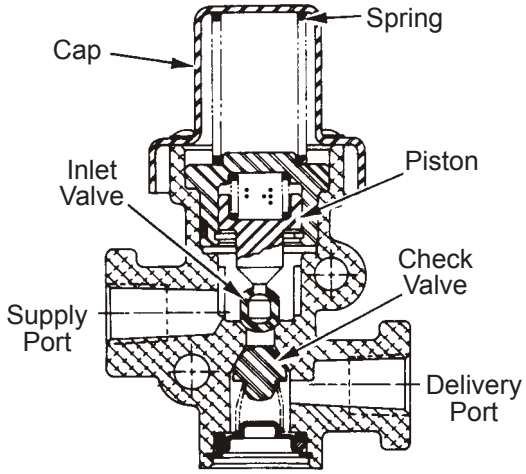
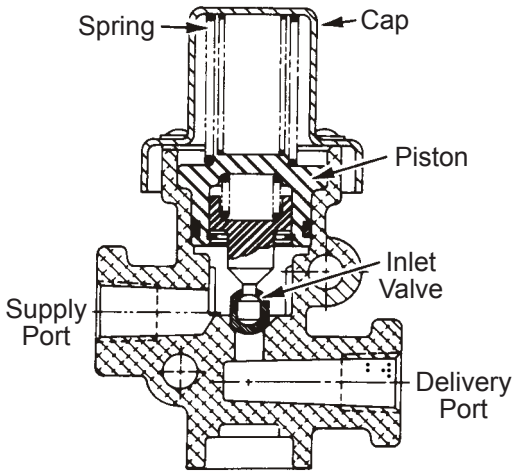
Bendix® PR-2™, PR-3™ & PR-4™ Pressure Protection Valves

PR-3 or PR-4 Pressure Protection Valves

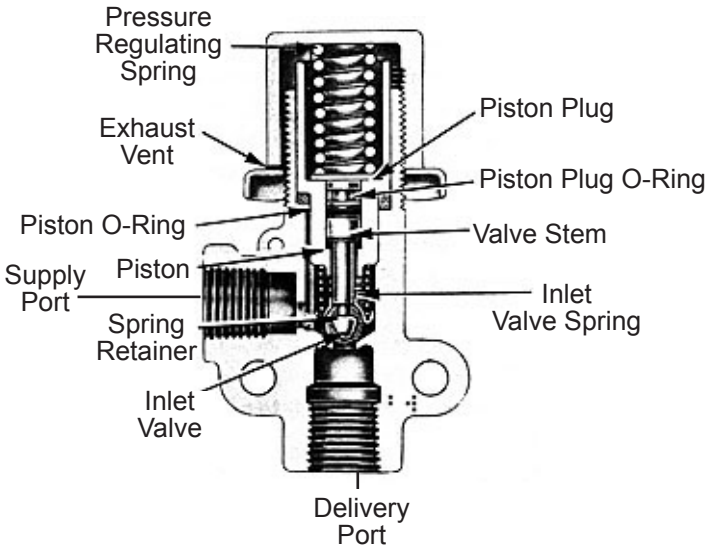


Bendix® PR-3™ Pressure Protection Valve



Bendix® PR-4™ Pressure Protection Valve

PR-2 Pressure Protection Valve



Bendix® PR-2™ Pressure Protection Valve

Figure 1 – Bendix® PR-2™, PR-3™ & PR-4™ Pressure Protection Valves

DESCRIPTION

The pressure protection valve is a normally closed, pressure control valve which can be referred to as a non-exhausting sequence valve. These valves are used in many different applications. An example would be in an air brake system to protect one reservoir, or reservoir system from another, by closing automatically at a preset pressure should a reservoir system failure occur. The valves can also be used to delay filling of auxiliary reservoirs to ensure a quick build-up of brake system pressure.

The Bendix® PR-2™ and PR-4™ pressure protection valves have one 1/4" N.P.T. supply port and one 1/4" N.P.T. delivery port which are identified. Both valves are provided with two 9/32" mounting holes through the body. The closing pressure of the PR-2 valve is externally adjustable while the PR-4 valve has a fixed setting.

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.**
- **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.**
- **You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.**

OPERATION

Air entering the supply port is blocked from flowing out the delivery port by the inlet valve, which is normally held closed by the pressure regulating spring above the piston. When sufficient air pressure builds beneath the piston, the piston will move, opening the inlet valve and allowing air to flow out the delivery port. As long as air pressure at the supply port remains above the specified closing pressure, the inlet valve will remain open.

Note: The Bendix® PR-2™ & PR-4™ valves closing pressure is noted on the label affixed to the valve. Opening pressures of the valves are higher than closing pressures. The pressure ranges are noted below:

PR-2 valve - Opening pressure 15-20 psi higher than closing pressure.

Bendix® PR-3™ & PR-4 valves - Opening pressure approximately 10 psi higher than closing pressure.

PR-3 valve - Check valve will retain maximum pressure in downstream reservoir.

If system air pressure decreases below the specified closing pressure, the regulating spring will close the inlet valve. The remaining air pressure, at either the supply or delivery side, (depending on where the pressure drop occurs) will be retained.

PREVENTIVE MAINTENANCE

IMPORTANT

Review the Bendix Warranty Policy before performing any intrusive maintenance procedures. A warranty may be voided if intrusive maintenance is performed during the warranty period.

No two vehicles operate under identical conditions, as a result, maintenance intervals may vary. Experience is a valuable guide in determining the best maintenance interval for air brake system components. At a minimum, the Bendix® PR-2™, PR-3™, and PR-4™ valves should be inspected every 6 months or 1500 operating hours, whichever occurs first, for proper operation. Should the PR valves not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.

OPERATING AND LEAKAGE CHECKS

OPERATING CHECKS

1. Provide a pressure gauge and drain valve at the supply side and delivery side of the pressure protection valve being checked.
2. Charge the air system to full pressure and shut off the engine.
3. Observing the gauges on the supply and delivery sides of the valve, slowly exhaust pressure from the delivery side. Note that both gauges will show pressure loss until the closing pressure of the pressure protection valve is reached.

   The pressure protection valve should close at approximately (± 5 psi) the pressure indicated on the valve's label or in the vehicle handbook. The gauge on the delivery side of the valve should continue to show loss of pressure while the gauge on the supply side should stop at the same pressure as the setting of the valve.
4. (PR-3 valve only) Build pressure up again and shut the engine off. Slowly exhaust air from the supply side of the PR-3 valve. The gauge on the delivery side of the valve should remain at the highest pressure previously attained.

LEAKAGE CHECKS

1. Charge the air system to full pressure and shut the engine off.
2. Apply a soap solution around the cap of the pressure protection valve. A one inch bubble in three seconds or longer is acceptable. PR-3 valve - No leakage is permissible at the bottom of the valve.
3. Drain the air pressure from the delivery side of the pressure protection valve and disconnect the air line to it.
4. Apply a soap solution to the delivery port. A one inch bubble in five seconds or more is acceptable.

GENERAL

If the pressure protection valve does not function as described, or leakage is excessive, it is recommended that it be replaced with a new or remanufactured unit or repaired with genuine Bendix® parts available at Bendix outlets.

REMOVING AND INSTALLING

REMOVING

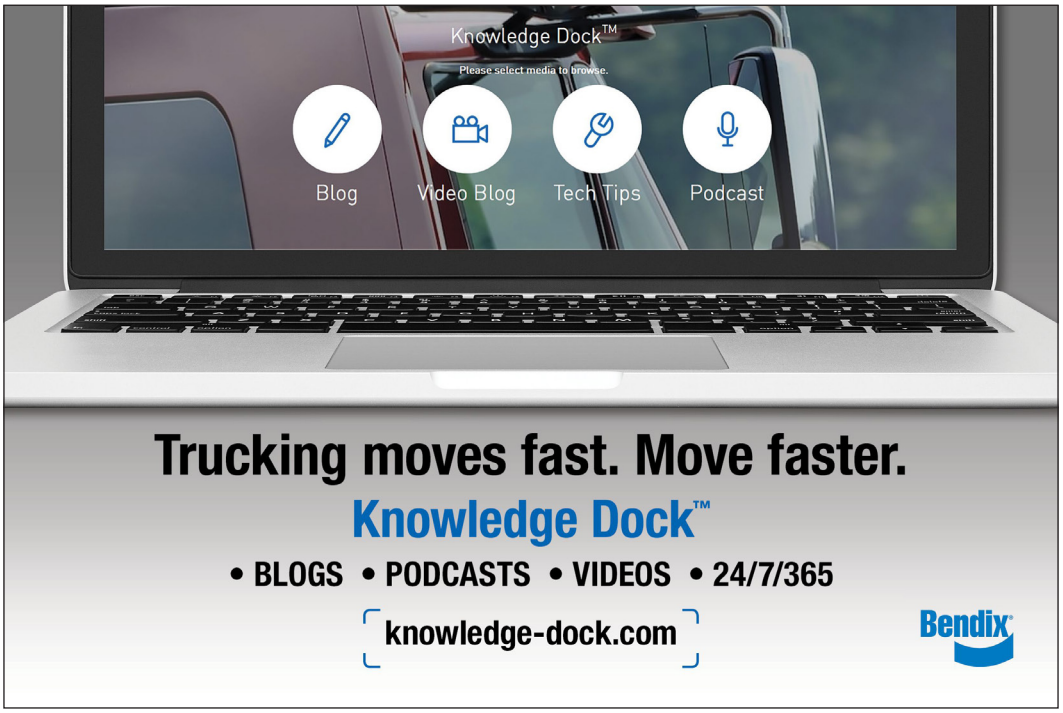
1. Block or hold the vehicle by means other than the air brakes.
2. Drain all system reservoirs to 0 psi.
3. Disconnect and identify (supply and delivery) the air lines leading to and from the pressure protection valve.
4. Remove the mounting bolts, if any, that secure the valve.

INSTALLING

1. Re-install the mounting bolts and secure the replacement valve to the vehicle.
2. Reconnect the supply delivery air lines to the proper ports of the replacement valve.

GENERAL

After installing a replacement valve, it is recommended that the operating and leakage checks be performed as outlined in this manual. If the closing pressure does not conform to that shown on the valve label or in the vehicle or a different setting is desired, the PR-2 valve may be adjusted by loosening the locknut and tightening or loosening the adjusting cap as required; however, if the proper setting cannot be attained by moderate adjustment of the cap, the valve may have the wrong spring and will have to be exchanged for the correct valve. The PR-3 and PR-4 valves are not adjustable.



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