

WABCO

Technical Bulletin

Service Procedures for Relay Valve (RV)

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

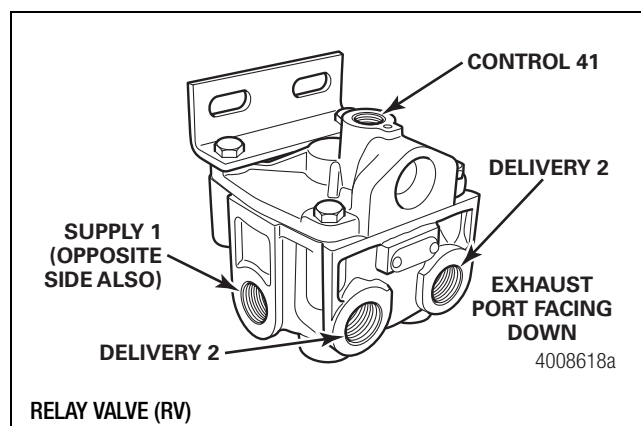
How to Obtain Additional Maintenance and Service Information

If you have any questions about the material covered in this publication, or for more information about the WABCO product line, please contact WABCO North America Customer Care at 855-228-3203 or visit our website, wabco-na.com.

Description and Function

The WABCO relay valve is designed to, upon service brake application and release, speed up the application and release of delivery air pressure when the control port pressure is applied and released.

This relay valve receives a control pressure signal (commonly from the vehicle foot brake valve) which results in pressurized air being delivered from an air supply reservoir. By controlling the pressure delivered from the vehicle foot brake valve to the relay valve, the air pressure and subsequent braking power can be graduated. When the vehicle foot brake valve is released, the control air pressure to the relay valve is decreased and the air from the brake chambers is exhausted at the relay valve exhaust port. A "crack pressure" will increase the differential between control air pressure and delivery pressure.



Service Procedures

Before servicing the WABCO relay valve, carefully read and follow all outlined procedures.

⚠ WARNING

To prevent serious eye injury, always wear eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Open drain valves on all reservoirs to remove all pressurized air from the air system before you disconnect any component. Pressurized air can cause serious personal injury.

Removing the Relay Valve

1. Wear safe eye protection.
2. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
3. Drain the total air system. Open all of the drain valves on all of the reservoirs.

- Follow the vehicle manufacturer's recommendations for removing all electrical power from the vehicle.
- Identify ports and mark corresponding information on all air line tubing connected to the valve to ensure that the replacement valve is connected correctly. Color-coded tubing is recommended for new installations.
- Using a tubing removal tool or similar device, disconnect the push-to-connect air line tubing. Disconnect the remaining air line tubing by turning the tubing fitting counterclockwise, and cover the ends of the tubing to protect them against contamination.
- Remove and save the mounting hardware that mounts the valve to the vehicle. Remove the valve assembly.
- Connect the air lines to the corresponding ports identified during removal.
- Before operating the vehicle, be sure all components and systems are restored to their correct operation.

Function and Leakage Test

NOTE: Install test gauges where pressure readings are required.

- With the delivery ports and the control port open, put 15 ± 5 psi (1.03 ± 0.34 bar) in the valve's supply reservoir. Apply a soap solution to the exhaust port and both delivery ports. Leakage of a one-inch bubble in three seconds is permissible at each location. Repeat the above test with 125 ± 5 psi (8.62 ± 0.34 bar) in the supply reservoir.
- With 125 ± 5 psi (8.62 ± 0.34 bar) in the valve's supply reservoir, apply and hold 35 ± 5 psi (2.41 ± 0.34 bar) at the control port. Apply a soap solution to the exhaust port. Leakage of a one-inch bubble in three seconds is permissible. Delivery pressure must be equal to the control pressure minus one half of the nominal "crack pressure." Repeat the above test with 125 ± 5 psi (8.62 ± 0.34 bar) at the control port. Delivery pressure must be 125 ± 5 psi (8.62 ± 0.34 bar).
- With 125 ± 5 psi (8.62 ± 0.34 bar) in the valve's supply reservoir, quickly apply and release the control pressure. The pressure in the delivery must rise and fall promptly.

Installing the Relay Valve

CAUTION

Be sure that the replacement valve has the same "crack pressure" as the valve being removed. The crack pressure is located on a tag or plate. A designation of RVO40 designates a relay valve with a nominal crack pressure of 4.0 psi. Using a different crack pressure relay valve may cause a change in braking characteristics. A typical crack pressure is 4.0 psi.

- Install the new relay valve using the hardware removed in Step 7 of the removal procedure. Tighten the mounting bolts from 30 ft-lb (41 N•m) minimum to 33 ft-lb (45 N•m) maximum for 3/8-inch SAE Grade 5 bolts.

CAUTION

Tubing for push-to-connect fittings must be cut cleanly and end cuts must be perpendicular within seven degrees. Angles and sharp edges can damage the seal in the fitting and cause air leakage.

WARNING

Ensure the tubing is connected correctly and securely. Insert the tubing into the push-to-connect fitting until it hits the stop in the fitting. After inserting the tubing, pull on the tubing to ensure that it is locked in the fitting. Unsecured tubing can cause excessive leakage which may lead to a loss of braking, resulting in loss of vehicle control. Serious personal injury can result.

Do not kink the tubing. Kinked tubing can block the flow of air which may cause a loss of braking, resulting in loss of vehicle control. Serious personal injury can result.

Troubleshooting

Troubleshooting the Relay Valve

WARNING

The relay valve is an important part of the air brake system. Never ignore any symptom such as leakage or a change in operation. Loss of braking may occur resulting in loss of vehicle control. Serious personal injury can result.

- Conduct the Function and Leakage Test when there is leakage or a change in operation.
- Replace the valve if it does not meet the requirements of the Function and Leakage Test.

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