

operation & maintenance instruction

"C-1" TYPE STRAINER & CHECK VALVE

NOVEMBER, 1983

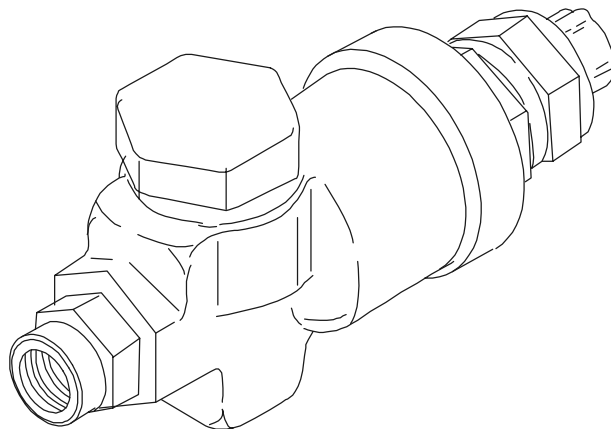
Supersedes issue dated May, 1981

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.



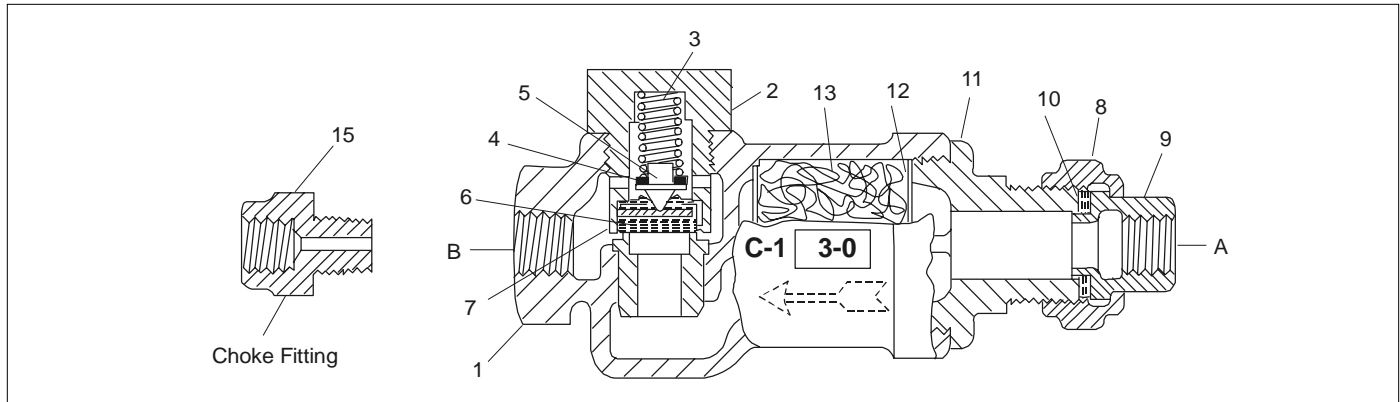


Figure 2 - Assembly View

1.0 DESCRIPTION

The "C-1" Type Strainer and Check Valve is designed to direct air flow at a desired rate and reduced pressure in equipment arrangements where the air pressure does not exceed 150 psig.

The direction of air flow through the strainer is indicated by a raised arrow cast on the body. The body houses the following parts:

A spring-loaded rubber seated check valve which functions to permit the preset air pressure reduction.

A choke fitting which, when used, limits the rate of air flow through the device.

A curled hair type strainer which assists in the removal of dirt particles from the air flowing through the valve. This helps to keep the check valve and choke clean.

The "C-1" Type Strainer and Check Valve is available with a number of spring values and choke sizes. Refer to the Wabtec Corporation Parts Catalog 3216-24, Sup. 1 for piece numbers and your Wabtec Corporation Representative for correct application. "C-1" Type Strainers and Check Valves have coded designations which contain four digits. The first digit C and the second digit 1 indicate a type "C" strainer and check valve. The third digit indicates the pressure differential in psi across the check valve as provided by the force of the spring. The fourth digit indicates the choke size in 1/64 of an inch. When no choke fitting is used the fourth digit is 0. For example: The designation C-1-3-8 indicates a "C-1" Type Strainer and Check Valve with a 3 psi differential spring and a 1/8" (8/64") choke fitting. The designation C-1-40-0 indicates a "C-1" Type Strainer and Check Valve with a 40 psi differential spring but no choke fitting.

2.0 OPERATION (Figure 2)

Air under pressure entering port A flows through the curled hair strainer (13) and to the cavity under check valve (6). When the air pressure in the cavity under check valve (6) is greater than the force of the check valve spring (3), the check valve (6) is lifted off its seat and air under pressure flows through port B and choke fitting (15) if used. When the force developed by air pressure in the cavity below check valve (6) drops below the force of the check valve spring (3), the check valve (6) is seated and the flow of air to port B is cut-off.

3.0 MAINTENANCE SCHEDULE

IMPORTANT: THE "C-1" TYPE STRAINER AND CHECK VALVE SHOULD BE REMOVED FROM THE VEHICLE, TAKEN TO THE SHOP, THOROUGHLY DISASSEMBLED, CLEANED, LUBRICATED, ASSEMBLED AND TESTED AT A MINIMUM OF ONCE EVERY SIX (6) MONTHS, OR MORE FREQUENTLY IF SERVICE EXPERIENCE SO DICTATES.

4.0 PARTS CATALOG INFORMATION

Refer to the Wabtec Corporation Parts Catalog 3216-24, Sup. 1 when ordering repair or replacement parts.

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.

5.0 SAFETY PROCEDURES & WARNINGS

Regular shop safety procedures must be followed when working on the "C-1" Strainer and Check Valve.

The work area is to be clean.



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⚠ WARNING

The following statements of warning apply all or in part whenever 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.

- **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 & LUBRICANT

6.1 The solvent used for cleaning the metal parts of the "C-1" Type Strainer and Check Valve **MUST BE** an aliphatic organic solution such as mineral spirits or naphtha that will permit all of the parts to be cleaned without abrasion.

6.2 A compound consisting of one part graphite, Wabtec Corporation Specification M-7695-2 (AAR Specification M-913) and two parts of SAE-20 oil by weight is used to lightly coat the threads of the choke fitting after it has been cleaned.

⚠ 7.0 "ON-CAR" VALVE REMOVAL & REPLACEMENT

7.1 **IMPORTANT:** Observe all safety procedures and WARNINGS as listed in Section 5.0. Chock the vehicle wheels to prevent vehicle movement and place warning placards on and about vehicle that work is being performed. Cut off all air supply to the line leading to the "C-1" Type Strainer and Check Valve.

Remove all free dirt from the "C-1" Strainer and Check Valve using a lint-free cloth or rag or blow clean with a low pressure jet of clean, dry air.

(Figures 2 & 3)

7.2 Using the proper tools **CAREFULLY** remove the "C-1" Strainer and Check Valve from the vehicle by first loosening the union nut (8) which secures the $\frac{3}{8}$ " x $\frac{1}{2}$ " swivel union (9) and vehicle piping to the body (1). Separate the swivel union (9) from the cap nut (11), then remove and **SCRAP** the $\frac{1}{2}$ " union gasket (10).

NOTE: The union nut (8) and union swivel (9) need not be removed from the piping unless they are damaged.

7.3 Using the proper tools **CAREFULLY** remove the "C-1" Strainer and Check Valve, less union nut, swivel and gasket from the vehicle.

7.4 Inspect the union nut (8) and swivel (9) to be sure they are clean. Using a **NEW** $\frac{1}{2}$ " union gasket, Pc.No. 81598



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install a NEW or REPAIRED and TESTED "C-1" Type Strainer and Check Valve in reverse order of removal.

7.5 Transport the "C-1" Strainer and Check Valve that was removed from the vehicle to the shop for maintenance and/or repair.

7.6 **IMPORTANT:** Whenever a "C-1" Type Strainer and Check Valve is removed from the equipment arrangement for any reason and it is replaced with a NEW or repaired and tested valve a stationary vehicle air brake test **MUST BE** made to be sure the valve functions properly in the equipment arrangement.

7.7 Remove all warning placards and wheel chocks before attempting to move vehicle.

8.0 "IN SHOP" MAINTENANCE PROCEDURES

⚠ 8.1 DISASSEMBLY

(Figures 2 & 3)

8.1.1 Remove the 1/2" union nut (8), 3/8" x 1/2" union swivel (9) and the 1/2" union gasket (10) from the cap nut (11) if these parts have not already been removed. **SCRAP** the gasket (10).

8.1.2 Remove the choke fitting (15) (if used) from the body (1).

8.1.3 Remove the cap nut (11) from the body (1).

8.1.4 Remove the strainer plate (12) (nearest the cap nut end) from the body (1).

8.1.5 Remove and **SCRAP** the curled hair (13) from the body (1).

8.1.6 Remove the strainer plate (12) (nearest the check valve end) from the body (1).

8.1.7 **CAREFULLY** remove the cap nut - check valve - spring assembly (2 to 7 incl.) as a unit from the body (1).

⚠ 8.1.8 **WARNING:** THE SPRING OF THE CAP NUT - CHECK VALVE - SPRING ASSEMBLY (2 to 7 incl.) IS UNDER A COMPRESSIVE LOAD. **EXERCISE CARE** WHEN DISASSEMBLING TO AVOID POSSIBLE PERSONAL INJURY IF PARTS ARE INADVERTENTLY EXPELLED BY SPRING FORCE. Disassemble the cap nut - check valve - spring assembly (2 to 7 incl.) as follows:

8.1.8.1 Depress the check valve (6) and **CAREFULLY** remove the retaining ring (7) from the cap nut (2).

8.1.8.2 Remove the following parts from the cap nut (2):

8.1.8.2.1 Check Valve (6)

8.1.8.2.2 Spring seat (5)

8.1.8.2.3 Shims (4) if used

8.1.8.2.4 Spring (3)

8.1.8.3 **SCRAP** the check valve (6).

⚠ 8.2 CLEANING & INSPECTING

8.2.1 GASKET & CHECK VALVE

The gasket (10) and check valve (6) are to be **SCRAPPED** and replaced with NEW Wabtec Corporation parts.

8.2.2 CURLED HAIR

8.2.2.1 The curled hair (13) **MUST BE SCRAPPED** and replaced. NEW curled hair is available from the Wabtec Corporation in the following amounts:

8.2.2.1.1 A 1/2 ounce package - Order Piece Number 88637.

8.2.2.1.2 A 17 1/2 ounce package - Order Piece Number 88790.

8.2.3 METAL PARTS

8.2.3.1 Wash all of the metal parts in the cleaning solvent described in Section 6.1.

IMPORTANT: METAL TOOLS MUST NOT BE USED TO CLEAN THE CHOKE FITTING SINCE, FOR PROPER PERFORMANCE, THE SIZE AND SHAPE OF THE ORIFICE MUST NOT BE CHANGED.

8.2.3.2 The spring may be wire brushed to assist in the removal of rust and scale.

8.2.3.3 After cleaning, blow the parts completely dry with a low pressure jet of clean, dry air.

8.2.3.4 Inspect the parts. Replace the spring if it is rusted, pitted, distorted, or if it has taken a permanent set. Refer to Parts Catalog 3216-24, Sup.1 for spring information and

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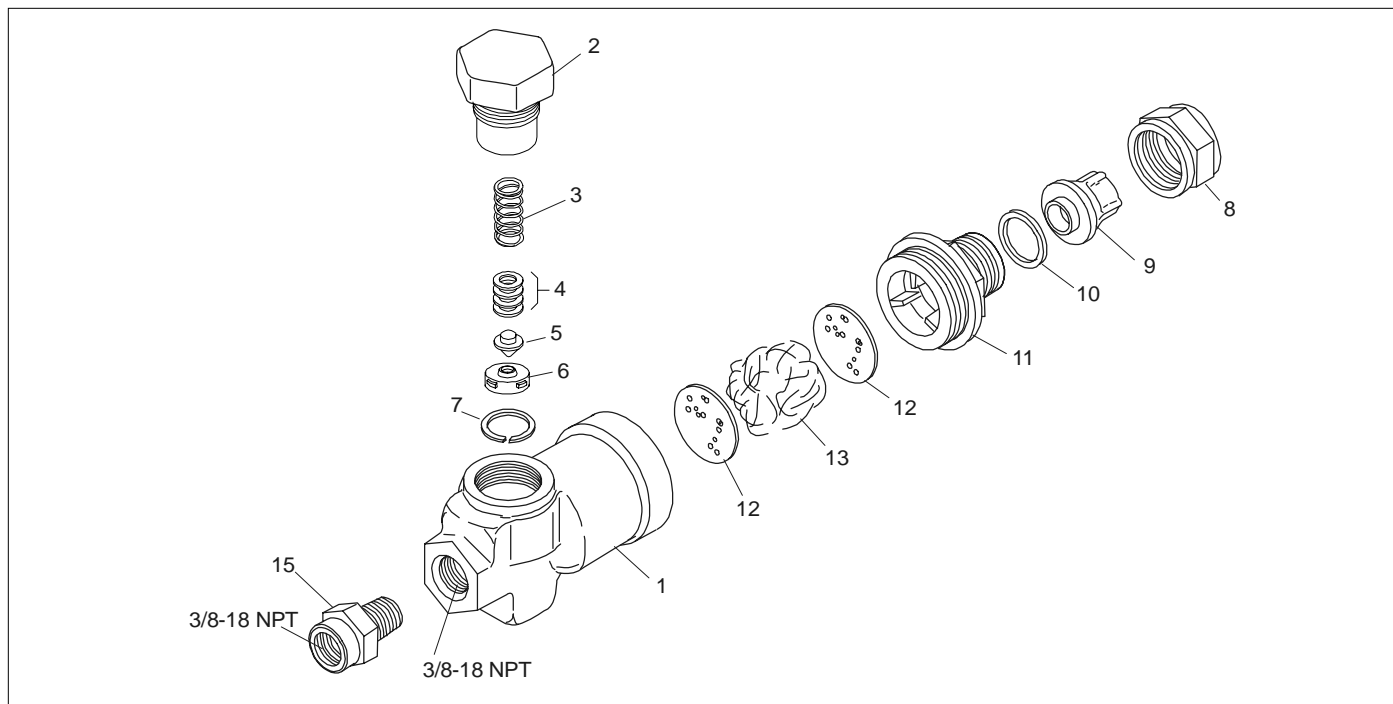


Figure 3 - Exploded View

identification.

Replace any part that is cracked, cut, broken, excessively worn or that is in such a condition that may result in the unsatisfactory operation of the "C-1 Type Strainer and Check Valve.

⚠ 8.3 ASSEMBLY (Figures 2 & 3)

8.3.1 Install the following parts in the cap nut (2):

8.3.1.1 Spring (3)

8.3.1.2 Shims (4) if used

8.3.1.3 Spring seat (5)

8.3.1.4 A NEW Check Valve (6)

⚠ 8.3.2 WARNING: THE SPRING OF THE CAP NUT - CHECK VALVE - SPRING ASSEMBLY IS TO BE ASSEMBLED UNDER A COMPRESSIVE LOAD. EXERCISE CARE WHEN ASSEMBLING TO AVOID POSSIBLE INJURY FROM PARTS INADVERTENTLY EXPELLED BY THE SPRING FORCE.

CAREFULLY depress the check valve, spring seat and spring and install the retaining ring (7) in position in the cap nut (2).

8.3.3 Install the cap nut - check valve - spring assembly (2 to 7 incl.) in place in the body (1).

8.3.4 Install the following parts in the body (1) making certain that the curled hair is retained between the strainer plates.

8.3.4.1 One of the strainer plates (12)

8.3.4.2 $\frac{1}{3}$ ounce of curled hair (13)

8.3.4.3 The remaining strainer plate (12)

8.3.4.4 Cap Nut (11)

8.3.5 Install a NEW $\frac{1}{2}$ " union gasket (10) in place on the union swivel (9) if these parts were removed during disassembly.

8.3.6 Secure the union swivel (9) with gasket (10) to the cap nut (11) with the $\frac{1}{2}$ " union nut (8) if these parts were removed during disassembly.

8.3.7 Just prior to assembling, coat the threads of the choke fitting (15) lightly with a compound consisting of one part graphite, Specification M-7695-2, (AAR Specification M-913) and two parts of SAE-20 oil by weight.



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8.3.8 Install the choke fitting (15) in place in the body (1).

9.0 TESTING AND ADDITIONAL INFORMATION

9.1 After the "C-1" Type Strainer and Check Valve has been assembled BUT BEFORE it is returned to service it MUST PASS a series of tests following the procedure of one of the following Wabtec Corporation Test Specifications.

9.1.1 T-1660-0 for use with the AB Test Rack.

9.1.2 T-1735-0 for use with the 4D Test Rack.

9.2 **IMPORTANT:** WHEN THE "C-1" TYPE STRAINER AND CHECK VALVE IS REMOVED FROM THE BRAKE

EQUIPMENT ARRANGEMENT FOR ANY REASON, AND IT IS REPLACED WITH A NEW OR REPAIRED AND TESTED STRAINER AND CHECK VALVE, A STATIONARY VEHICLE AIR BRAKE TEST MUST BE MADE TO BE SURE THAT THE "C-1" STRAINER AND CHECK VALVE FUNCTIONS PROPERLY IN THE BRAKE EQUIPMENT ARRANGEMENT.

9.3 **IMPORTANT:** WHEN A REPAIRED AND TESTED "C-1" STRAINER AND CHECK VALVE IS MOUNTED ON A VEHICLE AND THE UNION NUT (8) AND UNION SWIVEL THAT HAVE REMAINED ON THE PIPING IS UTILIZED A NEW 1/2" UNION GASKET, PC.NO. 81598 MUST BE USED.

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

WABCO Locomotive Products
1001 Air Brake Avenue • Wilmerding, PA 15148
(412) 825-1000 • Fax (412) 825-1019
www.wabtec.com