



Installation Instructions

E-10R, E-10PR & E-15R RETARDER CONTROL REPLACEMENT KIT

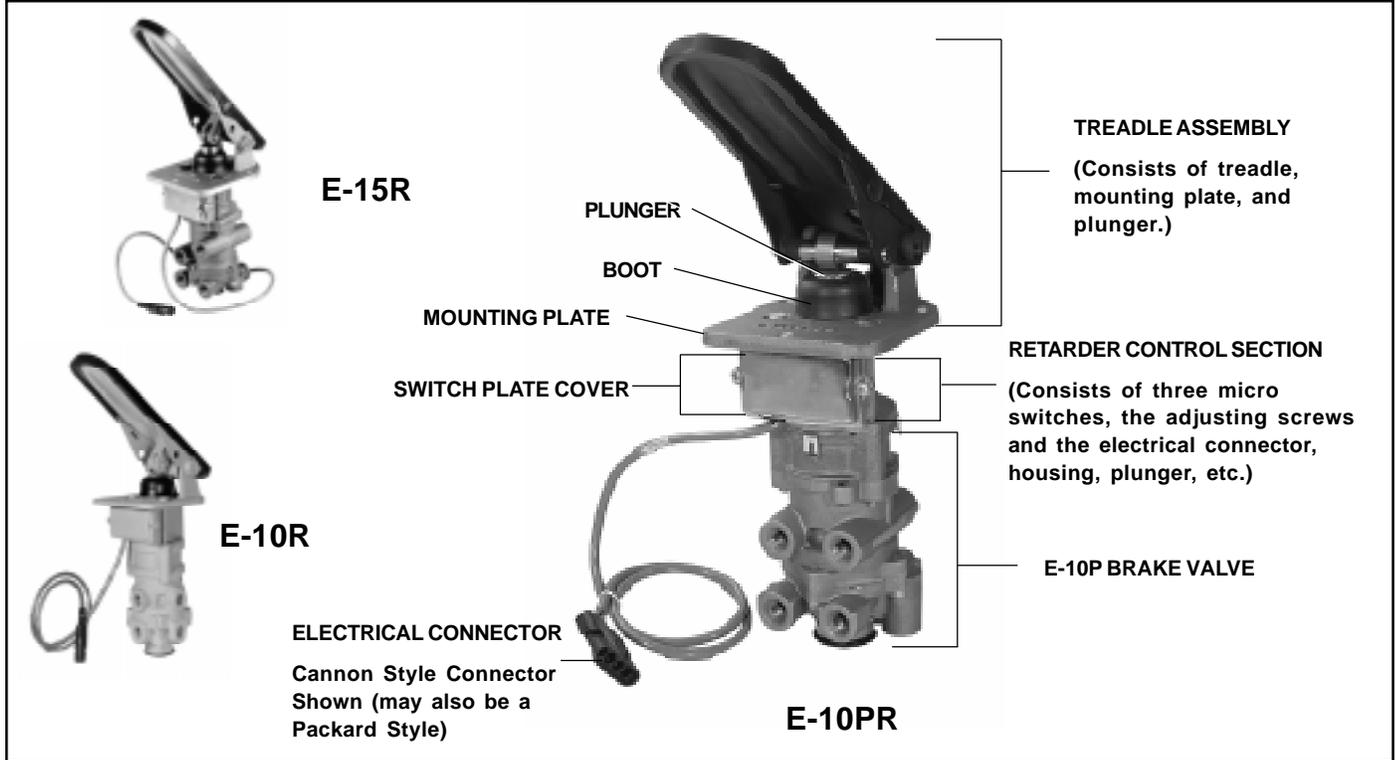


FIGURE 1 - RETARDER CONTROL BRAKE VALVE

IMPORTANT! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels.
2. Stop the engine when working around the vehicle.
3. If the vehicle is equipped with air brakes, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle.
4. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in manner that removes all electrical power from the vehicle.
5. When working in the engine compartment the engine should be shut off. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated, or electrically charged components.
6. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
7. Never exceed recommended pressures and always wear safety glasses.
8. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
9. Use only genuine Bendix replacement parts, components, and kits. Replacement hardware, tubing, hose, fittings, etc. should be of equivalent size, type, and strength as original equipment and be designed specifically for such applications and systems.
10. Components with stripped threads or damaged parts should be replaced rather than repaired. Repairs requiring machining or welding should not be attempted unless specifically approved and stated by the vehicle or component manufacturer.
11. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.

REMOVAL OF THE RETARDER CONTROL ASSEMBLY

1. Disconnect the plug of the electrical cable from its mating socket of the vehicles power supply.
2. Identify and disconnect all air supply and delivery lines at the brake valve, if brake valve replacement is required.
3. Remove the brake valve and treadle assembly from the vehicle by removing the three cap screws on the outer bolt circle of the mounting plate.

NOTE: Before removing the treadle assembly, be sure to mark the position of the treadle mounting plate relative to the retarder control assembly.

4. Remove the treadle from the mounting plate by tapping out the roll pin and then the pin retaining the treadle, spring and mounting plate.

NOTE: Mark the position of the retarder control assembly to the upper valve housing.

5. Remove the boot from the plunger.
6. Remove the three remaining cap screws (2) from the mounting plate. Separate the mounting plate from the retarder control section (1) and the retarder control section from the upper valve housing (3). **CAUTION: DO NOT SEPARATE THE UPPER VALVE HOUSING FROM THE BALANCE OF THE BRAKE VALVE.** Keep the plunger in the retarder control section in its bore. Switch damage will result from attempted removal or permitting it to slide out of the body/bore by more than 3/8".

INSTALLATION OF THE RETARDER CONTROL ASSEMBLY

1. Place the retarder control assembly (1) onto the brake valve (3) making sure it is oriented correctly. (Refer to marks made on unit prior to disassembly). **CAUTION: Switch damage will result if the plunger is permitted to slide out of the bore by more than 3/8".** Place the mounting bracket onto the top of the retarder control assembly in its proper location. (Again referring to marks made prior to disassembly.) Retain with the three long cap screws (2) and torque to 80-120 in. lbs. Do not use silicone grease in the retarder control section.
2. Replace the boot by expanding its large diameter into the recess in the mounting plate and the small diameter into the recess of the plunger.
3. Connect all air supply and delivery lines to the brake valve that were previously removed.
4. Plug the connector of the cable assembly into its mating component from the vehicles power supply. Switch adjustment will be required if the brake valve or retarder control has been replaced.
5. Replace the treadle assembly onto the valve. Place the yellow end of the spring into the hole provided in the mounting plate. Catch the opposite end of the spring under the treadle and hold the treadle in place while installing the pin through the ears of the mounting plate and the I.D. of the spring. Install the roll pin into its hole in the bushing on one side of the treadle making sure it enters its mating hold in the pin of the treadle assembly.

RETARDER BRAKE VALVE ADJUSTMENT PROCEDURE

Equipment required to perform adjustments:

Qty.	Description
1	Air Gauge
1	Phillips or Torx T-25 Screw Driver
1	0.050 Allen Wrench
1	Volt-Ohm Meter

SWITCH ADJUSTMENTS

Adjustments to the closing of the switches can be attained by inserting a 0.050 Allen wrench, turning the screw clockwise to decrease the amount of movement required to close the switch and counterclockwise to increase the amount of movement required to close the switch. All adjustments of the switches and readings of the volt-ohm meter are to be made with the treadle being depressed (downward stroke). Never attempt to adjust the switches on the release of the treadle application (upward stroke).

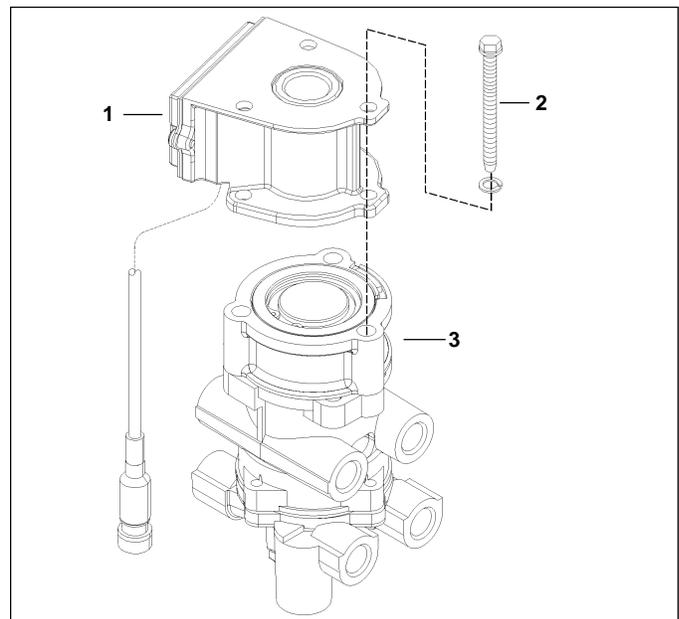


FIGURE 2 - RETARDER BRAKE VALVE EXPLODED VIEW

CALIBRATION OF MICRO SWITCHES ON ALL TREADLE ACTUATED BRAKE VALVES (Except the lever actuated model) See Figure 3.

NOTE: Cannon connector pins are identified with numbers and Packard connector pins are identified with letters.

1. Remove the two Phillips or Torx screws and remove the cover of the switch plate, exposing the switch plate.
2. Unplug the power cable at the quick connect connector.
3. To adjust switch #1, connect the black lead of the volt-ohm meter to pin #3 or C of the connector and the red lead to pin #1 or A of the connector. At this time there should be a maximum reading on the meter (open circuit). Slowly start to depress the treadle. After approximately 1/4" movement at the end of the treadle, switch #1 should close and the volt-ohm meter will respond with a reading of near 0 (closed circuit).

4. To check switch #2, leave the black lead of the volt-ohm meter connected to pin #3 or C of the connector; connect the red lead to pin #4 or D. At this time, the meter will have a maximum reading (open circuit). Slowly depress the treadle until you can feel resistance to the movement being applied. At the point of the end of the free travel of the treadle, approximately 1/2" movement at the end of the treadle, switch #2 should close and the volt-ohm will respond with a reading of near 0. If an adjustment to this switch is required, follow the instructions under the heading "Switch Adjustments."
5. To check switch #3, continue to have the black lead of the volt-ohm meter connected to pin #3 or C of the connector and connect the red lead to pin #2 or B. Install an air gauge in the primary delivery circuit. With the treadle in the retracted position, the reading on the volt-ohm meter will be maximum (open circuit). Slowly depress the treadle until the air delivery of the primary circuit (shown on the air gauge) reaches 12 psi. At which time switch #3 should close and the volt-ohm meter will respond with a reading of near 0. If an adjustment to this switch is required, follow the instructions under the heading "Switch Adjustments."
6. When all adjustments to the switches are complete, the Allen screws should be resealed using any available sealant (such as paint or liquid gasket material).
7. Replace the cover and gasket on the switch plate and retain by installing the two Phillips screws and tightening securely.

SERVICE CHECKS

OPERATING CHECK

Check the delivery pressure of both primary and secondary circuits using accurate test gauges. Depress the treadle to several positions between the fully released and fully applied positions, and check the delivered pressure on the test gauges to see that it varies equally and proportionately with the movement of the brake pedal.

After a full application is released, the reading on the test gauges should fall off to zero promptly. It should be noted that the primary circuit delivery pressure will be about 2 PSI greater than the secondary circuit delivery pressure with both supply reservoirs at the same pressure. This is normal for this valve.

Important: A change in vehicle braking characteristics or a low pressure warning may indicate a malfunction in one or the other brake circuit, and although the vehicle air brake system may continue to function, the vehicle should not be operated until the necessary repairs have been made and both braking circuits, including the pneumatic and mechanical devices, are operating normally. Always check the vehicle brake system for proper operation after performing brake work and before returning the vehicle to service.

LEAKAGE CHECK

1. Make and hold a high pressure (80 psi for the E-10R and E-10PR) application. For the E-15R check for leakage at a 20 psi primary application.
2. Coat the exhaust port and body of the brake valve with a soap solution.
3. Leakage permitted is a one inch bubble in 3 seconds. If the brake valve does not function as described above or leakage is excessive, it is recommended that it be replaced with a new or remanufactured unit, or repaired with genuine Bendix parts available at authorized Bendix parts outlets.

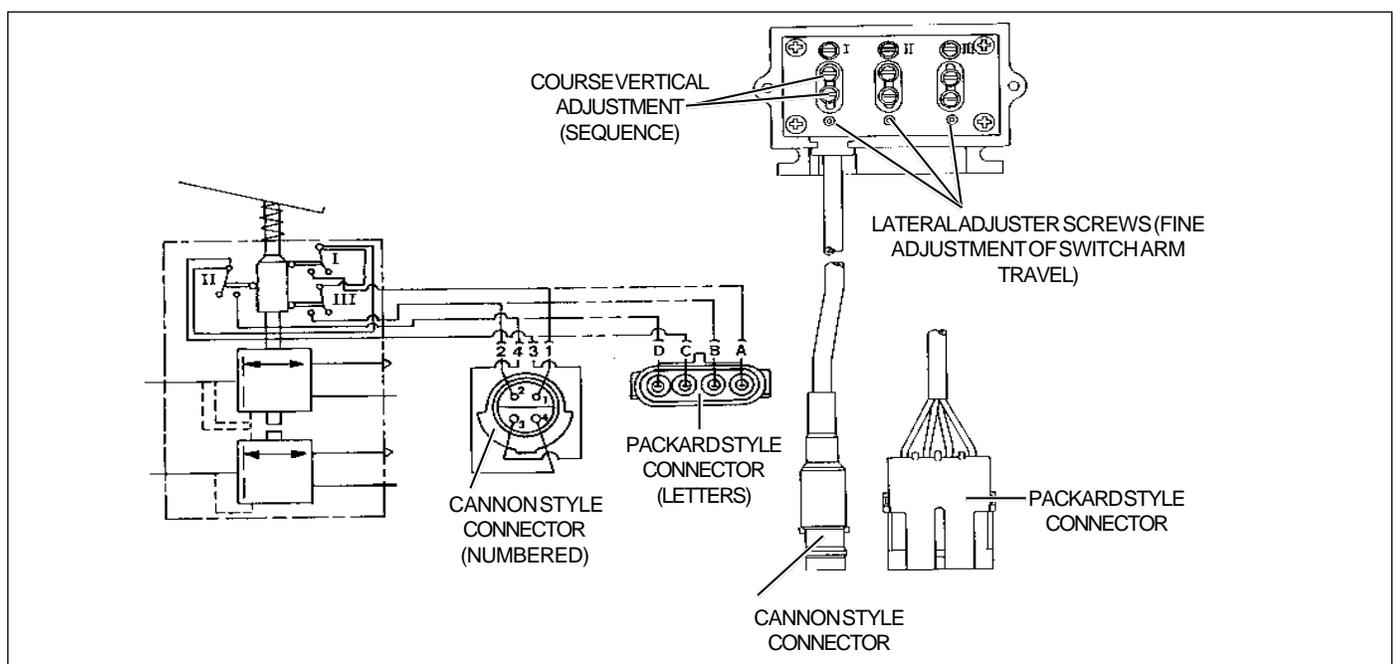


FIGURE 3 - RETARDER BRAKE VALVE SWITCH ADJUSTMENT

