

MILWAUKEE VALVE COMPANY

INSTALLATION OPERATION AND MAINTENANCE MANUAL

FOR

**BRONZE VALVES CAST IRON VALVES CAST STEEL VALVES
SILENT CHECK VALVES THREADED END TWO PIECE BALL
VALVES SOLDER END TWO PIECE BALL VALVES LUG
BUTTERFLY VALVES WAFER BUTTERFLY VALVES**



MILWAUKEE VALVE

BRONZE GATE, GLOBE AND CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Verify the tightness of the packing nut after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service. NOTE 2: Make sure check valves are oriented properly for flow

and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices. NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction.
- 2) Check valves are automatic.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered recommended spare parts are as follows: Gate Valves-Handle, handle nut, packing, gland, packing nut. Globe Valves-Handle, handle nut, packing, gland, packing nut, disc and seat. Check Valves-Disc, holder and hinge assembly, bonnet gasket.

When ordering parts, provide figure number, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST IRON GATE, GLOBE AND CHECK VALVE INSTALLATION, **OPERATION AND MAINTENANCE INSTRUCTIONS**

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.

Recommended aptitude is with the stem in the vertical position. Horizontal stem installations can present issues for larger valves, especially in reduced pressure service such as low pressure(5-35 psi) steam.

- 5) Bolt flange in line per recommendations of applicable ASME/ANSI standard, e.g. ASME/ANSI B16.1. Use full face gaskets.
- 6) Operate the valve from the full open to closed position.
- 7) Verify the tightness of the packing nut/gland after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service. NOTE 2: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices. NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction. 2) Check valves are automatic.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing gland nut to increase the pressure on the stem packing. The packing nuts should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered

recommended spare parts are as follows:

- Gate Valves-Packing
- Globe Valves-Packing
- Check Valves-None

When ordering parts provide the figure number of the valve, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST STEEL GATE, GLOBE AND CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Verify the tightness of the packing nuts after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service. NOTE 2: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices. NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction.
- 2) Check valves are automatic.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nuts to increase the pressure on the stem packing. The packing nuts should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered

recommended spare parts are as follows:

- Gate Valves-Packing
- Globe Valves-Packing
- Check Valves-None

When ordering parts provide the figure number of the valve, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST IRON SILENT CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe. When lifting the valve, secure by the body and not by the bronze trim.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Silent check valves can be installed in any position, either horizontal or vertical with flow up. The flow arrow must point in the direction of flow when the system is in operation.

NOTE: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices.

OPERATION

- 1) Silent check valves are designed to prevent reverse flow automatically. On pump startup the flow of water forces the disc open, allowing the passage of fluid thru an area equal to the pipe size. On pump shut-down, the spring closes the disc before a media reversal takes place. This type of closure, which prevents flow reversal, is the factor which allows silent operation and prevents water hammer normally associated with valve and pump shut-off. No regular maintenance is required.

INSPECTION & REMOVAL

- 1) Close the discharge isolation valve, and bleed system pressure by loosening the discharge side flange. Do not loosen the inlet side flanges until pressure have been relieved. Damage can occur to internal parts if this is not followed.
- 2) Remove the valve from the line. All parts can be checked for wear and damage. Replacement parts can be ordered from catalog submittal sheets.
- 3) Never attempt to inspect the seating of the valve by removing the inlet side piping. This will result in damage to the valve's internal seating mechanism.



MILWAUKEE VALVE

TWO PIECE THREADED END BALL VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) PTFE thread sealant is recommended when making up connections. Consult the sealant manufacturer's instructions for proper use. Install on pipe and not the valve.
- 7) Care should be used to not over tighten the valve onto the pipe, as it is possible to distort the internal parts of the valve.
- 8) Because bronze is a softer metal than steel, always put the pipe in a vise and turn the valve onto the pipe end. Always use a smooth -jawed wrench on the valve end on the same side of the valve to which the pipe or fitting is being installed to prevent distortion of the internal parts of the valve or transmission of torque and stress into the body joint. Pipe Wrenches should be used on pipe and fittings only.
- 9) Take precaution also to prevent loosening body to tailpiece connection by reverse rotation during installment/alignment. Such loosening could comprise body to tailpiece sealing.
- 10) Verify the tightness of the packing nut after installation.

OPERATION

- 1) Ball valves are designed to be opened by rotating the lever handle in a counterclockwise direction, and closing in a clockwise direction. The handle indicates the ball port direction.
- 2) Under certain conditions, throttling flow in the near-closed position can destroy the valve seats. Consult Factory for throttling service.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from

- open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
 - 3) Repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable.

REPAIR PARTS

Under normal conditions, repair parts are not required.



MILWAUKEE VALVE

TWO PIECE SOLDER END BALL VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Solder end ball valves should be installed with the valve in a partially open position. Extreme

care must be used to prevent overheating of the valve causing damage to seats and seals.

Consult catalog engineering section for information on soldering procedures.

7) Use care to direct the flame away from the valve body. Use care to prevent the flame from

making contact with the valve body as damage can occur.

8) Verify the tightness of the packing nut after installation, and valve cools.

OPERATION

- 1) Ball valves are designed to be opened by rotating the lever handle in a counterclockwise direction, and closing in a clockwise direction. The handle indicates the ball port direction. 2) Under certain conditions, throttling flow in the near-closed position can destroy the valve seats. Consult factory for throttling service.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable.

REPAIR PARTS

Under normal conditions, repair parts are not required.



LUG BUTTERFLY VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Rev 3

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Inspect the valve port and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the open to closed position.
- 6) Butterfly valves are designed for installation between Class 125 cast iron or Class 150 flanges. Resilient seated butterfly valves do not require gaskets for installation. Milwaukee Valve recommends using a full face flange that supports the entire surface of the rubber liner (weld neck instead of slip on type). While slip on flanges can work, when the temperature or pressure or other service conditions become elevated or severe, the lack of support of the rubber can cause a stress riser and possible failure in the liner. End users are cautioned on this point.
- 7) Valve should be installed with the disc in the almost closed position. It is recommended that butterfly valves on horizontal pipelines have the stem in the vertical position.
- 8) Prior to tightening any flange bolts, the valve should be carefully cycled to the open position to check for possible disc interference. Interference may occur when the butterfly valve is installed on systems using pipe that has extra heavy wall thicknesses. Corrective action would include tapering the pipe ID, or the use of spool pieces.
- 9) Centralize valve in flanges, small valves may be supported by hand; larger valves may require strap and lifting device. (This is to ensure raised face flanges contact the valve properly, concentric and metal-to-metal all around except for 2-1/2" and smaller. For wafer valves, spacers over threaded rod on the bottom may be used to support/centralize the valve.)
- 10) Lug valves should be installed using the crossover method for tightening. This distributes the bolt loads evenly across the valve. **Do not over-tighten the bolts.** In dead end service (lug only) the side of the valve marked "INLET" should face the pressure side of the system (when the isolated equipment is removed, this is not always the high pressure side of the line). For safety, a downstream flange is recommended. If one side of the valve must be tightened first, tighten the inlet side to prevent shifting of the liner. Consult the catalog for bolt or cap screw length and diameter.
- 11) For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service.
- 12) Verify the gear operator travel stops after installation. Adjust as necessary.

OPERATION

Manual butterfly valves can be operated by a lever handle or a gear operator. It is usually recommended that gear operators be used for valves 8" and larger. The lever handle gives an indication of disc position. Gear operators provide position indication with an indicator dial located on the top of the operator. Valves that are used infrequently should be cycled on a regular basis from open to close to prevent the build-up of material inside the valve.

INSPECTION & MAINTENANCE

Butterfly valves require no routine maintenance. Periodic cycling of the valve is highly recommended.

REPAIR PARTS

Under normal conditions, spare parts are not required. Consult factory for availability of repair parts.



MILWAUKEE VALVE

WAFER BUTTERFLY VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Inspect the valve port and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the open to closed position.
- 6) Butterfly valves are designed for installation between Class 125 cast iron or Class 150 flanges. Resilient seated butterfly valves do not require gaskets for installation.
- 7) Wafer butterfly valves should be centered between the flanges by installing bolts through the alignment lugs and rotating the valve into position. There should be full and even contact between the elastomer and the flange face. The valve should be installed with the disc in the almost closed position. It is recommended that butterfly valves on horizontal installations have the stem in the horizontal position. Never force the valve into place if flange spacing is incorrect as damage can occur to the elastomer.
- 8) Prior to tightening any flange bolts, the valve should be carefully cycled to the open position to check for possible disc interference. Interference may occur when the butterfly valve is installed on systems using pipe that has extra heavy wall thicknesses. Corrective action would include tapering the pipe ID, or the use of spool pieces.
- 9) Tighten the bolts to obtain metal to metal contact between the body and the flange. Consult the catalog for bolt or cap screw length and diameter.
- 10) Verify the gear operator travel stops after installation. Adjust as necessary.

OPERATION

Manual butterfly valves can be operated by a lever handle or a gear operator. It is usually recommended that gear operators be used for valves 8" and larger. The lever handle gives an indication of disc position. Gear operators provide position indication with an indicator dial located on the top of the operator. Valves that are used infrequently should be cycled on a regular basis from open to closed to prevent the build-up of material inside the valve.

INSPECTION & MAINTENANCE

Butterfly valves require no routine maintenance. Periodic cycling of the valve is highly recommended.

REPAIR PARTS

Under normal conditions, spare parts are not required. Consult factory for availability of repair parts.