

4. Slide the rubber boot and push rod from the master cylinder.
5. Remove the snap ring from the push rod side of the master cylinder. This will release the piston stop plate. See figure 2A-8.
6. Remove the piston stop plate, piston assembly, primary cup, spring and retainer assembly and valve assembly including valve seat.
7. Clean the internal parts with alcohol.
CAUTION: Do not use cleaning solvents. Wipe the cylinder bore with alcohol. Examine the cylinder bore. Make sure the main port and relief port are open. A blocked relief port will not allow the brakes to release fully, or compensate for expansion and contraction of fluid resulting from temperature changes.
8. A scored cylinder bore may be honed provided the diameter is not increased more than .005".
CAUTION: Clean hands with soap and water, not cleaning fluid or kerosene, before handling replacement parts.
9. Lubricate the cylinder wall and all rubber parts with hydraulic fluid. Replace the valve assembly, including the seat, spring and retainer assembly, primary cup, and piston from the repair kit.
10. Install the piston stop plate and the snap ring.
11. Install the push rod and rubber boot.
12. Secure the master cylinder to the dash panel. Torque the cap screws to 10-13 lbs. ft.
13. Attach the push rod to the brake pedal with the eccentric bolt, bushings, and locknut. The brake pedal free play is adjusted by turning this eccentric bolt. See figure 2A-4 for identification. Adjust so that the brake pedal pad will move $\frac{1}{4}$ " to $\frac{3}{16}$ " before the rod touches the master cylinder piston. If the rod is extended too far, the master cylinder piston will not return to its normal position. This causes pressure to remain in the cylinder with the result being a dragging brake condition.
14. Install the hollow bolt attaching the stop light switch and hydraulic line fitting to the master cylinder. A gasket type washer must be on each side of the hydraulic line fitting.
15. Bleed the hydraulic system at each wheel cylinder as outlined in "Bleeding System."

REMOVAL, REPAIR AND INSTALLATION OF BRAKE DRUMS AND LININGS

1. Remove the wheel and brake drum. Refer to figure 2A-2.

NOTE: If it becomes necessary to back off the brake adjustment in order to remove the drums, or because of dragging brakes, use the steps itemized under "Hydraulic Brake Adjustment." Do not push the brake pedal down while the drum is removed.

2. **REAR BRAKE ONLY.** Move the parking brake operating lever forward and lift out the parking brake cable.
3. Contract the shoes as follows:
 - a. Disengage the adjusting lever from the adjusting screw by pulling backward on the adjusting lever.
 - b. Move the outboard side of the adjusting screw upward and back up the pivot nut as far as it will go.
4. Pull the adjusting lever, cable and automatic adjuster spring down and toward the rear to unhook the pivot hook from the large hole in the secondary shoe web.
CAUTION: Do not attempt to pry the pivot hook out of the hole.
5. Remove the secondary shoe to anchor spring, as shown in figure 2A-9.
6. Remove the primary shoe to anchor spring and unhook the cable anchor.
7. Remove the shoe guide plate.
8. Remove the cable guide from the secondary shoe.
9. Remove the shoe hold-down springs, shoes, adjusting screws, pivot nut, and socket.

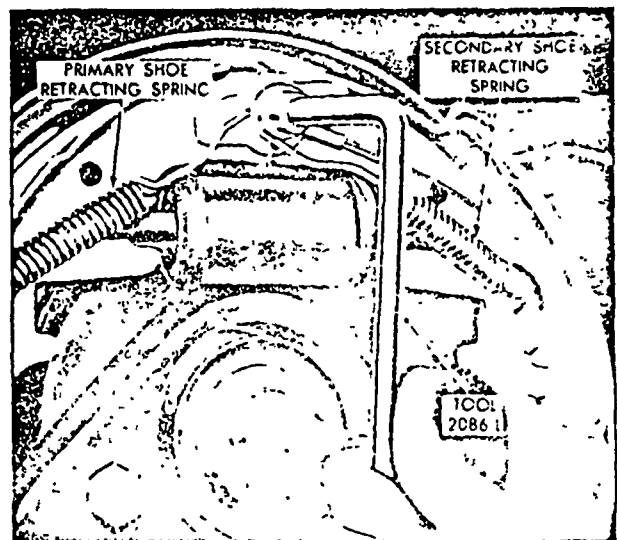


Fig. 2A-9—Retracting Spring Removal

PLAINTIFF'S EXHIBIT

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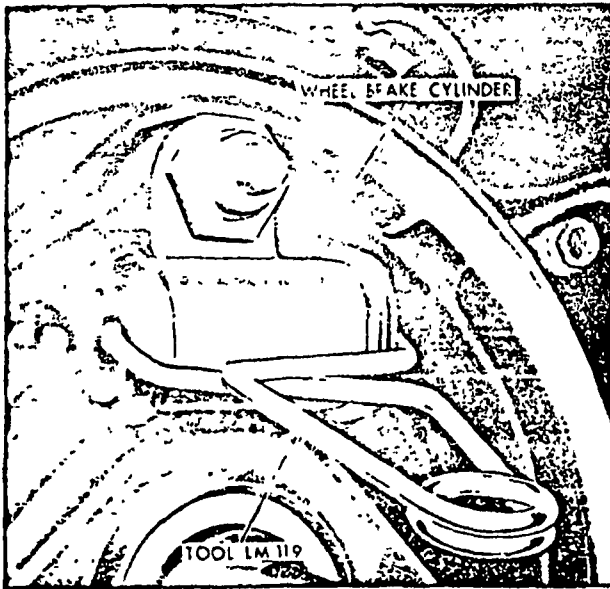


Fig. 2A-10—Wheel Cylinder Piston Clamp Installed

10. Install a wheel cylinder piston clamp, Tool LM-119, to hold the piston in place. See figure 2A-10.

11. Examine the brake drum for the following wear conditions:
 - a. Scored surface. Visually check and grind, if necessary.

CAUTION: The inside diameter of the drum must not exceed 11.060". To remove more material would seriously affect the strength of the drum.

NOTE: When drums are turned to 11.060" diameter, it is recommended that oversize linings or shoe and lining assemblies be used. **DO NOT SHIM LININGS.**

- b. Out-of-round. If erratic brake action is noted when brakes are road tested, check for an out-of-round condition. Use an arbor and dial indicator gauge or equivalent for making the check. There are various commercial devices available for restoring roundness, most of which are equipped with necessary gauging. A variation of more than .004" from round warrants attention.

Also examine brake linings for wear: If the lining face has worn to within $\frac{1}{32}$ " or less from the rivet heads, replace the linings. Either linings or lined shoes are supplied for service. However, the installation of factory lined shoes will generally give more satisfactory results. Under no circumstances replace one lining only, or one

wheel set. Both front wheel sets or both rear wheel sets should be replaced if one wheel set requires replacing.

12. Apply lubricant sparingly on those surfaces where the brake shoes contact the backing plate.
13. Examine the hydraulic wheel cylinder for evidence of fluid leakage. To recondition a wheel cylinder see "Removal, Repair and Installation of Wheel Cylinder."
14. Before assembly, clean the backing plate and apply 8L-19586 lubricant to the shoe bosses. Position the brake shoes on the backing plate, and install the hold-down spring pins, springs, and cups. On the rear brake, install the parking brake link and spring. Connect the parking brake cable.

NOTE: The parking brake cable and equalizer replacer Tool 2275 will facilitate connecting the cable assembly to the backing plate.

15. Install the shoe guide plate on the anchor pin. Place the cable anchor over the anchor pin with the crimped side toward the backing plate.
16. Install the primary shoe to anchor spring.
17. Install the secondary shoe to anchor spring.

CAUTION: Be certain that the cable end is not cocked or binding on the anchor pin when installed. All parts should be flat on the anchor pin.

18. Install the cable guide on the secondary shoe web with the flanged hole fitted into the hole in the secondary shoe web.

19. Thread the cable around the cable guide groove.

CAUTION: It is imperative that the cable be positioned in this groove and not between the guide and the shoe web.

20. Apply lubricant 8L-19586 to the threads and the socket end of the adjusting screw. Turn the adjusting screw into the adjusting pivot nut to the limit of the threads and then back off $\frac{1}{2}$ turn.

CAUTION: The brake shoe adjusting screw assemblies must not be interchanged from one side of the car to the other side. Interchanging the adjusting screws would cause the brake shoes to retract, rather than expand, each time the automatic adjusting mechanism operated.

21. Place the adjusting socket on the screw and install this assembly between the shoe ends with the adjusting screw nearest the secondary shoe.
22. Hook the cable hook into the hole in the adjusting lever from the backing plate side.
23. Place the adjuster lever pivot hook in the large hole in the secondary shoe web. See figure 2A-2.
24. Position the hooked end of the adjuster spring into the large hole in the primary shoe web, and install the loop end of the spring to the adjuster lever.
25. After installation, the action of the adjuster can be checked by pulling the section of the cable between the cable guide and the adjusting lever toward the secondary shoe web far enough to lift the lever past a tooth on the adjusting screw wheel. The lever should snap into position behind the next tooth, and release of the cable should cause the adjuster spring to return the lever to its original position, which will turn the adjusting screw one tooth ($\frac{1}{4}$ th revolution).

If pulling the cable does not produce the action described, or if the lever action is sluggish instead of positive and sharp, check the position of the lever on the adjusting screw toothed wheel. With the brake in a vertical position, anchor at the top, the lever should contact the adjusting wheel $\frac{3}{16}$ " (plus or minus $\frac{1}{32}$ ") above the centerline of the screw. If the contact point is below this centerline, the lever will not lock on the teeth in the adjusting screw wheel, and the screw will not be turned as the lever is actuated by the cable.

To determine the cause of this condition:

- a. Check the cable end fittings. The cable should completely fill or extend slightly beyond the crimped section of the fittings. If it does not meet this specification, possible damage is indicated and the cable assembly should be replaced.
- b. Check the cable length. The cable should measure $11\frac{1}{8}$ " (plus or minus $\frac{1}{4}$ ").
- c. Check the cable guide for damage. The cable groove should be parallel to the shoe web, and the body of the guide should lie flat against the web. Replace the guide if it shows damage.
- d. Check the pivot hook on the lever. The hook surfaces should be square with the body of the lever for proper pivoting. Repair the hook or replace the lever if the hook shows damage.
- e. See that the adjusting screw socket is properly seated in the notch in the shoe web.

26. After completing the installation of the adjuster and testing the action of the adjuster, remove the adjusting hole cover from the backing plate. Using a brake adjusting tool or a screwdriver, turn the adjusting screw upward from the backing plate side to expand the shoes. Use either of the following methods to complete the initial adjustment.

a. **METHOD NO. 1:**

Using calipers, expand the shoe until the outside diameter of brake shoes and lining, across points 90° to each side of the anchor, is .030" (approximately $\frac{1}{32}$ ") less than the inside diameter of the drum. Install drums and wheels. Make several reverse stops to accomplish final adjustment.

b. **METHOD NO. 2:**

If calipers are not available, follow Steps 3 through 8 listed under "Hydraulic Brake Adjustment."

REMOVAL, REPAIR AND INSTALLATION OF FRONT WHEEL CYLINDER

1. Remove the wheel, drum, and brake shoes. Disconnect the hydraulic hose from the tubing at the frame.
2. Bend back the tabs on the tab washer which secures the cylinder retaining nut. Remove the nut, washer and cylinder with the hydraulic line attached. Remove the hydraulic line.

NOTE: If it is necessary to remove the anchor pin, the attaching parts for the pin should be torqued to 80-100 lbs. ft. when installed.

3. Remove the boots, pistons, cups and spring from the cylinder. See figure 2A-11.
4. Place all parts except the cylinder casting in alcohol. Wipe the cylinder walls with alcohol.
5. Examine the cylinder bore. A scored bore may be honed providing the diameter is not increased more than .005". Replace worn or damaged parts from a repair kit.

CAUTION: Clean hands with soap and water, not cleaning fluid or kerosene, before handling replacement parts.

6. Lubricate the wheel cylinder walls and cups with brake fluid.
7. Install the spring, cups, pistons, and boots in the cylinder housing.
8. Install the piston retaining clamp Tool LM 119. See figure 2A-10.
9. Clean the hose, then wipe the threads and sealing surface clean in order to obtain a leak-proof connection. Install the hose on the cylinder.