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Types N563 and N863 Emergency Shutoff Valves



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.

Fisher® equipment must be installed, operated and maintained in accordance with federal, state and local codes and Emerson Process Management Regulator Technologies, Inc. instructions. The installation must also comply with NFPA No. 58, ANSI K61.1, and DOT standards.

Only personnel trained in the proper procedures, codes, standards and regulations of the applicable industries shall install and service this equipment.



Figure 1. Type N563 Emergency Shutoff Valve

Introduction

Scope of the Manual

This instruction manual covers installation and maintenance for the Types N563 and N863 Emergency Shutoff Valves and Accessories.

Type N563 is UL® Listed for service in Propane or Anhydrous Ammonia (NH₃).

Type N863 is intended for all other compressed gas service. Type N863 valves are serialized for the service specified with the order. The user should check with the factory to make sure the Type N863 valve materials are suitable for the intended service and temperature conditions.

Reference to Type N563 also refers to the Type N863 unless otherwise specified.

Description

Type N563 Snappy Joe™, Figure 1, Emergency Shutoff Valves are intended for transferring product to or from railroad tank cars, see Figure 2. The valves are used as temporary connections between the tank car's primary shutoff valves and the hose or swivel type piping.

Tank Car Connection

The Type N563 has a 2 in. FNPT coupling allowing the user the flexibility to install the desired length of 2 in. NPT piping to fit the tank dome. Replacing a worn out pipe connection is now easier as any desired length of schedule 80 pipe can be used.

Wrenching Hex – A wrenching hex is built into the body, minimizing wear or damage when connecting or disconnecting. A 1/4 in. FNPT opening in the hex portion can be used to install a bleed valve.

Hardened Threads – The 2 in. FNPT threads on the nipple portion are of hardened stainless steel to reduce wear from repeated use.

Fuse Plug – Melting point 212°F / 100°C. Closes valve when melted.

Installation

General

A typical installation schematic is shown in Figure 3, where two valves are installed on the liquid lines and one on the vapor line. To meet NFPA Pamphlet 58 requirements, emergency shutoff valves must have a means of closure at both the valve and a remote location. A quick-disconnect coupling provides manual control at the valve. A suitable two-way or three-way closure valve is required at a remote location, preferably near the exit of the transfer site.

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Types N563 and N863

Specifications

The Specifications section lists the specifications for Types N563 and N863 Emergency Shutoff Valves. Factory specification is stamped on the nameplate fastened on the valve at the factory.

TYPE	ELASTOMER	UL® LISTED	INLET CONNECTION, IN.	OUTLET CONNECTION, IN.
N563-16	Nitrile (NBR)	Yes	2 FNPT	2 FNPT
N563-26				3-1/4 Male Acme
N863E-16	EPDM	No		2 FNPT
N863E-26				3-1/4 Male Acme
N863K-16	Kalrez®(1)			2 FNPT
N863K-26				3-1/4 Male Acme
N863N-16	Neoprene (CR)			2 FNPT
N863N-26				3-1/4 Male Acme
N863T-16	Teflon®(2)			2 FNPT
N863T-26				3-1/4 Male Acme
N863V-16	Viton®(3)			2 FNPT
N863V-26				3-1/4 Male Acme

Maximum Relief Inlet Pressure⁽⁴⁾: 400 psi / 27.6 bar

Fuse Link Melting Temperature: 212°F / 100°C

Approximate Weights

with FNPT Outlet: 12.6 lbs / 5.7 kg

with Acme Outlet: 15.3 lbs / 6.9 kg

1. Perfluoroelastomer (FFKM) equivalent.

2. PTFE equivalent.

3. Fluorocarbon (FKM) equivalent.

4. The pressure limits in this Instruction Manual or any applicable standard limitation should not be exceeded.

Remote Closure



WARNING

A bleed orifice is required on the outlet of the pressure source regulator and before the remote closure valve. This restricts the pressure source flow to the system. Failure to install a bleed orifice may not allow the control pressure to exhaust quickly enough to close the emergency valves if the remote valve is used or the control pressure line is broken.

The Remote Closure Valve should be simple in operation and have enough capacity to quickly exhaust pressure between the supply source and the Type N563. A bleed orifice, Fisher® part number 1D7470, should be placed in-line after the pressure supply regulator to restrict flow. This allows the remote closure valve to exhaust pressure, and thus close the Type N563.

pipng the supply line to the Type N563. Failure to use the manual quick disconnect will negate a portion of the NFPA 58 requirements for Emergency Shutoff Valves.

Regardless of how many remote closure valves are installed in the system, **the quick-disconnect coupling at the valve is the primary means to open and close the Type N563.** Do not hard pipe the supply line to the Type N563 and then use a remote closure valve as the primary activation valve.

The pressure supply line to the Type N563 can be run along the transfer line back to a common pressure source and remote closure valve. In this way actuating the remote closure valve can close all emergency shutoff valves. It is recommended that a remote closure valve be installed on the working level of the unloading riser for the convenience of personnel, however, it should not be used as the primary means to open and close the Type N563.

Pressure Supply Line



WARNING

The manual quick disconnect valve must be used as the primary source to open and close the Type N563. Do not bypass the manual quick disconnect valve by hard

Pressure Source

The pressure source should be clean, dry gas such as air, nitrogen or CO₂. A Fisher Type 1301F regulator or equivalent can be used to reduce the high pressures encountered with these compressed gases.

Approximately 50 psig / 3.4 bar is needed to open the N563 Series. (Less control pressure is required with low product pressures.)

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Roll-Away Protection



WARNING

It is not possible to insure that Type N563 valves will remain installed or intact in the event of a tank car rollaway. Therefore, additional protection for the riser piping and valves are required.

Due to the various configurations of railcar domes, valves and unloading risers, the Type N563 valve(s) may not remain installed or intact during a rollaway.

It is recommended that a break-off pipe protect both the riser hoses and the Type N563 valves. This break-off pipe should be installed downstream of the protected tower back check valves and ESV so that the break-off pipe threads pull out before the hoses are pulled with more than 1500 lbs / 680 kg of force. A schedule 80 pipe takes around 3000 ft-lbs / 4067 N•m of torque to pull out at the threads.

Pneumatic Accessories

Use commercially available pneumatic controls, fittings and tubing for the pressure control lines. Pneumatic 3-way valves should quickly exhaust supply pressure to the Type N563 valves and at the same time shutoff inlet pressure.

Operation

1. Make sure the 2 in. NPT threads on the Type N563 and the Schedule 80 pipe nipple are clean and in good condition. Use an appropriate pipe compound on the male threads. Thread the nipple hand tight into the 2 in. FNPT inlet end of the Type N563. Then wrench tighten the nipple approximately two (2) additional turns. Check the connection for leaks.
2. Tighten the 3 set screws (1/4-20 UNC x 0.25 in.) against the pipe nipple. This helps secure the nipple to the Type N563 so that the nipple does not unscrew at the Type N563 instead of the tank car valve.
3. Slowly, but completely open the tank car's primary shutoff valves. Begin product transfer.
4. If the valve does close, stop the transfer and close the nearest downstream valve and the tank car's primary shut off valve. Wait for the Type N563 valve to click open.
5. All valves should be completely open when pumping.
6. The operator must always be aware of where the remote closure controls are located and know how to operate the controls if an emergency requires valve closure.
7. When the transfer has been completed, close the primary shutoff valves.
8. Bleed down the transfer hose or piping to avoid trapping pressure between the primary shutoff valve and the Type N563.

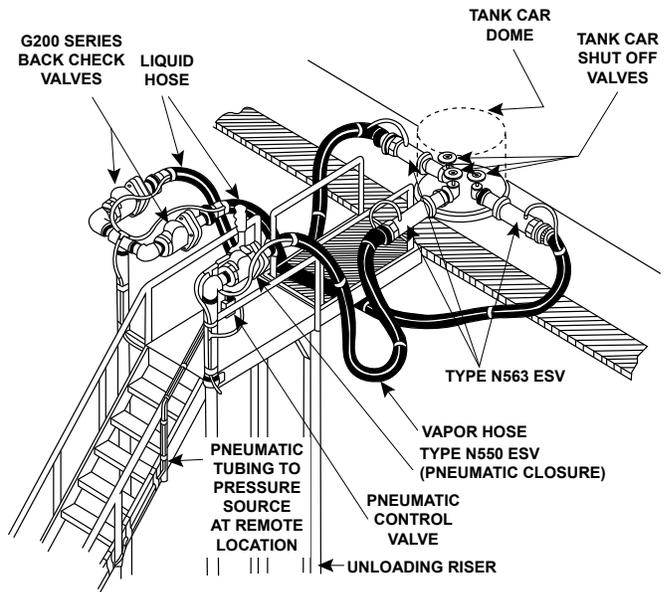


Figure 2. Typical Railcar Hook-up

9. Close the Type N563 by taking off the quick-disconnect coupling. (To remove the coupling simply pull back on the release sleeve.)
10. Unscrew the transfer hose or piping from the Type N563, and take the Type N563 off the primary shutoff valve.

Maintenance



WARNING

Only qualified service personnel should attempt to repair these valves. Before starting any type of repair, close off the upstream valves and remove all pressure from both the inlet and outlet of the Type N563 Emergency Shutoff Valve.

At least once a month inspect and check the following things:

1. See that the remote closure valve(s) works freely. Operate the valve to make certain it closes the Type N563.
2. Make sure the quick-disconnect nipple is not blocked or its exterior damaged or worn.
3. Check the quick-disconnect coupling for retention of supply pressure when disconnected and check for leaks when coupled.
4. Check for worn or damaged threads.
5. Check for joint leakage.
6. Retighten the 3 set screw securing the inlet piping to the Type N563.

Types N563 and N863

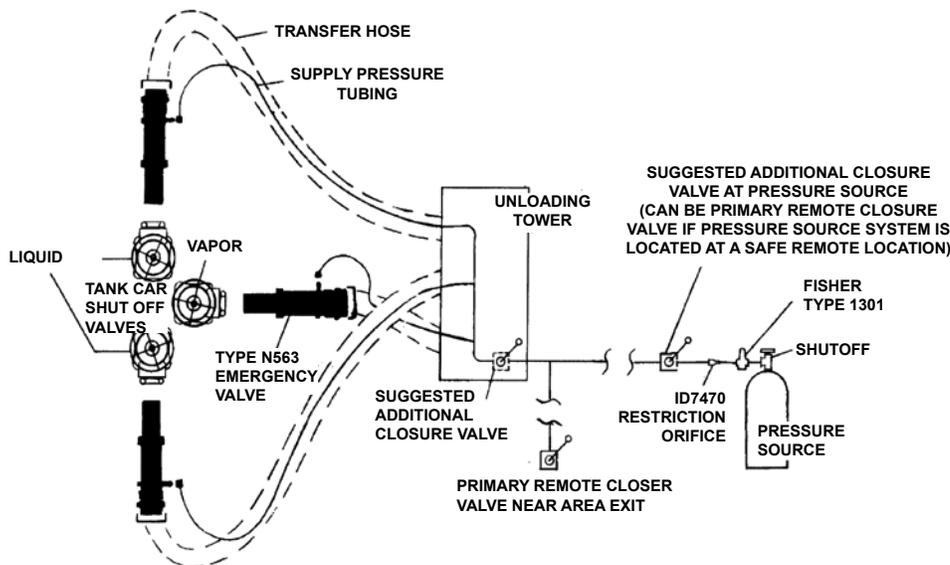


Figure 3. Installation Schematic of N563 Series

Replacing Inlet Nipple

1. Loosen the 3 set screws securing the inlet piping to the Type N563.
2. Remove the inlet nipple.
3. Make sure the 2 in. NPT threads on the Type N563 and the Schedule 80 pipe nipple are clean and in good condition. Use an appropriate pipe compound on the male threads. Thread the nipple hand tight into the 2 in. FNPT inlet end of the Type N563. Then wrench tighten the nipple approximately two (2) additional turns. Check the connection for leaks.
4. Tighten the 3 set screws (1/4 -20 UNC x 0.25 in.) against the pipe nipple. This helps secure the nipple to the Type N563 so that the nipple does not unscrew at the Type N563 instead of the tank car valve.

Replacing Internal Parts

With the exception of the quick-disconnect coupling and nipple and the Acme coupling, the Type N563 is not designed for field repair. Due to the use of special fire-resistant seals and assembly techniques, repair should be made only by trained personnel. If repair becomes necessary, contact your Fisher® distributor or the factory for information and assistance.

Only parts manufactured by Fisher should be used for the repair of Fisher Type N563 Valves. Be sure to give the complete type number of the Type N563 when corresponding with the factory.

Type N563 Valves that have been disassembled for repair must be tested for proper operation before being returned to service.

Repair Kit

N562-REPAIR (Types N562 and N563 Railcar repair service)⁽¹⁾

1. Contact your Fisher Distributor.

LPG Equipment

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