

**SAAB**

Saab-Scania of America, Inc.

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Service Information

Subject: Clutch Master Cylinder Leakage**Issue: 01/90-1209****Application: Early 1990 9000 Models with Manual Transmission**

Certain early 1990 9000 models with manual transmission may have a clutch master cylinder supply hose that is too short. In some cars, this hose may exert tension on the master cylinder inlet fitting and cause a leak of hydraulic fluid (brake fluid).

To prevent fluid leakage from the master cylinder, a longer (530 mm) supply hose, P/N 41 21 562, has been introduced into production beginning with VINs L1009255 and L2007026. Cars built prior to these VINs should be inspected during the Pre-Delivery Inspection (PDI) or the first major service to check for any signs of fluid leakage.

Inspection Procedure:

1. Inspect for any of the following signs of clutch fluid leakage:
 - a. Black-colored fluid trail and/or puddle on plastic in-transit floor protection (cars not yet PDI'd).
 - b. Fluid droplet on lowest point of master cylinder body.
 - c. Dampness on underside on inlet when finger wiped along flange of nipple.

If leakage is found, both the supply hose and the master cylinder must be replaced.

Parts required:

Supply hose	41 21 562
Master cylinder	75 94 039
Hose Clamps (Qty 2, if required)	79 73 605
DOT 4 brake fluid	local supply

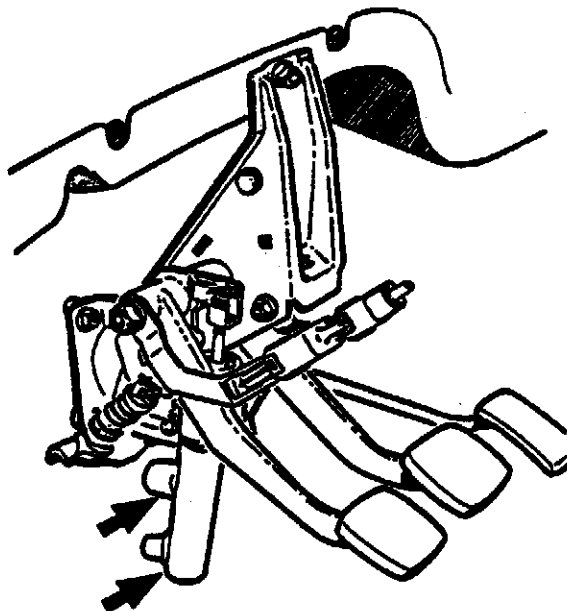


Figure 1: Inspect the Clutch Master Cylinder for signs of fluid leakage.

Repair procedure:**To Remove Clutch Master Cylinder And Hose**

1. With the ignition off, purge the ABS accumulator by depressing the brake pedal about 20 times or until a dramatic increase in pedal effort is felt.

2. Remove the ABS fuse/relay box from its bracket and position it out of the way.
3. Use pliers to release clamp securing the supply hose to the nipple on the ABS reservoir. Slide the clamp down hose.
4. Use locking pliers to pinch off the supply hose near the reservoir nipple.
5. Remove the sound insulation panel from under the driver's side of dash.
6. Use pliers to release the clamp securing the supply hose to the clutch master cylinder. Slide the clamp up hose. (Some early cars may be fitted with a white, plastic, surgical-type hose clamp. These clamps should be removed and discarded. The original spring-metal clamp will be found positioned up the hose.)
7. Place a suitable drip pan under the pedals and master cylinder. Slide the flap of the pan under the pressure pipe. (See Figure 2.)
8. Disconnect the supply hose from the master cylinder (Figure 3). Remove the clamp from the hose.
9. Pull the supply hose out through the firewall into the engine compartment. Remove the upper hose clamp and position the loose end of the hose above the fluid reservoir.
10. Unscrew the pressure pipe fitting from the master cylinder.
11. Remove the clip and clevis pin attaching the pushrod to the clutch pedal.
12. Slowly push down the pushrod to expel fluid from the master cylinder.
13. Remove the two 10mm hex nuts securing the master cylinder to its mounting bracket and remove the master cylinder.

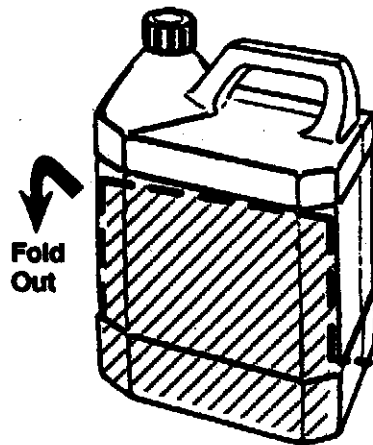
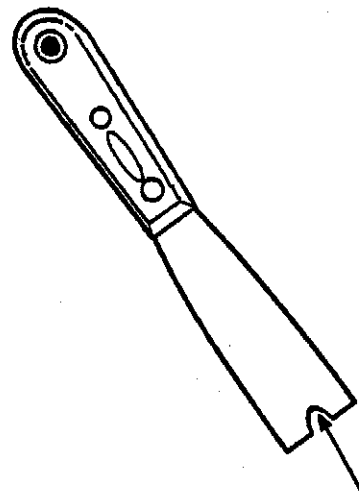


Figure 2. A drip pan can be made using a empty Saab antifreeze bottle. Form a flap from the bottom of the bottle by cutting along the 2 sides and the front. Cut out the front of the bottle from the bottom edge to the top near the handle. The pan should be positioned under the master cylinder with the flap slid up between the metal pressure pipe and the carpet.



10mm wide and deep

Figure 3. To aid in removing the supply hose from the master cylinder nipple, a simple tool can be made using a 1-inch wide stiff-bladed putty knife. Use a rattail file to form a notch in the blade. The notch should be about 10 mm wide and deep.

Master Cylinder And Hose Installation Procedure

14. Push in the pushrod on the replacement master cylinder.
15. Fit the hose clamp onto the new hose, P/N 41 21 562. Position the clamp about 40 mm from one end.
16. Install the end of the hose with the clamp onto the master cylinder and slide the clamp over the nipple.
17. Screw the pressure pipe fitting into the master cylinder but do not tighten (Figure 4).
18. Fit the master cylinder onto its mounting bracket (Figure 5). Refit the nuts and tighten. Torque: 6-14 Nm (4.5-10.5 ftlb.)
19. Tighten the pressure pipe fitting. Torque: 14-18 Nm (10.5-13.5 ftlb.)
20. Push the loose end of the supply hose through the firewall grommet and into the engine compartment. Fit the hose clamp onto the hose so the clamp is about 40 mm from the end.
21. Place a rag under the reservoir nipple. Remove the old hose from the nipple and quickly refit the new hose. Slide the hose clamp over the nipple.

NOTE

Position the clamp so that the sharp ends do not point toward the main wiring harness. Also, ensure that there is sufficient slack in the hose on both sides of the firewall so that the hose is not kinked or exerting tension on the master cylinder nipple.

22. Remove the drip pan and clean off any brake fluid residue from the master cylinder using a suitable solvent, such as brake cleaner.

23. Push the clutch pedal to the floor. Lift up the pushrod and refit the clevis pin and clip. Leave the pedal down against the floor.

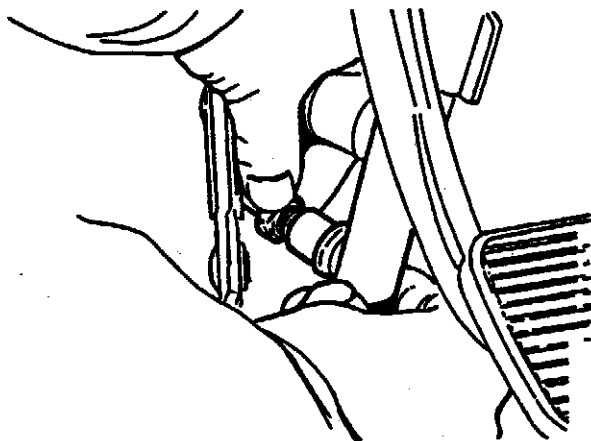


Figure 4. Screw the pressure pipe fitting into the master cylinder but do not tighten.

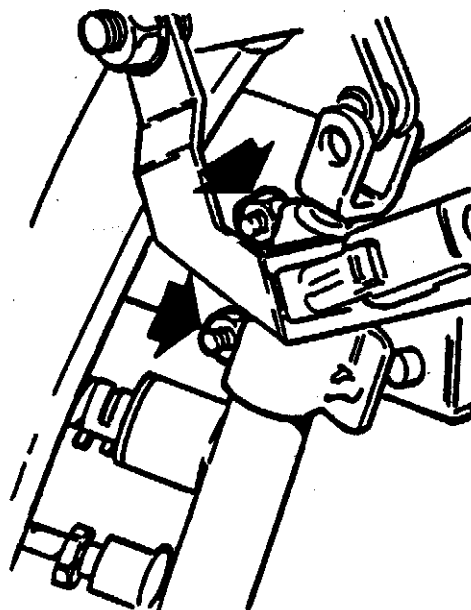


Figure 5. Fit the master cylinder onto its mounting bracket and tighten the nuts.

NOTE

The M90 9000 Clutch system can only be bled with the aid of a cooling system pressure tester or similar tool. Attempting to pump the clutch pedal to bleed the system will NOT work. See Figure 6 for making a clutch system pressure bleeder.

24. Bleed the clutch as follows:

- a. Connect a length of transparent hose to the bleed nipple on the slave cylinder. Place the other end of the hose into a suitable receptacle.
- b. Fill the ABS reservoir with DOT 4 brake fluid and attach the cooling system pressure tester pump.
- c. Open the bleed nipple half a turn.
- d. Pump using 1 bar (15 psi) pressure until all air bubbles have been expelled from the system. Watch as the level drops in the reservoir to ensure that the clutch portion is not drained completely, inadvertently allowing air back into the system.
- e. Close the bleed nipple on the slave cylinder.
- f. Slowly lift the clutch pedal by hand to the up position.
- g. Slowly press down the clutch pedal until resistance is felt. Do not press the pedal completely down to the floor.
- h. Repeat the up/down pedal motion until all air is expelled through the supply hose into the reservoir. The point at which resistance is felt will rise with each pedal stroke until only normal freeplay is present.

25. Reinstall the sound insulation panel.

26. Reinstall the ABS fuse/relay box.

27. Start the engine and wait for the ABS accumulator to fill. Siphon off any excess fluid or top up as needed to the level indicated on the front of the reservoir.

Warranty Information: For warranty claims, use Failure Coding 41235-03-0-01-06. The time allowance is Labor Operation No. 41222 (0.6 hour) plus 0.3 hour straight time to replace the supply hose, etc.

Since the inspection steps (Item 1 on the first page of this S.I.) can be done very quickly, do not submit any claim on cars where only the inspection is performed.

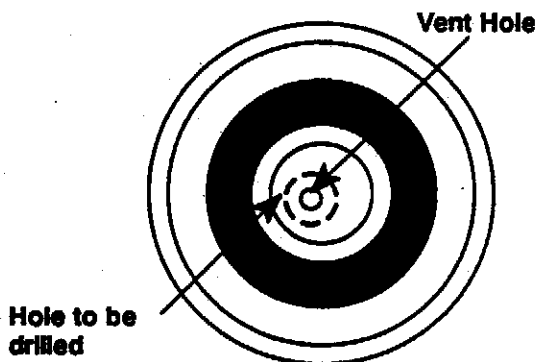


Figure 6. An adaptor for pressure bleeding the hydraulic system can be made using a spare ABS reservoir cap, P/N 89 66 152, a length of rubber hose, and a radiator pressure testing pump. Drill a hole through the center of the cap slightly smaller than the outside diameter of the hose. The hole should be drilled so that the vent in the cap is removed. Insert one end of the hose through the cap (the hose should fit tightly in the cap.). Attach the other end of the hose to the pressure pump using a suitable fitting and hose clamp.