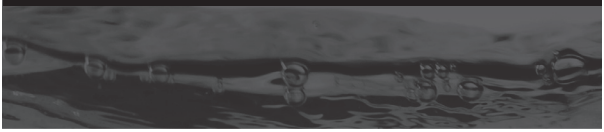
INSTALLATION/OPERATING MANUAL



MUELLER®

Lineseal III®, Lineseal XPII®, Lineseal® XP, & Lineseal 350® Butterfly Valves

⚠ WARNING:

1. Read and follow instructions carefully. Proper training and periodic review regarding the use of this equipment is essential to prevent possible serious injury and/or property damage. The instructions contained herein were developed for using this equipment on fittings manufactured by Mueller Co. only, and may not be applicable for any other use.

2. DO NOT exceed the pressure ratings of any components or equipment. Exceeding the rated pressure may result in serious injury and/or property damage.

3. Safety goggles and other appropriate protective gear should be used. Failure to do so could result in serious injury.

4. Pressure test, check for and repair leaks in all fittings and components each time one is installed or any joint or connection is broken. Failure to find and repair a leak from any source in the fittings, bypass lines or equipment could result in an explosion and subsequent serious injury and/or property damage.

Mueller Co.

Reliable Connections™

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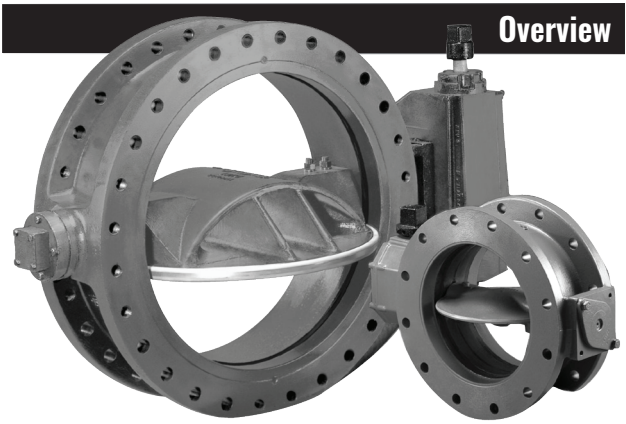
Overview



General

A valve is a significant component of any piping system. Failure due to faulty handling, installation, improper operation or maintenance could result in damage, down time and costly repairs. In buried underground installations, problems or malfunctions require extensive, costly unearthing operations to correct the problem. Many problems with a valve can be traced to improper handling, installation, operation or maintenance procedures.

Unloading

Inspect valve on receipt for damage in shipment, and conformance with quality and description in the shipping notice and order. Carefully unload valve to the ground without dropping. On valves larger than 36", use forks or slings under skids. On smaller valves, lift with eye bolts or rods through flange holes. Never use forks, slings or chain through the waterway, or around operating shaft or actuator of any valve.

Storage

Whenever practical, store valve indoors. If out of doors, store valve on pallet or skid, protect valve and actuator from weather and accumulation of water, dirt, rocks or debris. When storing a valve fitted with a power actuator and controls, energize electric actuator or otherwise protect electrical control equipment to prevent corrosion of electrical contacts, due to condensation resulting from temperature variations. DO NOT expose elastomeric seat to sunlight or ozone for any extended period. When storing valve indoors, store away from such things as electrical motors transformers and switch gear.

IMPORTANT: Valve should be stored with the disc slightly open.

Inspection

Make sure flange faces and joint sealing surfaces, body seat and disc seat are clean. Check actuator mounting bolts for loosening in transit and handling. If loose, tighten firmly. Open and close valve to make sure it operates properly and that stops or limit switches are correctly set so that the valve seats fully. Check valve for correct rotation.

IMPORTANT: Close valve before installing.

Installation

The following must be performed during installation to ensure proper valve function:

⚠ **WARNING:** ***Without an actuator attached to the valve, the disc may open or close at any time, which may cause injury to persons or damage to valve and other property. The shaft/disc clamping device, when furnished, is intended for temporary use during shipping, handling and valve installation only. DO NOT subject valve to flow conditions before actuator is mounted and tested for performance, and clamping device is removed.***

It is recommended that valves be installed into piping system in accordance with AWWA M11 in order to prevent any undue piping stress, deflection or bending that might adversely affect the performance or physical structure of the valves.

- Carefully place valve into position, avoiding contact or impact with other equipment, vault walls or trench walls.
- Valve is to be installed in accordance with the General Arrangement Drawings furnished with the order.
- Foreign material in valve can damage the seat when valve is operated. Be sure valve interior and adjacent piping are clear of foreign material prior to mating valve to pipe joint.
- Prepare pipe ends and install valve in accordance with the pipe manufacturer's instruction for joint end (see special note under "Mechanical Joint Installation"). DO NOT deflect pipe/valve joint. DO NOT use valve as jack to pull pipe into alignment.
- DO NOT subject valve or valve connection to bending stress from pipe loading or movement.
- In the case of wafer-type valves, concentrically center the valve body between the mating flanges.

- Make sure valve disc, when opened, will not contact pipe port (see special note under “Mechanical Joint Installation”). This is especially important on pipe with linings, or when wafer style or mechanical joint style valves are used. Check with Mueller Co. Customer Service for minimum pipe I.D. required for clearance.
- Buried valve with a valve box must be installed such that valve box does not transmit shock or stress to the valve actuator as a result of shifting soil or traffic load.
- When valve is installed in a vault, the vault design must provide space for purposed of repair. The valve operating nut should be accessible from the top opening of the vault with a tee wrench. For recommended bolt size and torque range please contact fastener/hardware supplier.

Mechanical Joint Installation

The successful operation of the mechanical joint requires that the plain end of the pipe be centrally located in the valve bell end, and that adequate anchorage be provided where abrupt changes in direction and dead ends occur. The rubber gasket will seal more effectively if the surfaces with which it comes in contact are thoroughly cleaned (for example, with a wire brush) just prior to assembly in order to remove all loose rust or foreign material. Lubrication and additional cleaning should be performed by brushing the gasket and the inside of the bell with soapy water or pipe lubricant just prior to slipping the gasket onto the pipe and assembling the joint.

The recommended range of bolt torque to be applied is given in the table below for mechanical joint end valves.

SIZE	BOLT SIZE	RANGE OF. TORQUE ft.-lb	LENGTH OF WRENCH*
3”	5/8”	45 – 60	8”
4” – 24”	3/4”	75 – 90	10”
30” – 36”	1”	100 – 120	14”
42” – 48”	1 1/4”	120 – 150	16”

*Torque loads may be applied with torque-measuring or torque-indicating wrenches, which may all be used to check the application of approximate torque loads applied by a person trained to give an average pull on a definite length of regular socket wrench.

SPECIAL NOTE: For 10" and 12" MJ and slip-on valves: When used with Class 200 C900 pipe, the inside diameter of the pipe must be beveled to assure adequate clearance for the maximum O.D. of the valve disc. Beveling is also recommended when using Class 150 C900 pipe with 10" valves.

Maximum disc O.D. for 10" valve = 9.83"; 12" valve = 11.6". In all cases, fully cycle each valve through open and close positions before burying or putting valve into service to verify disc clears the pipe end.

Testing

When the valve is used to isolate a section of line for test, it is important to recognize that Mueller valves are designed or factory-adjusted to hold rated pressure only. Test pressure may cause leakage past the elastomeric seat or damage to the valve.

In order to minimize time searching for leaks, it is recommended that excavation for a buried valve not be back-filled until after hydrostatic pressure tests have been completed.

Seat leakage can occur due to foreign material in the pipe. If this occurs, open valve 5-10 degrees to produce high velocity flushing action. Close and repeat several times to clear seat and restore tight shutoff.

Seat leakage can also occur from rotational shift in disc position relative to body seat. Readjust closing stop in actuator according to manufacturer's instructions.

Records

Once installed, valve location, size, make, type, date of installation, number of turns to open, direction of opening and any other pertinent information should be entered in the valve owner's permanent records.

⚠ WARNING: Fluids exposed to freezing temperatures may cause valve to fail, resulting in injury to persons or damage to valve and other property. DO NOT use valve in applications that are exposed to freezing temperatures unless sufficient flow is maintained through the valve to prevent freezing, or other protection to prevent freezing is provided.

Operation

DO NOT permit use and operation of any valve at a pressure above the rated working pressure of the valve. DO NOT exceed 300 ft.-lb. input or torque on actuator with wrench nut, 200 lbs. rim pull input torque for handwheel or chainwheel. If portable auxiliary operator is used, size the operator or use a torque limiting device to prevent application of torque exceeding 300 ft.-lbs. If an oversized operator with no means of limiting torque is used, stop the operator before valve is fully opened or closed against stops and complete the operation manually. Be sure to check operator direction switch against direction indicated on valve wrench nut, handwheel or records, before applying opening or closing torque.

If valve is stuck in some position between open and closed, first check for jamming in the actuator. If nothing is found, the interference is likely inside the valve. In this case, DO NOT attempt to force the disc open or closed since excessive torque in this situation can severely damage internal valve or actuator parts. Contact Mueller Co. Customer Service for assistance.

Maintenance

⚠ WARNING: Removal of actuator or its mounting bolts, whether or not valve is installed, or under pressure or flow conditions, may allow disc (including actuator, if unbolted and still attached to shaft) to rotate very rapidly without warning. Depending upon the situation, this may cause severe bodily harm to persons in the path of disc (or actuator) rotation, failure of piping from water hammer, or other significant damage to the valve or piping system. If valve is not installed, block or lock disc in place before removing actuator bolts. If valve is installed, line should be dewatered by first closing valves upstream of the valve to be serviced, then opening those downstream, allowing sufficient time for water to drain from the line.

Maintenance by valve owner is generally limited to the actuator adjustment or replacement of shaft seals. If the valve is a type that permits field adjustment or replacement of the elastomeric seat, these operations must be done in accordance with published service instructions. Unless the owner has properly skilled personnel with the necessary equipment, any major rework may require removal of valve from the line. (See Form 11987 for complete service Instructions for valves 20" and smaller; for valves 24" and larger see form 12057. These forms can be downloaded from the Mueller Co. website at www.muellercompany.com.)

Seal leakage, broken parts or difficult operation should be discussed with Mueller Co. personnel before valve repairs are attempted.

Before performing any corrective maintenance with valve in line, stop line flow and isolate valve from line pressure (see preceding warning message for other steps that may be required).

After completing repair, cycle valve through one complete operating cycle before restoring line pressure. Once line pressure is restored, inspect for leakage.

If repairs require removal or closure of valve, or shutdown of line, notify all interested personnel in the water department and fire department that the valve and line are out of service. Upon completion, notify these same personnel that the valve and line are being restored to service.

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