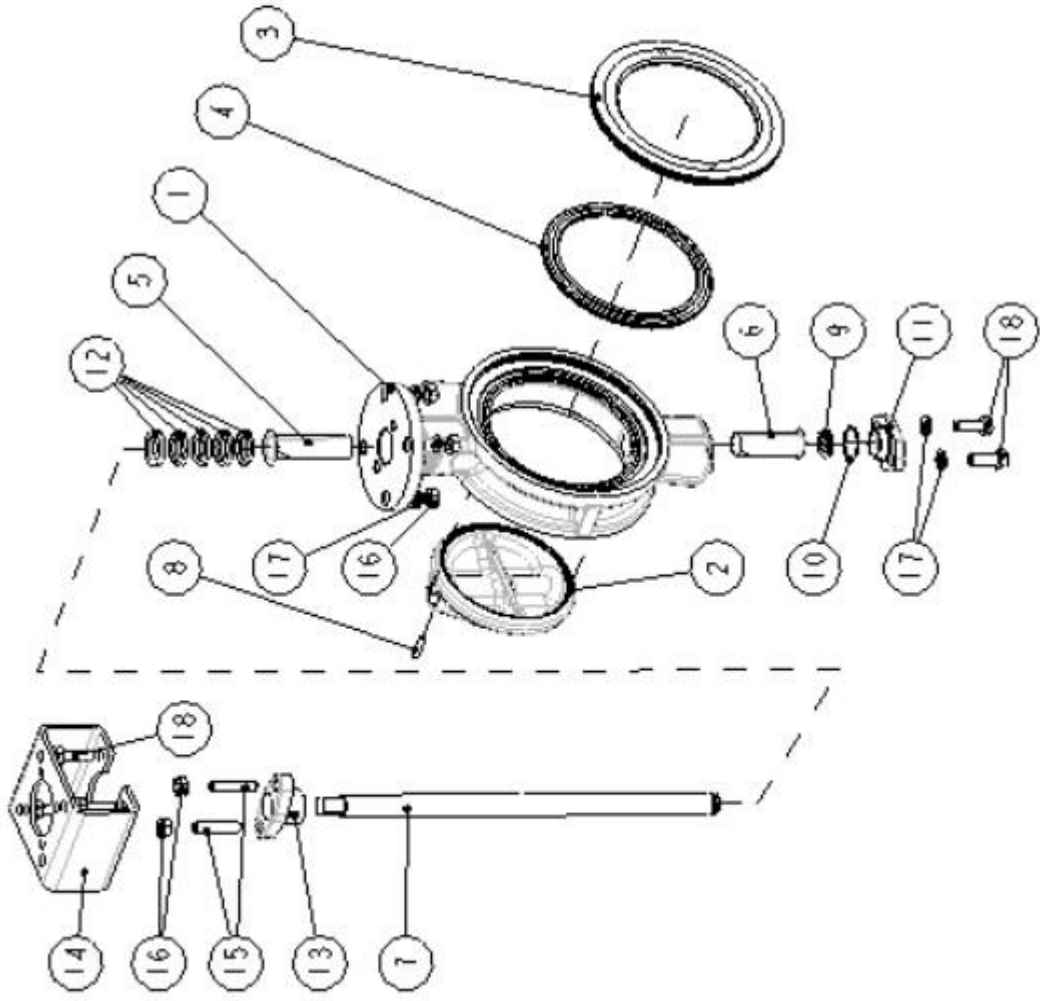


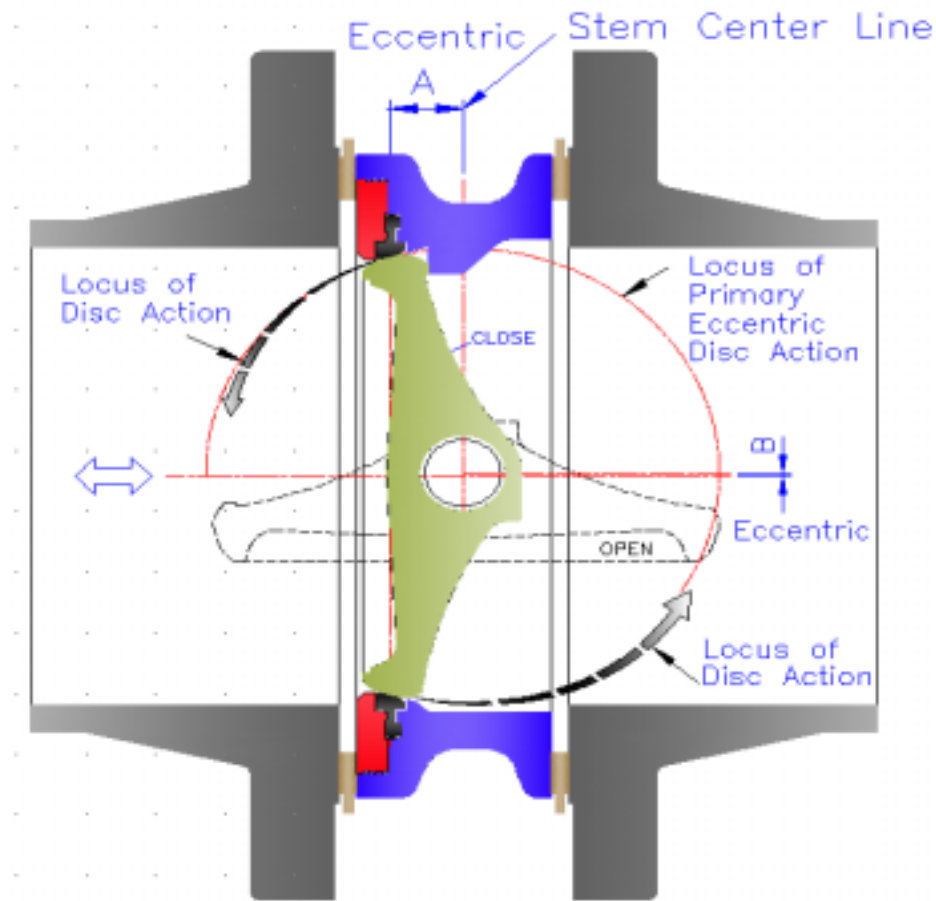
**MAINTENANCE MANUAL**

SERIES : VF-91 & VF-913





NO.	PART NAME	Q'TY
18	BOLT	6
17	SPRING WASHER	6
16	NUT	6
15	STUD	2
14	YOKE	1
13	GLAND	1
12	GLAND PACKING	6
11	BOTTOM COVER	1
10	SEAL	1
9	THRUST RING	2
8	PIN	1
7	STEM	1
6	BUSHING_2	1
5	BUSHING_1	1
4	SEAT	1
3	SEAT RING	1
2	DISC	1
1	BODY	1



## MAINTENANCE

In order to use a butterfly valve for a long period, it is necessary to check and replace the major parts periodically (1 - 2 years). The repair parts have to be always stored in the warehouse or procured ahead of the time.

### Design of Retainer

Special twin thread design between Valve Body and Retainer Ring offers,

1. Wider sealing face between flanges.
2. 100% sealing between retainer ring and valve body.
3. When long time storage, valve was in fully closed position and the seat ring was fixed by retainer ring. Encapsulated seat will not cold flow.

**Note :** Retainer ring must be upstream for dead end service.

### 1. Repair parts

Following are the repair parts for ordinary replacement.

Parts Name	No.	VF-91 & VF-913	
		Material	Quantity
Seat Ring	3	PTFE	1 pc
Gland Packing	12	PTFE	1 Set
Gasket	10	PTFE	1 pc
Thrust Bearing	9	PTFE	1 pc

Note: In case of replacing the gland packing, replace all set of the gland packing, not replace only the damaged packing.

### 2. Replacement procedure for repair parts

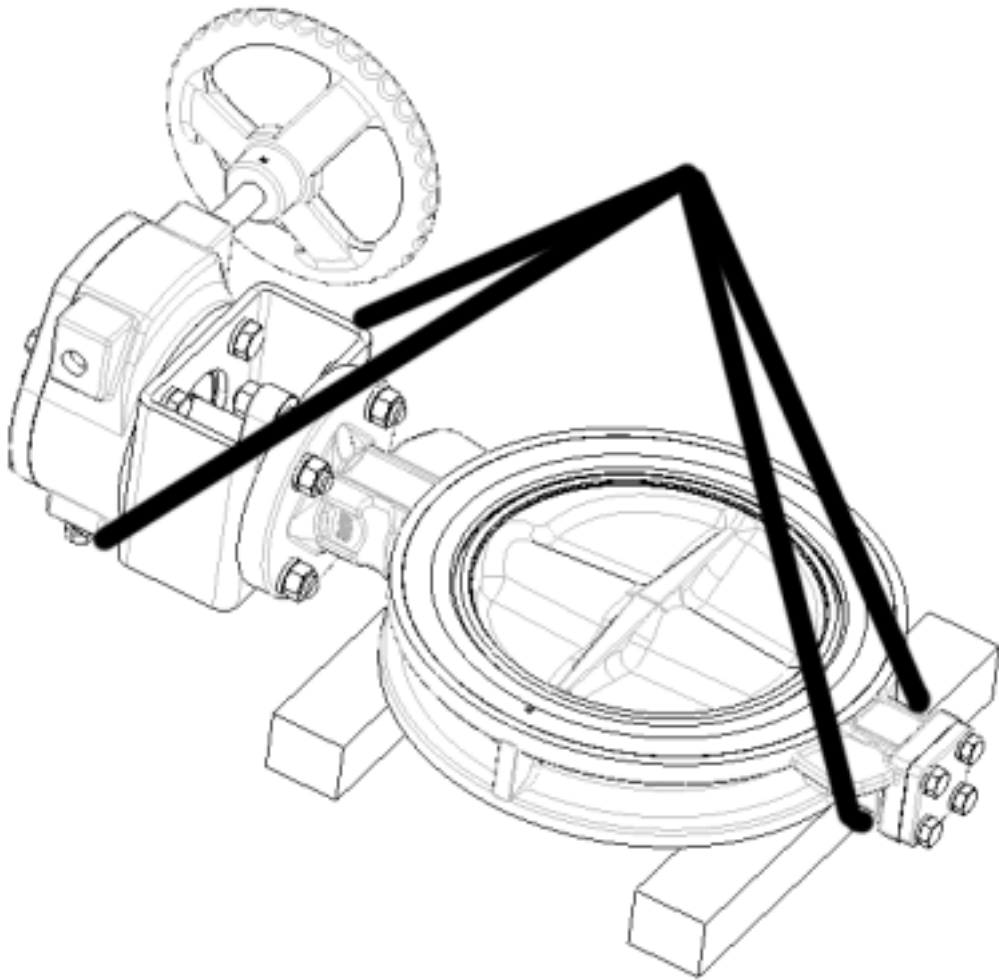
2.1 The replacement procedure for the seat is as follows.

#### A. Disassembling

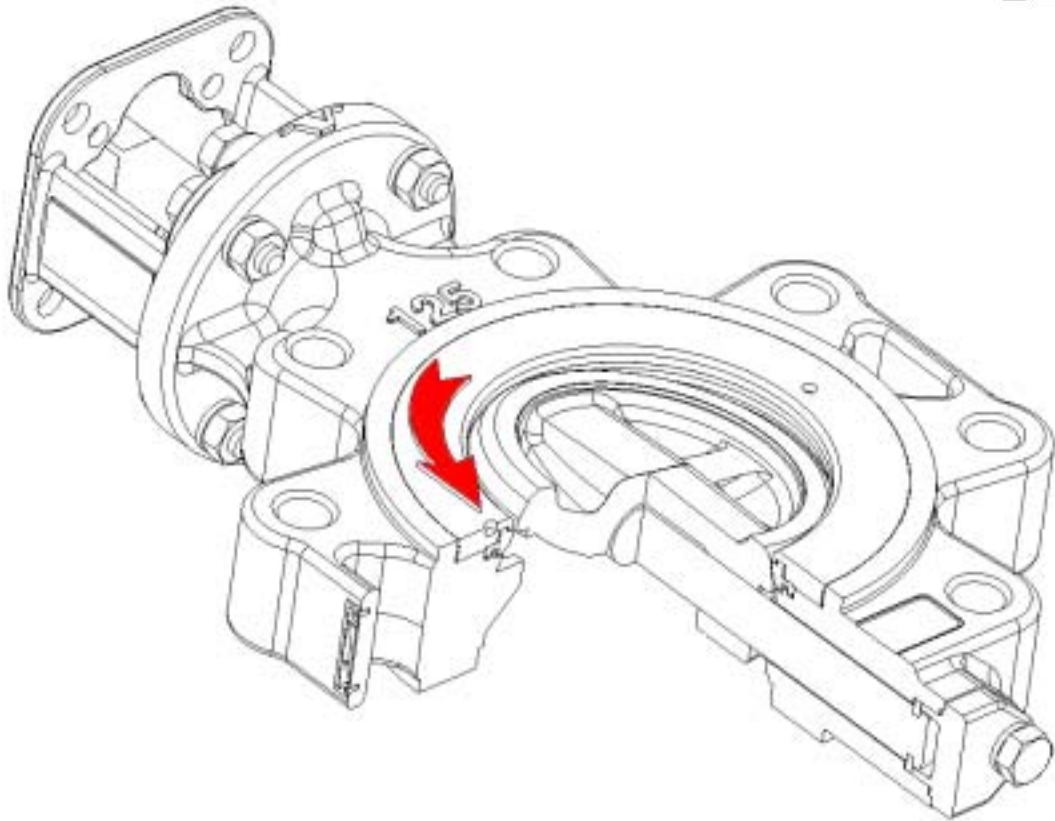
Before disassembling the valve, check the open / close indication on the actuator and confirm that the valve is at the closed position. If the valve is not in the closed position, operate the actuator to fully close the valve and make sure the pipeline de-pressure.

- a. Remove the valve from the pipeline.
- b. Place the valve horizontally on the wooden pieces in order not to

- damage the valve and with the seat retainer facing up (Fig. 1).
- c. If the rust or foreign matters are attached around the valve seat (valve seat and valve disc), remove with waste cloth or air blow. It should be taken not to damage the valve seat and disc edge.
  - d. Slightly open the valve to 10 degree, loosen the seat retainer in turning it counterclockwise and remove the retainer. If it was stuck then using a hexagonal spanner or “+” screwdriver to hold the holes of retainer and turn it up (Fig. 2).



**Fig. 1**



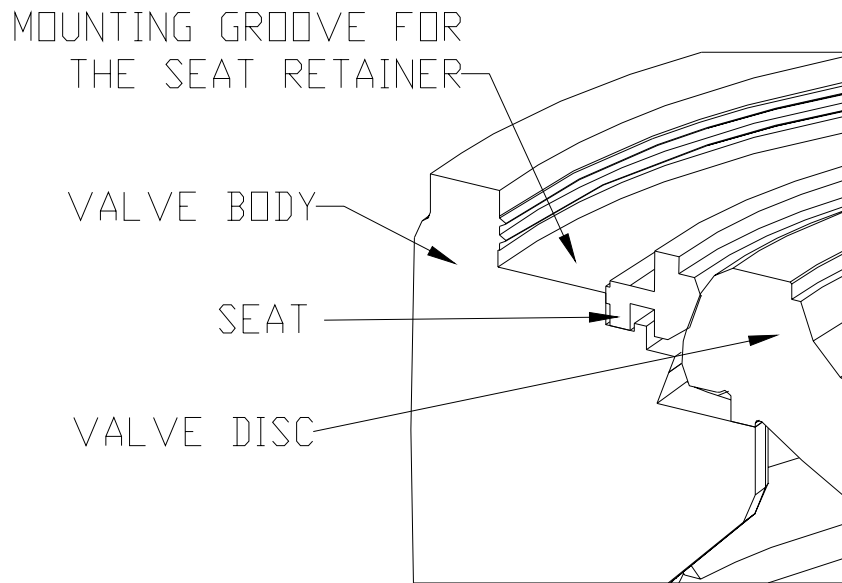
**Fig. 2**

- e. Remove the seat retainer to disassemble the seat.

#### B. Attachment of the seat

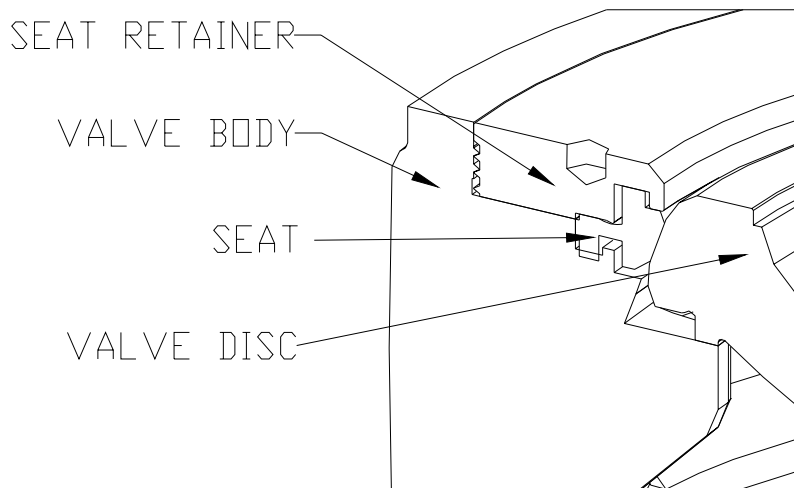
Before attaching a new seat, confirm again that the rust and foreign particles are not attached around the valve seat. Attachment of rust and foreign particles may damage the seat. Remove them with a waste cloth or an air blow.

- a. First, confirm that the valve disc of the valve is in the fully closed position. If not, operate the actuator so that the valve disc comes to the fully closed position.
- b. Insert the seat to the seat-mounting groove. The seat is somewhat floating because there is an interference of the seat (Fig. 3).



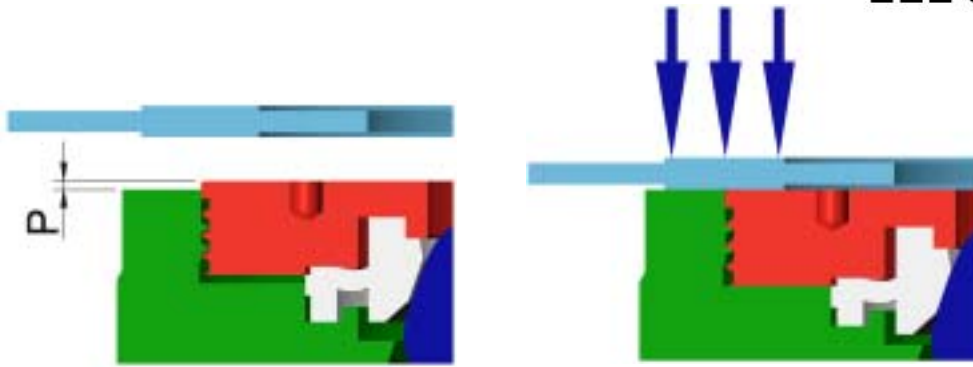
**Fig. 3**

- c. Insert the seat retainer to the mounting groove for the seat retainer. Due to the same reason as b, the seat and the seat retainer is somewhat floating (Fig. 4).



**Fig. 4**

- d. Turn and tighten the retainer clockwise.
- e. Since our new design of fixing the retainer, it's a normal condition when the retainer was tightened, and there is a gap less than 1mm between valve face and retainer face.



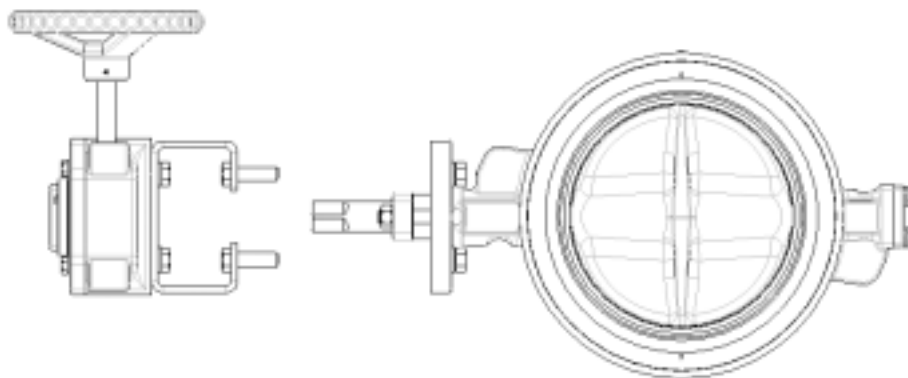
**Fig. 5**

- f. Slightly open the valve to 10 degrees then tighten the retainer ring again.
- g. Operate the actuator again to bring the disc to the fully closed position before mounting to the piping.

2.2 Observe the following procedure for the replacement of the gland packing

A. Disassembling

Firstly, loosen the bolts which fixed the actuator and the body, and then remove the actuator. If the actuator is too heavy to carry, use a chain block (Fig. 6).



**Fig. 6**

a. Remove the gland bush

If it is difficult to remove, lift up the gland bush slightly using a driver and then pull out the gland bush from the valve stem (Fig. 7).

However, since the structure of the gland part varies depending on



the valve models, please refer to the "Assembly drawing" as for the details.

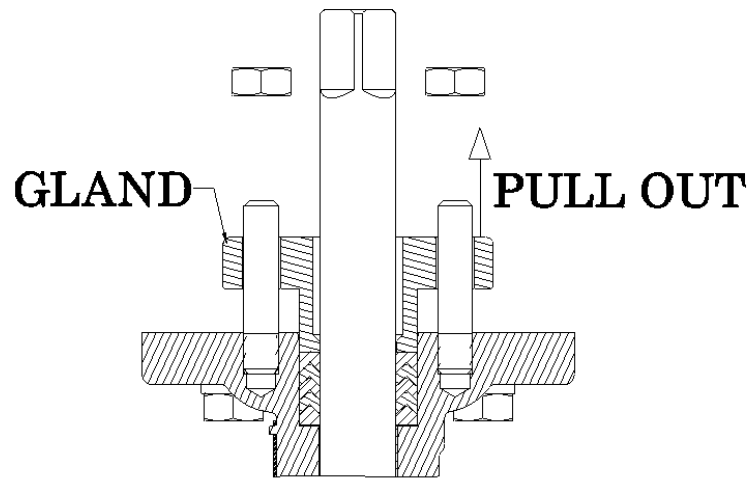


Fig. 7

- b. In case the gland packing is made of Teflon, after having pulled out the gland bush, remove the packing using a packing hook (packing puller). Always remove all the packing. When removing the packing, care should be taken so as not to damage the surface of valve shaft and stuffing box where the packing are attached.
- c. Clean the stuffing box and the valve shaft with waste cloth.

**B. Fitting Procedure**

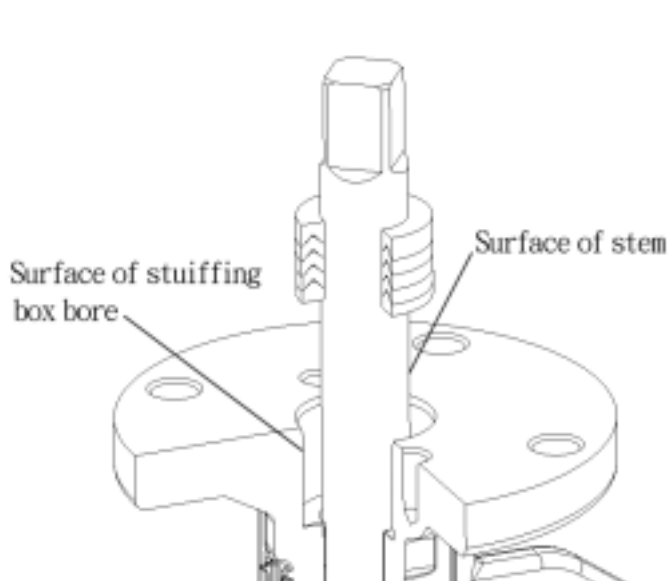


Fig. 8

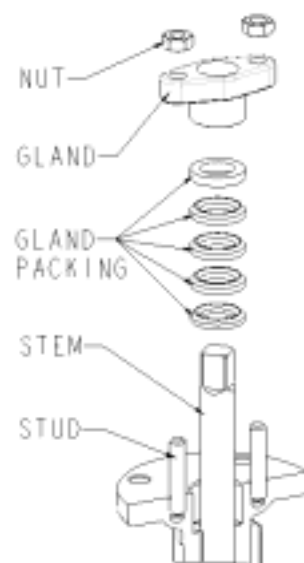


Fig. 9

Normally the gland packing is made of Teflon is a V-shape molded product, insert from the top of the valve shaft one by one. Apply grease for Teflon in order not to damage the gland packing.

Note:

1. Push the gland bush each time the gland packing is inserted into the stuffing box.
2. Always replace all the gland packing.
3. Insertion of the gland packing is; first place the base of the packing and then V-shaped packing one by one as shown in the Fig 8 and Fig. 9.
4. If the valve was in vacuum service then the V-shaped packing has to be inserted up-side-down like "V".

### TROUBLES AND COUNTERMEASURES

Troubles	Causes	Countermeasures
Leak from the seat	The fully closed position of the seat is not correct	Adjust the fully closed position of the stopper (in case of the electric motor type, re-adjust the position limit)
	A foreign particle is caught in the seat.	Check inside of the valve and remove the foreign particle.
	The seat is worn out or damage	Replacement of the seat.
Leak from the gland	The gland packing set was loose.	Re-tighten the gland bolts.
	The gland packing is worn out or damaged.	Replace the gland packing set.
Leak from the bottom cover.	Bottom cover gasket is worn out or damaged.	Replace the bottom cover gasket.
Leak from the gasket of the flange	The gasket is worn out or damaged.	Replace the gasket
Operation is not smooth	A foreign particle is attached or caught in the seat	Disassemble the seat to check and remove the foreign particle.

Note: As to the troubles other than mentioned above, please contact us for overhaul, etc.

