafe practices, which could result in severe personal injury or death.

CAUTION

Watch for this symbol:



It Means: Hazards or unsafe practices, which may result in minor personal injury or product or property damage.



Watch for this symbol! It means BE ALERT! Your safety, or the safety of others, is involved!

⚠ CAUTION ⚠		
Prevent accidents and injury, read and follow instructions.		
1. Read and follow instructions.		
2. Always wear eye protection, avoid loose clothing and jewelry.		
3. Keep all guards, shields, and covers in place and in working order.		
4. Keep bystanders out of work area.		
5. Unplug unit from power source before servicing or adjusting.		
6. Maintain unit properly, keep work surfaces and work area clean.		

IMPORTANT SAFETY INSTRUCTIONS

Before operating the lathe, review the warning information on the lathe and the cautions, warnings and dangers in this manual. Also review the following general safety instructions. Failure to follow safety instructions could result in personal injury to operator or bystanders and damage to the lathe or personal property.

READ ALL INSTRUCTIONS

When using your garage equipment, basic safety precautions should always be followed, including the following:

- 1.** Keep guards in place and in working order.
- 2.** Remove adjusting keys and wrenches from the tool before turning it on. Make this a habit.
- 3.** Keep work area clean and well lighted. Cluttered areas and benches invite accidents.
- 4.** To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids (gasoline).
- 5.** Adequate ventilation should be provided when working on operating internal combustion engines.
- 6.** Care must be taken as burns can occur from touching hot parts.
- 7.** Do not operate equipment with a damaged cord or if the equipment has been dropped or damaged—until it has been examined by a qualified serviceman.
- 8.** If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
- 9.** To reduce the risk of electric shock, do not use on wet surfaces or expose to rain.
- 10.** Keep children away. All bystanders should be kept completely away from the work area.
- 11.** Make the workshop kid-proof. Use padlocks and master switches, and remove starter keys.
- 12.** Don't force a tool. It will do the job better and safer at the rate for which it was designed.
- 13.** Use the right tool. Don't force a tool or an attachment to do a job for which it was not designed.
- 14.** Dress properly. Keep hair, loose clothing, neckties, shop rags, jewelry, fingers, and all parts of body away from moving parts. Non-slip footwear is recommended.
- 15.** ALWAYS WEAR SAFETY GLASSES. Everyday eye-glasses only have impact resistant lenses, they are NOT safety glasses. Safety glasses, goggles, or a face shield will help protect the operator from injury. Use a face shield and dust mask during dusty operations.
- 16.** Secure the work properly to the unit for setup and tool bit positioning. Do not attempt to hold a drum or rotor steady on the arbor with your hands. Both hands must be free to operate unit.
- 17.** Don't overreach. Keep proper footing and balance at all times when lathe is in operation or when working around the unit.
- 18.** Maintain tools with care. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- 19.** Remove power from the unit and disconnect tools before servicing and when changing accessories such as blades, bits, cutters, etc. Follow lock-out and tag-out procedures as required.
- 20.** Avoid unintentional starting. Make sure the switch is in the OFF (O) position before plugging the machine in or performing any maintenance or service work.
- 21.** Use of improper accessories may cause risk of injury to operator or bystanders. Use only as described in this manual. Use only manufacturer's recommended attachments.
- 22.** Never stand or lean on a lathe. Serious injury could occur if the lathe is tipped or if the cutting tool is unintentionally contacted.
- 23.** Check damaged parts carefully. Before further use of the lathe, a guard or other part that is damaged should be carefully checked. Immediately replace all damaged, missing, or non-functional parts. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect operation. Guards and other parts that are damaged should be properly repaired or replaced before lathe is used again.
- 24.** Always feed the work into a blade or cutter and against the direction of rotation. Cutters and tool bits are designed to cut from the inside of a drum or rotor to the outer edge. Do not attempt to cut from the outside edge in to the center.
- 25.** Never leave tools running unattended. Turn the power off. Don't leave the tool until it comes to a complete stop.
- 26.** Never use compressed air to blow the tool clean. Chips and dust may be driven between machined parts and into bearings, causing undue wear. They may also contact persons in the area causing personal injury.

SAVE THESE INSTRUCTIONS

Brake Lathes

Installation

Receiving

The shipment should be thoroughly inspected as soon as it is received. The signed bill of lading is acknowledgement by the carrier of receipt in good condition of shipment covered by our invoice.

If any of the goods called for on this bill of lading are shorted or damaged, do not accept them until the carrier makes a notation on the freight bill of the shorted or damaged goods. Do this for your own protection.

NOTIFY THE CARRIER AT ONCE if any hidden loss or damage is discovered after receipt and request the carrier to make an inspection. If the carrier will not do so, prepare a signed statement to the effect that you have notified the carrier (on a specific date) and that the carrier has failed to comply with your request.

IT IS DIFFICULT TO COLLECT FOR LOSS OR DAMAGE AFTER YOU HAVE GIVEN THE CARRIER A CLEAR RECEIPT.

File your claim with the carrier promptly. Support your claim with copies of the bill of lading, freight bill, invoice, and photographs, if available.

Although AMMCO's responsibility ceases upon delivery of the shipment to the carrier, we will gladly assist in tracing lost shipments. Our willingness to assist in every possible manner does not make AMMCO responsible for collection of claims or replacement of lost or damaged materials. Shipping damage claims will not be handled under warranty.

Wiring Requirements

Grounding: This lathe should be electrically grounded to protect the operator from shock.

Cord-connected Lathes: The lathe is equipped with an approved 3-conductor cord and a 3-prong grounding type plug to fit the proper grounding type receptacle. If your lathe is for use on 115 volts, it has a plug as illustrated in Fig. A1. If used on 220 volts it will have a plug as shown in Fig. A2.

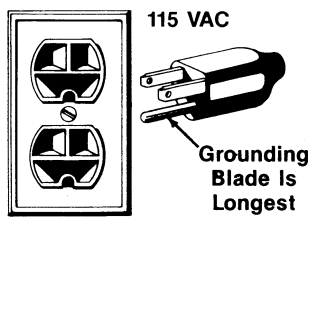


Figure A1

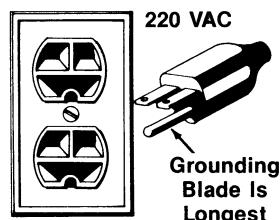


Figure A2

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

Replace or repair damaged or worn cords immediately. AMMCO electrical and electronic based machines are designed for nominal line voltages with variations of ten percent (10%) around the nominal, i.e.; 115 volt input could vary from 103 volts on the low side to 127 volts on the high side. These percentages also apply to 220 VAC, 480 VAC based products, etc.

Any line voltage lower or higher than ten percent (10%) of nominal will cause problems with the machine. If the machine receives below or above the design limit, erratic operation will ensue with a degradation in component reliability and life. By law the power company must supply power within the ten percent (10%) limit of nominal line. It is up to the customer to see that his facility is properly wired and is supplying power to the machine within its design limits. Inadequate voltages and wiring will only produce problems.

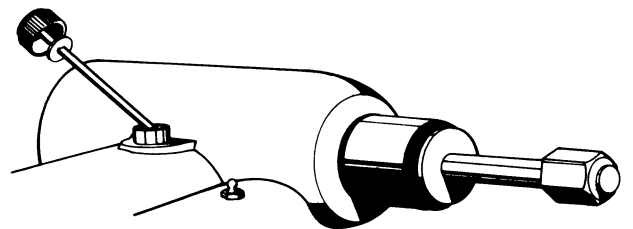
Installation

Set-Up - If you ordered a brake bench with your lathe, use the assembly instructions supplied with it. After assembly, the bench should be leveled and bolted down with 3/8" or 7/16" bolts or lag screws. Clean the lathe accessories with solvent, install mounting hooks and hang the items on the accessory storage board.

Note: A light film of oil should be put on all adapters to protect the machined surfaces from rust, refer to the CARE OF ARBORS AND ADAPTERS section for complete care.

Installing the lathe - Unbolt the lathe from the shipping pallet and place it on the bench. Bolt the lathe to the bench with the hardware provided. Make sure the motor switch is OFF before plugging the machine in.

Lubrication - Remove the shipping plug and insert the oil dip stick, and check oil level, Fig. A3. The lathe is shipped from the factory with the correct amount and type of oil. Refill as necessary with EP-80-90 gear oil and check the oil level often.



Brake Lathes

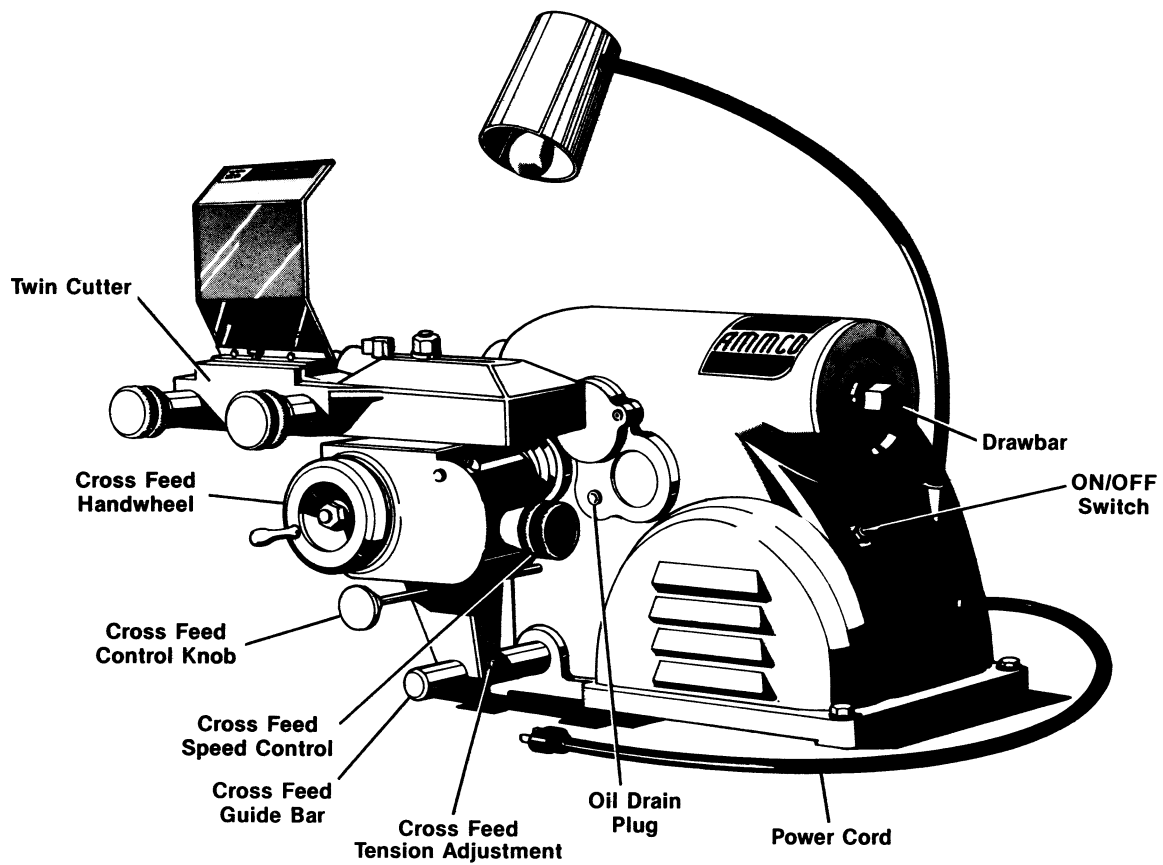
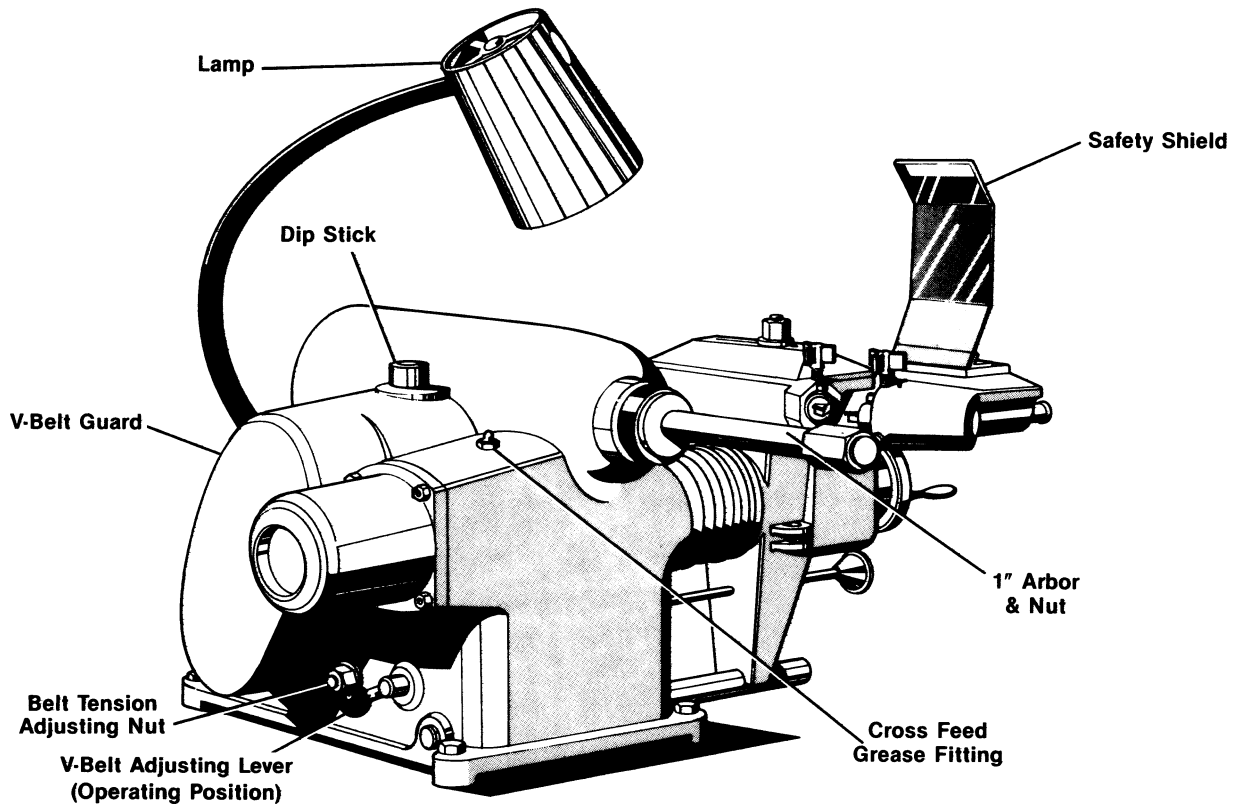
Lathe Operation

Operating Specifications

Cross Feed Speed	Infinitely Variable 0.002 in./rev. to 0.006 in./rev. (0.051 to 0.152 mm)
Spindle Speeds:	
Pulley: Inner Groove	100 RPM
Middle Groove	150 RPM
Outer Groove	200 RPM
Spindle Diameter	2-7/18" (73.02 mm)
Capacities:	
Maximum Brake Rotor Diameter (3/8" Thick Rotor)	19-3/4"
Maximum Brake Rotor Diameter (1-3/4" Thick Rotor)	20-1/2"
Maximum Rotor Thickness	1-3/4" (44.45 mm)
Maximum Arbor Load	
1 Inch Standard Arbor	100 lbs. (45.4 kg.)
1.875 Inch Optional Arbor	200 lbs. (90.7 kg.)
Shipping Weight (Lathe Only)	315 lbs. (143 kg.)
Electrical Requirements	115 VAC, 60 Hz, 1 Ph, 14 amp - standard 220 VAC, 60 Hz, 1 Ph, 7 amp - optional (Unless Otherwise Specified)
Floor Space Requirements (When Mounted On Optional Bench)	48 in. wide x 34-3/4 in. deep (1219.20 mm x 882.65 mm)

Brake Lathes

Lathe Components



Brake Lathes

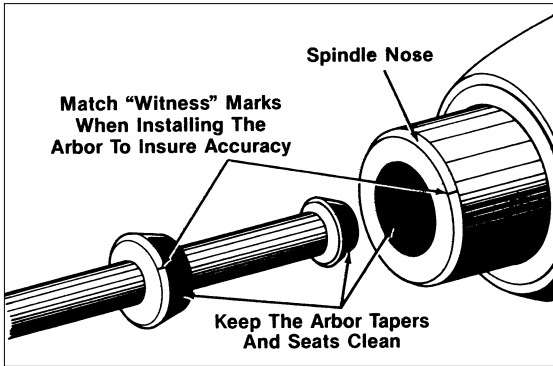


Figure B1

Arbor Installation

The 1" arbor shipped with the lathe has been carefully matched to the lathe during final assembly and testing. Witness marks have been etched onto the arbor and spindle for repeatable, precise alignment.

The witness marks should be carefully aligned when installing the arbor, Fig. B 1. A true running arbor is essential to professional quality rotor reconditioning.

The drawbar, which can be tightened or loosened at the rear of the spindle, pulls the hardened and ground tapers of the arbor into the matching seats.

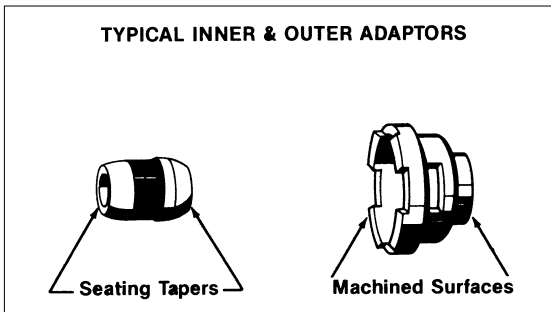


Figure B2

Adapters



Although the adapters, arbor, and spindle are made of top grade steel and are turned, hardened, and precision ground to close tolerances, great care should be taken in their use, handling, and storage. Even the smallest nick, scratch or loose chip on the mating machined surfaces, Fig. B 2, can cause incorrect rotor mounting alignment. This will cause inaccurate machining.

Note: A light film of oil should be put on all adapters to protect the machined surfaces from rust. Always inspect the surface, the face and the seating tapers of each part. Wipe each part clean before and after using it. Carefully correct any flaw with a fine stone. If damage cannot be corrected, replace the part.

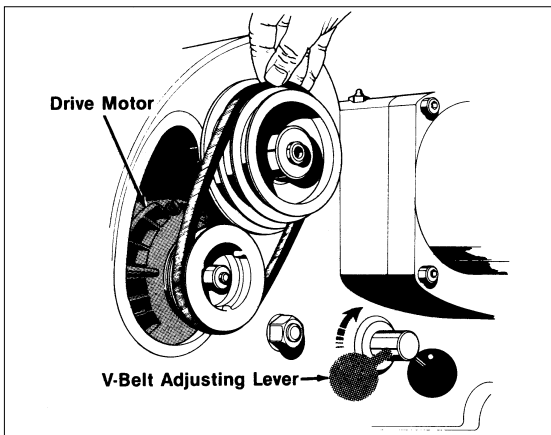


Figure B3

Basic Operation

To completely understand rotor turning you must have a knowledge of the lathe itself.

The spindle is a motor driven shaft that turns the arbor on which the brake rotor is mounted. By turning the rotor and holding a cutting tool to the rotor, metal can be removed.

By operating the cross feed lever the cutting tool is automatically drawn across the rotor brake face as the cross feed moves away from the tool while the rotor turns. Cross feed may also be done manually using the cross feed handwheel.

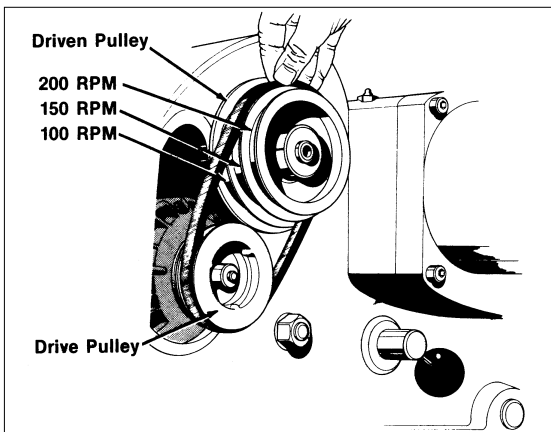


Figure B4



Do not try to move any feed levers or dials without the drive motor running. Damage may occur to the gear trains.

Adjustments

Spindle Speed - Release the belt tension by moving the V-belt adjusting lever clockwise, Fig. B 3. Move the belt to the pulley groove that will give the correct spindle speed for the cut to be taken, Fig. B 4.

Brake Lathes

Cross Feed -The cross feed draws the twin tool bits across the face of a brake rotor when the cross feed drive is engaged. The cross also be operated manually using the cross feed hand-wheel.

Feed Speed - Feed speed refers to the number of thousandths of an inch the cutting tools move across the face of the rotor per revolution of the spindle. The cross feed speed control adjusts the feed rate from .002" (.05 mm) to .004" (.10 mm) to .006" (.15 mm) per spindle revolution.

V-Belt Tension -When properly adjusted, the V-Belt should have 1/4" - 1/2" of slack. To adjust the tension, loosen the tension adjusting nut so the weight of the motor pulls the V-Belt snug and rotate red knob to its furthest counterclockwise position. Push the belt in 1/4" - 1/2" on one side and tighten the nut, Fig. B 5.

Cross Feed Leg Tension – Be sure the brass plug and spring are under the allen screw. (if the cross feed has been pulled out beyond the end of the guide bar, the plug and spring may have been lost.) Replace the plug and spring, Fig. B 6, then snug the allen screw all the way down then back it off 1/8" of a turn.

Tool-Bit Holder Adjustment (Preliminary Cleaning) - Refer to parts identification manual for nomenclature.

Before adjusting the tool-bit holders on a used twin cutter, the following steps should be performed.

- 1.** Be sure the tool-bit holder bores in the twin cutter body are clean along with the tool-bit holders and tool-bit assemblies.
- 2.** Replace the brass plugs if the original plugs are "mushroomed" or worn.
- 3.** Clean the threads of the lock knob holes by running a tap through them.

(Adjusting Tool-Bit) - Refer to parts identification manual for nomenclature.

- 1.** Loosen and back off the hex nut locking the locating screw in position.
- 2.** Loosen and back off the lock knob.
- 3.** Firmly tighten the locating screw to align the tool-bit holder by its locating groove.
- 4.** Simultaneously loosen the locating screw and tighten the tool-bit holder lock knob until the locating screw is loose and the lock knob is tight.
- 5.** Screw the locating screw in until it is snug, then back it off 1/8 to 1/4 of a turn.
- 6.** Hold the locating screw in this position and tighten the hex nut to lock the screw in place.
- 7.** Turn the outer knurl of the twin cutter control left and right to check for a smooth, free movement. Repeat the procedure for the other tool-bit holder.

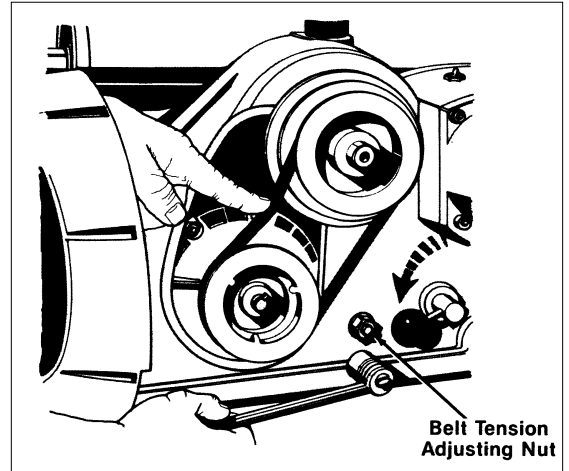


Figure B5

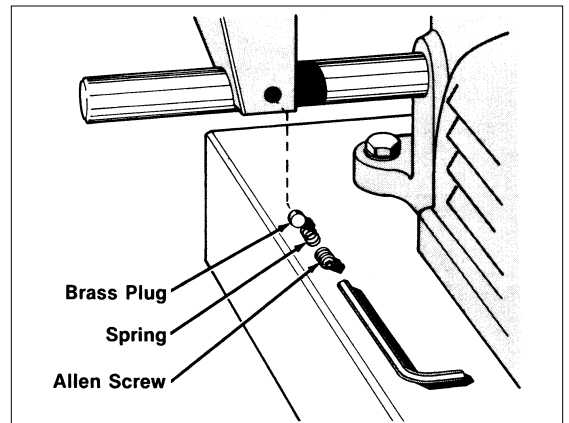


Figure B6

Brake Lathes

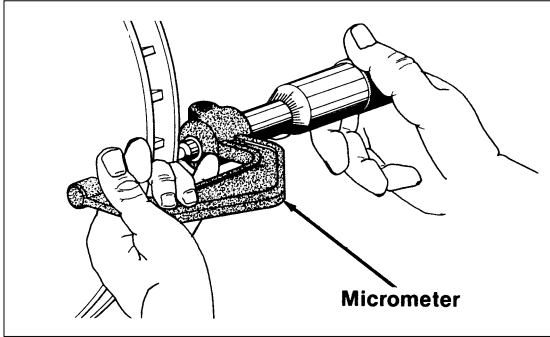


Figure B7

Reconditioning Disc Brake Rotors

Each brake disc should be carefully inspected for SCORING, RUST RIDGES (at the inner and outer circumference of the rotor), and HARD SPOTS. Any excessive wear or deformity should be noted and, if not within acceptable limits, the rotor should be replaced. Use a micrometer to check the thickness of the rotor at no less than three points around the circumference about 1" (25.4 mm) in from the outer diameter, Fig. B 7. If the rotor thickness varies between readings, it should be machined; however, if the thickness is less than the minimum established by the car manufacturer (or if it will be less after reconditioning), the rotor should be replaced.

Note: Most often the discard thickness dimension is cast into the rotor, not the minimum machine to thickness.

Mount the twin cutter on the cross feed with the stud bolt extending through the cast slot. In some applications the stud bolt may have to be positioned in one of the alternate stud mounting holes, Fig. B 8. To prevent contamination of the gear box position set screw in unused hole. To secure the twin cutter use the nut and washer assembly and tighten firmly.

Rotor Mounting

Fig. B20, TYPICAL ROTOR MOUNTING CONFIGURATIONS is a model example of many of the mounting configurations necessary to meet the requirements of brake rotor machining. Inspect the rotor hub for loose or damaged bearing races and replace parts as necessary. Hubbed rotors are mounted on the taper adapters that fit into the bearing races. Hubless rotors use a cone in the center hole and a hubless adapter on each side of the rotor. Spacers are used to fill out the arbor shaft so that the arbor nut can be tightened. The adapters, cones, and spacers supplied with your lathe will allow you to recondition the majority of rotors on today's vehicles. Optional adapters, cones, and spacers are available to meet special needs.

Note: Adapters may also be used as spacers to fill out the arbor if care is taken to prevent damage to their machined surfaces. The patented self-aligning spacer prevents diagonal thrust on the adapters. The self-aligning spacer should always be used adjacent to the arbor nut.

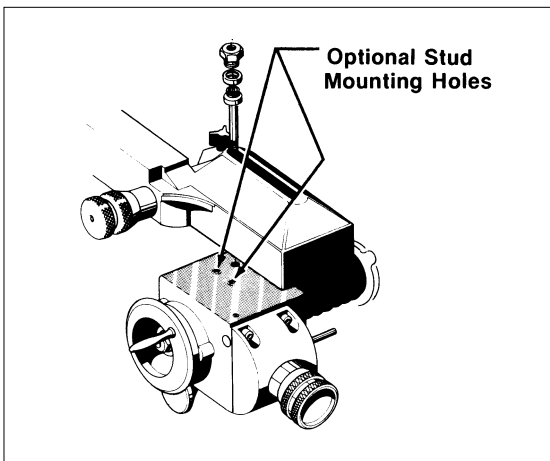


Figure B8

Brake Lathes

Reconditioning Disc Brake Rotors—Set-Up

1. After the brake rotor is mounted on the arbor, install the silencer band. This is easily done by stretching the band to its full length and then wrapping it around the rotor and hooking the end metal loop over a lead weight, Fig. B 9.

2. Center the twin cutter to the rotor. Loosen the stud nut, Fig. B 10, and adjust the twin cutter so that the rotor is centered between the tool bits. The slot of the twin cutter should be approximately parallel to the lathe spindle. Tighten the stud nut firmly.

3. Install the safety shield. Review the CAUTIONS / DANGERS and GENERAL SAFETY INSTRUCTIONS. The safety shield is easily screwed onto the twin cutter in the threaded mounting hole provided, Fig. B 11. Also always wear safety glasses or a face shield. Cutting or grinding on an exposed surface such as a rotor will produce flying chips.

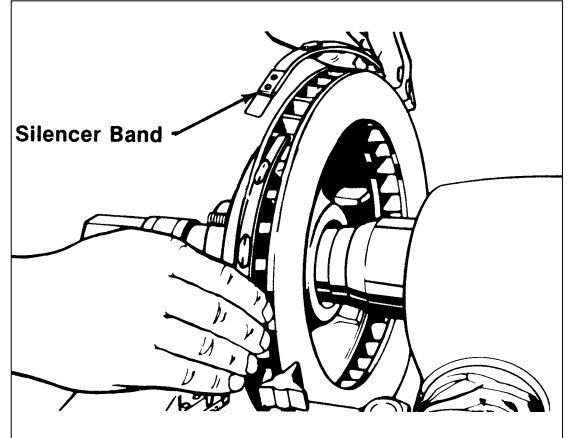


Figure B9

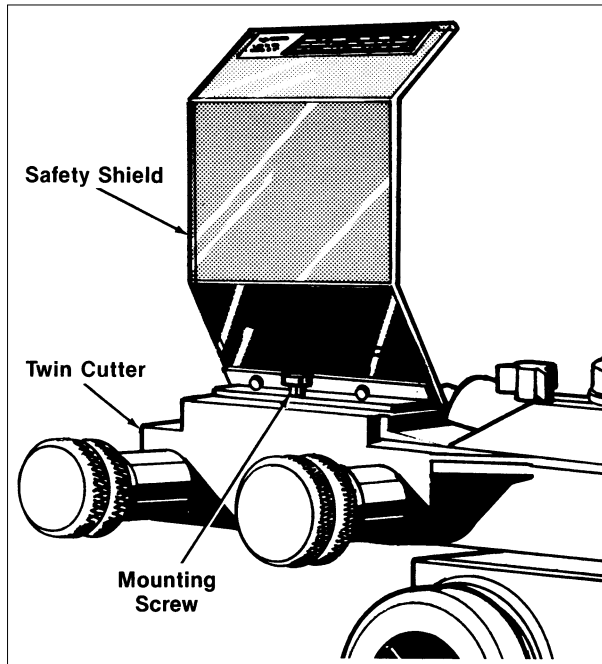


Figure B11

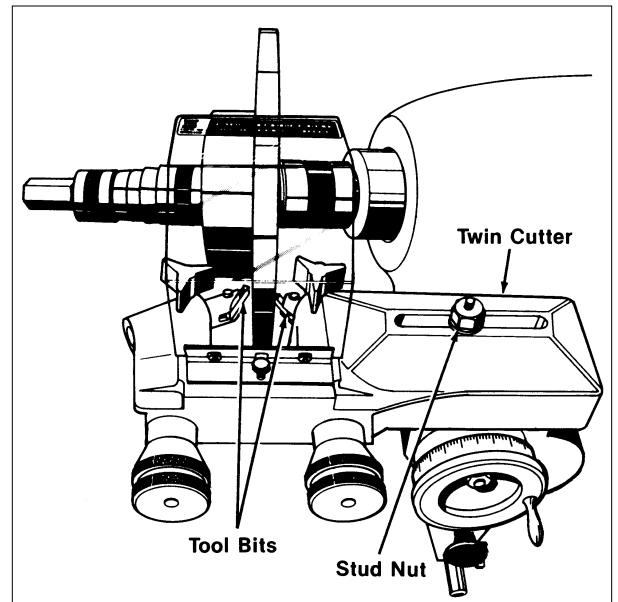


Figure B10

Brake Lathes

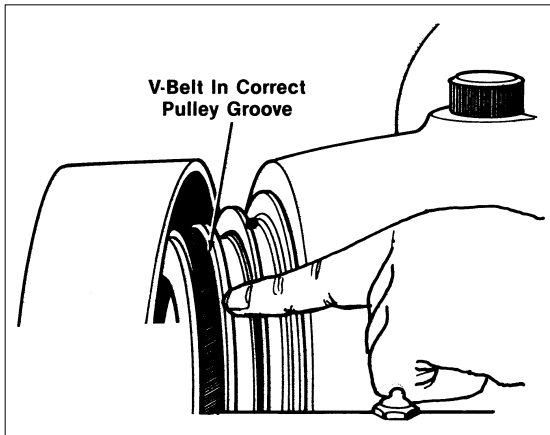


Figure B12

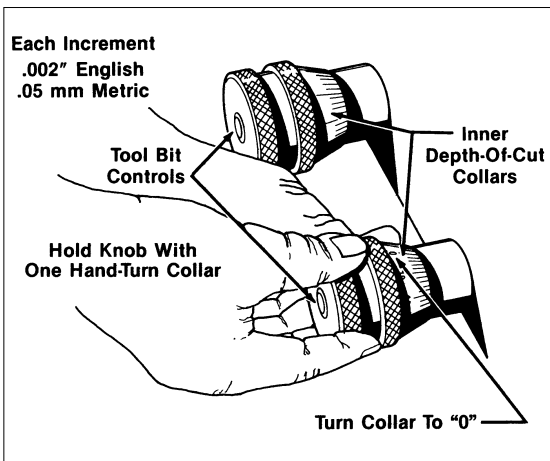


Figure B13

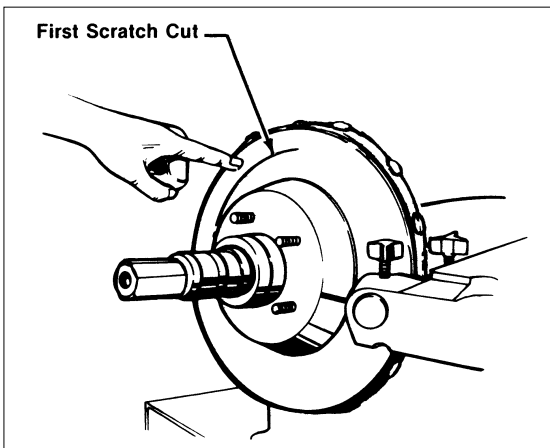


Figure B14

4. Adjust the drive belt to match the rotor size. Use the outer pulley groove for all passenger car and light truck rotors, Fig. B 12. Choose one of the inner grooves when machining medium duty truck rotors.

5. Make sure that the tool bits clear the rotor faces and the silencer band. Give the rotor a full turn by hand and start the lathe.

6. Turn each tool bit control (the outer knurled knobs) clockwise until the tool bits just contact the rotor faces. When the tool bits have made contact, rotate each of the inner depth-of-cut collars to zero and back the tool bits away from the rotor. From this point on all tool adjustments will be made with the tool bit controls, Fig. B 13. The inner depth-of-cut collars will be the reference and should not be moved.

7. Turn the cross feed handwheel until the tool bits are at mid-point of the rotor face. Turn the left hand tool bit control until the tool bit contacts the rotor surface and makes a scratch cut no deeper than .001", Fig. B 14.

Brake Lathes

The scratch will usually appear as an incomplete circle. This is caused by runout or wobble due to rotor condition or by the way the rotor is mounted on the arbor.

To check that the rotor is correctly mounted, loosen the arbor nut and turn the rotor 180° by hand, (make sure the inside adapter does not rotate along with the rotor), Fig. B 15. Retighten the arbor nut. Turn the cross feed handwheel back about a half turn, start the lathe and move the tool bit in to make a second scratch cut. Stop the lathe.

If the scratch cuts are side by side, Fig. B 16, next page, the runout or wobble is caused by the rotor condition. A dial indicator may be used to compare rotor runout with manufacturer's specifications.

If the scratch cuts are opposite one another (180°), Fig. B 17, the rotor may not be properly mounted on the arbor. Remove the rotor from the arbor. Examine each adapter and the arbor for nicks, burrs, chips, dirt, and rust. Also inspect the rotor hub for loose or damaged bearing cups. Clean, repair, remount, or replace as necessary.

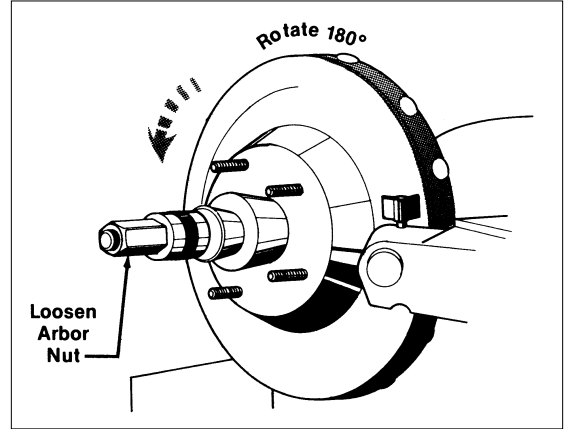


Figure B15

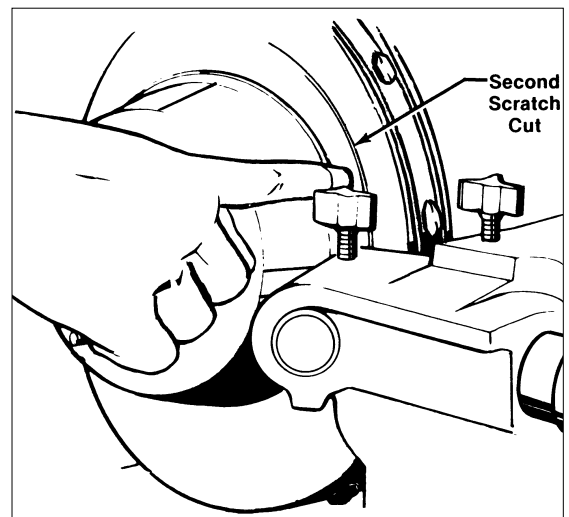


Figure B16

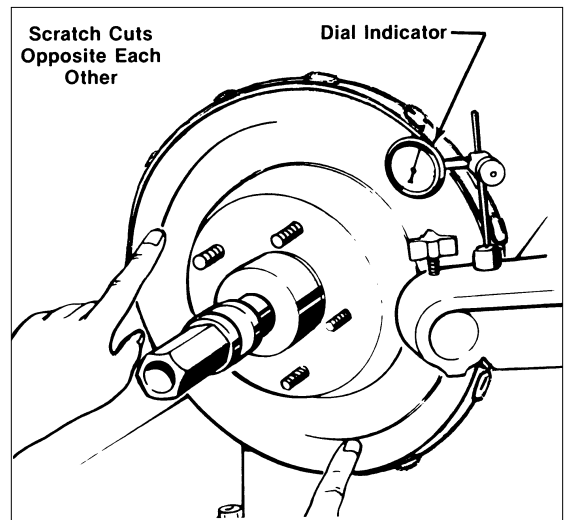


Figure B17

Brake Lathes

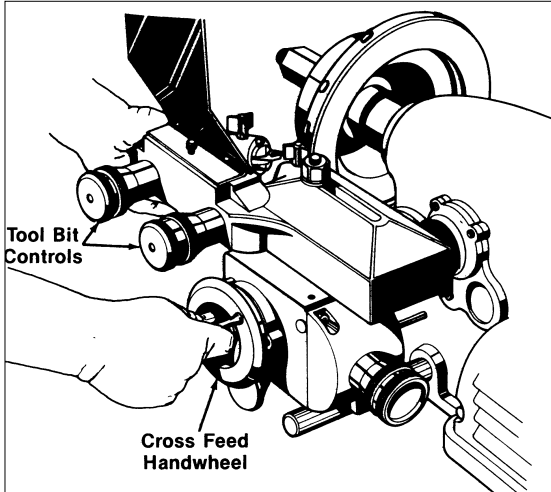


Figure B18

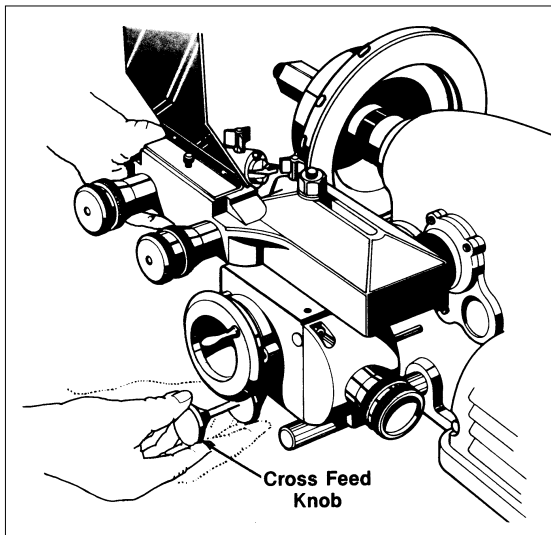


Figure B19

Machining

8. Recheck the setting of the depth-of-cut collars which were on zero. Move the tool bits inward until they just contact the faces of the rotor. Reset the collars if necessary.

9. Turn the cross feed handwheel clockwise until the tool bits are near the rotor hub, Fig. B 18. Start the lathe. Turn both tool bit controls to the desired depth-of-cut and lock them in position.

Note: Either rough or finish cuts may be taken to resurface a rotor. Generally, finish cuts should be .004" (.10 mm) to .006" (.15 mm). Very shallow cuts [less than .004" (.10 mm)] tend to reduce tool bit life because heat won't transfer to the rotor efficiently.

Move the cross feed speed control knob to the fast position for roughing cuts.

10. Now engage the automatic cross feed (by moving the knob), Fig. 19. When the cross feed has moved the cutting tools all the way across the face of the rotor, the feed will shut off automatically.

Brake Lathes

Typical Rotor Mounting Configurations

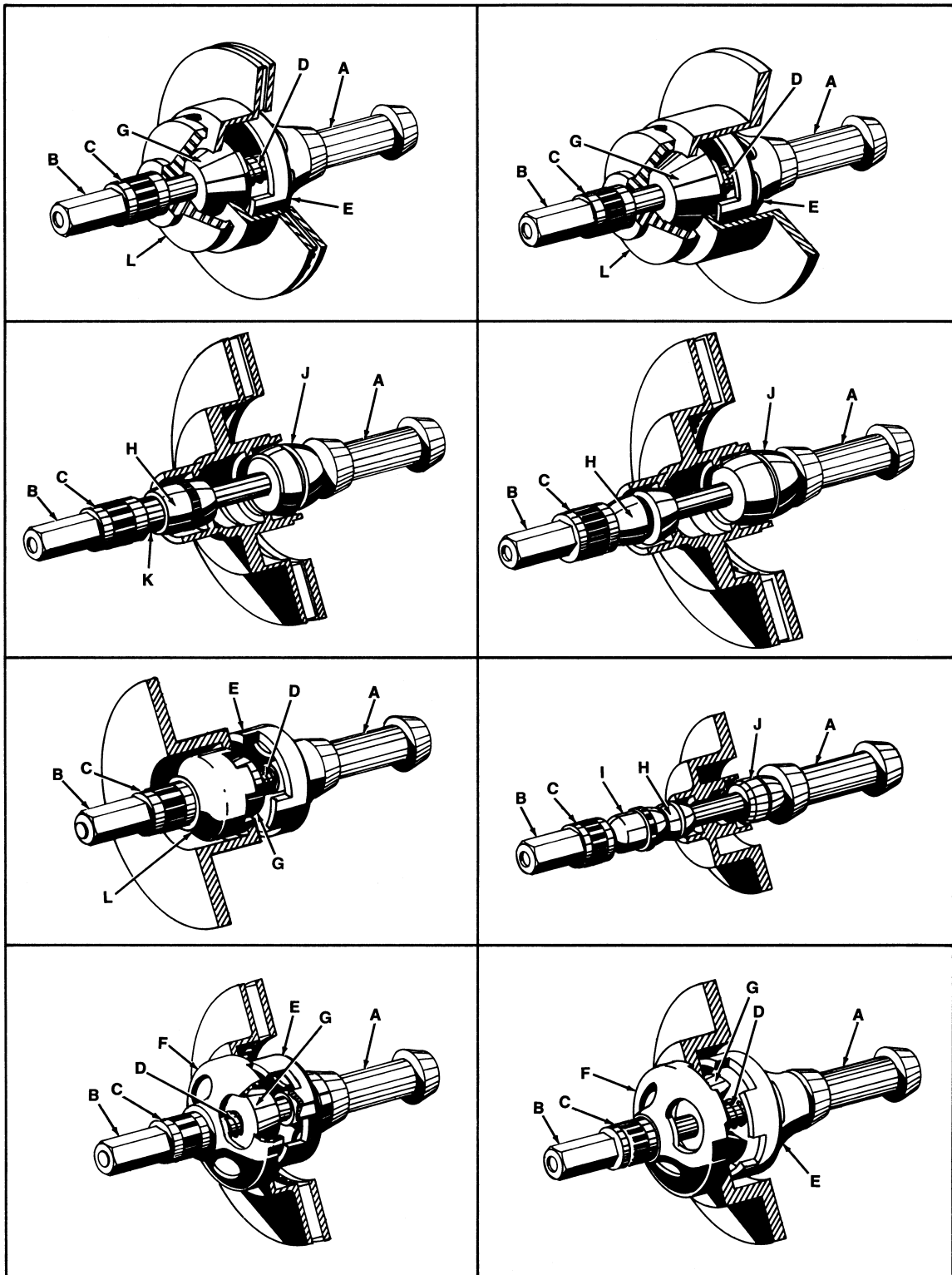


Figure B20

- | | | |
|------------------------|----------------------------------|----------------------------------|
| A 1" Arbor | E Large Diameter Hubless Adapter | I Adapter Being Used As Spacer |
| B Arbor Nut | F Aligning Cup | J Tapered Cone Adapter |
| C Self-Aligning Spacer | G Centering Cone | K Spacer |
| D Spring | H Tapered Cone Adapter | L Small Diameter Hubless Adapter |

Brake Lathes

Maintenance and Service

Note: Refer to LATHE COMPONENTS.

Oiling

The lathe is shipped from the factory with the correct amount and type of oil. Refill as necessary with EP-80-90 gear oil and check the oil level often., Fig. C 1.

Every 500 hours drain the oil and refill to the dipstick level with clean EP-80-90 gear oil. To drain the oil, remove the socket head drain plug located on the front of the lathe to the right of the cross feed assembly, Fig. C 2.

Cross Feed - Once a month pump automotive chassis grease into the cross feed grease fitting until it begins to come out of the relief slot at the base of the fitting. CAUTION: Use a HAND GREASE GUN ONLY, a high pressure gun can burst the lathe casting, Fig. C 3.

Cleaning

Keep the lathe as clean as possible for trouble free operation as well as safety and longer lathe life. Use a brush to sweep metal chips and dust off the lathe. DO NOT USE COMPRESSED AIR TO BLOW THE LATHE CLEAN. Chips and dust could be driven between machined parts and into bearings causing undue wear.

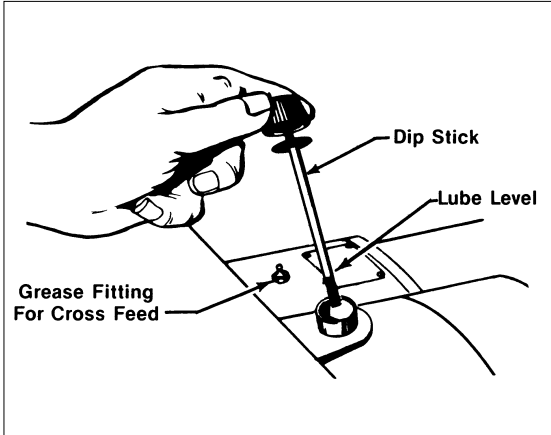


Figure C1

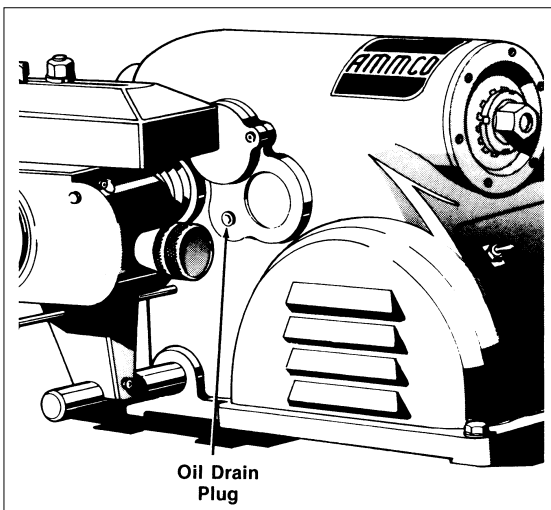


Figure C2

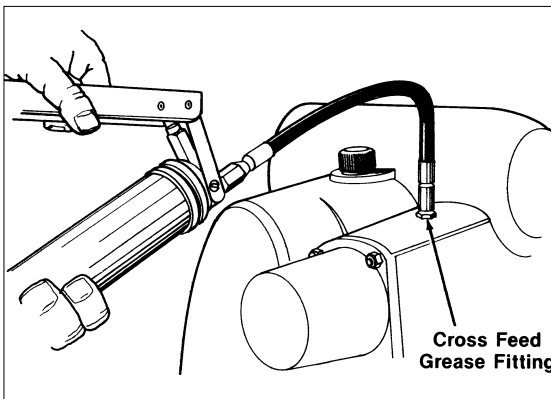


Figure C3

Brake Lathes

Care of Arbors and Adapters



Although the adapters, arbors, and the spindle are made of top grade steel and are turned, hardened, and precision ground to close tolerances, great care should be taken in their use, handling, and storage. Even the smallest nick, scratch, or loose chip can cause incorrect rotor alignment, resulting in inaccurate machining.

Remove all adapters from the arbor after machining a rotor and wipe them clean - especially the inboard adapter. When a finished rotor is removed from the arbor, the inboard adapter may move slightly away from the face of the arbor and allow metal chips to fall into the opening causing a poor mounting for the next rotor.

Regularly inspect the faces and seating tapers of the adapters for nicks and scratches, correct any flaw with a fine stone. If the damage cannot be corrected, replace the adapter. Handle the adapters and arbors with care and store them on individual hooks. DO NOT throw them into a box. The adapters are designed for mounting rotors only, DO NOT misuse the adapters.

