

operation & maintenance instruction

"NS-1" REDUCING VALVE, Part No. 575813

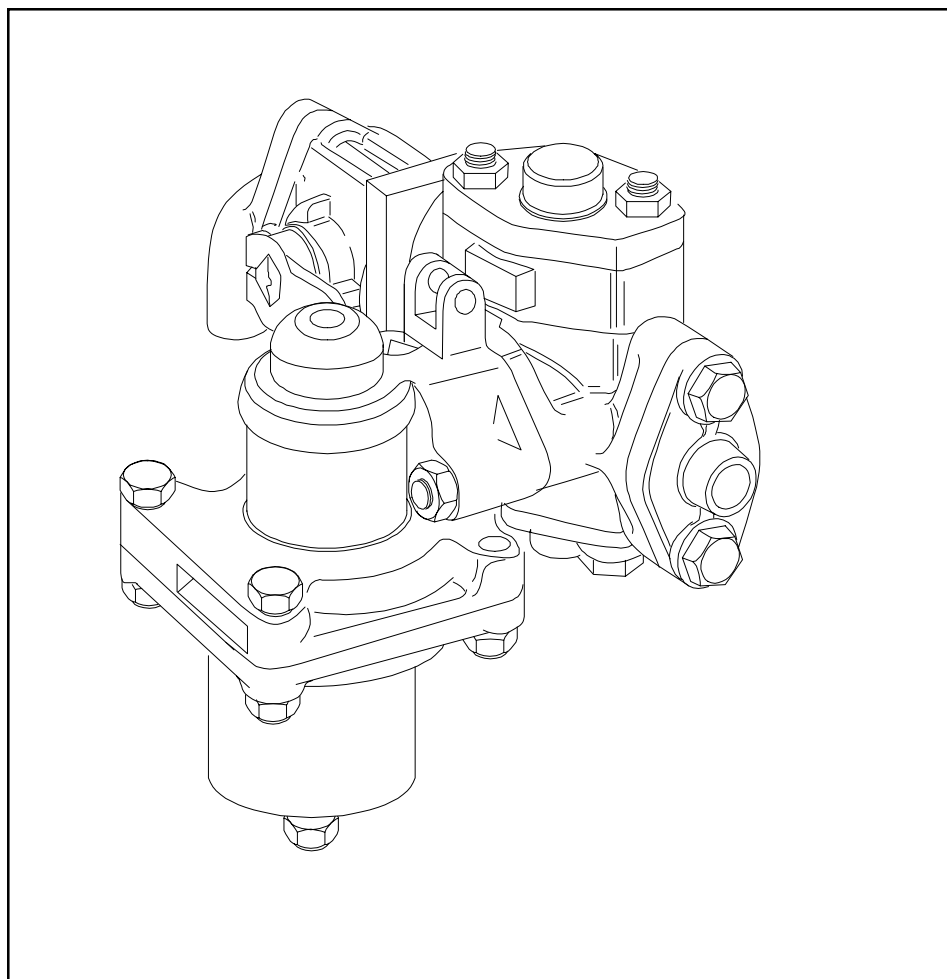
DECEMBER 1983

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.



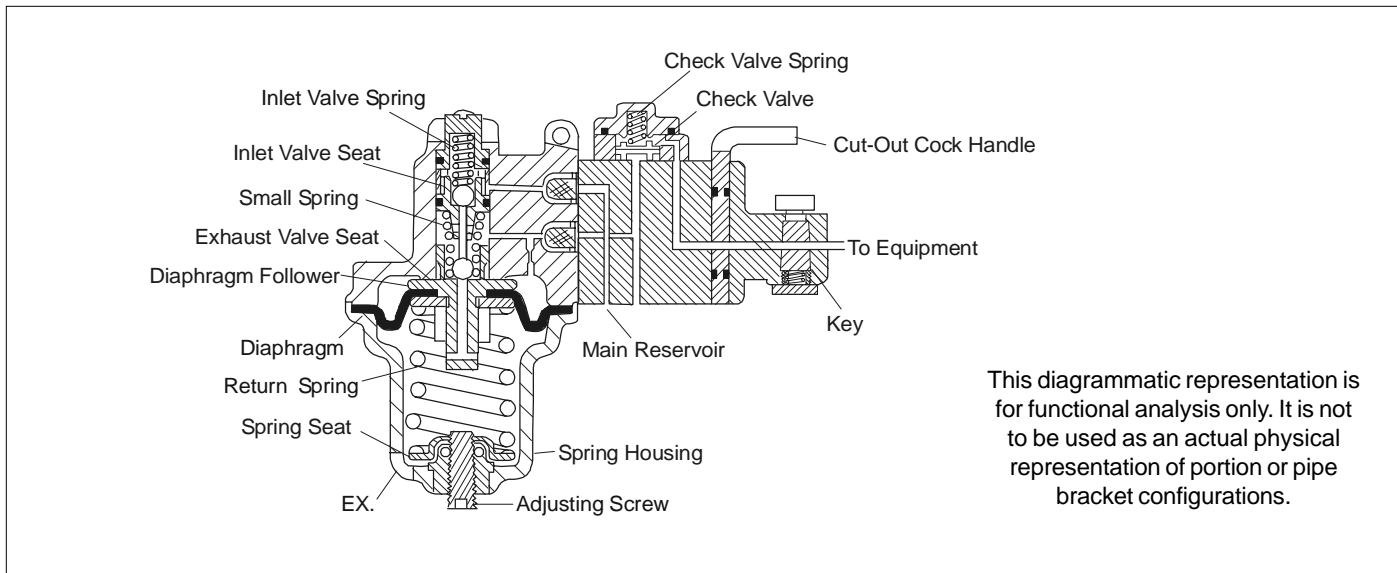


Figure 2 - Diagrammatic View

1.0 DESCRIPTION

The "NS-1" Reducing Valve is a diaphragm operated device designed to regulate air pressure at a predetermined value. This valve may be used in air brake equipment arrangements where the air pressure does not exceed 150 psig.

The "NS-1" Reducing Valve consists of a Reducing Valve Portion, which functions to reduce supply air to a predetermined pressure; a Check Valve Portion, which permits Reducing Valve Portion air to flow to another device but prevents back flow of air; a Cut-Out Cock, which provides a means to manually cut-off air flow from the Reducing Valve Portion to another device; a Mounting Bracket, used to mount the Cut-Out Cock; and a Pipe Bracket Portion on which the other components are mounted. All pipe connections are made to the "NS-1" Reducing Valve by use of various fittings which are furnished in an accessory package. This package also includes the gaskets and hardware required for mounting the various component portions to the Pipe Bracket.

2.0 OPERATION (Figure 2)

Main reservoir air enters the valve through passage "s" and flows to the supply chamber C. When charged to the predetermined setting of the Reducing Valve Portion, the "NS-1" Reducing Valve is in the lap position.

When the air pressure in chambers B and A is reduced to a predetermined level, the force of the return spring moves the diaphragm follower, exhaust valve seat, and the inlet and exhaust valves upward. This unseats the inlet valve and

main reservoir air in chamber C flows past the inlet valve seat into chamber B, passage r and passage r1 to the check valve. The air also flows through choke D and to chamber A on the top of the diaphragm. When the air pressure in chamber A reaches the predetermined setting of the Reducing Valve Portion, the combined forces of the air pressure and the small spring move the diaphragm, diaphragm follower, and exhaust valve seat downward. The force of the inlet valve spring moves the inlet valve down on its seat, which cuts off further flow of air.

If chambers B and A are charged to pressures in excess of the Reducing Valve Portion setting, the combined forces of the air pressure and small spring move the diaphragm, diaphragm follower, and exhaust valve seat downward so that the exhaust valve is unseated. The overcharge of air from chambers B and A then flows past the unseated exhaust valve seat into the spring housing and through the exhaust port to atmosphere. As the pressure in chamber A reaches the setting of the Reducing Valve Portion, the force of the return spring moves the diaphragm follower, diaphragm, and exhaust valve seat to seat the exhaust valve which prevents further flow of air.

The check valve permits air to flow from the Reducing Valve Portion to the delivery port through the open Cut-Out Cock but prevents a back flow of air. If it is desired to cut-off the flow of air from the Reducing Valve Portion to delivery, the Cut-Out Cock handle **MUST BE** moved to the cut-off position.



operation & maintenance instruction

3.0 MAINTENANCE SEHEDULE

The "NS-1" Reducing Valve, should be removed from the equipment arrangement, taken to the shop, be completely disassembled, the parts cleaned, inspected, lubricated, assembled, and the portions tested according to the following application schedule or more frequently if service conditions so indicate.

RECOMMENDED TYPE OF APPLICATION	FREQUENCY - AT LEAST ONCE EVERY
Locomotive	12 Months
Mass Transit	12 Months

4.0 PARTS CATALOG INFORMATION

Refer to the Wabtec Corporation Parts Catalog 3209-3 when ordering 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 parts are ordered.

5.0 SAFETY PROCEDURES AND WARNINGS

Regular owner-operating property and shop safety procedures are to be followed.

The work area is to 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.

- **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.**
- **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 "NS-1" Reducing Valve MUST BE an aliphatic organic solution such as mineral spirits or naphtha, that will dissolve oil or grease and that will permit all parts to be cleaned without abrasion.

6.2 #2 Silicone Grease, Wabtec Corporation Specification M-7680-2, is used to lubricate the Reducing Valve Portion

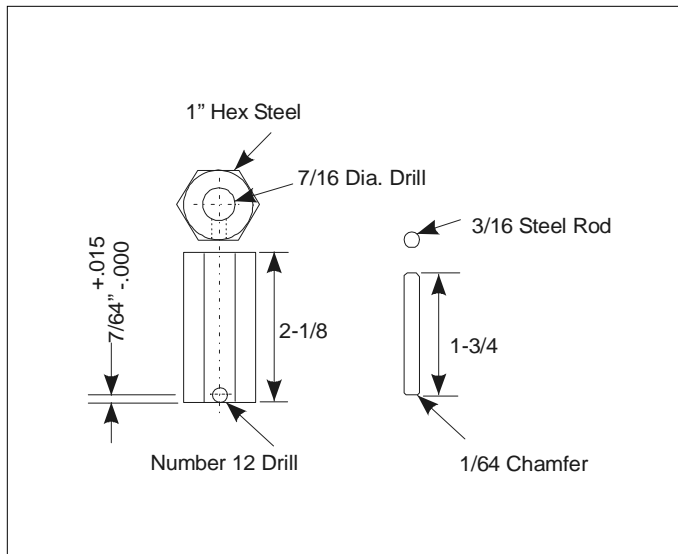


Figure 3 - Holding Fixture (Dwg. R-42-1)

o-rings, o-ring grooves, and the bearing surfaces of the bushings into which the o-ring assemblies are installed.

6.3 #4 Calcium Base Grease, Wabtec Corporation Specification M-7675-4, use to lubricate Cut-Out Cock key and o-ring.

7.0 SPECIAL TOOLS

In addition to the regular shop tools, a holding fixture for disassembling and assembling the exhaust valve of the Reducing Valve Portion **MUST BE** available to repair persons. Dimensions and specifications for making this fixture are shown in Figure 3.

IMPORTANT: The information shown in Figure 3 for making the holding fixture is furnished as a convenience. The Wabtec Corporation shall have no responsibility for tools which they do not manufacture or supply. The Wabtec Corporation will not be responsible for the use of tools, including claims by third parties.

⚠ 8.0 "ON-CAR" REMOVAL & INSTALLATION OF "NS-1" REDUCING VALVE COMPONENTS

(Figure 4)

8.1 The repair person will need the following items when replacing the "NS-1" Reducing Valve components on the car.

8.1.1 A NEW or repaired and tested Cut-Out Cock (3)

8.1.2 A NEW or repaired and tested Reducing Valve Portion (13)

8.1.4 Five NEW $\frac{3}{8}$ " gaskets (4), Pc. No. 93839

8.1.5 One NEW $1\frac{3}{8}$ " O.D. check valve ring gasket (11), Pc. No. 527911

8.1.6 One NEW $\frac{1}{2}$ " O.D. ring gasket (12), Pc. No. 527915

8.2 ⚠ **WARNING:** Before starting any work, chock the vehicle wheels to prevent vehicle movement which could result in injury to personnel and/or damage to equipment. Place warning placards on and about the vehicle to indicate that work is being performed. Cut off all air supply in piping leading to the "NS-1" Reducing Valve. Observe ALL warnings and safety precautions of Section 5.0.

8.3 Remove all free dirt from the exterior surfaces of the "NS-1" Reducing Valve by wiping with a lint-free cloth or blow clean using a low pressure jet of clean dry air.

8.4 Remove the two $\frac{3}{8}$ " hex nuts (9B) which secure the Reducing Valve Portion (11) to the Pipe Bracket (9). Remove the Reducing Valve Portion.

8.5 Disconnect fitting "A" from the Pipe Bracket (9) by removing the two $\frac{3}{8}$ " x 1" hex head cap screws (7). Remove and **SCRAP** the $\frac{3}{8}$ " gasket (4) from the Fitting "A".

8.6 Provide support to the bottom of the Pipe Bracket (9) and carefully back out the two $\frac{3}{8}$ " x $3\frac{1}{2}$ " hex head cap screws (1), which secure the Pipe Bracket (9) and Cut-Out Cock (13) to the mounting bracket (5), far enough to remove the Pipe Bracket (9).

CAUTION: Screws (1) also support the Cut-Out Cock (3), exercise care not to withdraw screws too far as Cut-Out Cock (14) will drop.

8.7 Remove the Cut-Out Cock (3) by removing the two screws (1) from the cock (3) and fitting "B".

8.8 Remove and **SCRAP** the $\frac{3}{8}$ " gasket (4) from the fitting "B" and the two $\frac{3}{8}$ " gaskets (4) from the mounting bracket (5).

8.9 Visually inspect the fittings "A & B" to see that they are clean and not damaged. The fittings need not be replaced unless they are damaged.

8.10 Install a NEW $\frac{3}{8}$ " gasket (4) in the groove of fitting "B" and the groove in the Cut-Out Cock mounting face of

operation & maintenance instruction

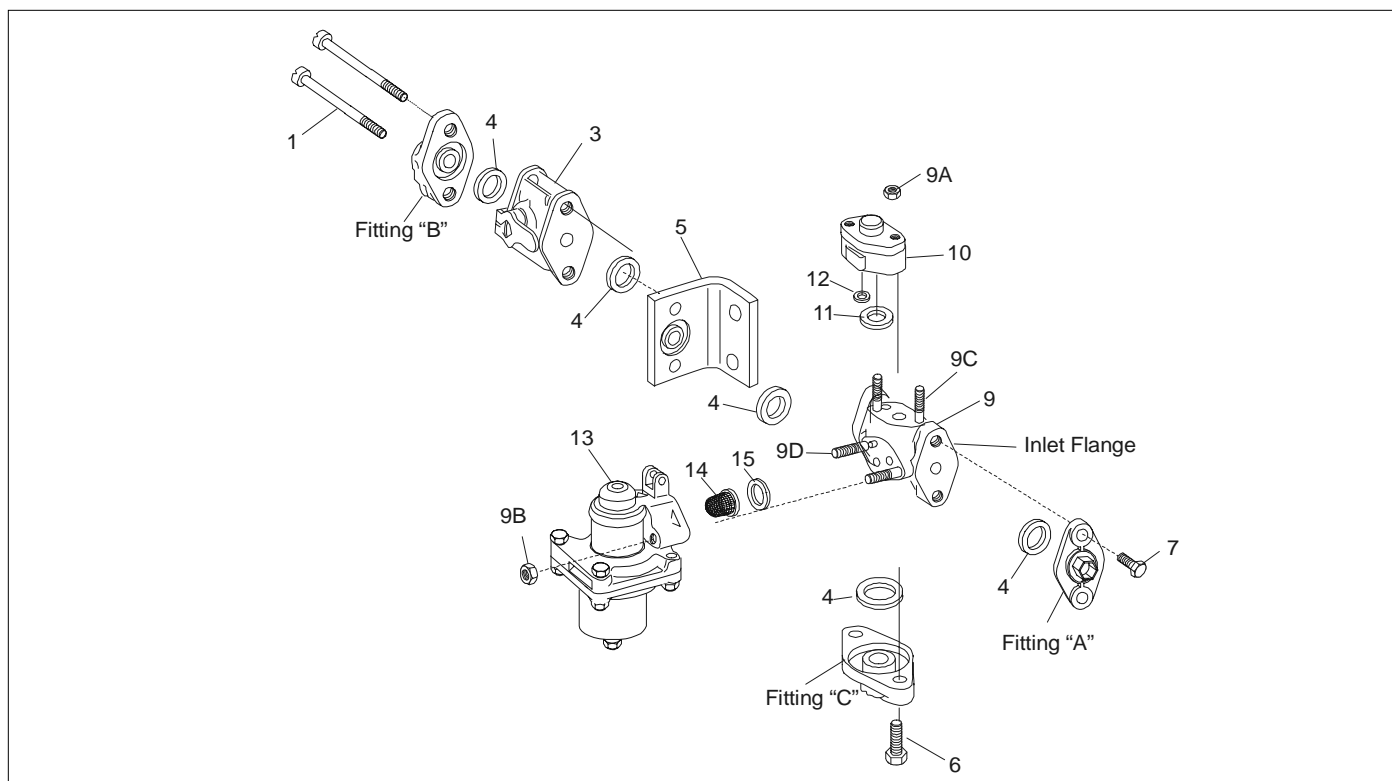


Figure 4 - "NS-1" Reducing Valve Exploded View

the mounting bracket(5).

8.11 Position a NEW or repaired and tested Cut-Out Cock (3) in place and insert the two $\frac{3}{8}$ " x $3\frac{1}{2}$ " hex head cap screws (1) through the fitting "B" and Cut-Out Cock (3) mounting holes into the mounting bracket (5).

8.12 Install a NEW $\frac{3}{8}$ " gasket (4) in the groove on the Pipe Bracket mounting face of the mounting bracket (5).

8.13 Place a NEW or repaired and tested Check Valve - Pipe Bracket Assembly (9 to 12) in position on the mounting bracket (5) and secure in place by tightening the two $\frac{3}{8}$ " x $3\frac{1}{2}$ " hex head cap screws (1).

8.14 Install a NEW $\frac{3}{8}$ " gasket (4) in the groove of Fitting "A" and secure the fitting in position on the Pipe Bracket (9) using the two $\frac{3}{8}$ " x 1" hex head cap screws (7).

8.15 Visually inspect the mounting face of the Reducing Valve Portion (13) to see that the gasket (15) and strainer (14) are in place. If NOT in place, return the Portion to the shop and obtain one with the gasket and strainer in position.

8.16 Remove any protective material or tape from the Re-

ducing Valve Portion (13) and install it on the Pipe Bracket (9). Secure the Portion in place using two $\frac{3}{8}$ " hex nuts.

8.17 Transport the removed components to the shop area for servicing.

8.18 **IMPORTANT:** Whenever the "NS-1" Reducing Valve or any of the component portions are removed from the equipment arrangement for any reason and it or any of the components are replaced, a stationary vehicle air brake test **MUST BE** made to be sure that the "NS-1" Reducing Valve and the component portions function properly in the brake equipment arrangement.

8.19 Remove wheel clocks and warning placards before attempting to move vehicle.

9.0 "IN SHOP" MAINTENANCE PROCEDURES - CHECK VALVE PORTION & PIPE BRACKET

⚠ 9.1 DISASSEMBLY) (Figure 4)

9.1.1 Remove the Check Valve Portion (10) by first removing the two $\frac{5}{16}$ " hex nuts (9A).

9.1.2 Remove and SCRAP the two mounting gaskets (11, 12). Set the Check Valve Portion aside for later servicing. See Section 10.

9.1.3 Remove the blanking pad, fitting "C" from the bottom of the Pipe Bracket by first removing the two $\frac{3}{8}$ " x 1" hex head cap screws (6).

9.1.4 Remove and SCRAP the gasket (4).

⚠ 9.2 CLEANING & INSPECTING

9.2.1 Wash the pipe bracket and the Blanking Pad in the cleaning solvent described in section 6.1.

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

9.2.3 Inspect the parts. Be sure that the passages of the pipe bracket are clean, dry, and unrestricted. Replace any part that is broken or damaged in any way.

⚠ 9.3 ASSEMBLY (Figure 4)

9.3.1 Install a NEW $\frac{3}{8}$ " gasket (4) in its groove in the blanking pad, fitting "C".

9.3.2 Place the blanking pad with gasket (4) in position on the pipe bracket (9) and secure it in place using two $\frac{3}{8}$ " x 1" hex head cap screws (6).

9.3.3 Install a NEW $\frac{1}{2}$ " O.D. gasket (12) and a NEW $1\frac{3}{8}$ " O.D. gasket (11) in their grooves on the mounting face of a NEW or repaired and tested Check Valve Portion (10).

NOTE: The two gaskets (11,12) ARE NOT a part of the Check Valve Portion and MUST BE ordered as individual items.

9.3.4 Install the Check Valve Portion (10) with gaskets (11,12) on the Pipe Bracket (9) and secure them in place using the two $\frac{5}{16}$ " hex nuts (9A). Equally tighten the nuts.

10.0 "IN - SHOP" MAINTENANCE PROCEDURES FOR CHECK VALVE PORTION, PC. NO. 527953

(Figure 5)

⚠ 10.1 DISASSEMBLY

10.1.1 If not already removed, remove and SCRAP the two ring gaskets from the mounting face of the body (6). These gaskets are NOT a part of the Check Valve Portion.

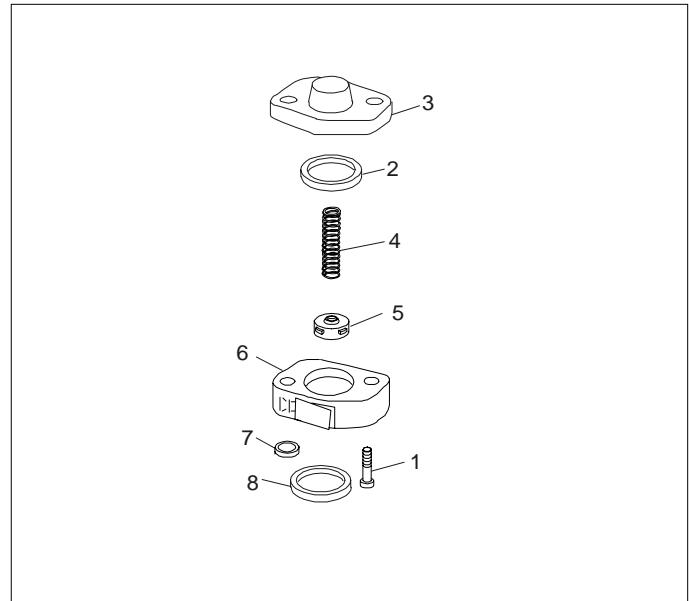


Figure 5 - Check Valve Portion Exploded View

10.1.2 Remove the two fillister head screws (1) which secure the check valve cover (3) to the body (6).

10.1.3 Lift the cover (3) from the body (6) and remove the spring (4) and check valve (5). SCRAP the check valve.

10.1.3 Lift the cover (3) from the body (6) and remove the spring (4) and check valve (5). SCRAP the check valve.

10.1.4 Remove and SCRAP the gasket (2) from the cover (3).

⚠ 10.2 CLEANING & INSPECTING

10.2.1 GASKET & CHECK VALVE

The gasket and check valve are to be SCRAPPED and replaced with NEW Wabtec Corporation Parts.

10.2.2 METAL PARTS

10.2.2.1 Wash the metal parts in the cleaning solvent described in Section 6.1.

10.2.2.2 The spring may be wire brushed to assist in the removal of any dirt, rust, or scale.

10.2.2.3 Inspect the parts. Replace the spring if it is rusted, pitted, distorted, or if it has taken a permanent set. Refer to Parts Catalog 3209-3 for spring information and identification.

operation & maintenance instruction

Replace any part that is cracked, cut, broken, damaged in any way, excessively worn or that is in such a condition that may result in the unsatisfactory operation of the Check Valve Portion.

⚠ 10.3 ASSEMBLY

10.3.1 Install a NEW check valve (5) and the check valve spring (4) in place in the body (6).

10.3.2 Install a NEW cover gasket (2) in place in the cover (3).

10.3.3 Carefully position the cover assembly (3,2) on the body (6) making sure that the spring is properly positioned in the recess of the cover. Secure the cover assembly (3,2) in place using two #8-32 x 3/4" fillister head machine screws (1). Equally tighten the screws.

10.4 TESTING & ADDITIONAL INFORMATION

10.4.1 **IMPORTANT:** After the Check Valve Portion has been assembled, but before it is returned to service, it MUST pass a series of tests following the procedure of the current issue of one of the following Wabtec Corporation Test Specifications:

T-1604-0
T-1694-0
T-2130-0

10.4.2 **IMPORTANT:** When mounting the Check Valve Portion on the Pipe Bracket two mounting gaskets are required. One 1/2" O.D. ring gasket Pc. No. 527915, and one 1-3/8" O.D. ring gasket Pc. No. 527911. These gaskets ARE NOT a part of the Check Valve Portion and MUST BE ordered as individual items.

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

11.0 "IN SHOP" MAINTENANCE PROCEDURES - CUT-OUT COCK, PC. NO. 570821

⚠ 11.1 DISASSEMBLY (Figure 6)

NOTE: DO NOT use sharp or hard metal tools to remove the o-ring from the key. Exercise care so that no damage occurs to metal parts.

11.1.1 Work the handle several times between the open and closed positions to vent any air which may be trapped inside the cut-out cock.

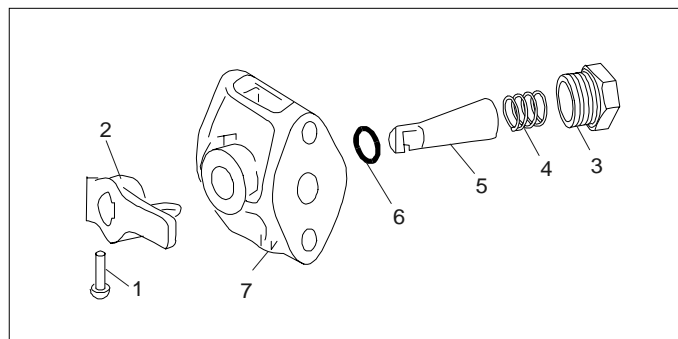


Figure 6 - Cut-out Cock Portion Exploded View

11.1.2 Exercising care so that there is no damage or bending of the key (5). Carefully drift the oval head rivet (1) from the handle (2) and key (5).

11.1.3 Lift the handle (2) from the key (5).

11.1.4 Carefully remove the cap nut (3) from the body (7). Remove the spring (4) and key assembly (5,6).

11.1.5 Remove and SCRAP the o-ring (6) from the key (5).

⚠ 11.2 CLEANING & INSPECTING

11.2.1 O-RING

The o-ring is to be SCRAPPED and replaced with a NEW Wabtec Corporation Part.

11.2.2 METAL PARTS

11.2.2.1 Wash the metal parts in the cleaning solvent described in section 6.1. Exercise care so that the key is not scratched or damaged. The spring may be wire brushed to assist in the removal of any dirt, rust, or scale.

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

11.2.2.3 Inspect the parts. Replace the spring if it is rusted, pitted, distorted, or if it has taken a permanent set. Refer to Parts Catalog 3209-3 for spring information and identification. Inspect the body to be sure that the vent is clear and unrestricted. The cock key is to be SCRAPPED and replaced with a NEW key if it is bent or damaged in any way.

Replace any part that is cracked, cut, broken, excessively worn, damaged in any way, or that is in such a condition that may result in the unsatisfactory operation of the Cut-

operation & maintenance instruction

12.1.1 Remove the two strainer gaskets (1) and the two strainers (2) from the manifold mounting face of the body (18).

12.1.2 **IMPORTANT:** Turn the adjusting screw (17A) located in the spring housing (17) counterclockwise, as viewed from the spring housing end, TO RELIEVE THE TENSION on the regulating valve spring (15) BEFORE ATTEMPTING THE DISASSEMBLY.

NOTE: It is not necessary to separate the adjusting screw (17A) from the housing during disassembly unless it is damaged, but care must be taken to insure all spring tension is removed before proceeding with step 12.1.3 to prevent personal injury.

12.1.3 **CAUTION:** Spring (15) may be under compression, exercise care during the following procedures. Carefully remove the four $\frac{5}{16}$ " hex nuts (3,4) which secure the spring housing (17) to the body (18).

12.1.4 Remove the spring housing (17), diaphragm-exhaust valve seat assembly (10, 11, 12, 13, 14) as a unit, the spring (15) and spring seat (16).

12.1.5 Remove the two $\frac{5}{16}$ " cap screws (5) from the body (18).

NOTE: The studs (18A) need not be removed from the body (18) unless they are damaged.

12.1.6 Disassemble the exhaust valve seat assembly (10, 11, 12, 13, 14, 15) by removing the following parts from the exhaust valve seat (14).

12.1.6.1 $\frac{3}{4}$ " O.D. o-ring (10). SCRAP the o-ring.

12.1.6.2 $\frac{9}{16}$ " Hex nut (11).

12.1.6.3 Follower (12).

12.1.6.4 Diaphragm (13). SCRAP the diaphragm.

12.1.7 Remove the exhaust valve spring (9) from the body (18).

12.1.8 Remove the inlet and exhaust valve unit with o-rings (7,8) from the body (18).

12.1.9 Remove and SCRAP the two $\frac{3}{4}$ " O.D. o-rings (7) from the valve unit (8).

12.1.10 Disassemble the inlet and exhaust valve unit (8) as

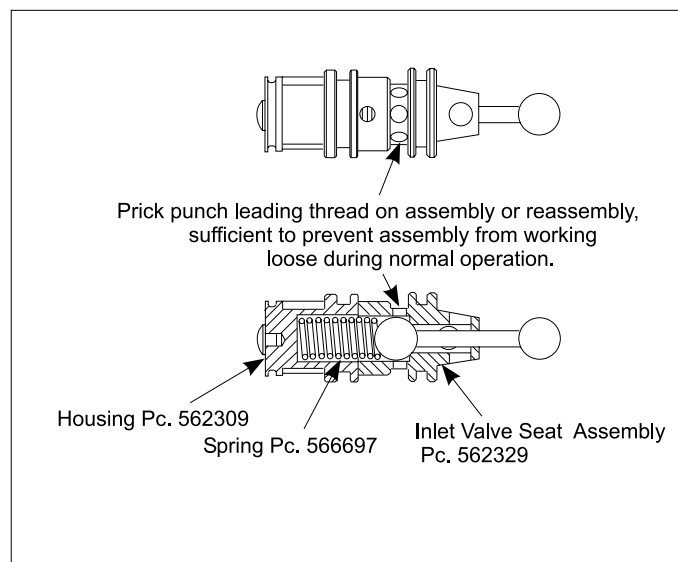


Figure 8 - Inlet and Exhaust Valve Unit - ASSEMBLY

follows: (Refer to Figure 8)

12.1.10.1 Using the holding fixture shown in Figure 3, insert the dumbbell end of the inlet and exhaust valve into the holding fixture so that the cross drill in the holding fixture aligns with the cross drill in the tapered end of the inlet valve seat.

12.1.10.2 Insert the $\frac{3}{16}$ " steel rod through the cross drill of the holding fixture and into the cross drill of the inlet valve seat.

12.1.10.3 Carefully remove the housing from the inlet valve seat.

12.1.10.4 Remove the spring from the inlet valve seat.

12.1.10.5 Remove the $\frac{3}{16}$ " steel rod from the inlet valve seat and the holding fixture.

12.1.10.6 Remove the inlet valve seat assembly from the holding fixture.

12.1.11 Remove and SCRAP the dirt protector (6).

⚠ 12.2 CLEANING & INSPECTING

12.2.1 GASKETS, O-RINGS, DIAPHRAGM, & DIRT PROTECTOR

All gaskets, o-rings, the diaphragm, and dirt protector are to be SCRAPPED and replaced with NEW Wabtec Corporation parts.



12.2.2 METAL PARTS

2.2.2.1 Wash all of the metal parts in the solvent described in 6.1.

12.2.2.2 The springs may be wire brushed to assist in the removal of rust and scale.

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

12.2.2.4 Inspect the parts.

Reject and replace any spring that is rusted, distorted, or that has taken a permanent set. Refer to parts catalog 3209-3 for spring identification and information.

Reject and replace any part that is cracked, cut, broken, worn excessively, damaged or is in such a condition that may result in unsatisfactory operation of the Reducing Valve Portion.

⚠ 12.3 ASSEMBLY

12.3.1 Just prior to assembling, lubricate all o-rings, o-ring grooves and bushings into which the o-ring assemblies are installed with #2 Silicone Grease Wabtec Corporation Specification M-7680-2 as follows:

12.3.1.1 Coat the o-rings with the grease.

12.3.1.2 Fill the o-ring grooves with the grease.

12.3.1.3 Lightly coat the bearing surface of the bushing into which the o-ring assembly is installed with the grease.

12.3.2 Assemble the inlet and exhaust valve unit as follows: (Refer to Figure 8).

12.3.2.1 Insert the dumbbell end of the inlet valve seat into the holding fixture so that the cross drill in the holding fixture aligns with the cross drill in the tapered end of the inlet valve seat.

12.3.2.2 Insert the $\frac{3}{16}$ " steel rod through the cross drill of the holding fixture and into the cross drill of the inlet valve seat.

12.3.2.3 Insert the inlet valve spring into the inlet valve seat.

12.3.2.4 Assemble the housing onto the inlet valve seat. Be sure spring remains in place.

12.3.2.5 **IMPORTANT:** Prick punch the leading thread of the seat assembly sufficiently to prevent the inlet and exhaust valve unit from coming apart during normal operations.

12.3.2.6 Remove the $\frac{3}{16}$ " steel rod from the inlet valve seat and the holding fixture.

12.3.2.7 Remove the inlet and exhaust valve unit from the holding fixture.

12.3.3 Install two NEW lubricated $\frac{3}{4}$ " O.D. o-rings (7) into the grooves on the inlet and exhaust valve unit (8). Remove the excess grease by wiping with a soft, clean, lint-free cloth.

12.3.4 Insert the inlet and exhaust valve unit with o-rings (7), housing end first, into the valve body (18).

12.3.5 Assemble the diaphragm and exhaust valve seat as follows:

12.3.5.1 Place a new diaphragm (13) and diaphragm follower (12) on the exhaust valve seat (14).

12.3.5.2 Secure the diaphragm (13), follower (12) and seat (14) together with the $\frac{9}{16}$ " hex nut (11).

12.3.6 Install a NEW lubricated $\frac{3}{4}$ " O.D. o-ring (10) in the groove on the exhaust valve seat (14). Remove the excess grease by wiping with a soft, clean, lint-free cloth.

12.3.7 If the adjusting screw (17A) was removed from the spring housing (17), it **MUST BE** replaced at this time. Insert screw a minimum number of threads to prevent spring tension during assembly.

12.3.8 Install the spring seat (16), spring (15) and diaphragm-exhaust valve seat assembly with o-ring (10, 11, 12, 13, 14) into the spring housing (17).

12.3.9 Install the inlet and exhaust valve spring (9) onto the unit (8) which was previously installed in the body (18).

12.3.10 **MAKE SURE** the exhaust opening in the spring housing (17) is located in the direction of the manifold mounting face of the body (18) when placing the spring housing assembly (10 to 17A incl.) on the body (18).

CAUTION: EXERCISE CARE SO THAT NO PARTS "FLY OUT" AND CAUSE BODILY INJURY.

12.3.11 Install the two $\frac{5}{16}$ " x $1\frac{3}{8}$ " hex head cap screws (5) through the aligned holes of the spring housing (17) and



operation & maintenance instruction

the body (18).

12.3.12 Install two $\frac{5}{16}$ " nuts (3) on the two $\frac{5}{16}$ " screws (5) and two $\frac{5}{16}$ " nuts (4) on the two $\frac{5}{16}$ " studs (18A) of the body (18). Equally tighten the nuts (3,4) to secure the body and spring housing assemblies (17,18) together.

12.3.13 MAKE SURE the two strainers (2) and two gaskets (1) are installed into the ports of the manifold mounting face of the body (18) to filter the air to the device.

12.3.14 Install the dirt protector (6) over the housing end of the inlet and exhaust valve unit (8) and onto the body (18).

12.4 TESTING & ADDITIONAL INFORMATION

12.4.1 After the Reducing Valve Portion 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 one of the following Wabtec Corporation Test Specifications:

T-1598-0
 T-1605-0
 T-1655-0
 T-2100-0
 T-2132-0

12.4.2 **IMPORTANT:** When mounting the Portion, after it has passed the test procedures, NEW mounting gaskets MUST BE used.

13.0 ADDITIONAL INFORMATION

13.1 **IMPORTANT:** Whenever any component portion or device of the "NS-1" Reducing Valve or the "NS-1" Reducing Valve itself is removed from an equipment arrangement for any reason, and it is replaced with a NEW or repaired and tested portion, device or valve, a stationary vehicle air brake test MUST BE made to be sure that the portion, device, and "NS-1" Reducing Valve function properly in the brake equipment arrangement.

13.2 **IMPORTANT:** Whenever any component portion or device of the "NS-1" Reducing Valve is removed from the equipment arrangement for any reason, and it is replaced with a NEW or repaired and tested portion or device, NEW mounting gaskets MUST BE used.

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



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