

operation & maintenance instruction

"24-E" DOUBLE CHECK VALVE PORTION, Pc. No. 584152

DECEMBER, 1990

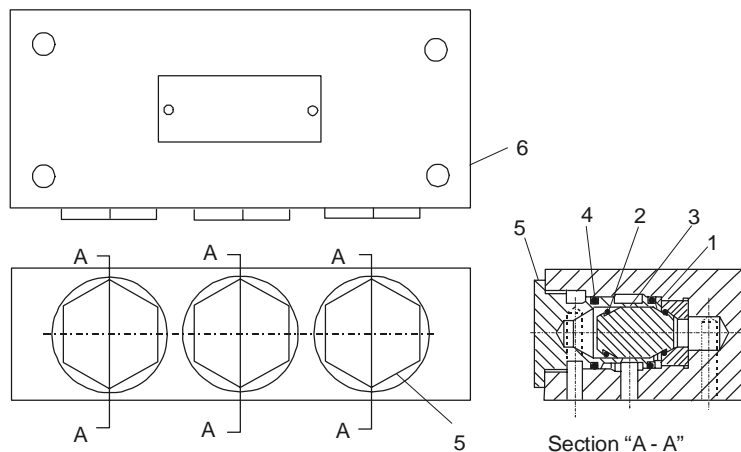
Supersedes issue dated December, 1989

NOTE: The following description and operation is based on this device and its components being new or this device and its components having been repaired, tested, installed and maintained in accordance with instructions issued by this and any other applicable Wabtec Corporation publications.

⚠ WARNING: At the time any part is replaced in this device, the operation of the complete device must pass a series of tests prescribed in the latest issue of the applicable Wabtec Test Specification. At the time this device is applied to the brake equipment arrangement, a stationary vehicle test must be made to insure that this device functions properly in the total brake equipment arrangement. (Consult your local Wabtec Representative for identity of the test specification, with latest revision date, that covers this device.)

IMPORTANT: Only Wabtec supplied parts are to be used in the repair of this device in order to obtain satisfactory operation. Commercially available non-O.E.M. parts are unacceptable.

NOTE: The part numbers and their associated descriptions are the property of Wabtec Corporation and may not be replicated in any manner or form without the prior sole written consent of an Officer of Wabtec Corporation.



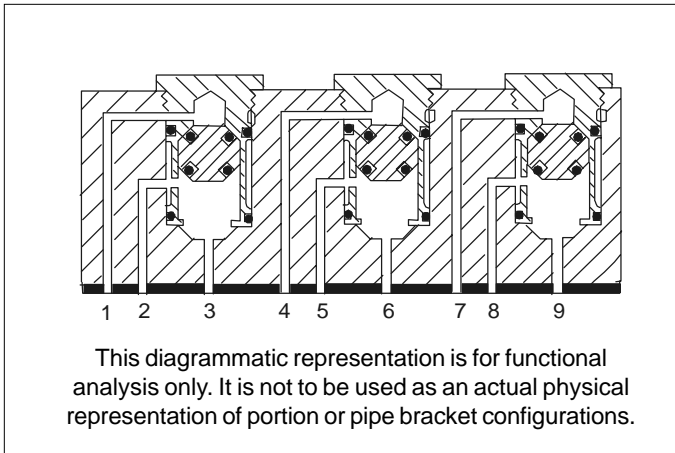


Figure 2 - Diagrammatic View

1.0 DESCRIPTION (Figure 1)

The "24-E" Double Check Valve Portion, Part No. 584152, is a panel mounted device consisting of a body (6) which houses three cartridge style floating check valve assemblies that function independently. Each check valve assembly consists of a valve with o-ring seals (3, 2) which is retained in a cap nut (5) by an internal retaining ring (1). Each check valve assembly is designed to permit the flow of air to a device to be controlled by either of two other devices.

The "24-E" Double Check Valve Portion is designed to be mounted on a pipe bracket or manifold in such a manner that it can be readily removed for maintenance without disturbing the piping of the vehicle. This Portion may be used in equipment arrangements where the air pressure does not exceed 150 psig.

2.0 OPERATION (Figure 2)

The check valve assemblies of the "24-E" Double Check Valve Portion are designed to select the higher air pressure inlet and to direct this air to the outlet port. The higher inlet air pressure forces the integral floating check valve to seal against its seat on the low pressure side. This action closes the passage between the low pressure inlet port and the outlet port of the body. Air then flows from the high pressure inlet port to the outlet port and to the controlled device. In Figure 2, the high pressure inlet ports are 3, 6, and 9; the outlet parts are 2, 5, and 8; and the low pressure inlet ports are 1, 4, and 7.

NOTE: Each check valve assembly within the body works in a similar manner independent of the others.

3.0 MAINTENANCE SCHEDULE

IMPORTANT: The "24-E" Double Check Valve Portion should be removed from the equipment arrangement, taken to the shop, be completely disassembled, the parts cleaned, inspected, lubricated, and then re-assembled using **NEW** Wabtec Corporation rubber parts and other specified **NEW** Wabtec Corporation parts. The assembled Portion is then to be tested for correct operation. Maintenance is to be performed according to the following application schedule, or more frequently if service conditions so indicate.

RECOMMENDED TYPE OF APPLICATION	FREQUENCY - AT LEAST ONCE EVERY
Locomotives	24 Months
Passenger (Interstate)	36 Months
Transit	24 Months

4.0 PARTS CATALOG AND REPLACEMENT PARTS INFORMATION

4.1 PARTS CATALOG

IMPORTANT: When ordering replacement parts for the "24-E" Double Check Valve Portion, Part No. 584152, refer to the current issue of the Wabtec Corporation Parts Catalog 3216-24, S.41.

NOTE: The reference numbers used in this publication and those used in the parts catalog may differ. Check the descriptive parts name to be sure that the desired part is ordered.

4.2 REPLACEMENT PARTS

IMPORTANT: To obtain satisfactory operation and reliability of this device, **ONLY** Wabtec Corporation replacement parts are to be used in the maintenance of this device.

5.0 SAFETY PROCEDURES AND WARNINGS

Regular shop safety procedures **MUST BE** followed when working on the "24-E" Double Check Valve Portion.

The work area should be clean.

⚠ WARNING

The following statements of warning apply all or in part wherever the symbol ⚠ appears in the maintenance procedures. Failure to observe these precautions may result in serious injury to those performing the work and/or bystanders.



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- The use of an air jet, which must be less than 30 p.s.i.g., to blow parts clean or to blow them dry after being cleaned with a solvent will cause particles of dirt and/or droplets of the cleaning solvent to be airborne. Wire brushing may also cause particles of dirt, rust, and scale to become airborne. These conditions may cause skin and/or eye irritation.
- When using an air jet, do not direct it toward another person. Improper use of air jet could result in bodily injury.
- Personal eye protection must be worn when performing any work on this device or its components parts to avoid any possible injury to the eyes.
- The use of solvents as cleaning agents and the use of lubricants can involve health and/or safety hazards. The manufacturers of the solvents and lubricants should be contacted for safety data (such as OSHA Form OSHA-20 or its equivalent). The recommended precautions and procedures of the manufacturers should be followed.
- When performing any test or work on devices or equipment while they are on the vehicle (on car test, etc.) special precautions must be taken to insure that vehicle movement will not occur which could result in injury to personnel and/or damage to equipment.
- Assembly may be under a spring load. Exercise caution during disassembly so that no parts "Fly Out" and cause bodily injury.
- All air supply and/or electric current to this device and/or to any components part must be cut-off before this device and/or any component part is removed from the equipment arrangement.
- "Bottled" up air under pressure (even though air supply is cut-off) may cause gaskets and/or particles of dirt to become airborne and an increase in sound level when this device and/or any component part is removed from the equipment arrangement.
- Personal eye and ear protection must be worn and care taken to avoid possible injury when performing any work on this device and/or component part.
- To prevent receiving electrical shock when performing electrical tests, hands must be clear of electrical components, contacts and housing and there must be no bodily contact with the work bench. Failure to heed this warning could result in severe injury or death.

6.0 CLEANING SOLVENT AND LUBRICANT

6.1 The solvent used for cleaning reusable parts **MUST BE** an aliphatic, organic solution such as mineral spirits or naphtha that will dissolve oil or grease and that will permit the parts to be cleaned without abrasion.

IMPORTANT: Cleaning solvents are to be used in a well ventilated area.

6.2 Number 2 Silicone Grease, Wabtec Corporation Specification M-7680-2, (Industry Designation MIL-G-4343) such as Dow Corning Corporation Dow Corning 55, is required for the lubrication of specified o-rings, o-ring grooves, and the bearing surfaces of the bushings into which the o-ring assemblies are installed.

6.3 Number 4 Calcium Base Grease with Zinc Oxide, Wabtec Corporation Specification M-7675-4, such as Fiske Brothers Refining Company Lubriplate Number 115, is required for the lubrication of the threads and cup of the cap nuts.

7.0 SPECIAL TOOL

IMPORTANT: In addition to the regular shop tools, a pair of internal retaining ring pliers will be required.

8.0 MAINTENANCE PROCEDURES

IMPORTANT: When performing the procedures which follow **DO NOT** use hard or sharp metal tools to remove o-rings. Exercise care so that no damage is done to metal parts.

⚠ 8.1 DISASSEMBLY (Figure 1)

8.1.1 Remove the three check valve assemblies (1 to 5) from the body (6) by turning the cap nuts (5) counterclockwise.

8.1.2 Remove and **SCRAP** the two 1-¹/₁₆" O.D. o-rings (4) from each of the cap nuts (5).

8.1.3 Using the proper retaining ring pliers, remove the internal retaining rings (1) from the cap nuts (5).

8.1.4 Remove the three "floating" check valves with o-ring assemblies (3, 2) from the cap nuts (5). It may be necessary to shake the cap nut to dislodge the check valve with o-ring assemblies.

8.1.5 Remove and **SCRAP** the two ⁵/₈" O.D. o-rings (2)



from each of the check valves (3).

8.1.6 Inspect the mounting face of the body (6) to be sure that the mounting gasket has been removed. If this gasket is still adhering to the body, it is to be removed and **SCRAPPED**. The mounting gasket **IS NOT** a part of the "24-E" Double Check Valve Portion.

8.2 CLEANING AND INSPECTING

8.2.1 NON-REUSABLE PARTS

8.2.1.1 **IMPORTANT:** ALL o-rings are to be **SCRAPPED** and replaced with **NEW** Wabtec Corporation parts.

8.2.2 REMAINING PARTS

8.2.2.1 Wash **ALL** remaining parts, using the cleaning solvent as described in Section 6.1.

IMPORTANT: Cleaning solvent is to be used in a well ventilated area.

8.2.2.2 A clean, lint-free cloth that has been saturated with the prescribed cleaning solvent may be used to assist in the cleaning of the interior and exterior surfaces of the body.

8.2.2.3 After the parts have been cleaned, they **MUST BE** completely dried. Use a low pressure jet of clean dry air to blow the parts dry.

8.2.2.4 Inspect the parts. Replace any part that is cracked, cut, broken, bent, excessively worn, damaged in any way, or that is in such a condition that may result in the unsatisfactory operation of the "24-E" Double Check Valve Portion.

The retaining rings **MUST BE** elastic enough to "snap" into its groove to hold securely.

8.3 ASSEMBLY

8.3.1 Apply a **light** coating of Number 2 Silicone Grease, Wabtec Corporation Specification M-7680-2, to the surfaces of six **NEW** 1-1/16" O.D. o-rings (4). Also fill the o-ring grooves of the three cap nuts (5) and lightly lubricate the cap nut bushings of the body (6) with the lubricant. **DO NOT** lubricate the threads on the cap nuts.

8.3.2 Install a **NEW** 1 1/16" O.D. o-ring (4) into each of the o-ring grooves of the three cap nuts (5). Any excess lubricant may be removed by wiping with a clean, dry, lint-free cloth.

8.3.3 Install a **NEW** Dry (unlubricated) 5/8" O.D. o-ring (2) into each of the o-ring grooves of the three "floating" check valves (3).

IMPORTANT: No lubricant is to be used on the o-rings or the check valves.

8.3.4 Install a check valve with o-ring assembly into each of the three cap nuts (5) so that each check valve seats in the hex. end of the cap nut.

8.3.5 Using the proper internal retaining ring pliers, secure the check valve with o-ring assembly (3, 2) in each cap nut (5) by installing the retaining ring (1) in its groove in the cap nut (5). Be sure the retaining ring (1) is properly seated in its groove.

8.3.6 Apply a light coating of Number 4 Calcium Base Grease with Zinc Oxide, Wabtec Corporation Specification M-7675-4, to the threads of each of the cap nuts (5).

8.3.7 Install a cap nut - check valve sub-assembly (1 to 5) into each of the three valve cavities of the body (6) and secure them in place by torquing to 35 foot-pounds.

9.0 TESTING AND ADDITIONAL INFORMATION

9.1 **IMPORTANT:** After the "24-E" Double Check Valve Portion, Part No. 584152, has been assembled, **BUT BEFORE** it is returned to service, **IT MUST** pass a series of tests following the procedures of the current issue of the Wabtec Corporation Test Specification T-3690-O.

9.2 **IMPORTANT:** Whenever the "24-E" Double Check Valve Portion, Part No. 584152, is removed from an equipment arrangement for any reason, and it is re-installed or replaced with a **NEW** or repaired and tested Portion, a **NEW** mounting gasket **MUST BE** used. This gasket, Part No. 584160, **IS NOT** a part of the Portion and **MUST BE** ordered as an individual item.

9.3 **IMPORTANT:** Whenever the "24-E" Double Check Valve Portion is removed from an equipment arrangement for any reason, and it is re-installed or replaced with a **NEW** or repaired and tested Portion, a stationary vehicle test **MUST BE** performed to be sure that the "24-E" Double Check Valve Portion functions properly in total equipment arrangement.

9.4 Consult your Wabtec Corporation Representative if additional information is required.

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