

FIGURE 1 - BENDIX® HR-1™ HYDRAULIC RELAY VALVE

General Kit Information

This modification kit is intended to change the internal Bendix® HR-1™ hydraulic relay check valve from its current design to a newer modified design (see Figure 2). Installation of the kit is typically accomplished without removing the valve from the vehicle.

IMPORTANT PRECAUTIONS

When working on or around a vehicle, follow all general safety precautions, including the Safe Maintenance Practices shown on page 2.

Vehicle Preparation

1. Park the vehicle on a level surface using the park brake control.
2. Turn off the engine and place chocks under all wheels.
3. Exercise the parking system by applying and releasing the parking brakes 4 times. The engine and parking system hydraulics should be cool to the touch before beginning work.

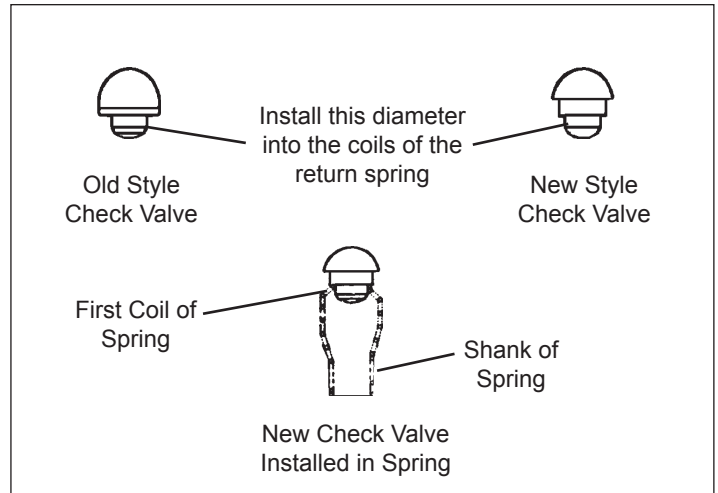


FIGURE 2 - CHECK VALVE VERSIONS AND VALVE INSTALLATION IN SPRING

4. Referring to Figure 1, locate the Bendix HR-1 hydraulic relay valve on the vehicle and thoroughly clean the exterior of the valve.
5. Referring to Figure 1, locate the check valve cap nut on the valve.

Disassembly

Before beginning the disassembly, locate an 8 ounce or larger container to catch the hydraulic fluid that will flow from the valve during the procedure. Prepare the general area where the kit will be installed for the possibility of an accidental spill of hydraulic fluid; Have materials at hand to deal with any clean-up needed.

1. Place the 8 oz. container under the cap nut (see Figure 1) and slowly remove the nut.
2. Allow the fluid to drain into the container. *Note: The spring and check valve may fall into the container during the draining process.*
3. If the check valve and spring did not fall out, carefully remove them by hand.
4. Discard the old check valve and spring.
5. Remove and discard the O-ring from the check valve cap nut.

Assembly

1. Using the parts in the kit, install the check valve onto the check valve spring. See Figures 1 and 2.

Important: The smallest diameter of the check valve must be inserted into the end coils of the spring. **Caution:** One end of the spring is designed to fit into the bore of the cap nut and the other end is designed to accept the shank of the check valve.

Install the check valve into the spring coils with a twisting motion. The direction of the twisting motion used should be opposite to the wrap of the spring coils. Twisting the check valve in the opposite direction as the wind of the spring prevents the coils from constricting and makes the installation easier.

2. Coat the cap nut and the O-ring contained in the kit with hydraulic oil drained from the system. Install the O-ring on the check valve cap nut, making certain not to damage or cut the O-ring in the process.
3. Referring to Figure 1, insert the end of the spring, opposite the check valve, into the cap nut.
4. Carefully install the cap nut (with spring and check valve) into the Bendix® HR-1™ hydraulic relay valve. Torque the cap nut to 75 - 175 pound inches.

Inspecting The Return Hose

1. Locate the brake booster. (*Refer to vehicle maintenance manual or brake booster manufacturer's instructions in lieu of the instructions in this section.*)
2. Ensure the flexible hose that connects the return nipple (typically integral to the body housing) to the steel tubing leading to the Bendix HR-1 hydraulic relay valve is installed properly.
 - A. The hose end must be installed 0.75 inches past the barb on the return nipple of the brake booster.
 - B. The hose end must be installed 0.75 inches past the circumferential bulge that serves as a barb on the steel tubing.
 - C. The hose clamp must be installed between the end of the hose and the barb. Torque the hose clamp screw to 12-15 pound inches.

Testing and Bleeding

1. Check the fluid level in the brake system's pump reservoir. Add fluid if necessary.
2. Start the engine and apply and release the parking brakes several times. Verify that the parking brakes apply and release promptly.
3. With the engine running, release the parking brakes (parking brakes off) and turn off the engine. Inspect for fluid leakage around the check valve cap nut. No leakage is permitted. If leakage is detected, check the torque on the cap nut and retest.
4. Apply the parking brakes.
5. Using the procedure specified in the vehicle maintenance manual, bleed the parking brake system.

SAFE MAINTENANCE PRACTICES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times:

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. When working around or under the vehicle, stop the engine and remove the key from the ignition. Always keep hands away from chambers as they may apply as system pressure drops. Always wear safety glasses.
2. 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.
3. 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 the use of those tools.
4. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
5. If the vehicle is equipped with an air over hydraulic brake system or any auxiliary pressurized air system, 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 or a dryer reservoir module, be sure to drain the purge reservoir.
6. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or pipe plug unless you are certain all system pressure has been depleted.
7. Never exceed manufacturer's recommended pressure.
8. Never attempt to disassemble a component until you have read and understand all recommended procedures. Some components contain powerful springs and injury can result if not properly disassembled. Use only proper tools and observe all precautions pertaining to use of those tools.
9. Use only genuine Bendix® replacement parts, components and kits.
 - A. Use only components, devices and mounting and attaching hardware specifically designed for use in hydraulic brake systems.
 - B. All replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as the original equipment.
10. 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.
11. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.