GENERAL DESCRIPTION

The air system incorporates various control components for regulating the use of pressurized air.

COMPONENTS

PARK VALVE

The Bendix PP-1 push/pull park brake control valve is used to control the application and release of the park brake by controlling the flow of air to the SR-1 spring brake valve. The PP-1 is supplied from the park brake double check valve. The delivery ports are connected to the SR-1 spring brake valve via the RD-3 emergency park brake release valve and to the park lamp switches.

EMERGENCY PARK BRAKE RELEASE

The Bendix RD-3 emergency park brake release valve is a manually operated on-off control. In an emergency, it is used to manually release the park brake. The valve is spring loaded and remains in the exhaust (button out) position unless constant manual force is applied.

SPRING BRAKE VALVE

The Bendix SR-1 spring brake valve controls the park brakes. The SR-1 supplies a specific, limited hold-off pressure to the spring brakes and, in the event of loss of primary service pressure, modulates the spring brakes through the use of the service brake valve.

SYNCHRO VALVE

The Bendix SV-1 is a pilot operated, non-graduating pneumatic control valve. The SV-1 is used to control air from a remote supply. Its set opening and closing pressures (25 to 40 psi) allow the valve to delay or sequence the action of other pneumatic devices. When there is insufficient pressure at the control port, the delivery line is vented and the supply air is closed. When there is sufficient pressure at the control port, the exhaust closes and supply air is delivered out of the delivery port.

DUAL BRAKE VALVE

The Bendix E-10P dual brake valve is a remote mounted, treadle-actuated valve. The E-10P has two separate supply and delivery circuits for service braking (primary and secondary). The primary air circuit is controlled by the upper portion of the valve; the lower portion controls the secondary circuit.

The brake valve primary and secondary supply ports are connected directly to the primary and secondary reservoirs. The brake valve primary service delivery port is connected to the Wabco rear ABS valve package via a DC-4 double check valve. The brake valve secondary service delivery port is connected to the Wabco front ABS valve package, which includes a quick release valve. Both the primary and secondary delivery ports route air to the preliminary and secondary stoplight switches.

BRAKE PEDAL ASSEMBLY

The MCI brake pedal assembly actuates the brake valve through a rod and linkage arrangement. The welded metal pedal is covered with a black rubber tread. The pedal assembly floor mounting plate incorporates lugs for pedal pivot and stop rod mounting. The mounting plate is also used to attach the electronic accelerator pedal assembly.

ANTILOCK MODULATOR VALVES

The antilock braking system is made up of an ECU, four wheel speed sensors and four modulator valves. Two modulator valves are incorporated in the front ABS valve package, along with a quick release valve. Two modulator valves are incorporated in the rear (drive) ABS valve package, along with a brake relay valve. See Section 4F: Antilock Braking System.
PRESSURE PROTECTION VALVE
The Bendix PR-2 pressure protection valve is a normally closed, pressure regulating valve. The PR-2 is set to close at 80 psi and re-open at 95 psi. This valve protects the brake system reservoirs from a complete pressure loss due to a complete suspension/accessory reservoir pressure loss.

The supply port is connected to the delivery port of the suspension air filter. The delivery port is interconnected to the park/emergency reservoir, the suspension air system and the accessory air system components via the front and suspension/accessory junction blocks.

RESERVOIRS
Reservoirs store compressed air for use by the brakes and other air components. There are five air reservoirs:
1. supply
2. primary service brake
3. secondary service brake
4. park brake
5. accessory

The primary and park reservoirs are mounted to the rear bulkhead. The supply and secondary reservoirs are mounted to the front bulkhead. The suspension/accessory reservoir is mounted inside the front LH side service door.

DOUBLE CHECK VALVES
The Bendix DC-4 double check valves control the distribution of air between components and/or circuits. A double check valve is used wherever a single function or component is controlled by either of two sources of pressure. The double check valve will always transmit the higher of the two pressure sources to the outlet port.

PRESSURE REGULATOR
The Williams pressure regulating valves control the pressures within the different air system circuits. They remain open until delivery pressure meets the set pressure of the valve.

IN-LINE AIR FILTER
An in-line filter is mounted on the supply reservoir.

TAG AXLE UNLOADING VALVES
The Watts dual tag axle unloading control valves are full-port, manually-operated tag axle air dump/fill valves. The valves provide for the exhausting and filling of the tag axle air springs as conditions require. The dual valve installations are mounted to the upper front of the RH rear side service door frame. Both supply ports are connected to the drive axle suspension bellows. The delivery ports are connected to the tag axle bellows.

LOW PRESSURE SWITCH
Two Texas Instruments low air pressure switches are installed on the primary and secondary air circuits. The switches give an automatic warning to the driver when air pressure is below the minimum for safe vehicle operation. The switches operate an electronic buzzer and telltale warning light. One switch is located in the rear junction box, and connected to the rear air/fuel junction block. The other switch is located in the tire compartment and connected to the supply reservoir.

BRAKE LIGHT SWITCH
The Williams pressure activated preliminary stop/park and secondary stop/fast idle light switches operate in conjunction with brake valve and park brake interlock circuits when applied. The switches are mounted to the center rear of the tire compartment. Primary and secondary delivery from brake valve is connected to the side port of the preliminary and secondary switch assemblies respectively. The top port is connected to the delivery side of the synchro valve.

MAINTENANCE

When working on or around a vehicle, the following general precautions must be observed:

1. Park the vehicle on a level surface, apply the parking brakes and block the wheels.
2. Turn the engine off. When the engine must be in operation, use extreme caution to prevent personal injury.
3. Turn the battery disconnect OFF.
4. Vent all reservoirs.
5. Wear safety glasses.
6. Do not connect or disconnect a pressurized line.
7. Ensure that system pressure has been depleted before removing plugs or components.
8. Never exceed recommended pressures.
9. Do not install, remove, disassemble or assemble a component until you have read and thoroughly understand the procedure.
10. Use the proper tools and observe all precautions pertaining to their use.
11. Use vendor replacement parts, components or repair kits. Replacement hardware, tubing, hose,
fittings, etc. must be equivalent to the original and be designed specifically for the application.

12. Replace components that have stripped threads or damaged parts.

13. Do not machine or weld parts unless specifically approved by the manufacturer.

14. Before returning a coach to service, ensure that components and systems are restored to operating condition.

**PP-1 PUSH-PULL VALVE**

![Figure 1 - PP-1](image)

Every 6 months, 48,000 miles or 1800 operating hours, disassemble and clean. Replace worn parts.

**System Check — PP-1**

1. Tee a test gauge into the supply line. Apply a 120 psi air source to the supply port. Connect a small volume reservoir (e.g. 90 cu. in.) and a gauge to the delivery port.

2. With 120 psi supply pressure and the button pulled out:
   - leakage at the exhaust port should not exceed a 1” bubble in five seconds
   - leakage at the plunger stem should not exceed a 1” bubble in five seconds
   - there must be no leakage between the upper and lower body.

3. Push the button in. Leakage at the exhaust port and at the plunger must not exceed a 1” bubble in 3 seconds.

4. Reduce the supply pressure. At approximately 40 psi, the button should pop out automatically, exhausting the delivery volume.

5. If the valve leaks excessively or does not function properly, replace it with a new valve or a factory-rebuild.

**RD-3 EMERGENCY PARK BRAKE RELEASE VALVE**

*WARNING*

*When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.*

![Figure 2](image)

Every 6 months, 48,000 miles or 1800 operating hours, disassemble and clean. Replace worn parts.

**Disassemble — PP-1 (Figure 1)**

1. Remove the two cap screws (3) that retain the lower cover. Remove the cover and sealing ring (4).
2. Insert a small punch through the roll-pin hole in the stem and remove the locknut (5).
3. Remove the inlet-exhaust valve (6), plunger (7) and spring (8).
4. Remove the O-ring (9) from the plunger.

**Disassemble — RD-3 (Figure 2)**

1. Remove the two cap screws (3) that retain the lower cover. Remove the cover and sealing ring (4).
2. Insert a small punch through the roll-pin hole in the stem and remove the locknut (5).
3. Remove the inlet-exhaust valve (6), plunger (7) and spring (8).
4. Remove the O-ring (9) from the plunger.

4. If the valve does not function properly, replace it with a new valve or a factory-rebuild.

SV-1 SYNCHRO VALVE

**WARNING**

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

Every year, 96,000 miles or 3600 operating hours, disassemble and clean metal parts. Replace rubber parts and worn metal parts. Check operation.

Remove — SV-1

1. Block the vehicle and drain all reservoirs.
2. Tag and disconnect air lines.
3. Remove bolts, then valve.

Disassemble — SV-1 (Figure 3)

1. Remove the control valve cap nut and O-ring.
2. Remove the piston. Remove the piston O-ring, exhaust stem O-ring and piston return spring.
3. Remove the supply cap nut and O-ring.
4. Remove the valve stop and spring.
5. Remove the inlet/exhaust valve.

Cleaning & Inspection — SV-1

1. Wash metal parts in cleaning solvent. Dry.
2. Inspect all parts for wear or deterioration.
3. Replace all rubber parts. Replace any part that does not pass inspection.

**System Check — RD-3**

1. Tee a test gauge into the supply line. Apply a 120 psi air source to the supply port. Connect a small volume reservoir (e.g. 90 cu. in.) and gauge to the delivery port.
2. With 120 psi supply pressure and the button pulled out:
   - leakage at the exhaust port should not exceed a 1” bubble in five seconds
   - leakage at the plunger stem should not exceed a 1” bubble in five seconds
   - there must be no leakage between the upper and lower body.
3. Push the button in and manually hold it in position. Leakage at the exhaust port and at the plunger must not exceed a 1” bubble in 3 seconds.

**Figure 2 — RD-3**
Assemble — SV-1

NOTE: Prior to reassembly, lubricate the piston, O-rings and body bores with Dow Corning 55 O-ring lubricant.

1. Install the inlet/exhaust valve in the body.
2. Install the inlet valve spring and valve stop.
3. Install the O-ring on the supply cap nut. Install the cap nut and torque to 100 in-lbs.
4. Install the piston return spring in the body.
5. Install the stem, O-ring and piston O-ring on the piston. Install the piston into the body, ensuring that the piston rests on top of the spring.

6. Install the cap nut O-ring on the cap nut. Install the cap nut in the body and torque to 275 in-lbs.
7. Perform the **Operation Check** and **Leakage Check**. Depending on the installation, it may be easier to perform the checks before installing the valve.

Install — SV-1

1. Mount valve securely.
2. Check and clean air lines.
3. Identify air lines and connect to valve.

Operation Check — SV-1

1. Install one gauge in a common control and supply line.
2. Install a second gauge in a delivery port.
3. Gradually apply pressure to the common supply and control line.
4. Note the pressure at which air is delivered through the valve. It should be approximately 40 psi.
5. Slowly decrease pressure in the common supply.
6. Note the pressure at which the delivery line pressure is vented. It should be approximately 25 psi.
7. If the valve does not function correctly, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions.

Leakage Check — SV-1

1. With 120 psi air pressure at the supply, control and delivery ports, apply a soap solution around the control port cap nut and supply port cap nut. No leakage is permitted.
2. Apply soap solution to the exhaust port. A slight bubble leakage is permitted. Excessive leakage indicates a faulty O-ring, inlet valve or exhaust seat.
3. Plug the delivery port and apply 10 psi to the common supply and control line. Apply soap solution to the exhaust port. Leakage must not exceed a 1” bubble in 5 seconds. Excessive leakage indicates a faulty inlet valve or inlet valve seat.
4. If the valve leaks excessively, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions.
E-10P DUAL BRAKE VALVE

**WARNING**

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

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**Maintenance Schedule**

**Every 3 months, 24,000 miles or 900 operating hours:**

1. Visually check for physical damage to the brake valve, such as broken air lines and broken or missing parts.
2. Clean dirt, gravel and foreign material away from the heel of the treadle, plunger boot and mounting plate.
3. Using light oil, lubricate the treadle roller, roller pin and hinge pin.
4. Check the rubber plunger boot for cracks, holes or deterioration. Replace if necessary.
5. Check the mounting plate and treadle for integrity.
6. Apply 2 to 4 drops of oil between the plunger and mounting plate. **Do not over oil.**

**Every year, 96,000 miles or 3600 operating hours,** disassemble and clean parts. Replace all rubber parts and any part that is worn or damaged. Check operation.

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**Remove — E-10P**

1. Block the wheels and drain all reservoirs.
2. Mark and disconnect all supply and delivery lines.
3. Remove the three cap screws on the outer bolt circle of the mounting plate. Remove the brake valve and treadle assembly. (The brake valve alone can be removed by removing the three cap screws on the inner bolt circle.)
Disassemble – E-10P (Figure 4)

1. Remove the three cap screws securing the treadle assembly to the brake valve.
2. Remove the screw (9) securing the exhaust diaphragm (10) and washer (11) to the exhaust cover (12).
3. Remove the four screws that secure the exhaust cover (12) to the lower body.
4. Remove the secondary inlet and exhaust valve assembly (13) from the lower body.
5. Remove the four hex head cap screws securing the lower body to the upper body. Separate the body halves.
6. Remove the rubber seal ring (14) from the lower body.
7. While depressing the spring seat (7), remove the retaining ring (8). Remove the spring seat (7) and coil spring (5).

CAUTION

The combined force of the primary piston return spring (6), the stem spring (19) and the relay piston spring (21) is approximately 50 pounds. Before removing the locknut (16) and stem (17), manually or mechanically contain the primary piston and relay piston. Care must be taken to avoid personal injury.

8. Manually or mechanically contain the primary piston and relay piston. (See Caution above and Figure 4).
9. Using a 3/8” wrench, hold the locknut (16) on the threaded end of the stem (17). Insert a screwdriver to restrain the stem, remove the locknut (16), spring seat (18) and stem spring (19).
10. Remove the adapter (1) and O-ring (4). Remove the primary piston (2) from the adapter (1) and the O-ring (34) from the primary piston (2).
11. Remove the relay piston (20), relay piston spring (21), primary piston (2) and primary piston return spring (6) from the upper body. Do not nick seats.
12. A small washer (24) will be found in the cavity of the lower side of the primary piston (2).
13. Remove the large and small O-rings (30 & 31) from the relay piston (20).
14. Remove the retaining ring (32) securing the primary inlet and exhaust valve assembly (33) in the upper body. Remove the valve assembly.

Cleaning & Inspection – E-10P

1. Wash metal parts in cleaning solvent. Dry.
2. Inspect all parts for wear or deterioration.
3. Inspect valve seats for nicks or burrs.
4. Check springs for cracks or corrosion.
5. Replace all rubber parts. Replace any part that does not pass inspection.

Assemble – E-10P

NOTE: Prior to reassembly, lubricate all O-rings, O-ring grooves, piston bores and metal-to-metal moving surfaces with Dow Corning 55 O-ring lubricant.

NOTE: All torques specified are assembly torques and will fall off after assembly. Do not retorque.

1. Install the primary inlet and exhaust assembly (33) in the upper body and replace the retaining ring (32) to secure it. Ensure that the retaining ring is seated in its groove.
2. Install the large and small O-rings (30 & 31) on the relay piston (20).
3. Install the O-ring (4) on the adapter (1) and install the adapter on the upper body. Install the O-ring (34) on the primary piston (2).
4. Place a screwdriver, blade up, in a vise. Insert the stem (17) through the relay piston upper body subassembly, slide this assembly over the blade of the secured screwdriver. Engage the screwdriver blade in the slot in the head of the stem.
5. Place the washer (24) over the stem (17) and on top of the relay piston (20).
6. Install the primary return spring (6) in the upper body piston bore.
7. Install the primary piston subassembly.
8. Compress the primary and relay pistons (2 & 20) and retaining ring into the upper body from either side and hold compressed, either manually or mechanically. (See Caution.)
9. Place the stem spring (19), the spring seat (18)—concave side up—and locknut (16) on the stem (17). Torque to 20–30 in-lbs.
10. Install the coil spring (5), spring seat (7) and retaining ring (8).
11. Replace the rubber seal ring (14) on the lower body.
12. Install the four hex head cap screws securing the lower body to the upper body. Torque to 30–60 in-lbs.
13. Install the secondary inlet and exhaust valve assembly (13) on the lower body.
14. Install the screws that secure the exhaust cover (12) to the lower body. Torque to 20–40 in-lbs.
15. Secure the screw (9) holding the exhaust diaphragm (10) and the diaphragm washer (11) to the exhaust cover (12). Torque to 5–10 in-lbs.
16. Install air line fittings and plugs, ensuring that thread sealant does not enter valve.

Install—E-10P

1. Install the assembled brake valve on the vehicle.
2. Reconnect all air lines to the valve.
3. Perform the Operation Check and Leakage Check before returning the coach to service.

Leakage Check — E-10P

1. Make and hold a high pressure (80 psi) application.
2. Coat the exhaust port and body of the brake valve with a soap solution.
3. Leakage must not exceed a 1” bubble in three seconds.
4. If the brake valve leaks excessively, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions.

BRAKE PEDAL ASSEMBLY

WARNING

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

1. Check the delivery pressure of the primary and secondary circuits using test gauges. Depress the treadle to several positions between the fully released and fully applied positions and check the delivered pressure to see that it varies equally and proportionately with the movement of the brake pedal. (The primary circuit delivery pressure will be approximately 2 psi greater than the secondary circuit delivery pressure with both supply reservoirs at the same pressure.)
2. After a full application is released, the reading should fall to zero promptly.
3. If the brake valve does not function correctly, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions.

Operation Check — E-10P

NOTE: A change in vehicle braking characteristics or a low pressure warning may indicate a malfunction in a brake circuit. This must be repaired before returning the coach to service. Always check the brake system operation after servicing the brakes.

Every 24,000 miles, 3 months or 750 operating hours:
1. Clean dirt, gravel and other foreign material away from the brake pedal and mounting plate.
2. Inspect for proper pedal and linkage adjustment. (See Inspection — Pedal & Linkage Adjustment.)
3. Lubricate the pedal and linkage pivots with S-6 (light engine oil) as shown in Section 10.

Every 48,000 miles, 6 months or 1500 operating hours:
1. Inspect all mechanical fasteners attaching the linkage rod to the brake lever arm and the rod clevis to the pedal for proper attachment and torque. The stover-type self-locking hex nut requires 52.5 ft-lbs torque.

Inspection — Pedal & Linkage Adjustment

1. With brakes released, set correct pedal height. (Figure 5)
2. Hold the brake valve lever against the stop bolt on the front of the valve housing and measure the clearance between the brake valve plunger and the lever roller. Clearance must be 0.025–0.60 inches.
Adjust the pedal stop bolt and/or linkage rod to provide this clearance.

3. Attach a test gauge to the test fitting on the secondary delivery circuit of the brake valve. Make a full brake application. The secondary output should be within 5 psi of the secondary reservoir pressure.

4. Adjusting the linkage rod longer will provide additional travel at the brake valve. Ensure that the lever will contact the stop bolt when released and that the roller does not extend past the plunger when the pedal is fully applied.

---

**SR-1 SPRING BRAKE VALVE**

**WARNING**

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

![Warning icon](image)

Every 3600 operating hours, 96,000 miles or yearly, disassemble the valve. Clean metal parts, replace rubber parts and replace worn or damaged parts.

**Remove — SR-1**

1. Apply the parking brakes and drain all reservoirs.
2. Mark and disconnect the air lines.
3. Remove the two mounting bolts and remove the valve.

**Disassemble — SR-1 (Figure 6)**

1. Remove the socket head pipe plug (1).
2. Remove the check valve spring (2) and the check valve (4).
3. Remove the two phillips head screws and remove the exhaust cover (5).
4. Separate the exhaust diaphragm (6) from the cover.
5. Remove the inlet and exhaust valve assembly (7).
6. Remove the inlet and exhaust valve cap nut (3) and separate the cap nut O-ring (9).
7. Remove the valve stop (10), valve spring (11) and inlet and exhaust valve (12).

**CAUTION**

The cover is under a spring load and must be held while removing the screws.

8. Remove the four phillips head screws and lockwashers that secure the cover to the body.
9. Remove cover (13) and three piston springs (14).
10. Remove the small piston (15) and the small and large O-rings (16).
11. Remove the large piston (17). Remove the piston O-rings (18 & 19).

1. Assemble the check valve (4) and the valve spring (2). Install in body.
2. Apply pipe sealant to the socket head pipe plug (1) and install in body. Torque to 130–170 in-lbs.
3. Install inlet and exhaust valve assembly (7) in valve body.
5. Install exhaust diaphragm (6) into the exhaust cover.
6. Place inlet exhaust valve (12) in the body. Install the valve spring (11) and valve stop (10).
7. Install O-ring (9) on cap nut and install cap nut (8) in body. Torque to 100–125 in-lbs.
8. Install the small and large O-rings (16) on the small diameter piston (15) and install piston in the body.
9. Install large O-ring (18) and small O-ring (19) on the large diameter piston and install piston in the body.
10. Install the piston springs (14) in their pistons.
11. Secure the cover to the body using four 1/4”–20 phillips head screws and lockwashers. Torque to 50–80 in-lbs.
12. Perform Operation Check and Leakage Check.

**Operation Check — SR-1**

1. Block vehicle.
2. Charge air brake system to governor cut-out pressure.
3. Place parking control valve in the “park” position. Observe that the spring brake actuators apply promptly.
4. Install a test gauge in the delivery port of the valve. Place the parking control valve in the “release” position. Observe that the spring brake actuators release fully.
5. With the parking control valve in the “release” position, note that the gauge pressure reading is 95 plus/minus 5 psi. If the pressure reading is incorrect, the valve must be repaired or replaced.
6. Place the parking control valve in the “park” position. The gauge reading should drop to zero promptly. A slow release of pressure may indicate faulty operation of the single check valve.
7. Place the parking control valve in the “release” position. Drain the primary service reservoir completely.
8. Actuate the brake pedal several times and note that the pressure reading on the gauge decreases each time the brake pedal is actuated. After several
applications, pressure on the gauge will drop to the point where release of the spring brake actuators will no longer occur.

9. If the valve does not function correctly, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions. (A maintenance kit for the SR-1 spring brake valve is available and includes the parts necessary for minor repairs.)

Leakage Check — SR-1

1. With the air system fully charged and the parking control valve in the “release” position, coat the exhaust port and around the valve corner with a soap solution.
2. Slight leakage is permitted.
3. If the valve leaks excessively, replace it with a new or remanufactured unit, or repair it according to Bendix warranty and instructions.

PR-2 PRESSURE PROTECTION VALVE

**WARNING**

*When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.*

Every 24,000 miles, 3 months or 750 operating hours, perform the **Operation Check** and **Leakage Check**.

Every 96,000 miles, year or 3600 operating hours, disassemble, clean and inspect all parts. Replace all rubber parts and any metal parts showing signs of wear or deterioration.

Remove — PR-2

1. Place battery disconnect switch OFF. Block vehicle and vent the entire air system.

2. Tag and remove all air lines from the valve.
3. Unfasten and remove the valve from the coach.

![Figure 7 — PR-2 Pressure Protection Valve](image)

Disassemble — PR-2 (Figure 7)

1. Loosen the locknut and unscrew the adjusting nut, then remove the locknut.
2. Remove the spring, piston, piston plug and inlet valve from the body.
3. Remove the inlet valve from the stem, spring retainer and inlet valve spring.
4. Turn the piston over and depress the inlet valve stem fully and remove the O-ring.
5. Clean and inspect all parts and springs for wear.

Assemble — PR-2

1. Lubricate all O-rings, O-ring bores and sliding surfaces with lubrication specification S-25 (silicon fluid - Dow Corning 200).
2. Install the inlet valve stem into the piston.
3. Install the small O-ring on the piston plug and install the piston plug, pressing it snugly into the piston body.
4. Install the inlet valve spring, spring retainer and snap on the rubber inlet valve.
5. Install the O-ring onto the piston end and insert into body.
6. Install the spring and locknut.
7. Install the adjusting nut. Readjust the valve. Tighten the locknut.
Install — PR-2

1. Reinstall pressure protection valve in reverse order of the Remove procedure.

Operation Check — PR-2

1. Install a pressure gauge and drain valve on the supply and delivery sides of the valve.
2. Build up full system air pressure and turn engine off.
3. While watching the gauges on both sides, slowly exhaust air from the delivery side to 80 psi. Both sides should show pressure loss until 80 psi is reached.
4. The pressure protection valve should close at 80 plus/minus 5 psi. The gauge on the delivery side should continue to show loss of pressure while the gauge on the supply side should stop and stay at 80 plus/minus 5 psi.

NOTE: The valve is set to close at 80 psi and re-open at 95 psi.

Leakage Check — PR-2

1. Block the wheels and fully charge air system. Shut the engine off.
2. Apply soap solution to the valve cap. A 1” bubble in three seconds is permitted.
3. Drain air pressure from the delivery side of the valve. Disconnect the delivery port line and apply soap solution to the delivery port. A 1” bubble in five seconds is permitted.
4. If the leakage is excessive around the cap and delivery port, repair or replace the assembly.

RESERVOIRS

WARNING

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

A small amount of oil, water or other contaminants may reach the reservoir. Each reservoir is equipped with a 1/4-turn drain cock at the tank bottom and should be drained frequently.

Reservoirs should be inspected for mounting integrity and for outer surface corrosion or damaged lines and fittings.

The in-line air filter is mounted on the supply reservoir. The filter insert must be replaced whenever the engine oil is changed.

Remove — Reservoir

1. Place battery disconnect switch “Off”. Block vehicle and vent the entire air system.
2. Tag and remove all air lines from the reservoir.
3. Unfasten the support straps and remove the reservoir from the coach.

Install

1. Reinstall the reservoir in the reverse order of the Remove procedure.

DC-4 DOUBLE CHECK VALVE

WARNING

When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

Every 96,000 miles, year or 3600 operating hours, disassemble, clean and inspect parts. Replace all rubber parts and any metal parts that show signs of wear or deterioration.

Remove — DC-4

1. Place battery disconnect switch to “Off”. Block the vehicle and vent the entire air system.
2. Tag and remove all air lines from the double check valve.
3. Unfasten and remove the check valve from its mounting location.

Disassemble — DC-4
1. Unfasten the two capscrews and remove the check valve cap.
2. Remove the shuttle and the shuttle guides from the valve body.

Assemble — DC-4
1. Install the shuttle guides and the shuttle into the valve body.
2. Place the cap and body together and torque fasteners to 60 in-lbs.

Install — DC-4
1. Install the check valve in the reverse order of the Remove procedure and test.
2. When installing the valve, make certain that it is installed correctly with respect to the desired air flow. An arrow indicating the direction of air flow should be cast into the valve body.

PRESSURE REGULATOR

WARNING
When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

Inspection — Pressure Regulator
Every 48,000 miles, 6 months or 1500 operating hours, check the regulator valves and reset them to their set pressures.

Disassemble — Pressure Regulator
1. Unfasten the six screw and separate the two body halves.
2. Separate the valve halves and remove the diaphragm(s), springs and spring retainers.
3. Unfasten the bottom cover and remove the poppet and spring.

Cleaning & Inspection — Pressure Regulator
1. Wash all metal parts in cleaning solvent.
2. Inspect inside of valve for water or damage. If the valve is excessively grooved or pitted, it should be replaced.
System Check — Pressure Regulator
1. Install a tee fitting and plug it in the outlet port of the pressure regulating valve. This enables installation of a test gauge.
2. Loosen the locknut, turn the adjusting screw counterclockwise to reduce the pressure approximately 10 psi below the pressure required.
3. Turn the adjusting screw clockwise to increase the pressure slowly until the required pressure setting is reached, then tighten the locknut.
4. Test the valve for leakage by applying a soap solution while pressurized.

Assemble — Pressure Regulator
1. Reassemble the valve in the reverse order of the Disassemble procedure.
2. After the valve is assembled, check the pressure setting using the previous test procedure and adjust the valve to the specific pressure setting.

BRAKE LIGHT SWITCH

WARNING
When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

NOTE: There are no serviceable parts in the brake light switches.

Inspection — Brake Light Switch
Every 96,000 miles, year or 3600 operating hours, inspect the operation of the brake light switch.

Remove — Brake Light Switch
1. Place battery disconnect switch “Off”, block the vehicle and vent the service and park brake air circuits.
2. Disconnect the electrical harness and air line connections.
3. Unfasten the mounting capscrews and remove switch.

Install
1. Reinstall switch in reverse order of the Remove procedure. Torque mounting fasteners to 20 ft-lbs.

LOW AIR PRESSURE SWITCH

WARNING
When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

NOTE: There are no serviceable parts in the low air pressure switches.

Inspection — Low Air Pressure Switch
Every 96,000 miles, year or 3600 operating hours, inspect the operation of the low air pressure switch.
1. Apply and release the service brakes a number of times to reduce reservoir pressure.
2. The telltale warning light and buzzer should come on when the pressure gauge drops below 75 plus/minus 5 psi.
Remove — Low Air Pressure Switch
1. Place battery disconnect switch OFF. Block the vehicle and vent the entire air system.
2. Disconnect the electrical harness and remove the switch from the air line connection.

Install — Low Air Pressure Switch
1. Reinstall the switch in reverse order of the Remove procedure.

TAG AXLE UNLOADING VALVES

WARNING
When working on or around a vehicle, follow the precautions listed at the beginning of the Maintenance section.

Inspection — Operation & Leakage Test
Every 48,000 miles, 6 months or 1500 operating hours, perform an Operation & Leakage Test on the unloading valves.
1. With air pressure in the trailing suspension system, operate the valves to dump and then refill the suspension bellows.
2. Check the function of the low tag bellows warning light switch.
3. With the valves in the fill position, apply soap solution.
4. Leakage at the exhaust port or at the valve stem must not exceed a 1” bubble in five second.
5. If faulty operation or excessive leakage is detected, remove and replace the valve.

Remove — Tag Axle Unloading Valve
1. Place the battery disconnect switch OFF. Block the vehicle and vent the entire air system.
2. Tag and disconnect all air lines and fittings, and remove the wire harnesses from the switches.
3. Unfasten the valve handle hex nut and remove.
4. Unfasten the valve mounting screws and remove the valve from the bracket.
SPECIFICATIONS

Park Valve
Manufacturer: Bendix
Model: PP-1

Emergency Park Brake Release
Manufacturer: Bendix
Model: RD-3

Spring Brake Valve
Manufacturer: Bendix
Model: SR-1

Synchro Valve
Manufacturer: Bendix
Model: SV-1

Dual Brake Valve
Manufacturer: Bendix
Model: E-10P

Brake Pedal Assembly
Manufacturer: MCI

Pressure Protection Valve
Manufacturer: Bendix
Model: PR-2

Double Check Valve
Manufacturer: Bendix
Model: DC-4

Pressure Regulator
Manufacturer: Williams

Tag Axle Unloader Valve
Manufacturer: Watts
Model: Dual Tag

Low Pressure Switches
Manufacturer: Texas Instrument

Brake Light Switch
Manufacturer: Williams