



Installation Instructions

KIT PC. No.
102802

UNIVERSAL MAINTENANCE KIT FOR R-12, R-14 RELAY VALVES & M-10 ANTILOCK MODULATOR

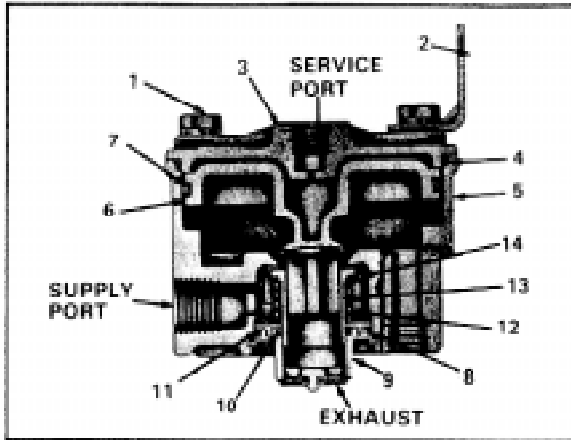
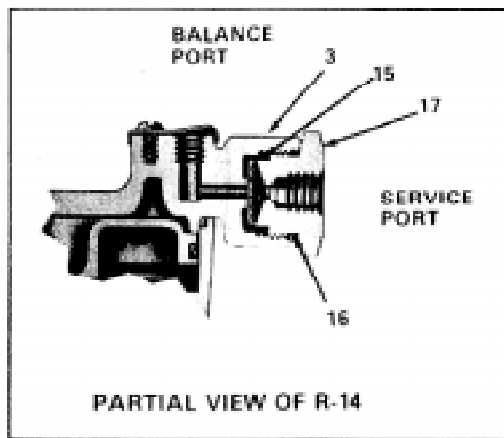


FIG-1



PARTIAL VIEW OF R-14

This kit contains the following parts:

| Key | Description | Qty. |
|-----|---------------------|------|
| 4 | Sealing Ring | 1 |
| 7 | O-Ring | 1 |
| 8 | Retaining Ring | 1 |
| 9 | Exhaust Cover Assy. | 1 |
| 10 | O-Ring | 1 |
| 11 | O-Ring | 1 |
| 12 | Spring | 1 |
| 13 | Inlet/Exhaust Valve | 1 |
| 14 | Valve Retainer | 1 |
| 15 | Diaphragm | 1 |
| 16 | O-Ring | 1 |
| | Tube of Lubricant | 1 |
| | Instruction Sheet | 1 |
| 17 | O-Ring | 1 |

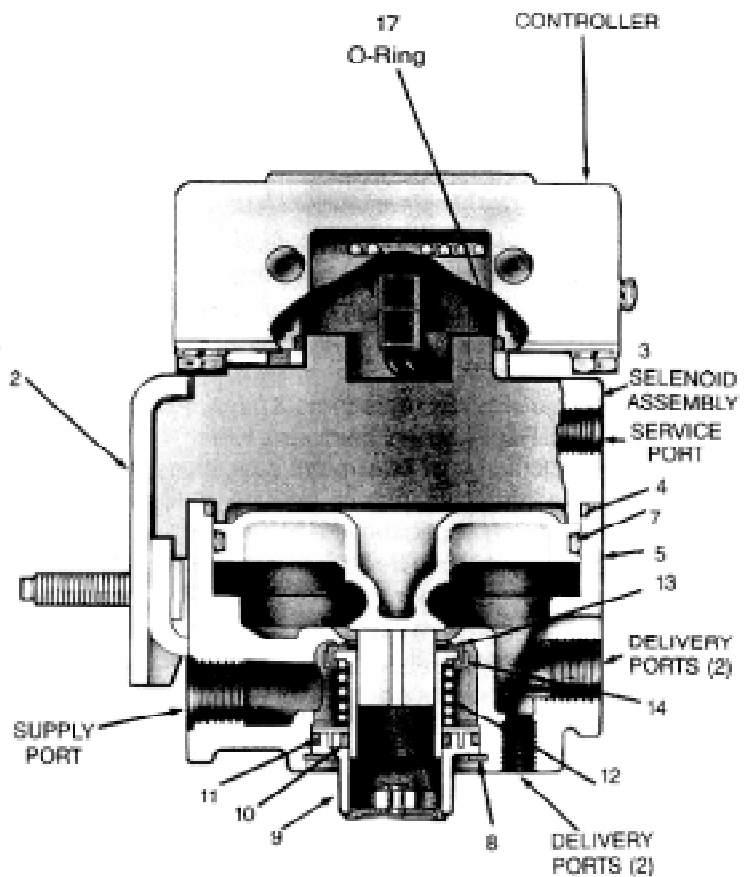


FIG-2

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

1. Block and hold the vehicle by means other than air brakes.
2. Drain air brake system reservoirs.
3. Identify air lines to facilitate installation.
4. Disconnect air lines from valve.
5. If servicing the M-10 modulator, lift the wire retainer from the 19 pin connector, pinch the lock tabs and pull the connector from its socket.
6. Remove mounting bolts, then valve.

7. Prior to disassembly, remove as much contamination as possible from the exterior of the device taking care to keep all contamination from entering the open ports.

DISASSEMBLY

NOTE: Prior to disassembly, mark the location of the mounting bracket to the cover or solenoid assembly and the cover or solenoid assembly to the body of the valve.

CAUTION: The valve bodies may be lightly clamped in a bench vise during disassembly, however, **over-clamping will result in damage to the valve and result in leakage and/or malfunction. If a vise is to be used, position the valve so that the jaws bear on the supply ports on opposing sides of the valve's body.**

1. On the R-12 or R-14 valve, remove the four cap screws securing the mounting bracket and cover to the body. Retain the cap screws for reuse.
On the M-10 valve, remove and retain the four Allen head screws that attach the controller to the solenoid assembly. Remove and discard the o-ring(17). Remove and retain the two Allen head screws and the two Allen head bolts, lockwashers and nuts that attach the solenoid assembly and bracket to the body.
2. Remove and retain the mounting bracket.
3. Remove the cover or solenoid assembly from the body and retain.
 - A. If the valve being serviced is an R-12 or M-10, locate diaphragm(15) and o-ring(16) contained in this kit and discard. Proceed to Step 4.
 - B. If the valve being serviced is an R-14, remove cap nut(17) from cover(3) and remove and discard diaphragm(15) and o-ring(16).
4. Remove and discard sealing ring(4) from the cover(3) or solenoid assembly.
5. Remove piston(6) from the body(5) and retain for reuse.
6. Remove and discard o-ring(7) from piston(6).
7. Depress and hold the exhaust cover assembly(9) and remove and discard retaining ring(8) from the valve body(5).
8. Slowly release the holding force on the exhaust cover assembly(9) to relax the spring.
9. Remove and discard the following parts:
 - a. Exhaust cover assembly(9)
 - b. O-rings(10 & 11)
 - c. Spring(12)
 - d. Inlet/exhaust valve(13)
 - e. Retainer(14)

ASSEMBLY

Wash all remaining parts in mineral spirits and dry thoroughly. Using the lubricant provided in this kit, lightly lubricate all o-rings, o-ring grooves, body bores any sliding surfaces.

1. Install o-rings(10 & 11) in the exhaust cover assembly(9).
2. Install o-ring(7) on piston(6).
3. Install sealing ring(4) on cover(3); or solenoid assembly(3).
4. Install retainer(14) on inlet/exhaust valve(13) and insert both in the body(5).

5. Install spring(12) in the body(5).
6. Install exhaust cover assembly(9) in the body(5). Depress and hold the exhaust cover assembly in the body.
7. Install retaining ring(8) in the body(5). Make certain the retaining ring is completely seated in the groove in the body.
8. Install piston(6) in body(5).
9. If the valve being serviced is an R-12 or M-10, proceed to Step 10. If the valve being serviced is an R-14, install o-ring(16) on cap nut(17), install diaphragm(15) and then cap nut(17) in cover(3). **NOTE:** Install diaphragm(15) in cover(3) and make certain the diaphragm is centered in the cover bore to prevent pinching when the cap nut is installed. Torque cap nut to 150-400 inch pounds.
10. Referring to the marks made during disassembly, install cover(3) or solenoid assembly(3). Be sure to install o-ring(17) between the solenoid assembly and the EC-10 controller, Figure 2.
11. Install the mounting bracket(2) on the cover (3) or solenoid assembly(3), Figure 2, in the position as marked during disassembly.
12. For the R-12 or R-14, install the four cap screws(1) in the cover(3) and torque to 80-100 inch pounds and proceed to Step 15. For the M-10 valve, install the two Allen head screws and lockwashers and the two 5/16" Allen head bolts, lockwashers and nuts that retain the solenoid assembly and the mounting bracket to the valve and torque to 140 inch pounds. Perform the operating and leakage tests before returning the vehicle to service.
13. Install the four Allen head screws that retain the controller to the solenoid assembly and torque to 45 inch pounds.
14. Plug the 19 pin connector into the modulator until the lock tabs snap in place. Push the wire retainer in place over the lock tabs.

INSTALLATION

1. Clean air lines connected to valve.
2. Inspect all lines and/or hoses for damage and replace as necessary.
3. Install valve and tighten mounting bolts.
4. Connect air lines to valve (plug any unused ports).

OPERATIONAL AND LEAKAGE TEST

1. Fully charge air brake system and adjust brakes.
2. Make several brake applications and check for prompt application and release at all appropriate wheels.
3. With brake valve in released position, coat the exhaust port with soap solution and check for inlet valve and valve guide o-ring leakage; one-inch (1") bubble in five seconds leakage is permitted.
4. Make and hold a brake valve application; coat the exhaust port with soap solution and check for leakage; one inch (1 ") bubble in three seconds leakage is permitted.
NOTE: If the valve being tested in an R-14, coat the balance port also. Leakage at this point should not exceed a one inch (1") bubble in three seconds.
5. Make and hold valve application: coat outside of valve body in area where cover joins the body for cover o-ring leakage. No leakage permitted.
6. For information relating to the electrical components and troubleshooting of the MC-10 antilock assembly refer to service data SD-13-4760 or Bendix antilock troubleshooting diagram BW-1609 available from your local Bendix distributor.

