

Installation Instructions



BENDIX® E-10™ & E-10P™ BRAKE VALVE MAINTENANCE KIT

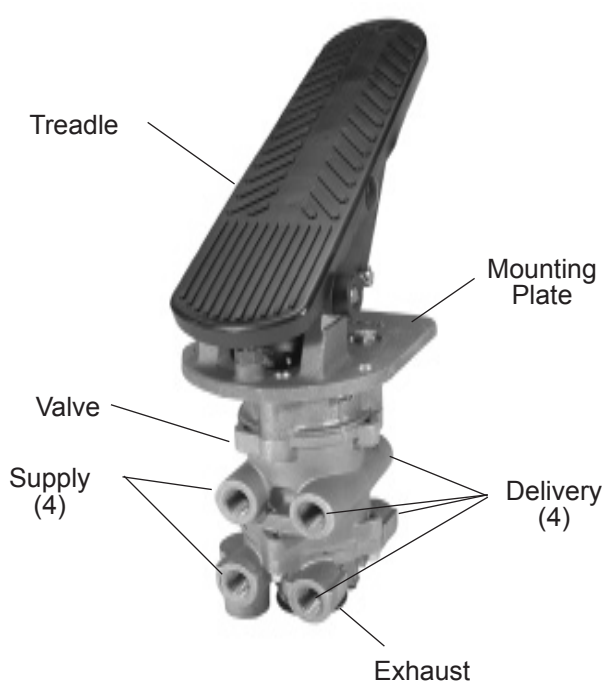


Figure 1 – Brake Valve And Treadle Assembly (E-10P™ shown)

Kit Contents		
Item No.	Description	Qty.
1	O-Ring (.754" O.D.)	1
2	O-Ring (2.387" O.D.)	1
3	Retaining Ring	1
4	Piston Return Spring	1
5	Vent Filter	1
6	O-Ring (2.637" O.D.)	1
7	Inlet/Exhaust Valve Assy.	1
8	Spring	1
9	Relay Piston Spring	1
10	O-Ring (2.379" O.D.)	1
11	Spring	1
12	Plastic Washer	1
13	Retaining Ring	1
14	Diaph. O-ring (2.754" O.D.)	1
15	Washer	1
16	Diaphragm Screw	1
17	Exhaust Diaphragm	1
18	Inlet/Exhaust Valve Assy.	1
19	Locknut	1
20	Lubricant	1

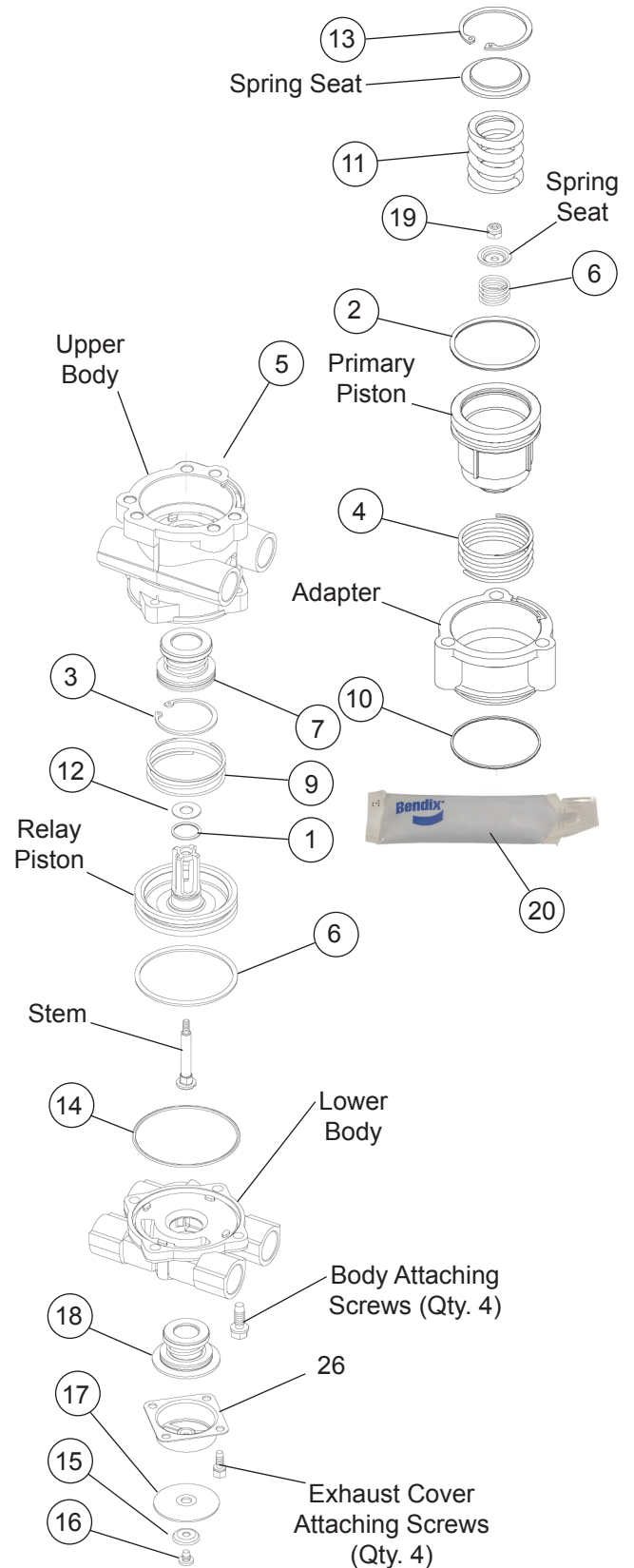


Figure 2 – Brake Valve - Exploded View

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.

Refer to Figure 2 for item numbers referenced in parenthesis.

REMOVAL

1. Check the vehicle wheels or park the vehicle by mechanical means. (Block and hold the vehicle by means other than the air brakes.) Drain all air system reservoirs.
2. Identify and disconnect all supply and delivery lines at the brake valve.
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. The basic brake valve alone can be removed by removing the three cap screws on the inner bolt circle.

Note: Before removing the treadle assembly, be sure to mark the position of the treadle mounting plate relative to the upper valve body.

DISASSEMBLY

1. If the entire brake valve and treadle assembly was removed from the vehicle, remove the three cap screws securing the treadle assembly to the basic brake valve.
2. Remove the screw (16) securing the exhaust diaphragm (17) and washer (15) to the exhaust cover.
3. Remove the four screws that secure the exhaust cover to the lower body.
4. Remove the secondary inlet and exhaust valve assembly (18) from the lower body.
5. Remove the four hex head cap screws securing the lower body to the upper body and separate the body halves.
6. Remove the rubber seal ring (14) from the lower body.
7. While depressing the spring seat, remove the retaining ring (13). Remove the spring seat and the coil spring (11).



CAUTION

Before proceeding with the disassembly, refer to *Figure 2* and note that the lock nut (19) and stem are used to contain the primary piston return spring (4), stem spring (8), and the relay piston spring (9). The combined force of these springs is approximately 50 lbs and care must be taken when removing the lock nut as the spring forces will be released. It is recommended that the primary piston and relay piston be manually or mechanically contained while the nut and stem are being removed.

- Using a 3/8" wrench, hold the lock nut (19) on the threaded end of the stem. Insert a screwdriver to restrain the stem, remove the lock nut (19), spring seat, and stem spring (8).
- Remove the adapter and the o-ring (10). Remove the primary piston from the adapter and o-ring (2) from the primary piston.
- Remove the relay piston, relay piston spring (9), and primary piston return spring (4) from the upper body. Use care so as not to nick the seats.
- A small washer (12) will be found in the cavity of the lower side of the primary piston.
- Remove the large and small o-rings (6 & 1) from the relay piston.
- Remove the retaining ring (3) securing the primary inlet and exhaust valve assembly (7) in the upper body and remove the valve assembly.

CLEANING AND INSPECTION

- Wash all metal parts in mineral spirits and dry.
- Inspect all parts for excessive wear or deterioration.
- Inspect the valve seats for nicks or burrs.
- Check the springs for cracks or corrosion.
- Replace all rubber parts and any part not found to be serviceable during inspection, use only genuine Bendix® replacement parts.

ASSEMBLY

Prior to reassembling, lubricate all o-rings, o-ring grooves, piston bores, and metal to metal moving surfaces with Dow Corning® 55 o-ring lubricant (20) (Bendix piece number 291126).

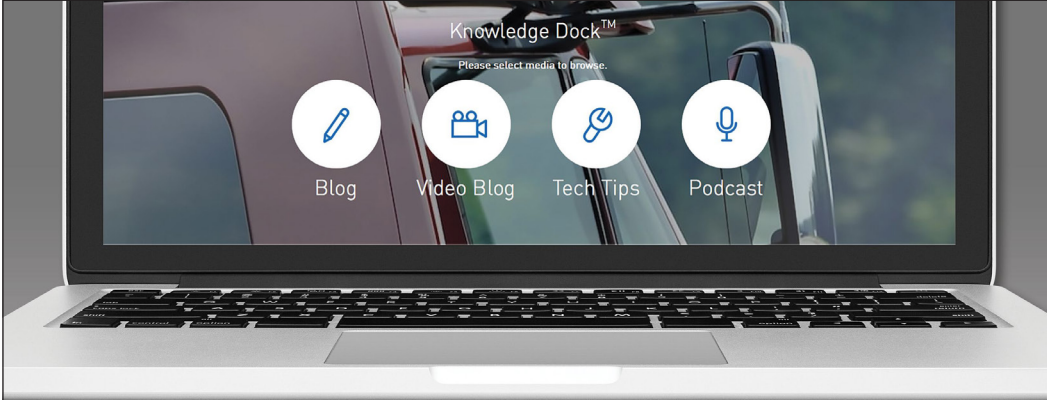
Note: All torques specified in this manual are **assembly** torques and can be expected to fall off, after assembly is accomplished. **Do not retorque** after initial assembly torques fall.

- Install the primary inlet and exhaust assembly (7) in the upper body and replace the retaining ring (3) to secure it. Be sure the retaining ring is seated completely in its groove.

- Install the large and small o-rings (6 & 1) on the relay piston.
- Place the relay piston spring (9) in the concave portion of the relay piston and install the relay piston through the primary inlet/exhaust assembly (7) and into the under side of the upper body.
- Install the o-ring (10) on the adapter and install the adapter on the upper body. Install the o-ring (2) on the primary piston.
- Place the screwdriver, blade up, in a vise. Insert the stem through the relay piston upper body sub assembly, slide this assembly over the blade of the secured screwdriver, engage the screwdriver blade in the slot in the head of the stem.
- Place the washer (12) over the stem. This washer should be installed in all valves.
- Install the primary return spring (4) in the upper body piston bore.
- Install the primary piston assembly into the upper body. Compress the primary and relay pistons into the upper body from either side and hold them compressed, either manually or mechanically. **See the cautionary note under step 7 in the Disassembly section of this manual.**
- Place the stem spring (8), the spring seat (concave side up), and lock nut (19) on the stem. Torque to 20-30 in-lbs.
- Install the coil spring (11), spring seat, and retaining ring (13).
- Replace the rubber seal ring (14) on the lower body.
- Install the 4 hex head cap screws securing the lower body to the upper body. Torque to 30-60 in-lbs.
- Install the secondary inlet and exhaust valve assembly (18) on the lower body.
- Install the screws that secure the exhaust cover to the lower body. Torque to 20-40 in-lbs.
- Secure the screw (16) holding the exhaust diaphragm (17) and the diaphragm washer (15) to the exhaust cover. Torque to 5-10 in-lbs.
- Install all air line fittings and plugs making certain thread sealant material does not enter the valve.

VALVE INSTALLATION


- Install the assembled brake valve on the vehicle.
- Reconnect all air lines to the valve using the identification made during VALVE REMOVAL step 1.
- After installing the brake valve assembly, perform the "OPERATION AND LEAKAGE CHECKS" before placing the vehicle in service.



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