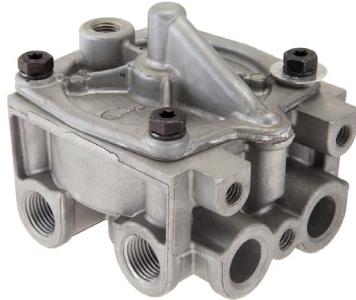


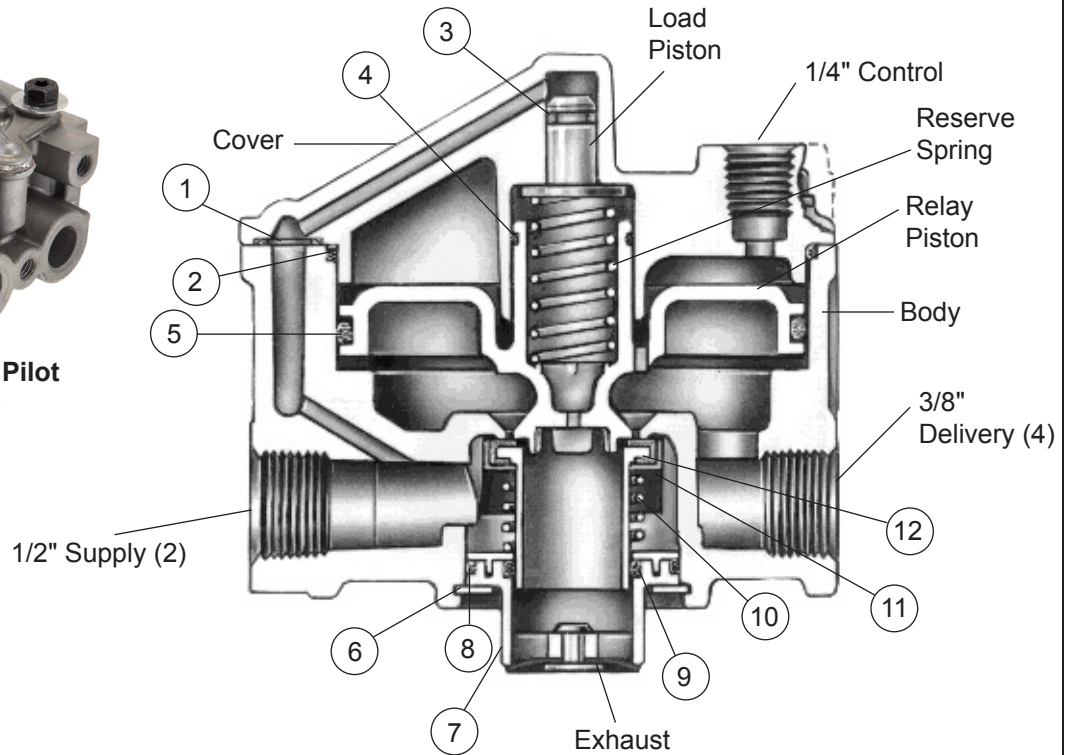
Installation Instructions



BENDIX® R-12P™ PILOT RELAY VALVE MAINTENANCE KIT



Bendix® R-12P™ Pilot Relay Valve



Kit Contents

Item No.	Description	Qty.
1	O-Ring (.364 I.D.)	1
2	O-Ring (2.487 I.D.)	1
3	O-Ring (.239 I.D.)	1
4	O-Ring (.739 I.D.)	1
5	O-Ring (3.234 I.D.)	1
6	Snap Ring	1
7	Exhaust Cover	1
8	O-Ring (1.424 I.D.)	1
9	O-Ring (.862 I.D.)	1
10	Valve Spring	1
11	Valve Retainer	1
12	Inlet/Exhaust Valve	1
13	Lubricant	1

I.D. = Inside Diameter

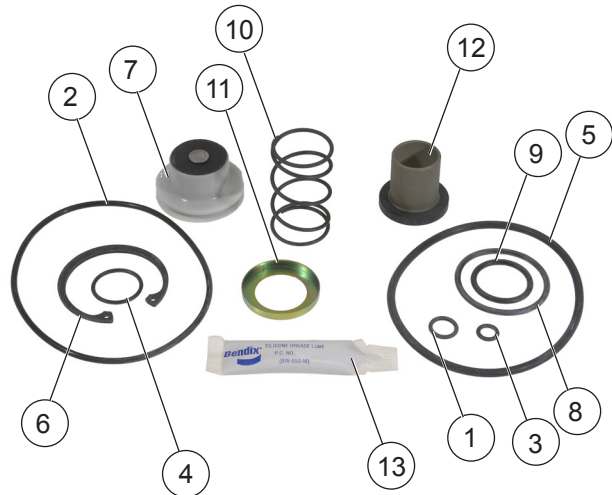


Figure 1 – Bendix® R-12P™ Sectional View

GENERAL SAFETY GUIDELINES



WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS



TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following guidelines should be observed **AT ALL TIMES**:

- ▲ Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.
- ▲ Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. 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.
- ▲ 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.
- ▲ If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning **ANY** work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si® air dryer, be sure to drain the purge reservoir.
- ▲ Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
- ▲ Never exceed manufacturer's recommended pressures.
- ▲ You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.
- ▲ Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.
- ▲ Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
- ▲ Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
- ▲ Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
- ▲ For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.
- ▲ The power **MUST** be temporarily disconnected from the radar sensor whenever any tests **USING A DYNAMOMETER** are conducted on a vehicle equipped with a Bendix® Wingman® system.

REMOVAL

1. Identify and mark or label all air lines and their connections to the Bendix® R-12P™ valve. Then disconnect the air lines.
2. Remove the valve from the vehicle and save the mounting hardware.

DISASSEMBLY



The R-12P valve may be lightly clamped in a bench vise during disassembly. However, overclamping will cause damage to the valve and result in leakage and/or malfunction. If a vise is used, position the valve so the jaws bear on the supply ports on opposing sides of the valve's body.

1. Remove the four fasteners that secure the cover to the body. Then slowly remove the cover.
2. Remove and discard the small o-ring (1) that seals the internal channel and the large o-ring (2) between the cover and the body.
3. Remove the load piston from the cover. NOTE: If necessary, use approximately 20 psi of shop air, directed into the load piston's air passage in the cover, to dislodge it.



- The piston will leave the cover with some force.
4. Remove and discard the load piston's o-ring (3).
 5. Remove the reserve spring and the relay piston from the body. Remove and discard the relay piston's o-rings (4) and (5).
 6. While holding the exhaust cover (7), remove and discard the snap ring (6) that secures the cover to the body.

7. Remove and discard the exhaust cover (7) and its o-rings (8) and (9).
8. Remove and discard the valve spring (10), valve retainer (11), and the inlet/exhaust valve (12) from the body.

CLEANING & INSPECTION

1. Using mineral spirits or an equivalent solvent, clean and thoroughly dry all metal parts that do not have replacements in the kit. Do not damage bores with metal tools.
2. Wash all non-metallic components in a soap and water solution. Dry thoroughly.
3. Inspect interior and exterior of all metal parts for severe corrosion, pitting, and cracks. Superficial corrosion and/or pitting on the exterior of the body and cover is acceptable. Replace the entire valve if the body or cover interior show signs of corrosion or pitting.
4. After washing, inspect relay piston for cracks, wear, or distortion. Replace the valve if these conditions are found.
5. Make certain the air channel running from the cover through the top surface of the body to the supply port is clear and free of obstruction.
6. Inspect the pipe threads in the body. Make certain they are clean and free of thread sealant.
7. Inspect all air line fittings for corrosion. Replace as necessary. Remove all old thread sealant before reuse.

ASSEMBLY

1. Before assembly, lubricate all o-rings and pistons as well as body and cover bores, using the grease (13) provided in the maintenance kit. Use all of the lubricant, and spread it evenly on all rubbing surfaces.
2. Install the valve retainer (11) on the inlet/exhaust valve (12) so that the flange of the retainer surrounds the rubber portion of the valve.
3. Install the inlet/exhaust valve (12) in the body.
4. Install the valve spring (10) over the inlet/exhaust valve in the body.
5. Install the large and small diameter o-rings (8) and (9) in the exhaust cover (7).
6. Place the exhaust cover on the inlet/exhaust valve spring. Then depress the cover against the spring's force into the body. Secure the cover with the snap ring (6).
7. Install o-rings (4) and (5) onto the relay piston. Then place the reserve spring in the piston and install the piston into the body.

8. Install the load piston's o-ring (3) onto the load piston. Then install the load piston into the cover, small end first.
9. Install the small o-ring (1) that seals the internal channel and the large o-ring (2) onto the cover.
10. Place the cover on the body and secure with its four fasteners. Torque to 120-150 in-lbs.

INSTALLATION

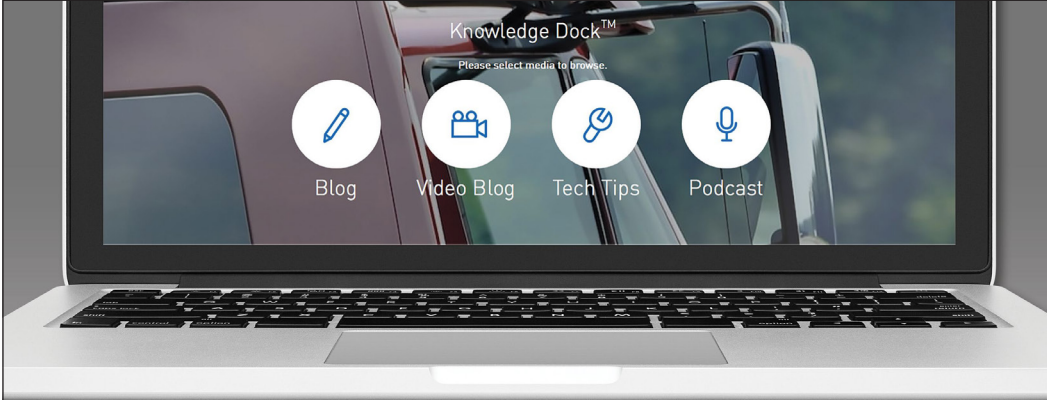
1. Install the Bendix® R-12P™ on the vehicle using the mounting hardware saved during removal.
2. Reconnect all air lines to the valve using the identification made during removal.
3. Perform OPERATIONAL AND LEAKAGE TESTS before placing the vehicle back into service.

OPERATIONAL AND LEAKAGE TESTS


1. Block the vehicle's wheels and fully charge the air system.
2. Inspect all air lines connected to the valve for signs of wear or physical damage. Repair/replace as necessary. Also, test air line fittings for excessive leakage and tighten or replace as necessary.
3. Apply and release the service brakes several times and check for prompt response of the brakes at all appropriate wheels.
4. With the air system fully charged, apply a soap solution to the R-12P exhaust port. Leakage of a 1" bubble in five seconds is permissible.
5. Make and hold a full brake application and again apply a soap solution to the R-12P exhaust. Leakage of a 1" bubble in three seconds is permissible.
6. With the brakes still applied, apply a soap solution around the valve where the cover meets the body. No leakage at this point is permitted.

If the valve does not function as described; or if leakage is excessive, repair the valve or replace it at any authorized Bendix® parts outlet.

NOTE: If a supply line single check valve is present, check it for leakage. Disconnect the inlet side of the single check valve and plug the disconnected supply line. Coat the inlet side of the single check valve with a soap solution, then make and hold a full brake application. Leakage of a 1" bubble in five seconds is permissible. If the valve's leakage is excessive, replace it with a 1/2" single check valve.



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