

INSTALLATION

1. Handle the valves carefully with appropriate lifting equipment using the lift hooks provided on the valve body, avoiding contact or impact with other equipment vault, walls etc.
2. Do not use rope or chain through the valve port. Never use the actuator or handwheels as slings while handling of the valve assembly.
3. Ensure that the valve is in fully closed position during installation.
4. Clean valve flanges and companion flanges and remove protective grease from the valve flanges. Clean the valve interiors and adjacent piping prior to mounting of the valve on the pipe joint.
5. Centre the valve such that the shaft is in horizontal position and the flow direction indicated on the valve matches with the flow direction in the pipeline.
6. Insert the gaskets and fit the bolts.
7. Tighten the bolts. Opposite bolts are to be tightened in sequence. Tighten gradually and uniformly to avoid tendency to twist one flange relative to the other.

Use of a torque wrench is recommended to ensure and uniform tightening of the flange bolting. Flange mis-alignment, should under no circumstances, be corrected by tightening of flange bolts. Such practice may cause excessive distortion of the valve body to cause fouling of the seating surface and render operation of the valve difficult.

Caution :- Clean the interior of the pipe before mounting the valve on the pipeline, otherwise any foreign material such as scales, grit, weld spatter etc. remaining in the pipe will damage the valve body seal

OPERATION

Butterfly valve is a **quarter turn** valve. These can be operated in the following ways:-

1. Manual
2. Electric
3. Pneumatic
4. Hydraulic

ROUTINE MAINTENANCE:-

The following activities can be carried out during the routine maintenance of the valves:-

- (a) Check the disc seal for any damage.
- (b) Check for any leak through the shaft seal.

CHECK AND REPLACEMENT OF DISC SEAL:-

Depressurise the pipeline. Disconnect the electrical supplies. Remove the valve from the pipeline, observing the necessary precautions for dismantling the valve from the pipeline. Keeping the valve disc in open position, check the disc seal for any damage.

If the seal is damaged then:-

- (a) Keep the valves in open position, remove the screws on the retainer plate and take out the seal.
- (b) Clean the groove thoroughly.
- (c) Assemble the new seal on the disc profile and place the retainer plate back into position. Care shall be taken not to damage the seal.

MAINTENANCE

SAFETY PROCEDURES:-

1. Always depressurise the pipeline, when taking up any maintenance activity on the valve/actuator.
2. Always disconnect the electrical supplies to the electrical actuator before carrying out any maintenance activity on the valve / actuator.

Caution :- Study carefully and understand the instructions outlined in the Installation, Operation & Maintenance manual for valve & actuator before taking up any maintenance.

ROUTINE MAINTENANCE:-

The following activities can be carried out during the routine maintenance of the valves:-

- (a) Check the disc seal for any damage.
- (b) Check for any leak through the shaft seals.

CHECK AND REPLACEMENT OF DISC SEAL:-

Depressurise the pipeline. Disconnect the electrical supplies. Remove the valve from the pipeline, observing the necessary precautions for dismantling the valve from the pipeline. Keeping the valve disc in open position, check the disc seal for any damage.

If the seal is damaged then:-

- (a) Keep the valves in open position, remove the screws on the retainer plate and take out the seal.
- (b) Clean the groove thoroughly.
- (c) Assemble the new seal on the disc profile and place the retainer plate back into position. Care shall be taken not to damage the seal.

(d) Tighten the screws uniformly working diagonally across the perimeter.

SHAFT SEALS('O' Rings):-

There is no possibility of leakage through the shaft seal in this design, as the pressure is held by means of 'O' rings. However, in the extreme case of leakage due to damage of the 'O' rings, replace the seals as given below.

REPLACEMENT OF 'O'RINGS :-

- (a) Depressurise the pipeline. Disconnect the electrical supplies to the actuator (if any).
- (b) Dismantle the gear unit and the actuator from the valve along with the mounting adaptor.
- (c) Replace the 'O' ring seals on the shaft and on the body cover flange.
- (d) Mount the mounting adaptor, gear unit and actuator(if any) back on the valve.

ACTUATORS :-

For maintenance of electrical actuator refer the Instruction manual of the electric actuator.

GEAR UNIT :-

Generally the Gear Units are filled with Grease (Servogem 3). They do not require any additional maintenance. However in case of extreme difficulty of operation, remove the top cover and fill with Grease. Assemble the top cover. Ensure that the stoppers inside the Gear Unit are not disturbed.

DO'S AND DON'TS FOR BUTTERFLY VALVES

1. Before taking valve for pipe erection, make sure that it is cleaned properly from inside and outside and there are no foreign particles or metallic chips sticking on to the sealing element.

DO NOT install a valve in the pipeline without the operating element.

2. While installing the operating element, make sure that the Butterfly valve, the operating element and the intermediate gear box, if any, are all in fully closed position.

DO NOT attempt forcible assembly of actuator on to the valve shaft. In case of any difficulty in proper matching of the key-ways, refer to the detailed instruction manual, DO NOT hammer actuator surface to drive it in.

3. Make sure to remove all the rust preventive on the machined surface in the flow area before a valve is put in the pipeline.

4. Read the name plate details carefully and install the valve in the right place and for the correct duty conditions, for which it is designed and manufactured.

5. Butterfly valves have preferred sealing direction marked by an arrow on the valve face.

6. Valves should be installed in the line after thoroughly verifying the condition of rubber seal. In case there is any damage to the rubber seal, the valve will not be leak tight. In such a case, replace the rubber seal before installing the valve in the line.

7. While lifting a valve, make sure to use lifting points, for which, necessary lift hooks are provided.

DO NOT use shaft extension, actuator body and gear box castings as lifting points.

8. The installation of the valves should be strictly as per the General Assembly drawing.
9. DO NOT operate electrical operators directly on power. Try hand operation in both directions for the complete length of travel to ensure that the whole assembly is performing properly.
10. Make sure to supply rated voltage and frequency to the electrical actuator.
11. DO NOT operate electrically operated valves from fully open or fully closed position for initial starting. Make sure to bring them to mid-travel position by hand operation and check phase for reversal, if any. Correct the phase reversal immediately. Note that none of the safety devices like limit switch, torque switch etc., will be effective in case of wrong phase connecting to the actuator.
12. Your Butterfly valve need care and maintenance in its use. Always make routine checks once in six months that all the operating elements are in working condition and programme trial operations to keep the mechanism smooth and workable. In case opening or closing of a Butterfly valve with a handwheel demands excessive force.

DO NOT use force multiplying devices like levers or pulleys. In case a valve demands excessive operating torque, make sure there is no artificial obstruction in the pipeline or in the operating mechanism.

13. DO NOT lever hand wheels. They are weak links to safeguard damage to the more expensive and heavy components.
14. DO NOT remove operating mechanism from the valve when the disc is partially open. Note under full flow condition. Butterfly valves with eccentric blades are self-closing and may cause dangerous accidents if the self-locking drive is removed from the valve shaft.