

CERTAIN 2011 F-650 AND F-750 VEHICLES EQUIPPED WITH AIR BRAKES AND TRACTION CONTROL — BENDIX® ATR-6™ TRACTION CONTROL RELAY VALVE REPAIR

OVERVIEW

Before demonstrating or delivering any of the vehicles involved in this recall, dealers are to remove and repair the Bendix® ATR-6™ Traction Control Relay Valve using a service kit. This service must be performed on all affected vehicles at no charge to the vehicle owner.

SERVICE PROCEDURE

NOTICE: Before attempting to work on the air brake system, certain precautions should be observed since the compression and storage of air can be compared to the energy in a coiled spring and, when released, can present a hazard if not correctly recognized. The wheels of the vehicle should always be blocked by some means other than the air brake system so that depletion of air will not permit the vehicle to roll.

- In draining the system, do not look into the air jets or direct them toward a person as dirt or sludge particles can be carried in the air stream.
- As system pressure is drained and the emergency brakes apply, keep hands away from brake chamber push rods and spring actuators which will apply automatically with the loss of pressure. This caution should also be followed when checking the service brake system.
- Do not disconnect hoses that contain air pressure since they will whip as air escapes from the line.

1. Chock the wheels before proceeding.

NOTE: If the relay valve has a rectangular silver metal service tag as shown in Figure 1, this indicates that the relay valve was previously repaired. Contact the Special Service Support Center (SSSC) at 1-800-325-5621 for instructions to close this recall. Release the vehicle to the customer.

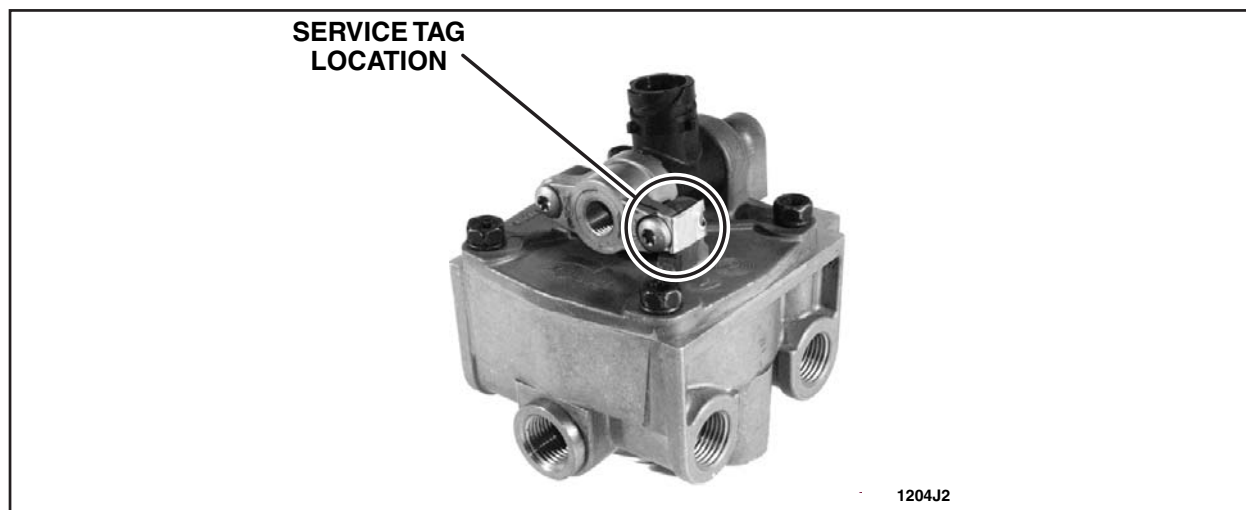


FIGURE 1



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NOTICE: Take care to avoid any contamination inside the valve during these procedures.

2. Drain the air pressure from the reservoirs.

- For vehicles without automatic moisture ejector valves, open the drain cocks on the primary and secondary reservoirs. See Figure 2.
- For vehicles with automatic moisture ejector valves, use a suitable tool to press the stem on the bottom of the valve. See Figure 3.

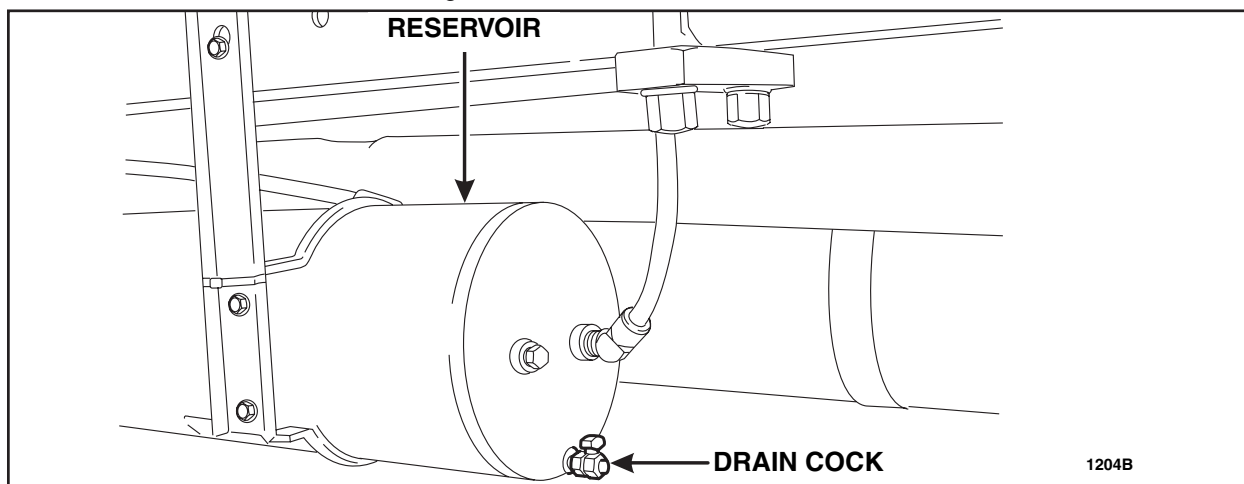


FIGURE 2

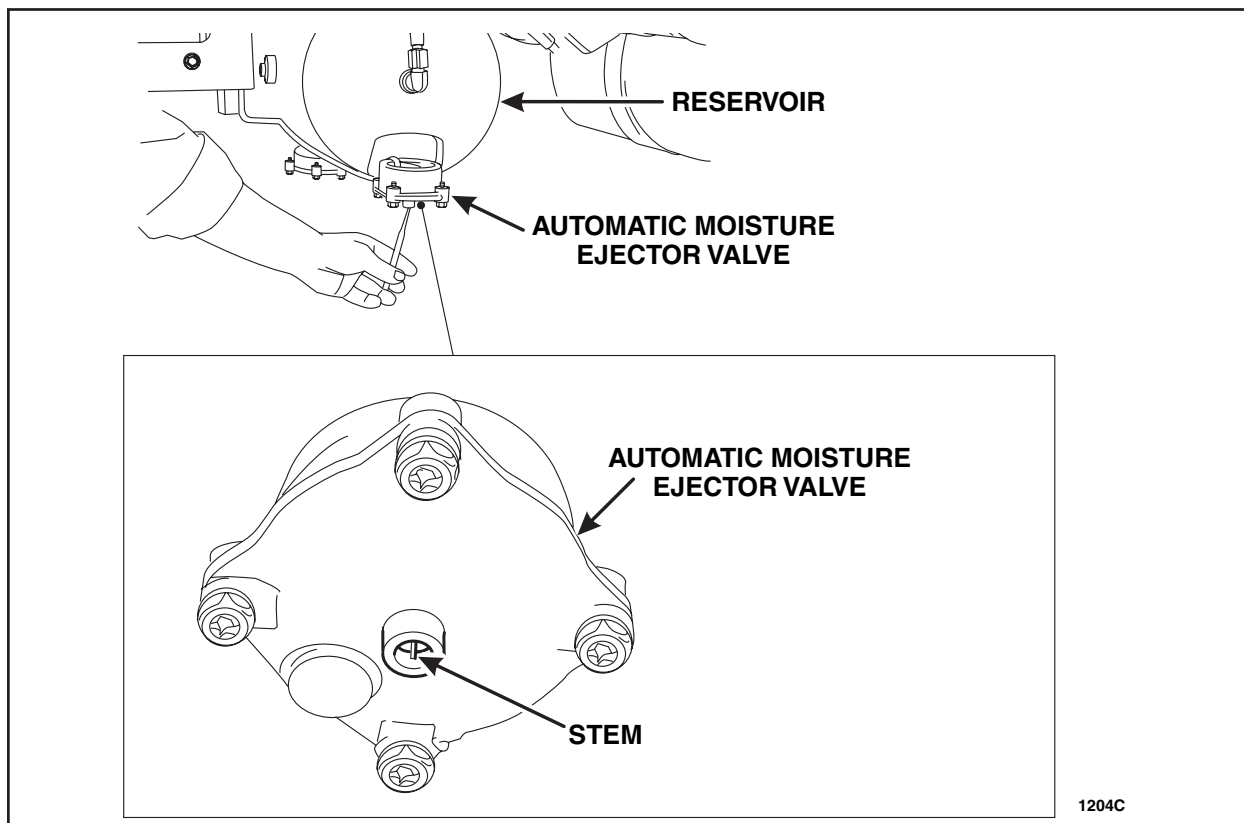


FIGURE 3



3. Clean the relay valve and fittings to remove any dirt, corrosion or contaminants that could enter the relay valve or fittings during service.
4. Disconnect the traction solenoid electrical connector. See Figure 4.

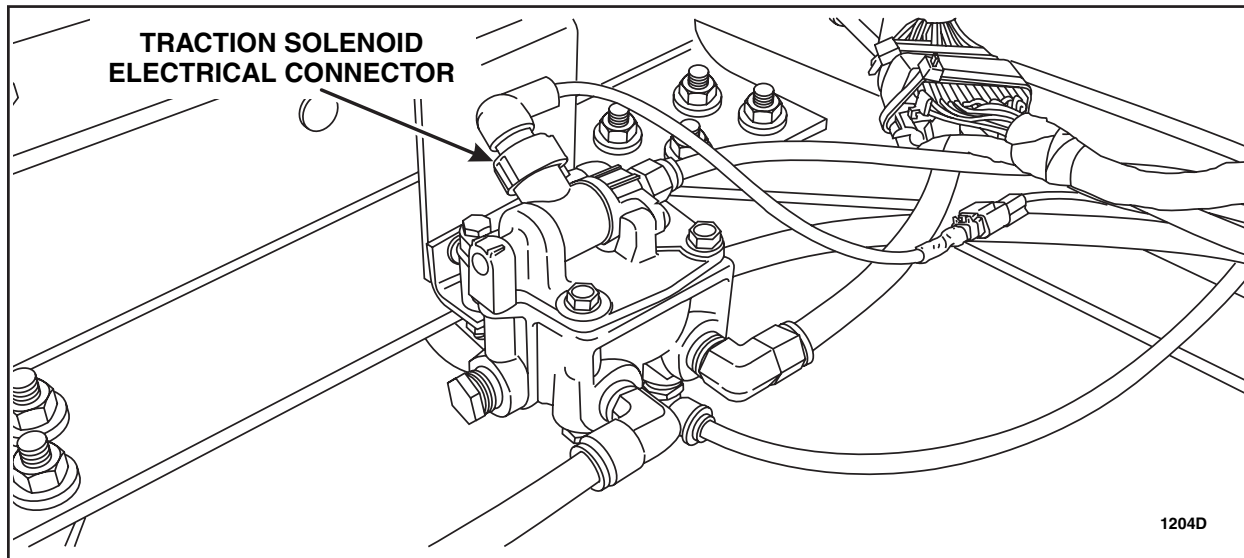


FIGURE 4

5. Mark the five (5) relay valve air tubes to their corresponding ports to aid in reassembly.
6. Remove the air tubes from the relay valve fittings.
 - Push in on the tubes, depress the collets, and firmly pull the tubes out of the fittings.
 - If the fittings have been exposed to harsh conditions or have been in service for a long period of time, it may be necessary to rotate the collet with pliers to help free the collet from the body.



7. Remove the two (2) bracket nuts and remove the relay valve. See Figure 5.

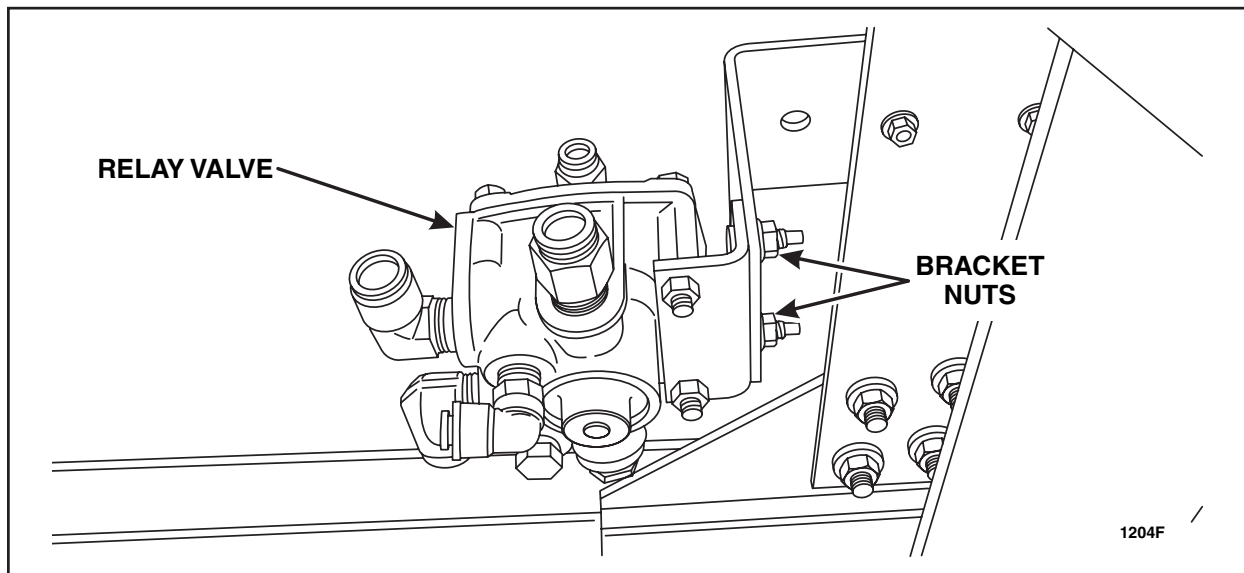


FIGURE 5

8. Remove the control port fitting from the relay valve cover. See Figure 6.

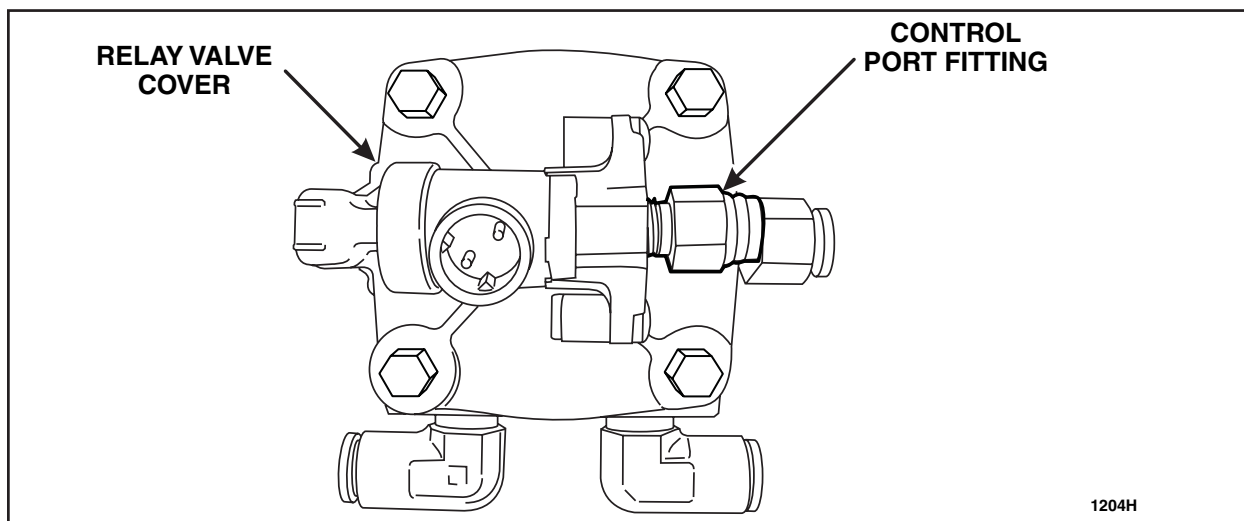


FIGURE 6

9. Apply teflon tape to the control port fitting.
10. **NOTICE: All torques specified are assembly torques and can be expected to fall off slightly after assembly. Do not re-torque after the initial assembly torque falls off.**

NOTICE: Do not over-tighten, over torquing could crack the cover or strip the threads.

Install the control port fitting onto the *new* relay valve cover. See Figure 6.

- Tighten to 15-24 Nm (130-220 in-lbs). Tighten an additional 1/4 turn to no more than 1 full turn.



11. Mark the orientation of the relay valve cover and bracket. Also note the location of the bolts and ID washer. See Figure 7.
12. Remove the relay valve cover and bracket from the relay valve. See Figure 7.
 - a. Remove the bolts and nuts.
 - b. Remove and discard the relay valve cover.

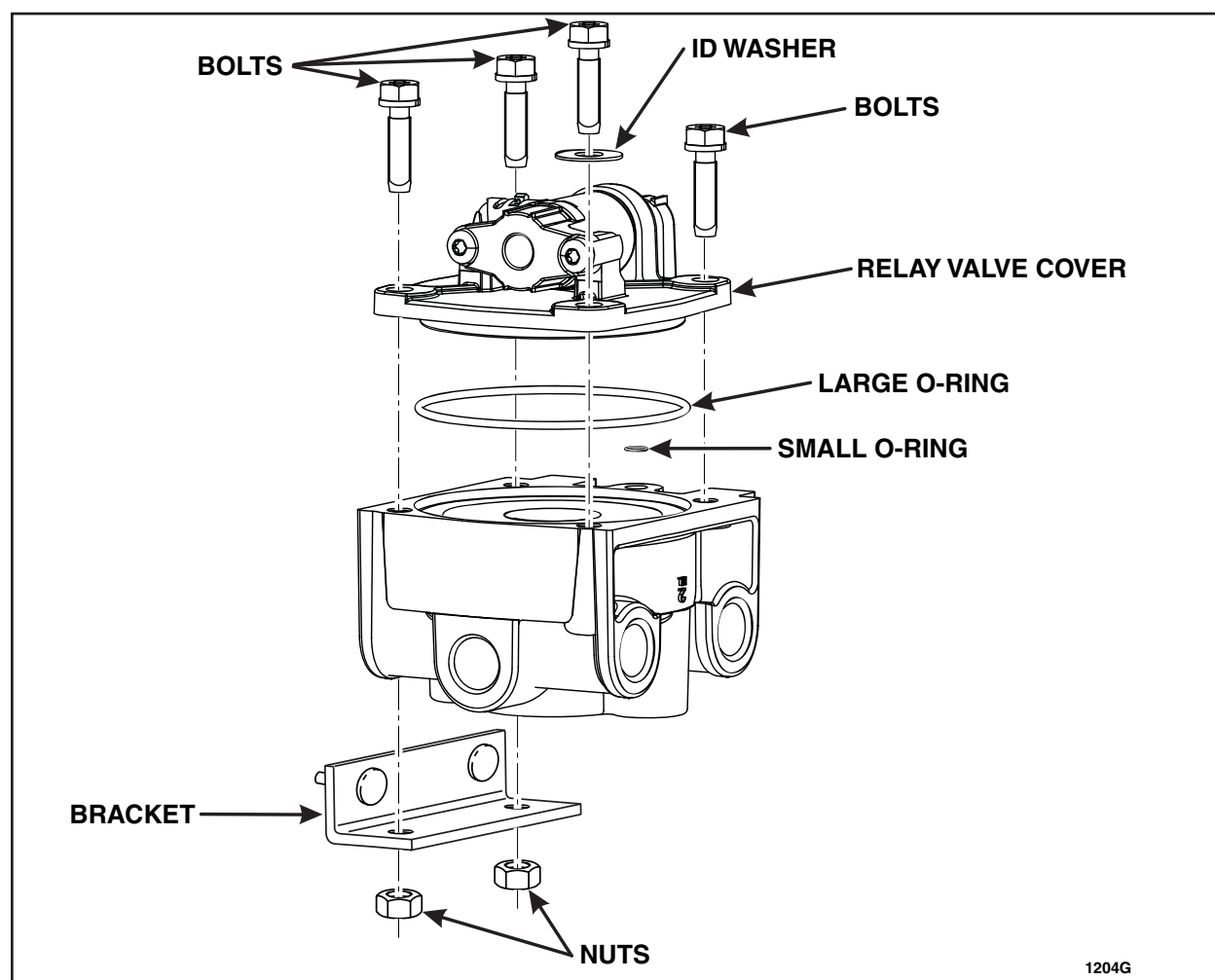


FIGURE 7

13. Remove and discard the large and small relay valve o-rings. See Figure 7.



14. Verify that no contamination has entered the valve. You **MUST** remove any debris inside. Use a clean shop cloth and shop air to remove any debris.
15. Lube the *new* large and small o-rings using the grease supplied with the relay valve cover kit.
16. Install the *new* large and small o-rings onto the *new* relay valve cover. See Figure 8.

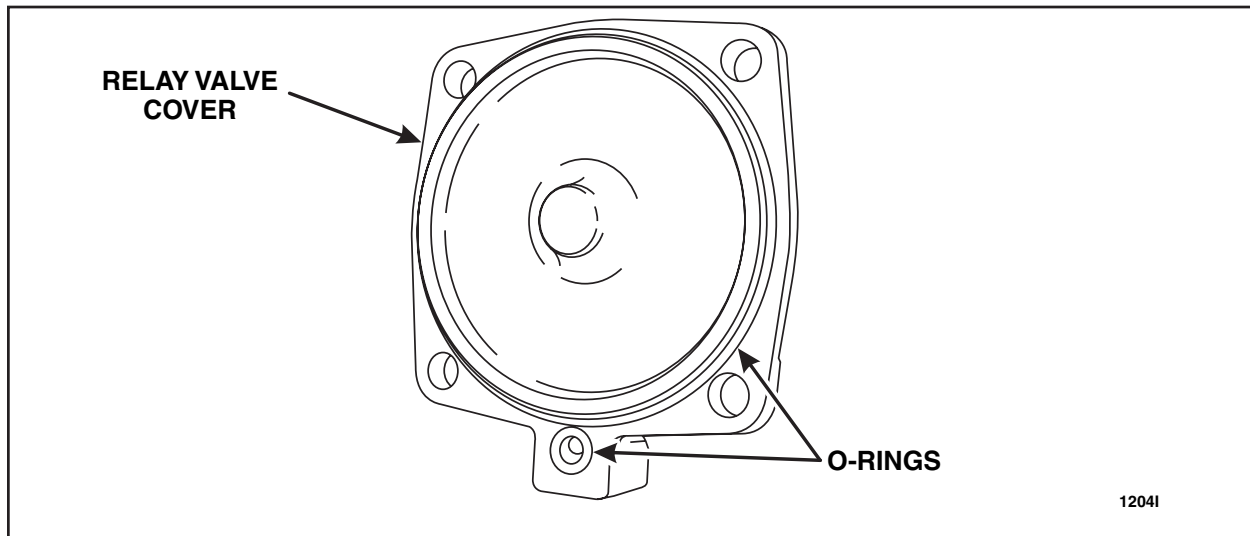


FIGURE 8

17. Place the *new* relay valve cover in position over the valve body in the same orientation as prior to removal.
18. **NOTICE: Do not over-tighten, over torquing could crack the cover or strip the threads.**

Install the relay valve cover bracket, bolts, ID washer, and nuts. See Figure 7.

- In a cross pattern, tighten the relay valve cover to 15-24 Nm (130-220 in-lbs).

19. Install the relay valve and the two (2) bracket nuts. See Figure 5.

- Tighten to 11-18 Nm (96-120 in-lbs).

20. **NOTE:** Check the tube ends for damage or distortion.

Install the air tubes to the relay valve fittings.

- Insert the air tubes into the fittings until fully seated. Pull back on the tube to make sure the collet is retaining the tube.

21. Connect the traction control solenoid electrical connector. See Figure 4.
22. If previously opened, close the air drain cocks on the primary and secondary reservoirs.



Check For Air Leaks

1. Turn the vehicle on and pressurize the air brake system.
2. Apply a soap solution to the exhaust port on the bottom of the valve.
 - Any leakage noted should not exceed a one-inch bubble in 3 seconds.
3. Make and hold a full brake application and apply a soap solution to the exhaust port and around the cover where it joins the body.
 - The leakage noted should not exceed a one-inch bubble within 3 seconds at the exhaust port.
4. Check for inlet valve and air tube/o-ring leakage. Make this check with the service brakes released.
 - Coat the port(s), air tubes, and the area around the relay valve exhaust retaining ring with a soap solution.
 - Leakage of a one-inch bubble in 3 seconds is permitted.
5. When the vehicle is started, the Anti-lock Brake System (ABS) and Automatic Traction Control (ATC) lamp(s) should briefly illuminate and then go out. Verify that the ABS and ATC lamps illuminate briefly at start-up. If either of the lamps remain ON:
 - a. Verify that the relay valve solenoid electrical connector is connected properly.
 - b. Verify that the relay valve assembly is not damaged and has been assembled properly.
 - c. If the previous steps did not resolve the ABS/ATC lamp issue, refer to the Workshop Manual (WSM) for normal diagnostic procedures.

Chuff Test

NOTE: This procedure requires the brakes NOT be applied.

WARNING: The wheels need to be chocked during this test procedure.

1. With the vehicle "OFF", verify that the air brake system is fully pressurized.
2. Cycle the ignition to the "ON" position while a second person monitors the relay valve by listening closely, or using their hand to feel for a short release of air, coming from the relay valve.
3. If the relay valve does not perform the momentary exhaust as normal:
 - a. Verify that the relay valve solenoid electrical connector is connected properly.
 - b. Verify that the relay valve assembly is not damaged and has been assembled properly.
 - c. If the previous steps did not allow the relay valve to function properly, refer to the WSM for normal diagnostic procedures.



Check Air Brake Operation

1. Remove the wheel chocks.
2. Check the air brake system operation.
3. If the Air Brake System is operating properly, release the vehicle to the customer.
 - Air Brake System is not operating properly, refer to the WSM for normal diagnostic procedures.

