

Installation and Operation Instructions for For: ME983 Railcar Emergency Shutoff Valve (ESV) Series

!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.

Marshall Excelsior equipment must be installed, operated, and maintained in accordance with federal, state, and local codes and MEC instructions. The installation in most states must also comply with NFPA 58 or ANSI K61.1 standards.

Only personnel trained in the proper procedures, codes, standards, and regulations of the LP-Gas or anhydrous ammonia industries should install and service this equipment.

Introduction

Scope of the Manual

This instruction manual covers installation and maintenance for the ME983 series Emergency Shutoff Valves and Accessories. The ME983 series is UL Listed for use with Propane, Butane, and Anhydrous Ammonia.

Description

ME983 Railcar Emergency Shutoff Valves are used for transferring product to and from railroad tank cars, see figure 1. These valves are intended for use as temporary connections between the hose or swivel type piping and the tank car's primary shutoff valves.

Railcar Connection

The ME983's 2" NPT coupling allows the flexibility to install any desired length of 2" NPT pipe to fit the tank dome. Any desired length of schedule 80 pipe can be used to replace a worn out pipe connection.

Wrench Hex – Built into the body is a wrench hex, minimizing the wear and / or damage when connecting and disconnecting. A 1/4" NPT port in the side of the body can be used to install a bleed valve or a gauge.

Excess Flow Valve – Closing flows:

ME983-16 – NO EXCESS FLOW SHUT-OFF

ME983-16/150 – 150 GPM LPG / 71,000 SCFH LPG Closing flow

ME983-16/250 – 250 GPM LPG Closing flow

ME983-16/500 – 500 GPM LPG Closing flow



Fuse Plug – Closes valve when melted. Melting point is 212°F (100°C).

Installation

General

Connect the ME983 to the transfer hose and check for leaks. Shown in figure 2 is a typical installation setup where two valves are installed on the liquid lines and one on the vapor line. NFPA 58 requires that the emergency shutoff valves must have a means of closure at both the valve and at a remote location. To provide manual control of the valve, use a quick disconnect coupling. To provide closure at a remote location, preferably near the exit of the transfer site, a suitable two-way or three-way closure valve is required.

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 have enough capacity to quickly exhaust pressure between the supply source and the ME983 and be simple to operate. A bleed orifice, MEC ME202 or ME202SS, should be placed in-line after the pressure supply regulator to restrict flow. This closes the ME983 by allowing the remote closure valve to exhaust pressure.



WARNING: These products contain a chemical known to the state of California to cause cancer and birth defects or reproductive harm

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Pressure Supply Line

!WARNING!

The ME983 must have a manual quick disconnect as the primary source to open and close. Do not bypass the manual quick disconnect valve by hard plumbing the supply line to the ME983. Failure to use a manual quick disconnect will negate a portion of the NFPA 58 requirements for emergency shutoff valve.

The quick disconnect coupling at the valve is the primary means to open and close the ME983. Regardless of how many remote closure valves are installed, do not hard plumb the supply line to the ME983 and then use a remote closure valve as a primary activation valve.

The pressure supply line that is run to the ME983 can be run along the transfer line back to a remote closure valve and to a common pressure source. This way when the remote closure valve is activated, all the emergency shutoff valves will close. Though not to be used as the primary means to open and close the ME983, it is recommended that a remote closure valve be installed on the working level of the unloading riser for the convenience of personnel.

Pressure Source

Clean, dry gas such as air, nitrogen, or CO₂ should be used as a pressure source. The MEGR-11301F regulator or equivalent can be used to reduce the high pressures encountered with these compressed gases.

A max of 50 PSIG is needed to open the ME983 series. Less control pressure is required with low product pressures.

Roll-Away Protection

!WARNING!

In the event of a tank car rollaway, it is not possible to safeguard that ME983 valves will remain installed or intact. Additional protection for the riser piping and valves are required.

The ME983 valves may not remain installed or intact during a rollaway due to the various configurations of railcar domes, valves, and unloading risers.

It's recommended that a break-off pipe protect both the riser hoses and the ME983 valves. This 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 1,500 lbs. (680 kg.) of force. A schedule 80 pipe takes around 3,000 Ft. lbs. of torque to pull out at the threads.

Pneumatic Accessories

To quickly exhaust the supply pressure to the ME983 valves and at the same time shutting off the inlet pressure, a pneumatic 3-way valve should be used. Use commercially

available pneumatic controls, fittings, and tubing for the pressure control lines.

Operation

1. Make sure the threads of both the 2" NPT of the ME983 and the schedule 80 pipe nipple are clean and in good condition. Apply an appropriate pipe compound onto the male threads and install pipe nipple hand tight into the 2" NPT inlet end of the ME983. Wrench tighten the nipple approximately two (2) additional turns. Check for leaks at joint.
2. Tighten the 3 set screws against the pipe nipple so that the pipe will unscrew at the tank car valve instead of at the ME983.
3. Connect the ME983 to the tank car's primary shut-off valve.
4. Slowly open the tank car's primary shutoff valves completely to avoid sudden surges which could slug the excess flow valve shut. Begin transferring product.
5. If the excess flow valve closes during transfer: stop the transfer, close the nearest downstream valve and the tank car's primary shutoff valve, and wait for the ME983 to click open.
6. All valves should be completely open when pumping. Throttling type valves could prevent the excess flow valve from closing when required.
7. The operator must always know where the remote closure controls are located and know how to operate them if an emergency requires valve closure.
8. Close the primary shutoff valves when the transfer is complete.
9. To avoid trapping the pressure between the primary shutoff valve and the ME983, bleed down the transfer hose or piping before disconnecting
10. Remove the quick disconnect coupling to close the ME983.
11. Unscrew the transfer hose or piping from the ME983 and take the ME983 off the primary shutoff valve.

Excess Flow Protection

!WARNING!

When the ME983 is installed as intended, it provides excess flow operation only when removing product from the railcar.

There is an excess flow feature contained within the standard ME983 models. If the system is designed to use the excess flow protection provided by the ME983, the flow rating of the piping, fittings, pump, valves, and hose on both the inlet and outlet of the ESV must be greater than the GPM flow rating of the integral excess flow valve within the standard ME983 models. Additional excess flow valves will have to be installed if branching, piping length, additional valves, reduction in pipe size, elbows, or other necessary restrictions are incorporated into the system as this will reduce the flow and the ME983 will not give excess flow protection.

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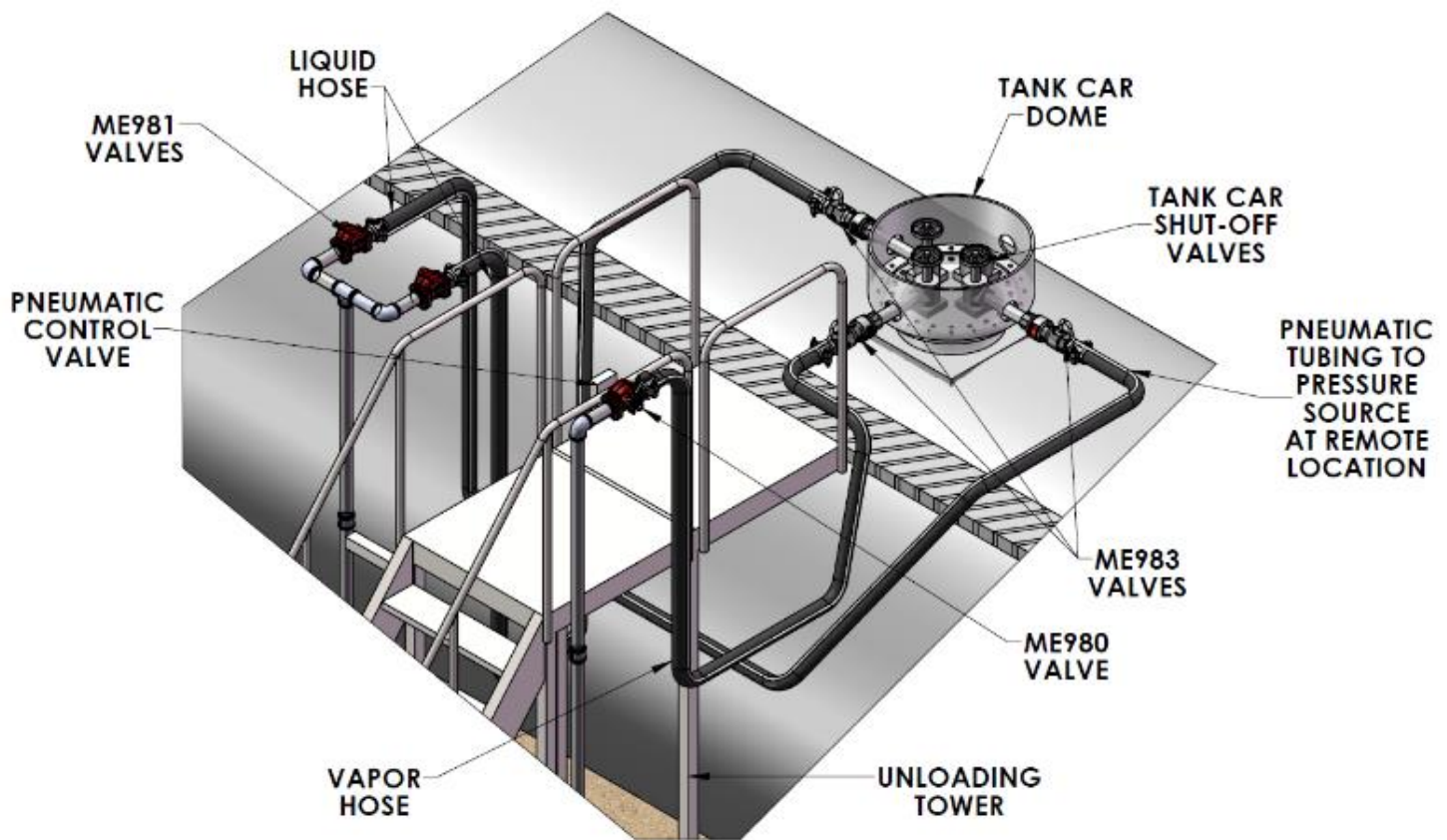


FIGURE 1: Typical Railcar Hook-up

!WARNING!

A break or leak downstream of an excess flow valve that doesn't allow a flow equal to the valve flow rating will not actuate the excess flow valve and could result in a fire or explosion from leaking gas.

Test the ME983 excess flow function in a safe location and with the permission of the local authorities because testing with a flammable gas is hazardous.

After the excess flow valve closes, the leakage through the equalizing feature must be controlled or a hazard can be created. For this reason the operator must be familiar with the closure controls for the ME983 system and immediately shut down the system.

Maintenance

!WARNING!

Only qualified service personnel should attempt to repair these valves. Before starting any type of repair, close off the upstream valves in the system and remove all pressure from both the inlet and outlet of the ME983 Emergency Shutoff Valve.

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

1. Check that the remote closure valve(s) work freely. Operate the valve to make certain it closes the ME983.
2. Make sure that the quick disconnect nipple is not blocked and that the exterior is not 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 screws securing the inlet piping to the ME983.

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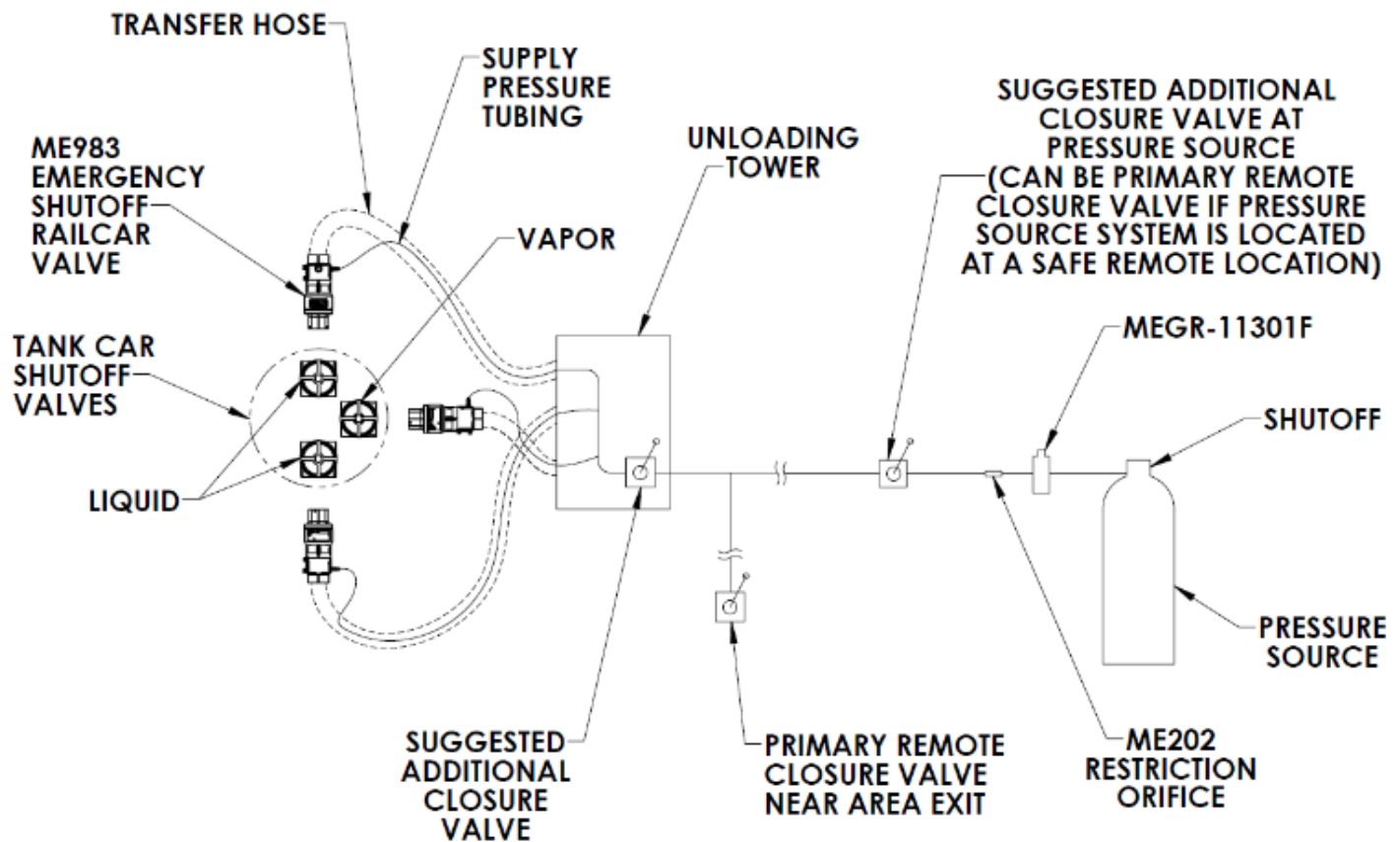


FIGURE 2: Installation Schematic of ME983 Series

Replacing Inlet Nipple

When replacing the inlet nipple:

1. Loosen the 3 set screws securing the inlet piping to the ME983
2. Remove the inlet nipple
3. Make sure the threads of both the 2" NPT of the ME983 and the schedule 80 pipe nipple are clean and in good condition. Apply an appropriate pipe compound onto the male threads and install pipe nipple hand tight into the 2" NPT inlet end of the ME983. Wrench tighten the nipple approximately two (2) additional turns. Check for leaks at joint.
4. Tighten the 3 set screws against the pipe nipple so that the pipe will unscrew at the tank car valve instead of at the ME983.

Replacing Internal Parts

ME983 can be repaired in the field. However, due to the special fire resistant seals and assembly techniques, repairs should be done only by trained personnel. If repair should become necessary, contact your local Marshall Excelsior Distributor for information and assistance.

Only parts manufactured by Marshall Excelsior Co., should be used for the repair of ME983 Series Valves. Be sure to give the complete model number of the ME983 valve when corresponding with your local distributor.

ME983 valves that have been disassembled for repair must be tested for proper operation before being returned to service.