INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Butterfly Valve Installation Guidelines

Hammond Valve's resilient seated butterfly valves are designed for installation between Class 125 cast iron or Class 150 steel flanges, conforming to ASME B16.1, ASME B16.5 or ASME B16.47 (Series A).

The elastomer seat (liner) is lapped over into a recess in both faces of the body to provide a leak-proof seal between the valve and the faces of the pipe flanges. Installations between metallic flanges do not require gaskets and should not be used. **Installations between PVC flanges require a full-faced elastomer gasket (compatible with system/media) that is 1/8" thick and has a durometer (hardness) of 70 +/- 5 Shore A at each flange connection.** Slip-on flanges are not recommended, rather flat face weld neck flanges are preferred to support the entire surface of the rubber liner.

It is good practice to install valve with side of body marked "inlet" facing pressure, especially when valve is to be dead-ended on the line. For isolating a piece of equipment, the valve downstream from the equipment in normal operation should be installed with "inlet" away from the equipment, because that is the side that will see pressure when the equipment is removed. EPDM and Buna lined valves 2" - 12" are suitable for bi-directional dead-end service. Other liner materials, epoxy coated valve bodies, and all 14" - 24" butterfly valves are unidirectional dead-end capable.

Valve Installation Procedure – Flange, Lug & Wafer Style Only

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 open to closed position.
6. Spread the flanges to exceed face to face dimension by approximately 3/16" to prevent damage to the liner.
7. Valve should be installed with the disc in the "near closed" position. Hammond Valve butterfly valves normally are shipped with the disc in the 5% open position. The valve can be installed in the pipeline with the shaft in the vertical, horizontal or other intermediate diagonal position, based on the application.
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 butterfly valves should be installed using the crossover method for tightening. See bolt tightening sequence and torque values below. 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. For safety, a downstream flange is recommended. See Flange Bolting page for bolt or cap screw length and diameter. EPDM and Buna lined valves 2"-12" are suitable for Bi-Directional Dead End Service.
11. 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. On wafer-type valves, use only sufficient torque to obtain metal-to-metal contact between the pipe flange faces and the valve body around the elastomer sealing faces.
12. 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.
13. Verify the gear operator travel stops after installation. Adjust as necessary.

NOTES:

- Provide lever handles for 6" and smaller butterfly valves.
- Provide gear operator for 8" and larger butterfly valves.
- Provide chainwheel operators for valves installed seven feet or more about floor level.
- These valves are not recommended for steam service.

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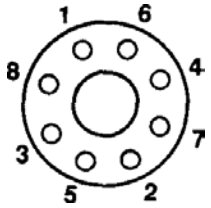
Recommended Bolt Tightening Sequence and Torques



BOLT TIGHTENING SEQUENCE AND TORQUES		
SIZE VALVE	**SIZE FASTENERS**	**TORQUE (FT - LBS)**
2" - 4"	5/8"	15 - 45
5" - 8"	3/4"	25 - 75
10" - 12"	7/8"	40 - 140
14" - 16"	1"	56 - 58
18" - 20"	1 1/8"	78 - 80
24" - 30"	1 1/4"	114 - 116
32" - 48"	1 1/2"	198 - 200

Travel/End Stop Adjustment Procedure
See Hammond Valve's Instructions for Mounting Gear Operators for more information: Instructions for Mounting Gear Operators in Technical/Services Information on website.

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. Turning the valve handle 90° clockwise will fully close the valve. The valve handle also serves as a disc position indicator. When the valve handle is parallel to the pipe, the valve is open, when perpendicular to the pipe, the valve is closed. 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 for repair parts.

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