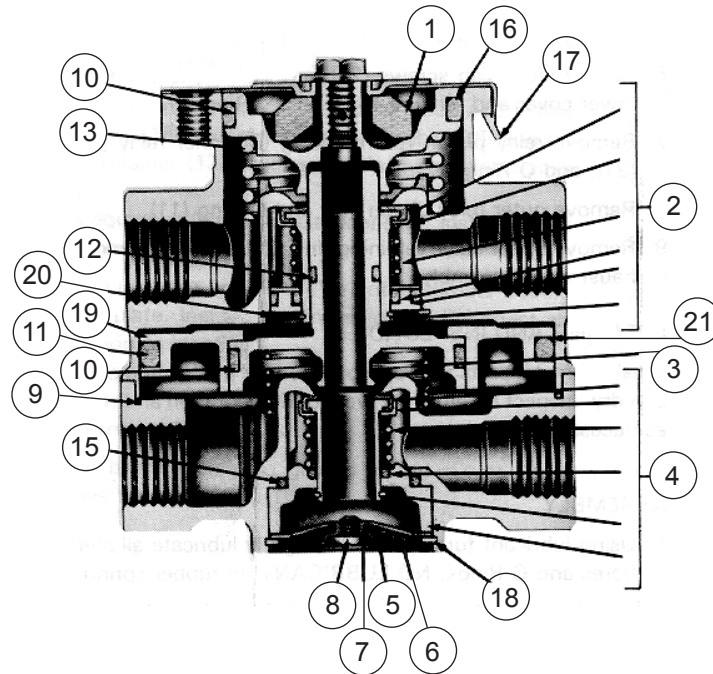


Installation Instructions



BENDIX® E-4™ BRAKE VALVE MAINTENANCE KITS



Minor Kit - 281218N

Kit Contents		
Item No.	Description	Qty.
1	Rubber Spring	1
2	Inlet / Exhaust Valve Ass'y	1
3	Relay Piston Return Spring	1
4	Inlet / Exhaust Valve Ass'y	1
5	Exhaust Check Valve Seat	1
6	Diaphragm	1
7	Diaphragm Washer	1
8	Screw	1
9	O-Ring (4.187" O.D.)	1
10	O-Ring (2.375" O.D.)	2
11	O-Ring (4.125" O.D.)	1
12	O-Ring (.750 O.D.)	1
13	Piston Return Spring	1
14*	Boot	1
15	O-Ring (1.437" O.D.)	1
	Lubricant (BW-650M)	1

Major Kit - 289332N

Kit Contents		
Item No.	Description	Qty.
	Minor Kit	1
16	Piston Assembly	1
17	Retainer	1
18	Retaining Ring	1
19	Outer Relay Piston	1
20	Retaining Ring	1
21	Inner Relay Piston	1
22*	Lockwasher	4
23*	Cap Screw	4
24**	Gasket	1

*Not illustrated

**Not illustrated. Item 24 gasket used only with exhaust extension.

Figure 1 – Bendix® E-4™ Brake Valve Maintenance Kit Contents

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. Block and hold the vehicle by means other than the air brakes and exhaust the air pressure from all reservoirs.
2. Identify the air lines to facilitate installation, then disconnect the air lines.
3. Remove the mounting bolts and remove the valve.

DISASSEMBLY

1. Remove the treadle from the mounting plate. *NOTE: new treadle parts are not included in kits; however, it is recommended that the treadle assembly be dismantled, cleaned, and inspected.* Replace any worn parts.
2. Depress the piston assembly (16) and remove the retainer (17). Remove the piston assembly (16) and the piston return spring (13) from the body.
3. Remove the o-ring (10) from the piston. If using minor kit 281218, remove the cap screw, washer, spring seat, and rubber spring (1). If using major kit 289332, the entire piston assembly (16) may be discarded.
4. Using snap ring pliers, remove the retaining ring (18). Remove the screw (8), washer (7), diaphragm (6) and seat (5). (Remove the exhaust extension and gasket (25) if so equipped.)
5. Remove the lever inlet/exhaust valve assembly (4) and o-ring (15).
6. Remove the four cap screws (23) and lockwashers (23) from the lower cover and remove the cover and o-ring (9).
7. Remove the relay piston return spring (3), the inner relay piston (21), and the o-ring (12).
8. Remove the outer relay piston (19) and the o-ring (11).
9. Remove the upper valve retaining ring (20) and the upper inlet/exhaust valve assembly (2).

CLEANING AND INSPECTION

Wash all metal parts that are to be reused in cleaning solvent and dry. Inspect carefully for wear or deterioration and replace as necessary.

ASSEMBLY

1. Using the lubricant furnished in the kit, lightly lubricate all stems, bores, and o-rings. **DO NOT LUBRICATE** the rubber spring.
2. Install the lower valve guide o-ring (15) and the lower inlet/exhaust valve assembly (4) in the lower cover. Install the exhaust check valve seat (5), diaphragm (6), washer (7), and screw (8). Depress the exhaust seat and using Truarc pliers, install the retaining ring (18); make sure the retaining ring is properly locked in the groove of the cover.
3. Install upper inlet/exhaust valve assembly (2) in body. Depress valve assembly and install the retaining ring (20), making sure it is locked in the groove of the body.
4. Install the cover o-ring (9) and install the relay piston return spring (3). Install o-rings (10) and (12) on the inner relay piston and o-ring (11) on the outer relay piston.

5. Carefully install the inner relay piston (21) into the bore of the outer relay piston (19). Assemble the lower cover to the upper body using the four cap screws (23) and lockwashers (22). Tighten the cap screw firmly and evenly.
6. If using the minor kit 281218, install the new rubber spring (1). Install in the piston using the spring seat, washer, and cap screw. Torque the cap screw to approximately 50 in-lbs. (If using the major kit 289332, the entire piston assembly (16) is replaced.) Install the o-ring (10) on the piston.
7. Install the piston return spring (13) in the upper body and install the piston assembly (16). Depress the piston assembly (16) and install the piston retainer (17) making certain the retainer locks onto the body.
(If the valve is equipped with an exhaust extension, install the gasket (24) and then the extension.)
8. Install the mounting plate and boot (14) and assemble the treadle to the mounting plate. Install the valve in the vehicle and connect the air lines as previously identified.

TESTING FOR SERVICEABILITY

Charge the air brake system to govern, or cut-out, and test the valve as follows:

SERVICE CHECKS

OPERATING

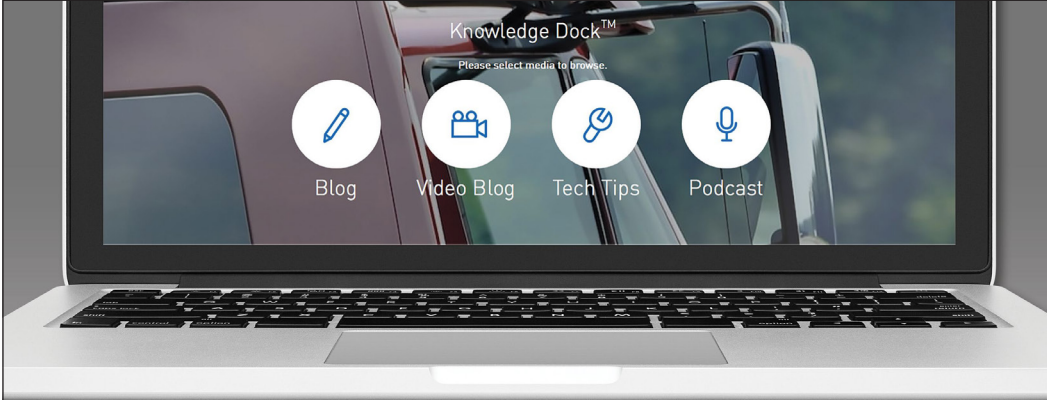
Check the delivery pressure of both the upper and lower circuits using a test gauge known to be accurate. Depress the pedal or treadle to several positions between the fully released and fully applied positions. Check the delivered pressure on the test gauges to see that it varies proportionately with the movement of the pedal or treadle. When the treadle is fully applied, the test gauge reading should fall off to zero when the application is released. It should be noted that the upper circuit delivery pressure will be about 2.5 psi greater than the lower circuit delivery pressure with upper and lower circuit supply reservoirs at the same pressure. This is normal in this valve.

Build up the air pressure in the system to approximately 100 psi. Drain the reservoir supplying the upper circuit to the brake valve. Make several full brake applications, and note pedal or treadle force required to make application is approximately the same as with both circuits operating. An increase in stopping distance, longer treadle or pedal travel, or the low pressure warning system indicates a malfunction in one or the other circuits.

LEAKAGE CHECK

Make and hold a high pressure application. Coat the exhaust port and top of the valve with a soap solution. No leakage is permitted on top of the valve or body. Leakage of a 1" bubble in 3 seconds is permitted at the exhaust port in both the applied and released positions.


For complete details on the operation and maintenance of this device, refer to *Bendix Service Data Sheet SD-03-1150* available on bendix.com.



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