



6000, 6002 Heavy Duty Drum/Disc 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.

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

Manual Part No.: 921657 18

Revision: 06/01

Brake Lathes

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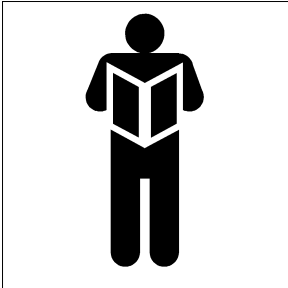
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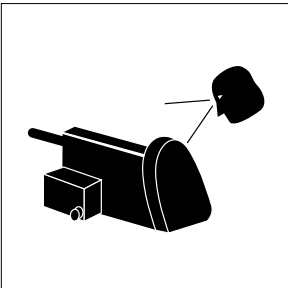
Safety

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:

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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.		
		
<ol style="list-style-type: none">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.

Preferred Lifting Method



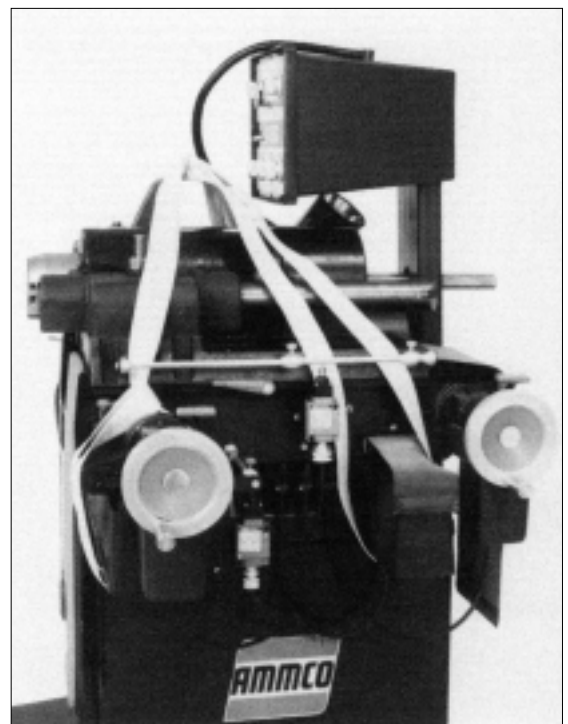
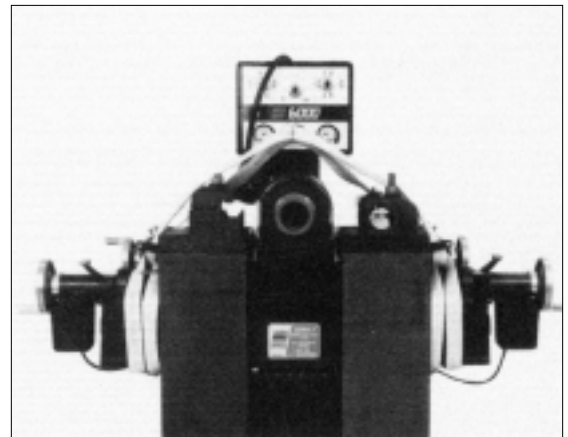
Lift the lathe by all four bed ways only. DO NOT lift under the saddles, cross slides, boring bars, or spindle. Be sure the gearbox control wires and external travel controls will not be damaged when lifting the lathe.

Be sure the lifting slings are arranged so they will not crush or exert pressure against any limit switch control parts, lock levers, control wires, etc.

Both slings should be hung together in a hook or a loop of chain when lifting the lathe.

Installation

Bolt the lathe to the floor using the anchor bolts provided. Be sure the lathe is resting solidly on its three feet. Shim with washers if necessary to eliminate rocking. After the lathe is bolted down run the outer corner screws of the front support down until they contact the floor and tighten the jam nuts. These screws are not to be used for leveling. BEFORE RUNNING THE LATHE, REFER TO THE OILING AND GREASING INSTRUCTIONS. Allow sufficient work space around the lathe as illustrated in the WORK SPACE REQUIREMENTS.



Brake Lathes

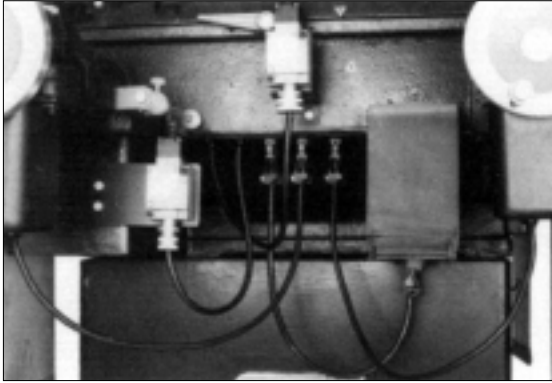


Figure 1 - Drive Motor Electric Cables Connected To Terminal Plate

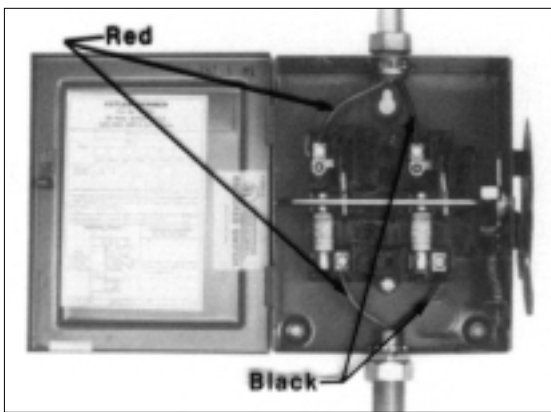


Figure 2 - Disconnect Box Hook-up (Black To Black, Red To Red)

Electrical Wiring Requirements

The lathe is factory wired to a disconnect box which should be grounded to the power supply box in accordance with local code requirements to protect the operator from shock.

The lathe is grounded to the disconnect box through the flexible conduit. **The flexible conduit should not be removed or eliminated.**

This box is to be mounted to the wall behind the machine.

A qualified electrician should complete the hook-up to line power of 220 VAC, 50~60 Hz, Single Phase, 20 amps.

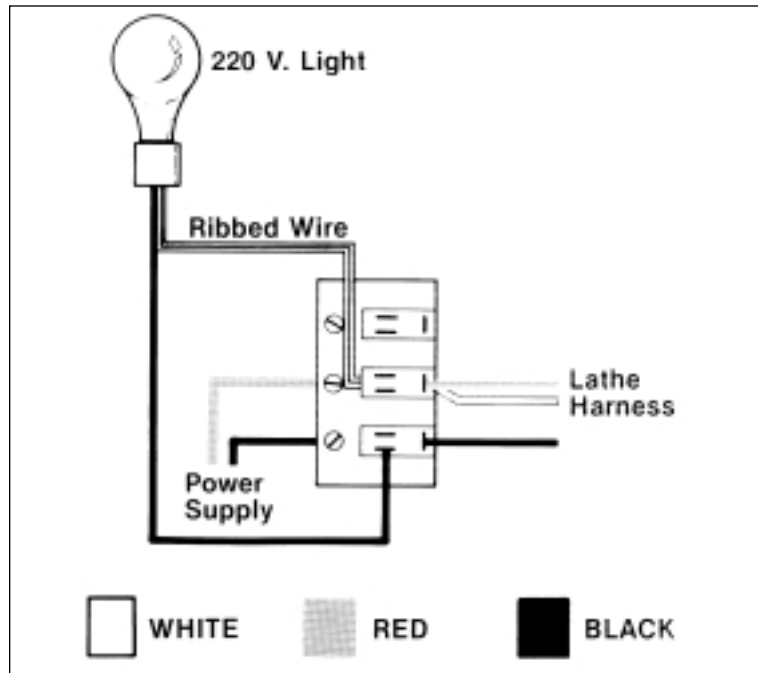
Before operating the lathe be sure the drive motors are connected at the terminal plate as shown in Fig. 1.

Electrical Hook-Up

Connect one incoming power line to the screw terminal at the top of the fuse above the red lathe wire and the other power line to the screw terminal at the top of the fuse above the black lathe wire, Fig. 2. Check the voltage between the red and black power lines with a voltmeter. The meter will show 220 volts when properly wired.

Note: The incoming power lines must be supplied by the consumer and must be in accordance with local code requirements. The incoming power lines may be colors other than red and black.

Terminal Block Diagram



Work Lamp

The work lamp is designed for a maximum bulb wattage of 75 watts. Exceeding 75 watts will damage the lamp shade. Be sure to use 220 volt bulbs only.

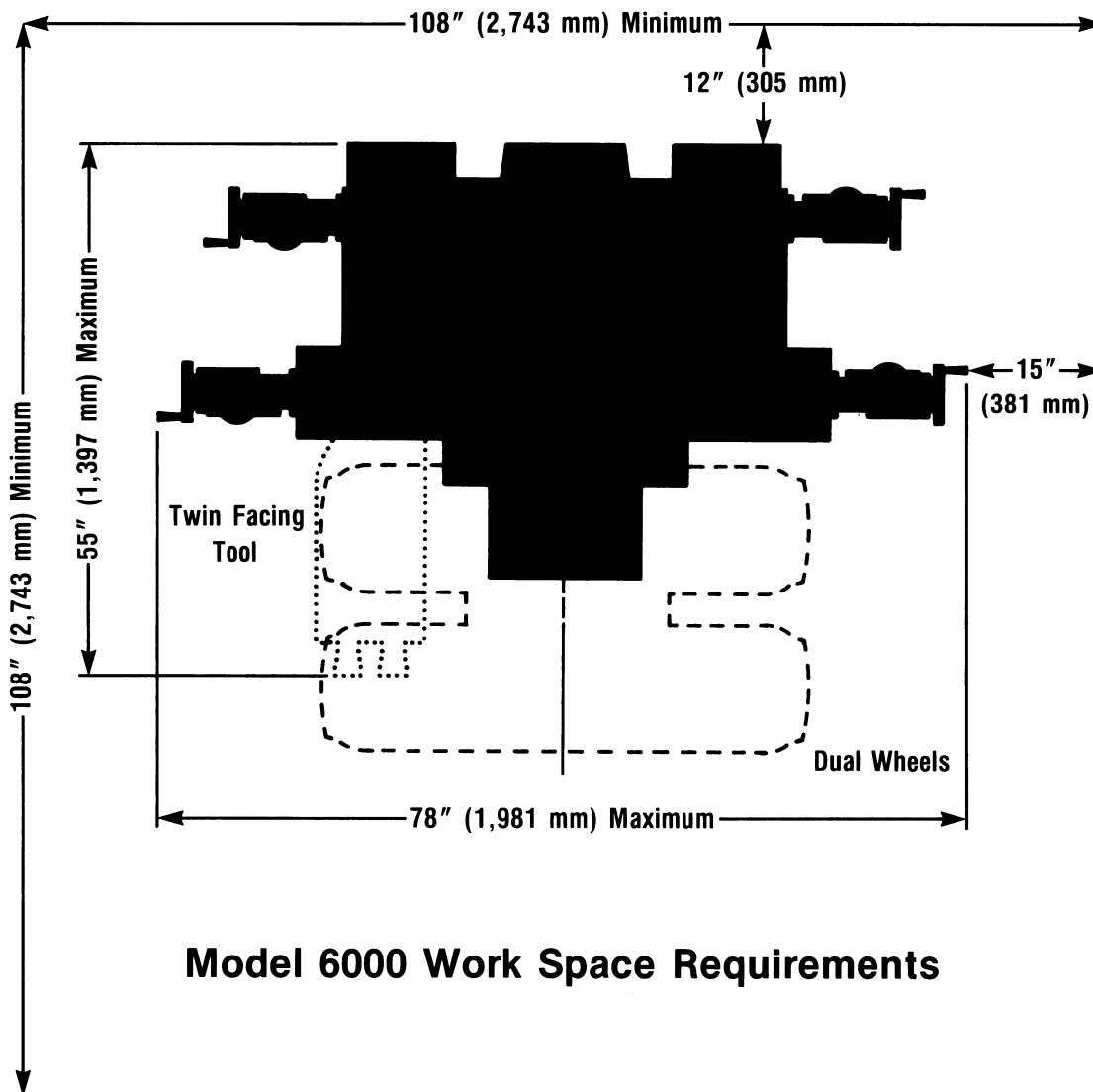
Brake Lathes

Lathe Operation

Operating Specifications

Overall Lathe Height	.57in. (1447.8 mm)
Spindle To Floor	.39 In. (990.6 mm)
Turning Travel	.18 In. (457.2 mm)
Facing Travel	.7 In. (177.8 mm)
Spindle Speed, Infinitely Variable	.20—140 RPM
Feed Rates, Infinitely Variable	.0625 In./Min, To .750 In./Min. (1.6 mm/Min. To 19.1 mm/Min.)
Handwheel Graduations	.001 In. (.020 mm)
Maximum Load, 2 1/2 In. Arbor	.1500 Lbs. (680.4 Kg)
Spindle Motor	.1 1/2 Hp—180 VDC
Electrical Requirements	. .220 VAC, 50/60 Hz, 1 Ph, Fused At 20 A
Lathe Weight	.1600 Lbs. (725.8 Kg)

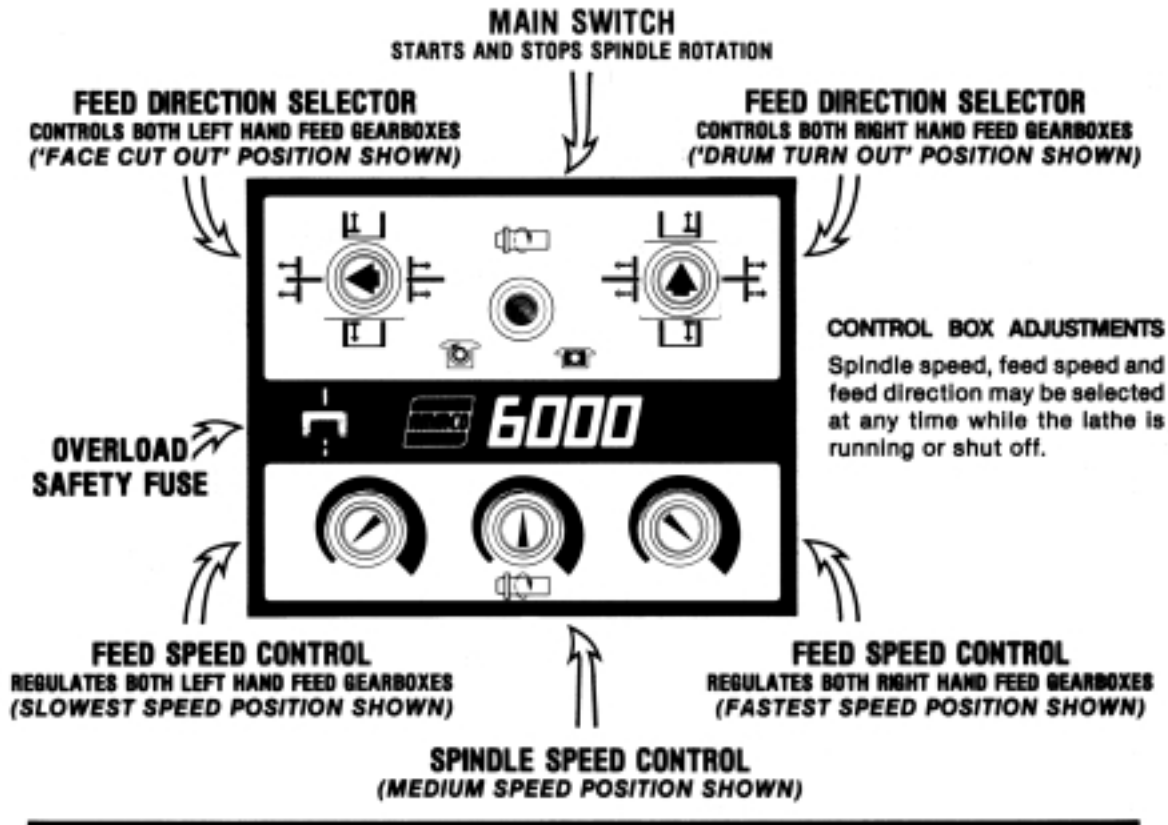
Work Space Requirements



Model 6000 Work Space Requirements

Brake Lathes

Control Panel Functions



Electrical Overload Safety Breaker

The control panel is equipped with an overload safety breaker switch which will automatically turn the lathe off when the motor is overloaded or when something is wrong in the lathe's electrical circuit.

To reset, wait approximately three minutes before moving the switch to its RESET position. If the overload safety breaker continues to open, or if the line fuses are blown, have the circuit checked by a qualified electrician.

If the feed motors do not function after resetting the safety breaker, check the fuses on the back side of the control panel assembly. Following the OVERLOAD SAFETY FUSE REPLACEMENT procedure.

Limit Switches

The lathe is equipped with external limit switches which can be adjusted to stop the travel of either the saddles or cross slides as a cut is completed. See how-to-use details under drum reconditioning and rotor reconditioning in this section.

Brake Lathes

Saddle and Cross Slide Locks

The red handled saddle locks and cross slide locks tighten in a clockwise direction. Use the locks to maintain a constant depth-of-cut when machining drums (saddle locks) and turning rotors (cross slide locks). Never engage a feed gearbox when its saddle or cross slide is locked, Fig. 1.

Feed Gearbox Engagement Levers

Each gearbox is labeled to indicate the ENGAGE and DISEN-GAGE positions. The gearboxes may be shifted in and out of gear at any feed speed without danger to the gearboxes.

Hand Wheel Depth-Of-Cut Dials

The hand wheel dials are calibrated with both inch and metric scales. The dials indicate the DEPTH-OF-CUT when setting the cutting tool for turning a drum.

Inch Scale - A cut of .010" from a 16.000" diameter drum will result in a refinished diameter of 16.020".

Metric Scale - A cut of .1 mm from a 418 mm diameter drum will result in a refinished diameter of 418.2 mm.

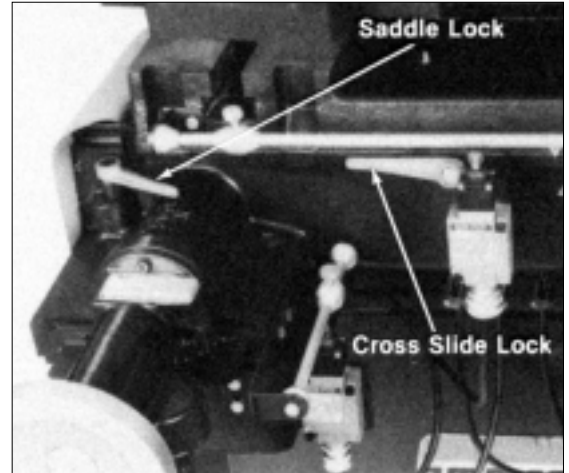


Figure 1 - Saddle & cross slide locks.

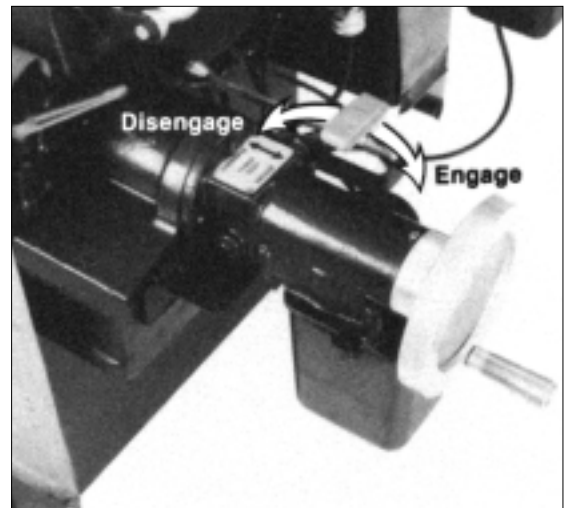
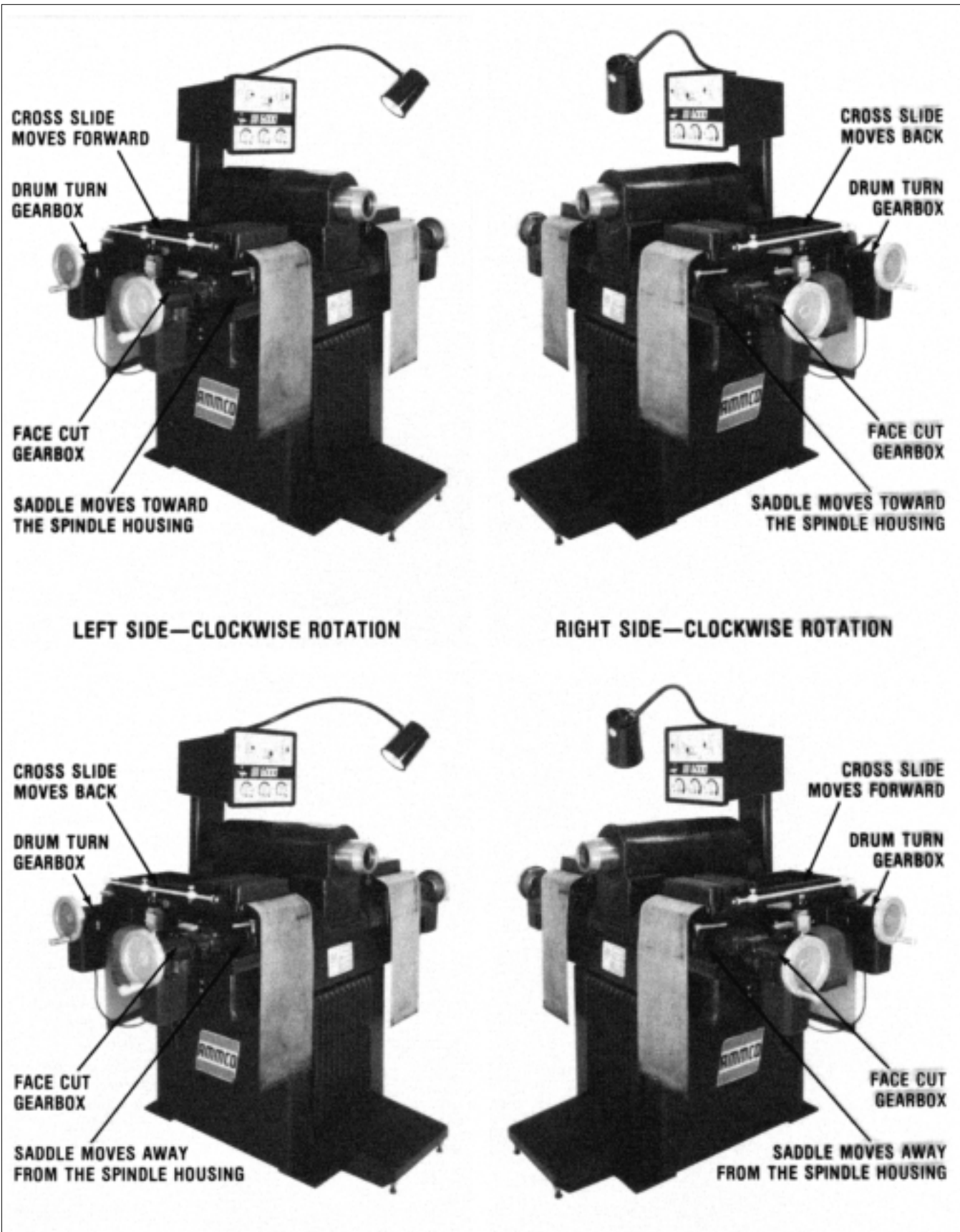


Figure 2 - Engagement Lever Operation

Brake Lathes

Gearbox Function & Handwheel Operation

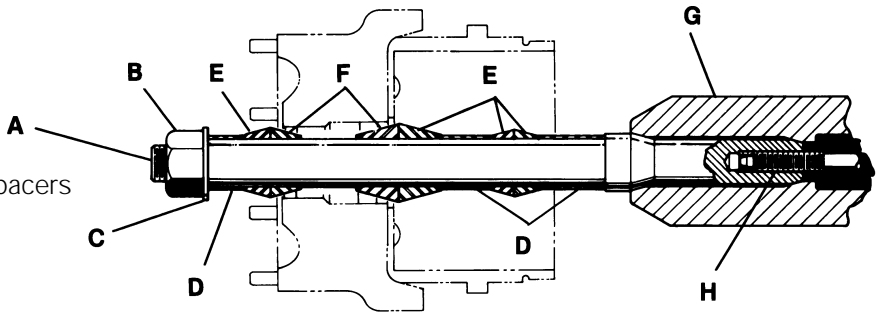


Brake Lathes

Typical Drum Mounting

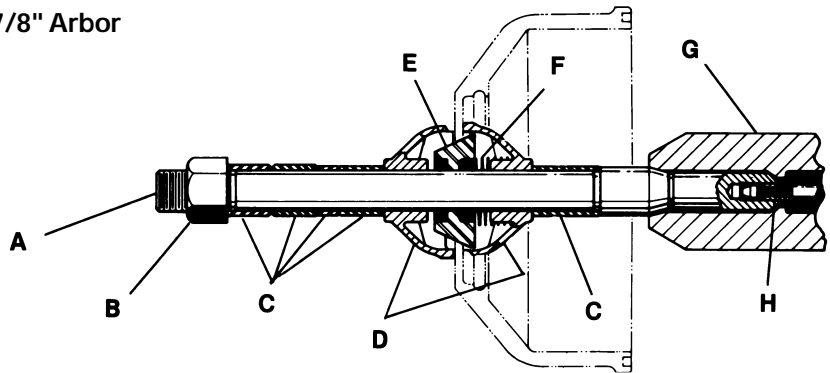
Large Truck Drum Mounted On 2 1/2" Arbor

- A — Arbor
- B — Arbor Nut
- C — Arbor Washer
- D — Spacers
- E — Centering Cones Used As Spacers
- F — Centering Cones
- G — Lathe Spindle
- H — Draw Bar



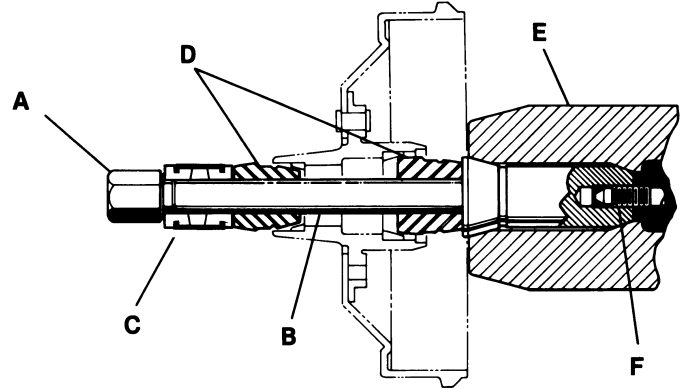
Floating Type Drum Mounted On 1 7/8" Arbor

- A — Arbor
- B — Arbor Nut
- C — Spacers
- D — Clamping Cups
- E — Centering Cone
- F — Spring
- G — Lathe Spindle
- H — Draw Bar



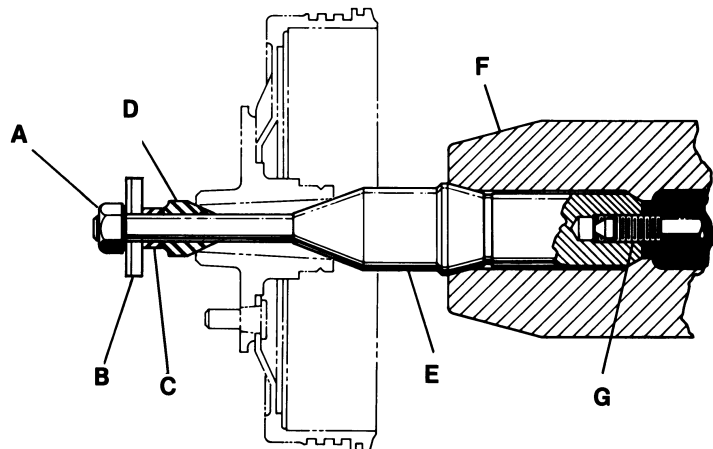
Hub Type Drum Mounted On 1" Arbor

- A — Arbor Nut
- B — Arbor
- C — Self-Aligning Spacer
- D — Radii Adapters
- E — Lathe Spindle
- F — Draw Bar



Hub Type Drum Mounted On 11/16" Arbor

- A — Arbor Nut
- B — Self-Aligning Washers
- C — Spacer
- D — Centering Cone
- E — Arbor
- F — Lathe Spindle
- G — Draw Bar



Brake Lathes

Brake Drum Reconditioning

Although drum turning is usually done on the right side of the lathe, the left side may also be used by turning the boring bar upside down in the left hand boring bar clamp.

The following description assumes right hand operation:

1. Measure the diameter of the drum with a brake drum micrometer. If the drum diameter will be larger than the manufacturer's specified rebore limit after machining, it must be replaced. Be sure the general condition of the drum is good.

2. Before mounting a hubbed brake drum, inspect the bearings and races for wear. Check a lubricant sample from the bearings for metal particles. An abundance of shiny metal chips indicate a damaged bearing. Install a new bearing race before machining the drum. Also, check the hub for a loose race. If the bearing race can be turned by hand the race recess is worn. Replace the hub or hub and drum. New bearing races are usually installed in the hub during manufacturing. Be sure the races are fully seated in the hub. New bearings should be used with new races.

3. Mount the drum on the arbor using appropriate adapters, cones, and spacers. See TYPICAL DRUM MOUNTING illustrations.

4. Wrap a drum silencer band snugly around the drum and secure it by sliding the buckle finger under the top layer of the band.

5. Place the boring bar in the boring Bar clamp. Crank the saddle to its innermost position, then back it out 2 turns. Position the cross slide so it is close to the open side of the drum; be sure the drum will not touch the cross slide when the lathe is turned ON.

6. Position the boring bar and clamp so the inside corner of the drum can be reached with the tool, and so the boring bar and clamp will not run into the spindle housing as the cross slide feeds out. Give the saddle hand wheel one full turn clockwise to move the tool away from the drum.

7. Set the cross slide limit switch by either estimating the travel necessary to cut the full depth of the drum or, if cutting several drums having the same depth, crank the cross slide back so the tool bit is 1/4" to 1/2" outside the drum. be sure all feed gearbox levers are in the DISENGAGE position. TURN THE LATHE ON. Slide the left adjustable travel limit stop against the microswitch plunger, Fig. 3. The feed motor will shut off as the ramp of the adjustable stop depresses the microswitch plunger. Tighten the lockscrew to hold the stop at this point. Set the right hand feed direction knob to the DRUM TURN OUT position.

8. Crank the tool bit to the middle of the drum wall. Manually advance the tool bit until it lightly contacts the drum wall making a "scratch" cut.

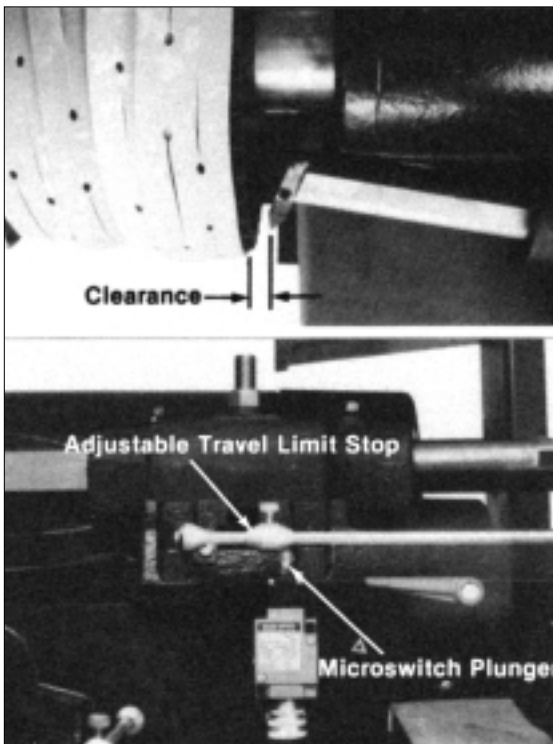


Figure 3 - Setting Limit Switch for Drum Turning

Brake Lathes

Note: A "scratch" cut should be no more than .001" deep. If the "scratch" cut is too deep it will show a continuous line on the face of the drum and the runout will not be apparent. Back the tool bit off, stop the lathe, and check the mounting as follows:

A. Loosen the arbor nut and rotate the drum one-half turn (180°) on the adapters.

Note: The adapters must be held to keep them from turning. Retighten the arbor nut, turn the lathe ON, and make a second "scratch" cut. Turn the lathe OFF.

B. If the first and second "scratch" cuts are side-by-side, the runout is in the drum — not in the mounting.

Note: A very small amount of runout is permissible. A large amount of runout indicates either a bent drum or an incorrect mounting.

If the "scratch" cuts are opposite each other (180° apart), the drum is not properly mounted. Shut the lathe OFF. Inspect the mounting for cleanliness and the adapters for burrs, nicks, or scratches. Check the bearing races for looseness. Remount the drum and check again for runout. Proceed to machine the drum, if the runout has been corrected.

9. Turn the lathe ON. Carefully advance the tool bit by hand until it just contacts the drum surface and makes a "scratch" cut. Hold the saddle hand wheel in this position and rotate its dial to the (0) position. This setting will be the reference used to help determine the reconditioned diameter of the drum.

10. Align the tool bit with the deepest groove worn in the drum. Start the lathe and manually advance the tool bit into the bottom of the groove until it makes a continuous cut around the drum. Do not cut any deeper than necessary to make the cut continuous. The depth-of-cut dial will show the approximate amount of material that must be removed to recondition the drum. Double the depth-of-cut reading and add the result to the brake drum micrometer reading to find the finished diameter of the reconditioned drum. This calculated measurement must be compared with:

- a. The maximum rebore limit (available from the manufacturer's specifications).
- b. The measured diameter of the drum before machining to determine the amount of material to be removed in each pass.

11. With the lathe still running, give the saddle hand wheel one full turn clockwise to move the tool bit away from the drum wall. Manually position the tool bit at the inside corner of the drum and set the desired depth of cut. Engage the feed gearbox and set the feed speed.

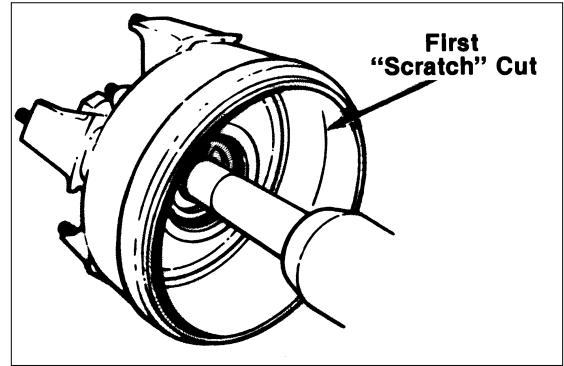


Figure 4 - Drum Mounting, First "Scratch" Cut

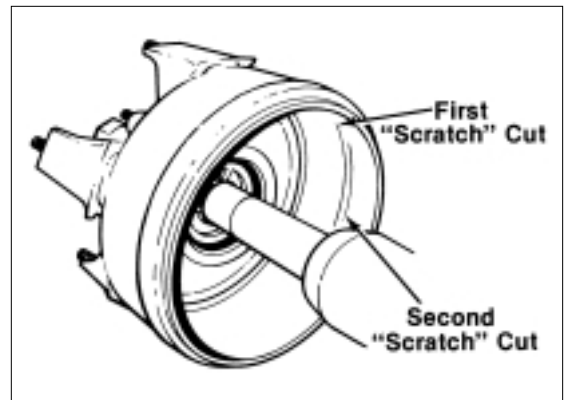
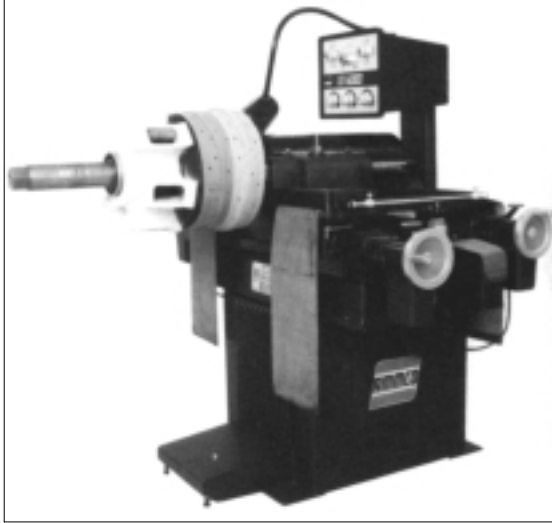


Figure 5 - Drum Mounting, Second "Scratch" Cut

Brake Lathes



Note: FEED AND SPEED SETTINGS—The following spindle speed and feed speed recommendations are intended to serve as a starting point for a machine operator not familiar with the lathe.

Drums	Spindle Speed	Feed Speed
Up To 12" Dia.	Medium Fast	Medium Slow
Over 12" Dia.	Medium	Medium Slow

Note: See CONTROL PANEL FUNCTIONS.

Although these settings are relatively slow, they should give the manufacturer's recommended finish and good tool life. The settings may be increased considerably, however, tool life decreases as spindle and feed speeds increase.

12. If a finish cut is to be made simultaneously with the rough cut or a rough cut and grind are to be done at the same time, repeat steps 5, 6, and 7 on the left side of the lathe.

Note: Both the lathe and the grinder must be running when the grinder is moved into contact with the drum.

Start the second (finish) cut at least one inch behind the rough cut. Find the zero setting for the left side by carefully advancing the tool bit or grinder (both the lathe and the grinder must be running) by hand until it makes light contact with the drum. Set the micrometer dial to zero. Advance the tool bit to the desired depth for the finish cut and tighten the saddle lock lever. Engage the saddle feed gearbox and set the feed speed.

Disengage the feed gearbox and shut the lathe off when the cut is completed.

Note: Determine the depth-of-cut by these general guidelines:

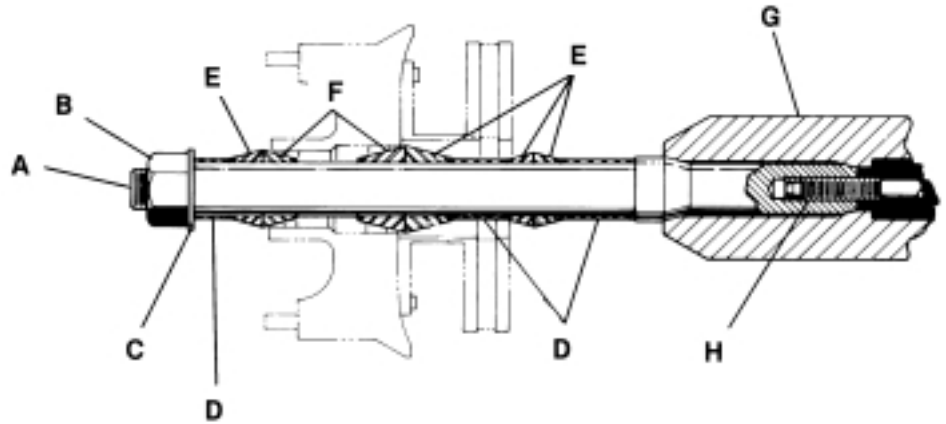
- Finishing cuts should not be shallower than .002 inches (.05 mm).
- Usually no more than two cuts are required to recondition a drum.

Brake Lathes

Typical Rotor Mounting

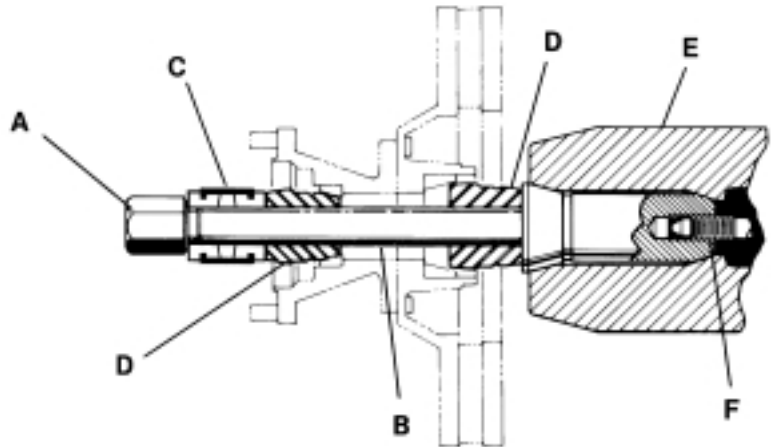
Large Truck Rotor Mounted On 2 1/2" Arbor

- A — Arbor
- B — Arbor Nut
- C — Arbor Washer
- D — Spacers
- E — Centering Cones
Used As Spacers
- F — Centering Cones
- G — Lathe Spindle
- H — Draw Bar



Hub Type Rotor Mounted On 1" Arbor

- A — Arbor Nut
- B — Arbor
- C — Self-Aligning Spacer
- D — Radii Adapters
- E — Lathe Spindle
- F — Draw Bar



Brake Rotor Reconditioning

Each brake rotor should be carefully inspected for scoring, hard spots, and rust ridges at the inner and outer circumferences of the rotor. Any excessive wear or deformity should be noted and, the rotor should be replaced if not within acceptable limits. The twin cutter is designed to be used on the left cross slide in place of the boring bar clamp, to refinish both sides of a rotor at the same time. The cross slide centers the twin cutter to the rotor and the saddle feeds the twin cutter out when cutting.

1. Use a micrometer to check the thickness of the rotor at three or more points around the circumference and about 1" (2.54 cm) in from the outer diameter. If the thickness is less than specified by the manufacturer at any point measured, or will be less after machining, the rotor should be replaced.

2. Before mounting a hubbed rotor inspect the bearings and races for wear. Check a sample of lubricant from the bearings for metal particles. An abundance of shiny metal chips indicates a damaged bearing. Install a new bearing race before machining the rotor. Also, check the hub for a loose race. If the bearing race can be turned by hand the race recess is worn. Replace the hub or hub and rotor. New bearing races are usually installed in the hub during manufacturing. Be sure the races are fully seated in the hub. New bearings should be used with new races.

3. Mount the rotor on the arbor using the appropriate adapters, cones and spacers. See the TYPICAL ROTOR MOUNTING illustrations.

4. Install a silencer band by stretching it around the rotor and hooking the wire loop over a lead weight.

5. Center the twin cutter to the rotor by manually moving the cross slide forward or back so the rotor is evenly spaced between the tool bits. Lock the cross slide in place.

6. Unlock the twin cutter tool slides and adjust them so they are equally spaced from the center of the rotor.

7. Loosen the boring bar clamp nuts of the twin cutter and position the boring bars so approximately one-half of their length is forward of the clamp studs. Manually advance the saddle until the outer boring bar tool bit comes in contact with the hub at the face of the rotor. Be sure the rotor has clearance with the body of the twin cutter in this position. Wrench tighten the outer clamp nut. Position the inner boring bar so its tool bit is approximately 1/2" beyond the rotor face and wrench tighten its clamp nut. Lock the tool slides in these positions. Be sure the tool bits are not in contact with the rotor.

8. Set the saddle travel limit switch by either estimating the travel necessary to cut the full width of the rotor faces or, if cutting several rotors having the same outside diameter, crank the saddle out so the tool bits are 1/4" to 1/2" outside the rotor. Be sure all feed gearbox levers are in the DISENGAGE position. Slide the adjustable travel limit stop against the microswitch plunger, Fig. 6. The feed motor will shut off as the ramp of the

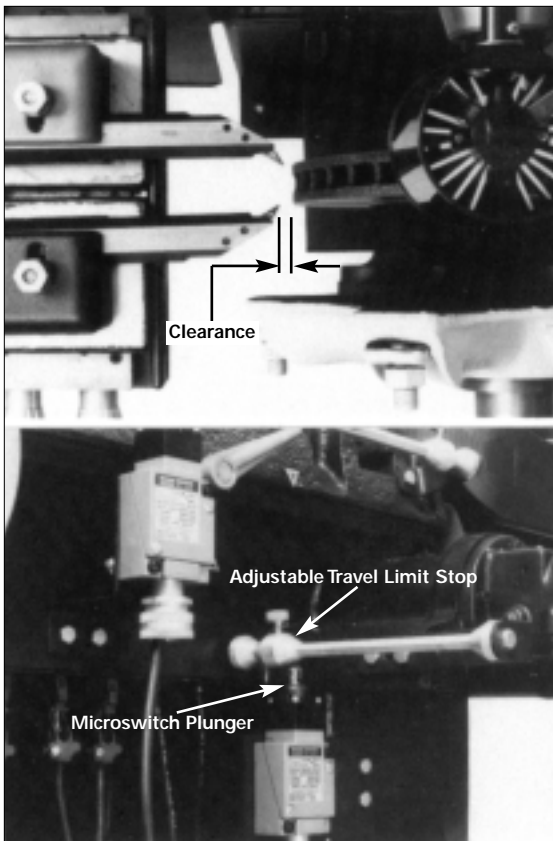


Figure 6 - Setting Limit Switch For Face Cut

Brake Lathes

adjustable stop depresses the microswitch plunger. Tighten the lock screw to hold the stop at this point.

9. Advance the tool bits to the approximate center of the rotor faces. Turn the red and blue depth-of-cut knobs clockwise, one at a time, until their respective tool bits make light contact with the rotor face, making a "scratch" cut, Fig. 7.

Note: A "scratch" cut should be no more than .001" deep. If the "scratch" cut is too deep it will show a continuous line on the face of the rotor and the runout will not be apparent. Hold the outer knobs still and turn the inner dials to zero (choose either inches or millimeters). Back the tool bits away from the rotor by turning the knobs counterclockwise. Turn the lathe OFF.

10. To check the rotor mounting:

A. Loosen the arbor nut and rotate the rotor one-half turn (180°) on the adapters.

Note: The adapters must be held to keep them from turning. Retighten the arbor nut. Back the saddle out one hand wheel turn and start the lathe. Make a second "scratch" cut on the outer surface of the rotor only. Turn the lathe OFF.

If the "scratch" cuts are side by side any runout or wobble is caused by the rotor's condition.

B. If the "scratch" cuts are opposite each other (180° apart), the rotor is not properly mounted. Remove the rotor from the arbor and 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.

11. Check the settings of the depth-of-cut dials again. Move the tool bits in until they lightly contact the rotor faces and reset the dials to zero if necessary.

12. Start the lathe and manually advance the saddle to position the outer tool bit at the rotor hub. Set the dial knobs for the desired depth of cut (inches or millimeters). Set the spindle speed and set the left hand feed direction knob to the FACE CUT OUT position. Engage the saddle feed gearbox.

Note: The following spindle speed and feed speed recommendations are intended to serve as a starting point for a machine operator not familiar with the lathe.

Rotors	Spindle Speed	Feed Speed
Up To 12" Dia.	Fast	Medium Slow
Over 12" Dia.	Medium	Medium Slow

Note: See CONTROL PANEL FUNCTIONS.

Although these settings are relatively slow they should give the manufacturers recommended finish and good tool life. The settings shown may be increased considerably; however, tool life decreases as spindle speed and feed speed are increased.

When the cut is completed, disengage the feed gearbox and shut the lathe OFF.

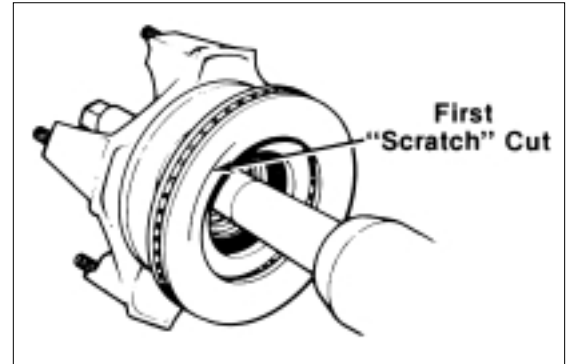


Figure 7 - Rotor Mounting, First "Scratch" Cut

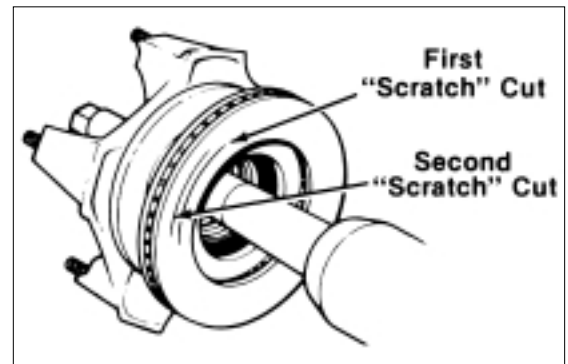


Figure 8 - Rotor Mounting, Second "Scratch" Cut

Brake Lathes

Maintenance and Service

Oiling

The lathe is initially greased and the bare metal parts are coated with an oil-soluble rust preventative at the factory. It is not necessary to clean the rust preventative from these parts. Before using the lathe, however, all bare metal parts (ways, spindle, cross slides, etc.) should be wiped down with an oiled rag. Use a light machine oil or way oil for the initial wipe down and daily when oiling the bare metal parts. Keep the wipers oiled by applying light machine oil to their top edges daily.

Greasing

Automotive chassis grease should be applied to the grease fittings called out in Figs. 1, 2 & 3 weekly using the hand grease gun supplied with the lathe.

Sides (Right Side Illustrated), Fig. 1:

Align the red triangle index marks (1). Apply grease to the lead screw nut fitting (2) located on top of the cross feed. Also, grease the cross slide way fitting (3) and the rear saddle way fitting (4). Follow the same procedure when greasing the left side.

Rear (Right Rear Illustrated), Fig. 2:

With the lathe turned OFF, reach up under each saddle at the back of the lathe and wipe grease onto the driving shaft gears of the cross slide gear boxes.

Front (Front Right Illustrated), Fig. 3:

Fold the cross slide dove tail cover back. Align the red triangle index marks (5). Apply grease to the saddle fitting (6) and the lead screw nut fitting (7) located inside the hole in the front of the saddle. Follow the same procedure when greasing the front left side.

Motor Bearings: The motor bearings are sealed for life and need no maintenance.

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** as chips and dust may be driven between machined parts and into bearings, and cause undue wear.

Adjusting Gibs

The gibs, Figs. 1 & 3, should be adjusted periodically to minimize looseness in the slides and to obtain the best possible finish on the work. When adjusting the gibs, the cross slide and the saddle must not overhang either end of their respective dove tails. Tighten one gib adjusting screw then back it off until the slide moves smoothly. Run the slide back and forth by hand to check your adjustment. Repeat a second time if necessary. Go through the same procedure for each individual gib adjusting screw.

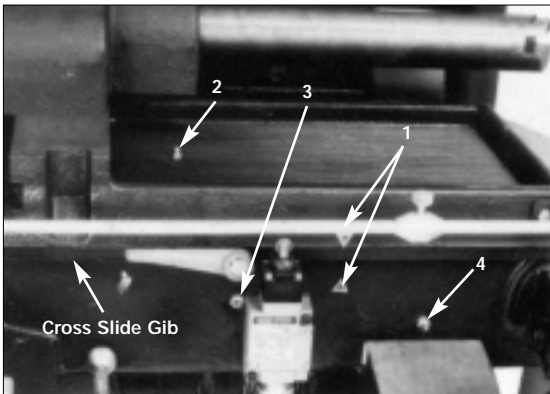


Figure 1 - Grease Fittings (Right Side Shown)

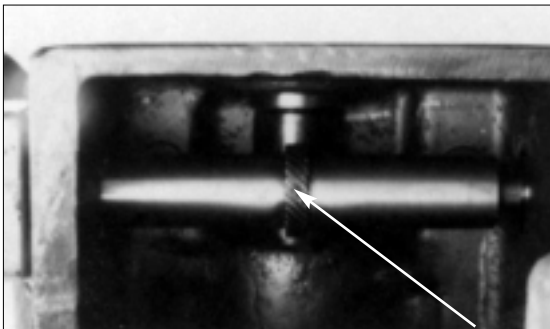


Figure 2 - Apply Grease To The Gear (Right Rear Shown From Underneath)

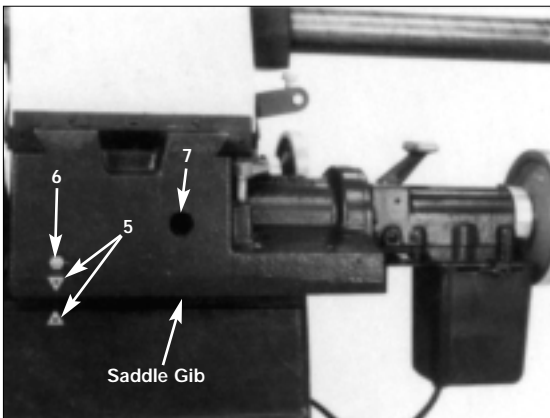


Figure 3 - Grease Fittings (Right Front Shown)

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 or drum alignment and the result will be inaccurate machining.

Always inspect the faces and the seating tapers of each adapter. Wipe each adapter clean before and after use. Carefully correct any flaw with a fine stone. If the damage cannot be corrected, replace the part.

Handle and store arbors and adapters with great care. Keep them clean and oiled with light machine oil. DO NOT dump them together in a box to collect nicks and dirt. DO NOT use the adapters for any other purpose than they are intended.

Remove all adapters from the arbor after machining a drum or rotor and wipe them clean - especially the inboard adapter. When a finished drum or rotor is removed from the arbor, the inboard adapter may move slightly away from the face of the arbor and allow chips or dust to fall into the opening. If these chips are not cleaned from between the arbor face and the adapter, they may adversely affect the machining of the next brake part.

Brake Lathes

Drive Belt Replacement

When replacing drive belts, the following procedure must be followed:

1. Turn the wall switch OFF.
2. Remove the arbor and drawbar from the spindle.
3. Remove the upper and lower belt guards.
4. Remove the spindle pulley and the spindle belt.
5. Remove the counter shaft bushing and the counter shaft belt.
6. Remove the access door, then the motor pulley and the motor belt.

To remove the motor pulley:

- a. Remove both set screws.
- b. Insert a set screw into the threaded hole and tighten. This will loosen the bushing, Fig. 4.

To install the motor pulley:

- a. Clean the motor shaft, the bore, the outside of the bushing, and the hub bore of all oil and dirt.
- b. Insert the bushing in the hub and match the hole pattern.

Note: Each hole will be threaded on one side only.

- c. Oil the set screws and thread them into the holes indicated in Fig. 4.
- d. Alternately tighten the set screws. Torque to 175 in. lbs. (1210 bushing - with 3/8 screws) or 55 in. lbs. (1008 bushing - with 1/4 screws).

To install new timing belts, reverse the procedure. Be sure the motor pulley is correctly aligned.

Main Power Switch Bulb Replacement

1. Remove the red lens bezel by unscrewing it in a counter-clockwise direction.
2. Pull gently on the black ring around the bulb to eject it.
3. Push the new bulb into the socket and replace the lens.

Drive Motor Brush Replacement

1. Turn the lathe OFF and turn the wall switch to its OFF position.
2. Unscrew the brush retaining plugs from the motor and remove the brushes, Fig. 5.
3. Install the new brushes and replace the retaining plugs.

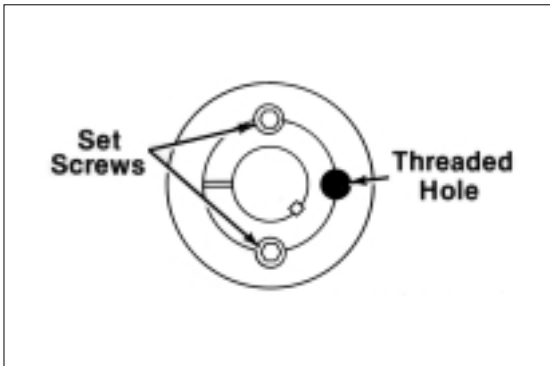


Figure 4 - Motor Pulley Removal & Installation

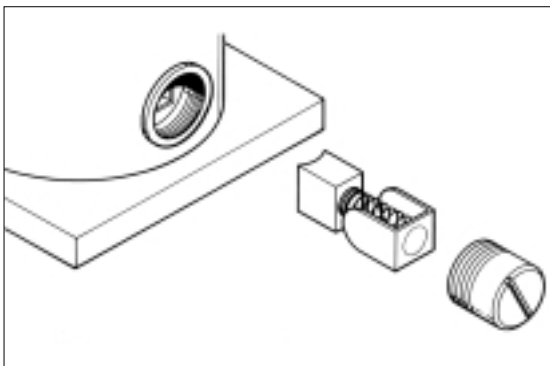


Figure 5 - Drive Motor Brush Replacement

Brake Lathes

Feed Motor Brush Replacement

1. Turn the wall switch OFF. Remove the motor cover and disconnect the electrical connector.
2. Unscrew the brush retaining plugs from the motor and remove the brushes. Note how the brushes are positioned in the motor, Fig. 6.
3. Install the new brushes so they contact the commutator correctly.
4. Replace the retaining plugs, connect the electrical wires, and replace the motor cover.

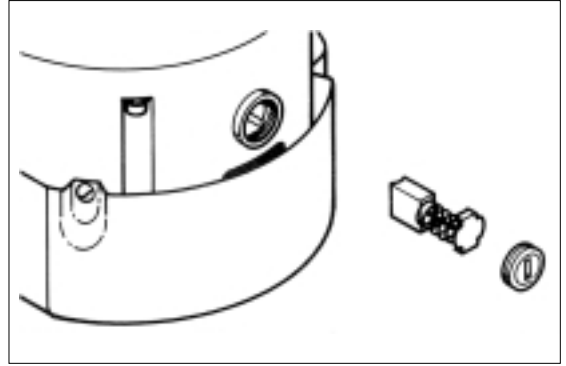


Figure 6 - Feed Motor Brush Replacement

Electrical Cords

Replace or repair any damaged or worn cords immediately.

Overload Safety Fuse Replacement

1. Turn the wall mounted disconnect box off.
2. Remove the screws holding the control panel in the control box and pull the control panel assembly out.
3. Disconnect the lathe harness connector from the panel.
4. Remove the four screws from the shield to gain access to the fuses, Fig. 7.

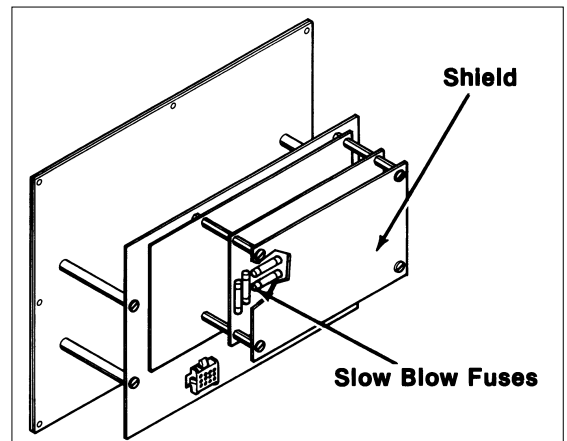


Figure 7 - Safety Fuse Replacement

