

Installation, Operation and Maintenance Manual for the HE Series

High Performance Butterfly Valve
"Double Offset"



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1.1 General Note

High performance butterfly valve with double eccentricity can be used with manual operation, automatic on-off and proportional control. Simple and clear valve structure enables user to assemble and disassemble easily for field maintenance.

1.2 Type

Our valves are classified as Wafer Type , Lugged Type and Flanged end type by their shape. Their principle parts consist of body, disc, seat and stem. Material of each part is determined by the application and working condition of the valve.

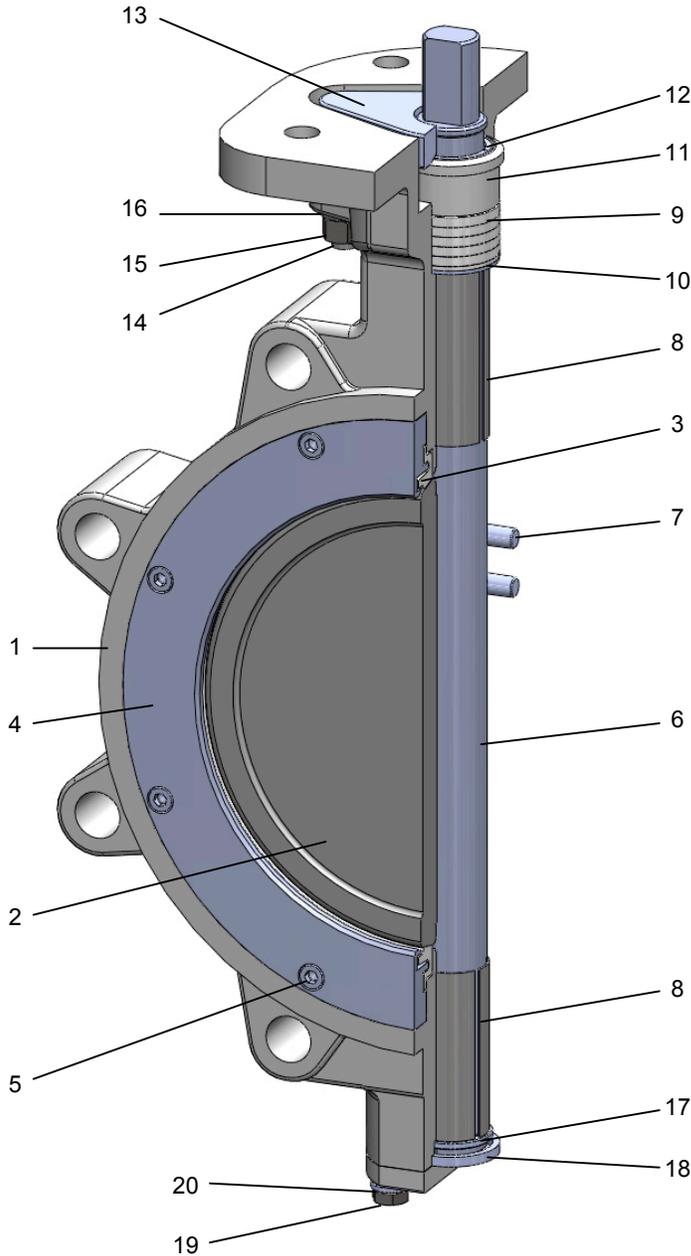
1.3 Operation

The valve operator could be classified into a lever handle , manual gear, pneumatic actuator and electric motor operated actuator. By rotating or closing the valve's disc you can control flow through the pipe line by regulating the flow or shutting it off.
(Generally, on- off direction is indicated on the operator)

Manufacture Standard

Valve Type Specification		Wafer & Lug	Flanged	Butt-Weld
Design Standard	Standard	API 609 & ANSI B16.34, API 607 (Fire Safe)	API 609, ANSI B16.34	ANSI B16.34, ANSI B16.25
	Available Reference	BS 5155	BS5155	
Face to Face	Standard	API609 Category B, MSS-SP-68 Table 1, ANSI/ASME B 16.19 Table 8, ISO 5752 Table 1, BS 5155 Table 6 (Only 2" & 2.5")	ISO 5752 Table 6, BS5155 Table 6, ANSI B16.10	ISO 5752 Table 4, BS 5155 Table 6
	Available Reference	DIN 3203, ISO 5752, BS 5155	DIN 3203, ISO 5752, BS 5155	
Flange connection	Standard	ANSI B 16.5, ANSI B 16.47 Series A, MSS-SP-44, API 605	ANSI 16.5, ANSI B16.47 Series A, MSS-SP-44, API 605	ANSI B16.25
	Available Reference	JIS B 2210, DIN 2501, ISO 7005-1	JIS B 2210, DIN 2501, ISO 7005-1	
Testing	Standard	API 598, ANSI B16.34, BS 1560, BS 5155	API 598, ANSI B16.34, BS 1560, BS 5155	API 598, ANSI B16.34
	Available Reference	JIS B 2203, 2201, DIN 3230, ISO 7005, FCI 70-2, ANSI B16.104, MSS-SP 61	JIS B 2203, 2201, DIN 3230, ISO 7005, FCI 70-2, ANSI B16.104, MSS-SP 61	FCI 70-2, ANSI B16.104, MSS-SP 61

WARNING Do not use a valve where service conditions exceed the valve design and rating. Manufacturer is not responsible for any misuse of valve.



No.	Part Name
1	Body
2	Disc
3	Seat
4	Seat Retainer
5	Seat Retainer Screw
6	Shaft
7	Disc Pin
8	Shaft Bearing
9	Packing
10	Packing Retainer
11	Packing Gland
12	Anti-Blow out Ring
13	Gland Flange
14	Gland Bolt
15	Gland Nut
16	Washer
17	Shaft Retainer
18	Bottom Gasket
19	End Cap Screw
20	Washer

2.1 Pre- Installation

Before installation of the valve to the 'Pipe Line', it is recommended that the user to inspect the valve as below.

2.1.1 Inspecting Valve & Accessory

- Ensure that there has been no damage to the valve during transportation.
- Remove the protection cover of the valve just before installation and clean with an air blast or with a clean dust cloth.
- Check the tightness of all the bolts and nuts.

2.1.2 Inspecting Pipeline

- Remove foreign materials such as a rust, welding slag, etc, which remain in the pipeline .
- Make sure the pipe flange and gasket surface is clean.

* Caution :

When the fluid is flowing through the line, any foreign materials are subject to scratch the disc, seat and inner body. Scratches may cause leakage and shorten the valve's life.

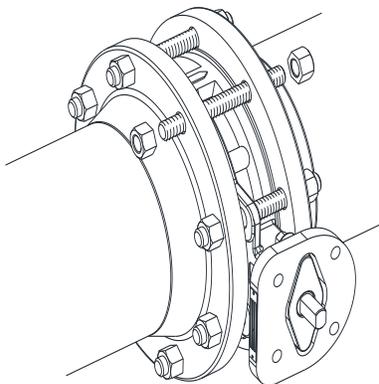
2.2 Installation

- Make sure the valve disc is fully closed.
(Usually, valve is delivered with disc closed tightly to protect a seat ring)
- Check the preferred flow direction indicated by the arrow on the valve body.
- Be sure to place a gasket at center of valve and pipe flange.
- See the reference figure as follows.

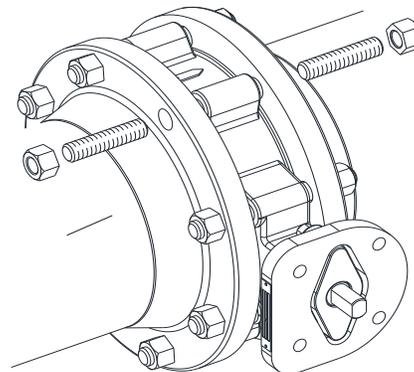
* Caution :

- For long lifetime of the valve, install valve in preferred flow direction
- Over torque on the bolt might cause damage of gasket.

INSTALLATION OF VALVE TO PIPING



WAFER TYPE



LUG TYPE

3.1 Maintenance

Our valve does not need maintenance unless leakage is found. However, some routine inspection is recommended for safety and a longer lifetime.

- Visual inspection of the body, disc and packing of the valve at the time of initial service or at the re-operation after long-term recess.
- Check the valve when abnormal sound is perceived during operation.
- Regularly ensure the tightness of each bolt.

*** All the repair work (disassembly and replacement etc) of our valve should be performed by well-trained maintenance personnel.

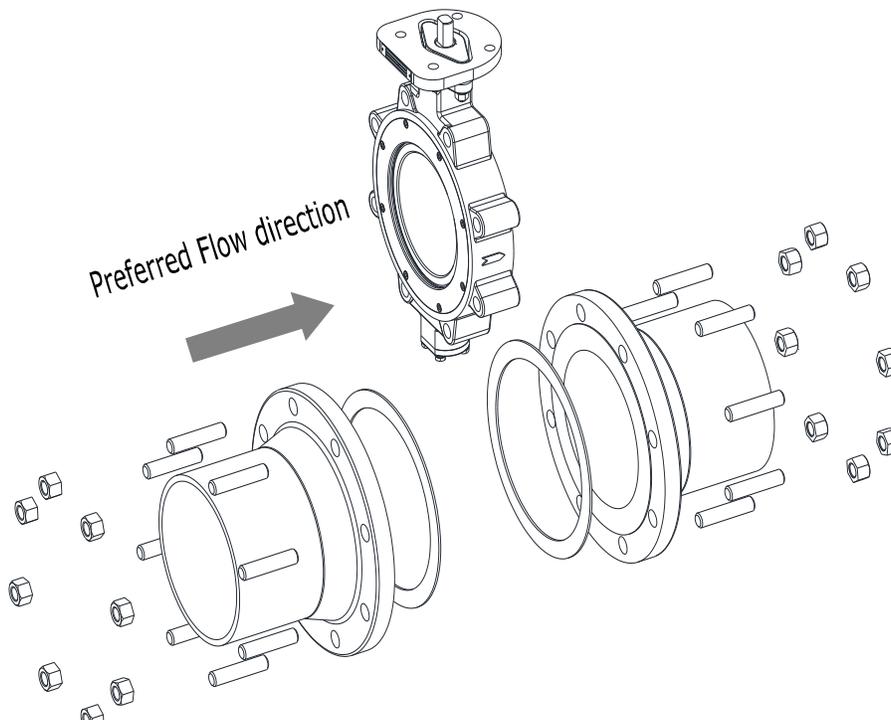
3.2 Inspection / Minor Treatment

3.2.1 Packing

Most leakage from the the packing parts of the valve can be prevented by effective tightening of gland flange's nuts and bolts. If the leakage doesn't stop, packing replacement shall be required instead of re-tightening bolts. In this case, see the reference figure and the method of packing replacement.

3.2.2 Seat Ring / Seat retainer

Before installation in the line, check the condition of the seat ring and the bolting degree of seat retainer.



PIPING INSTALLATION DIAGRAM

4.1 Separation of Valve from the Pipe

To repair a leaking valve, the valve must be removed from the pipeline and the parts must be dismantled as below:

- Shut down the line and ensure that there is no pressure in the pipeline.
- Drain all mediums from the pipe.
- Completely close the disc of the valve.
- Remove the parts and the valve from the pipe.

CAUTION

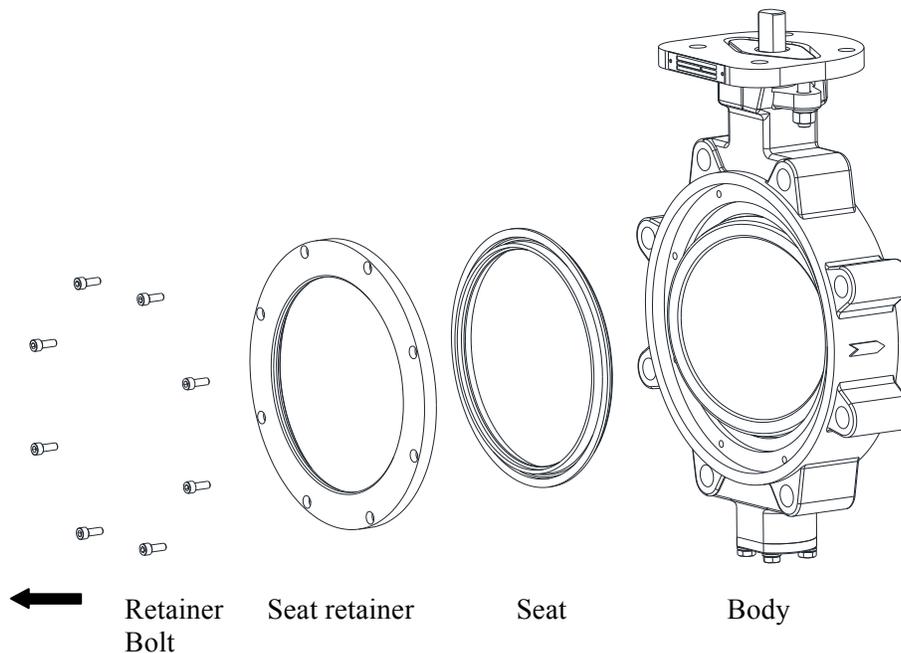
If the fluid is a hazardous or toxic then proper protection is required before the removal of valve.

4.2 Dismantle the Seat Ring & Seat Retainer

- Open the disc of valve (10~15 degree) with operating article.
- Remove the tightened retainer bolts on the seat retainer plate.
- Remove the seat retainer by lifting it up with jacking tap .

Please see the following pictures .

- Take out the inner seat. At this time be careful not to scratch or damage the seat ring. Clean the retainer plate and seat as well as the other parts of the valve with a soft dust cloth or an air blast.
- Refer to the below picture for disassembling of the seat retainer & seat ring.

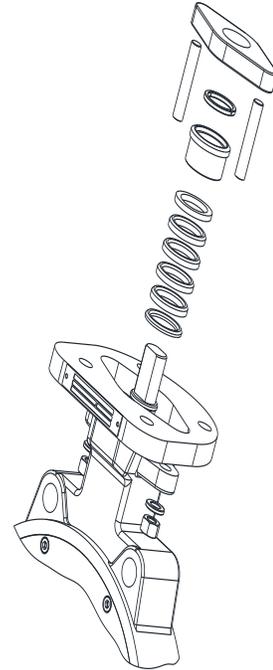


SEAT DISASSEMBLY

4.3 Packing Replacement

For replacement of packing, please take the steps as below.

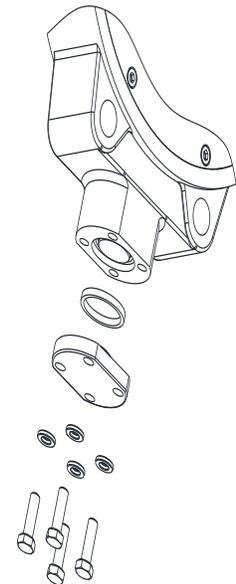
- a. Remove the gland flange after loosening the nuts of the gland flange.
- b. Slightly lift the packing gland up and remove it with hands.
- c. Remove the packing using a packing extractor such as a corkscrew, awl or gimlet.
- d. When you remove the packing with tools (packing extractor), please be careful not to scratch and damage the packing housing wall or the valve stem because the damage may cause leakage.
- e. Insert the new set of packing in the packing housing after carefully cleaning the packing housing.
- f. After inserting the packing, assemble the packing gland and gland flange.
- g. The nuts of gland flange should be tightened sufficiently . Be careful not to over tighten the nuts as this may cause a higher torque for the valve.



4.4 End cap Replacement

For replacement of packing, please take the steps as below:

- a. Remove the bolts and end cap.
- b. By using a packing extractor such as a corkscrew, awl or gimlet, remove the packing. At this time, please be careful not to scratch and damage the wall of packing housing and the valve shaft.
- c. After removing the packing, clean the neck of body prior to replacement of new packing .
- d. Insert the new packing with standard screwdriver being careful not to damage packing.
- e. Align end cap by hand & tighten end cap bolts.



WARNING

Over tightening on the bolt might cause damage at the threaded parts and bolt head.

4.5 Seat ring Replacement :

If the fluid can't be shut-off under the full closing position of disc, then seat-damage is suspected. In case of seat-damage, replacement should be followed as below:

- a. See the disassembly of seat ring / seat retainer for removing of seat ring and seat retainer.
- b. Replace the damaged seat ring with a new seat ring.
- c. New seat ring should be seated with the 10~15 degree of disc-opening angle.
- d. For assembling of the seat retainer, please apply the reverse steps of the previous disassembly. Therefore, it is important to identify the location of each part as the same location of old seat ring.
- e. Slightly tighten the bolts of seat retainer. Cycle valve to closed position and rotate the disc a couple of times.
- f. Rotate the disc a couple of times and then tighten the bolt completely with the 10~15 degree of disc-opening angle.
- g. Finally, rotate the disc several times to achieve an accurate position of seat . The above needs to be done to get the seat settled in position.
- h. Install the valve on the pipe line with disc fully closed.

CAUTION Over tightening of bolts may cause a damage at the threaded parts.

