

RUBBER-SEATED VALVES

Operation and Maintenance

Seat leakage can occur due to foreign material in the line. If this occurs, open valve 5–10 degrees to get high velocity flushing action. Close and repeat several times to clear seats for tight shutoff. Seat leakage can occur due to rotational shift in position of the disc with relation to the body seat. Readjust closing stop in accordance with 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.

OPERATION

Do not permit use and operation of any valve at pressure above the rated pressure of the valve.

Do not exceed 300 ft-lb input torque on actuators with wrench nuts, 200 lb. rim pull input torque for handwheels or chain wheels. If portable auxiliary actuators are used, size the actuator or use a torque limiting device to prevent application of torque exceeding 300 ft-lbs. If an oversize actuator with no means of limiting torque is used, stop the actuator before valve is fully opened or closed against stops and complete the operation manually. Be sure to check actuator directional switch against direction indicated on wrench nut, handwheel or records before applying opening and closing torque.

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

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

MAINTENANCE

Maintenance of rubber-seated valves by owner is generally limited to actuators and shaft seals. In some instances, valve design

permits field adjustment or replacement of rubber seats when leakage occurs. Seat adjustment should be made in accordance with field service manuals. Unless the owner has skilled personnel and proper equipment, any major rework will probably require removal of the valve from the line. Depending on condition, valve may require return to the manufacturer.

WARNING: Removal of actuator from valve shaft will cause disc to rotate, striking persons or objects in the disc path, causing injury to persons and damage to valve. Block or lock disc before removing actuator.

Normal maintenance would be shaft packing replacement and actuator adjustment. Seal leakage, broken parts and difficult operation should be discussed with the Milliken Service Department before valve repairs are attempted. Milliken Service Engineers are available to perform or supervise valve repairs in the field.

Stop line flow and isolate from line pressure prior to performing any corrective maintenance.

After completing repair, cycle valve through one complete operating cycle and after line pressure has been restored, inspect for leakage.

If major repairs require removal or closure of the valve, notify all interested personnel in the water department and fire department that the valve and line are out of service. Upon completion of repair and reinstallation, notify the same personnel of the return of the valve and line to service.

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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.

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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, DO NOT lift valves with slings or chain around operating shaft, actuator, or through waterway. Instead, lift smaller valves with eye bolts or rods through flange holes.

STORAGE

Whenever practical, store valves indoors. If not, protect valves and actuators from weather and accumulation of water, dirt, rocks and debris. When valves fitted with power actuators and controls are stored, energize electric actuator or otherwise protect electrical control equipment to prevent corrosion of electrical contacts due to condensation resulting from temperature variation. DO NOT expose rubber seats to sunlight or ozone for any extended period. Valve should be stored with the disc or closure member slightly open.

INSPECTION PRIOR TO INSTALLATION

Make sure flange faces and joint sealing surfaces, body seats and disc seats are clean. Check bolting attaching actuator to valve 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 that valve rotation direction is correct and close valve before installing.

INSTALLATION

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

- 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. Valves with

flow direction arrows are to be installed accordingly.

- Foreign material in a valve can damage the rubber seat when valves are operated. Be sure valve interiors and adjacent piping are clear of foreign material prior to mating valve to pipe joint.
- Prepare pipe ends and install valves in accordance with the pipe manufacturer's instructions for the joint used. DO NOT deflect pipe/valve joint. DO NOT use valve as jack to pull pipe into alignment.
- In plant piping, install so as to minimize bending of valve connection with the pipe loading.
- Make sure valve disc, when opened, will not contact pipe port. This is especially necessary on pipe with linings and when wafer valves are used. Check manufacturer for minimum pipe I.D. required for clearance.

WARNING: It is recommended that valves be installed into piping system in accordance with AWWA M-11 in order to prevent any undue piping stress, deflection or bending that may affect the performance of the valves. Valve disc without actuator may open or close at any time and 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.

Buried valves installed with valve boxes must be so installed that the valve box does not transmit shock or stress to the valve actuator as a result of shifting soil or traffic load.

When valves are installed in vaults, the vault design must provide space for purpose of repair. The valve operating nut should be accessible from the top opening of the vault with a tee wrench.

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

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pipe lubricant just prior to slipping the gasket onto the pipe and assembling the joint.

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.

For water and gas service, the recommended range of bolt torques to be applied are given in Table 1.

When tightening bolts, it is essential that the gland be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This may be achieved by partially tightening the bottom bolt first, then the top bolt; next the bolts at either side; and finally, the remaining bolts.

This process should be repeated until all bolts are within the range of torques shown in Table 1. (In larger sizes [30"–48"], as many as five repetitions may be required.) If effective sealing is not attained at the maximum torque indicated, then the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing of bolts or mechanical joint flanges to compensate for poor installation practice is to be avoided.

TABLE 1.

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.

TESTING

When rubber-seated valves are used to isolate sections of line for test, it's important to know these valves are designed or factory adjusted to hold rated pressure only. Test pressure may cause leakage past the rubber seat or damage to the valve.

In order to prevent time lost searching for leaks, it's recommended that excavations for buried valves not be back-filled until after hydrostatic pressure tests have been made.