INSTALLATION AND MAINTENANCE MANUAL FOR BUTTERFLY VALVES

INTRODUCTION

The BI-TORQ InstruPak BY series uses the BI-TORQ wafer or lug style butterfly valve with a cast iron body construction, SS stem and disc and either EPDM, BUNA-N or Viton liners.

1. SHIPMENT & STORAGE

1.1 The seat, disc, stem and bushing of the butterfly valve should be coated with a silicone lubricant.
1.2 The disc should be positioned at 10° open.
1.3 Where applicable, the faces of each valve should be covered with cardboard, plywood or similar sturdy material to prevent damage to the seat face, disc edge or butterfly valve interior.
1.4 Valves should be stored indoors with face protectors intact. Storage temperature ideally should remain in a range from +40°F to 85°F.
1.5 When valves have been stored for more than 3 months, open and close the valves. Repeat for every 3 months of storage.
1.6 Store valves so that no heavy loads are applied to the bodies.

2. INSTALLATION CONSIDERATIONS: Piping/Valve orientation and placement

2.1 Piping and flange compatibilities:
The BI-TORQ BY and MY series butterfly valves have been designed to be suitable for all types of ANSI 125/150 flanges, whether flat-faced, raised face, slip-on or weld-neck. These valves have been engineered so that the critical disc dimension at the full open position will clear the adjacent inside diameter of most types of piping, including schedule 40, lined pipe, heavy wall, etc.
2.2 Valve location and orientation in piping
A. Valve location: Whenever possible, butterfly valves should be installed 6 pipe diameters from other elements in the pipeline, such as joints, elbows, etc. This might not always be possible, but it is important to achieve as much distance as possible. Where the valve is connected to a check valve or pump, use an expansion joint to ensure that the disc does not interfere with the adjacent equipment.
B. For slurries, sludge, pulp, dry cement or any other media with sediment or particles, BI-TORQ recommends the valve be installed with the stem in the horizontal position with the lower disc edge opening in the downstream direction.

3. INSTALLATION PROCEDURE

3.1 General Installation
A Make sure the pipeline and pipe flanges are clean. Any foreign material such as pipe scale, metal chips, welding slag, welding rods, etc. can obstruct disc movement or damage the valve.
B. The BY/MY series valve has molded o-rings on the face of a seat. IMPORTANT: No gaskets are required as these o-rings serve the function of a gasket.
C. Align the piping and then spread the pipe flanges so that the valve body can be easily placed between the flanges without contacting the pipe flanges.
D. Check to see that the valve disc has been positioned to a partially open position with the disc edge approximately 1/4” to 3/8” from the face of the seat. (Approximately 10° open.)
E. Insert the valve between the flanges taking care not to damage the seat faces. Always pick the valve up by locating holes or by using a nylon sling around the valve neck. IMPORTANT: Never pick the valve up by the actuator or operator as damage may occur.
F. Place the valve between the flanges, center it, and then span the valve body with all flange bolts. DO NOT TIGHTEN THE BOLTS AT THIS TIME. Carefully open the disc to the full open position, ensuring that the disc does not make contact with the pipe I.D. Systematically remove any jack bolts on flange spreaders and hand tighten the flange bolts. Very slowly close the valve disc to ensure disc edge clearance from the adjacent pipe flange I.D.
G. Open the disc to full open and tighten all flange bolts per specifications. Repeat a full open to close rotation of the disc to ensure proper clearances.

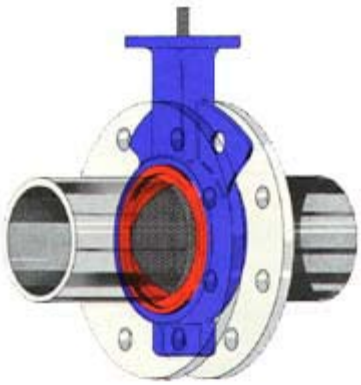
3.2 Installation with flange welding
When butterfly valves are installed between ANSI welding type flanges, care should be taken to abide by the following procedures to ensure no damage will occur to the seat:
A. Place the valve between the flanges with the flange bores and valve body bore aligned properly. The disc should be in the 10° open position.
B. Span the body with flange bolts.
C. Take the flange-valve-flange assembly and properly align in the pipe.

Installation and Maintenance Manual for Butterfly Valves

D. Tack weld the flanges to the pipe.
E. When tack welding is complete, remove the bolts and the valve from the pipe flanges and complete the welding. Be sure to let the pipe and flanges cool before installing the valve. CAUTION: Never complete the welding process (after tacking) with the valve between the pipe flanges. This causes severe seat damage due to heat transfer.

4. MAINTENANCE

4.1 The BY/MY series has been designed to minimize wear and maintenance requirements. No routine lubrication is required. CAUTION: No valve maintenance, including the removal or manual or power actuators, should be performed until the piping system has been de-pressurized completely.

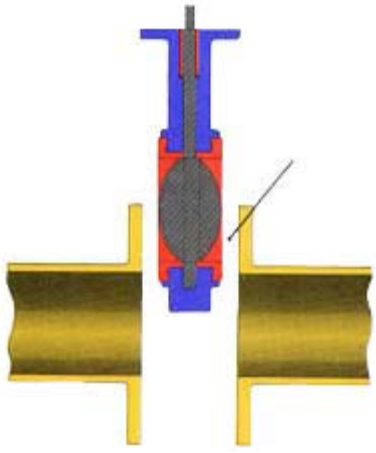


PROPER INSTALLATION PROCEDURE

Pipework opened to allow free valve entry with the disc in a semi-closed position. NOTE: Best practice is to have the disc in the 10% open position while installing

IMPROPER INSTALLATION

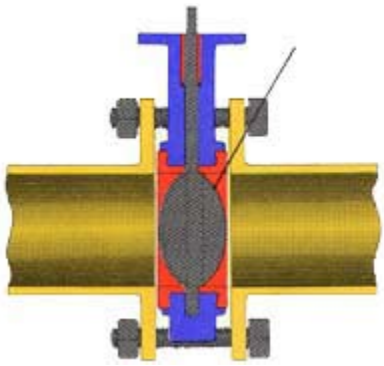
Pipework not spread sufficiently - could tear rubber seat. Disc in open position will hit flange and score disc edge.



Valve in semi-closed (10% open) position to (1) protect disc edge, (2) reduce rubber interference during installation and start-up, and (3) help reduce initial torque build-up.

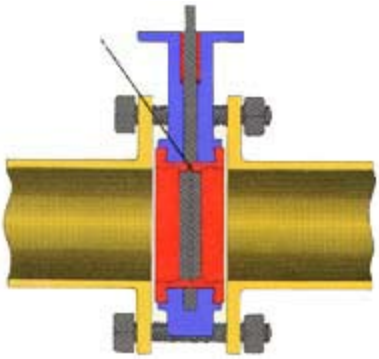
Disc as shown in fully closed position causes seat distortion. When flanges are drawn up, rubber will close around disc edge creating excessive torque in initial operation.

INSTALLATION AND MAINTENANCE MANUAL FOR BUTTERFLY VALVES



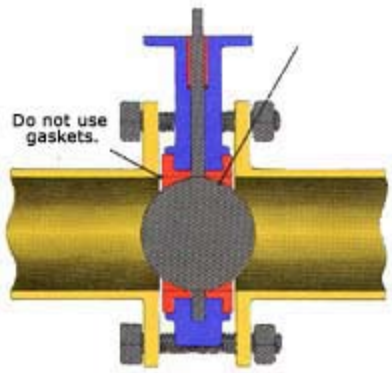
PROPER INSTALLATION PROCEDURE (CONTINUED)

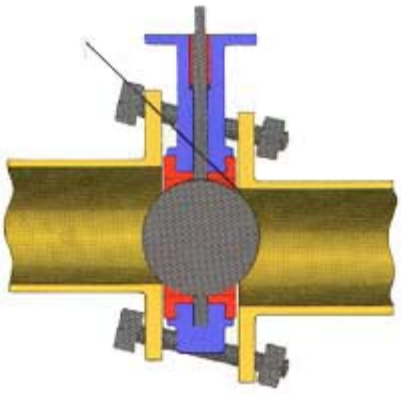
Disc should be returned to the full open position after flange alignment and before evenly pulling up the flange bolts.



IMPROPER INSTALLATION (CONTINUED)

Incorrect pipe alignment will cause interference between the disc edge and flange face, creating leakage and excessive torque for opening valve.





INSTALLATION AND MAINTENANCE MANUAL FOR BUTTERFLY VALVES

PROPER INSTALLATION PROCEDURE (CONTINUED)

Tighten flange bolts according to the bolt torques and diagrams listed below..

IMPROPER INSTALLATION (CONTINUED)

Do not overtorque or improperly tighten bolts in any other pattern than that listed below.

IMPORTANT:

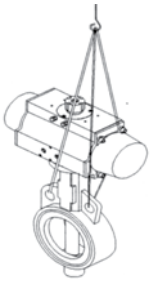
Do NOT use flange gaskets. All BI-TORQ butterfly valve seats have a molded-in o-ring that creates a positive seal when used in conjunction with standard ANSI flange faces. The use of gaskets unnecessarily might cause leakage or misalignment.

LUG BOLT TIGHTENING SEQUENCE AND BOLT TORQUE CHART

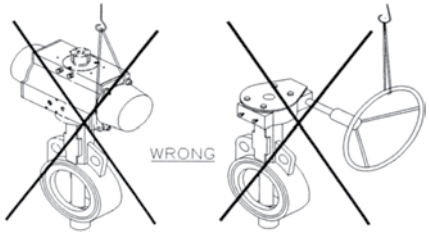
VALVE SIZE	BOLT SIZE	MAXIMUM BOLT TORQUE REQUIREMENT (in. lbs.)
2”-4”	5/8-11	80
5”-8”	3/4-10	118
10”-12”	7/8-6	164
14”-16”	1-8	215
18”-24”	1-1/8-7	262

IMPORTANT:

Use caution when handling the valve or valve package. Never lift by the valve handle, gear operator, handwheel, or actuator. Securely place a rope or hoist around the valve body while handling.



CORRECT



INCORRECT