

GRS

Installation, Operation and Maintenance

USER MANUAL



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GRS

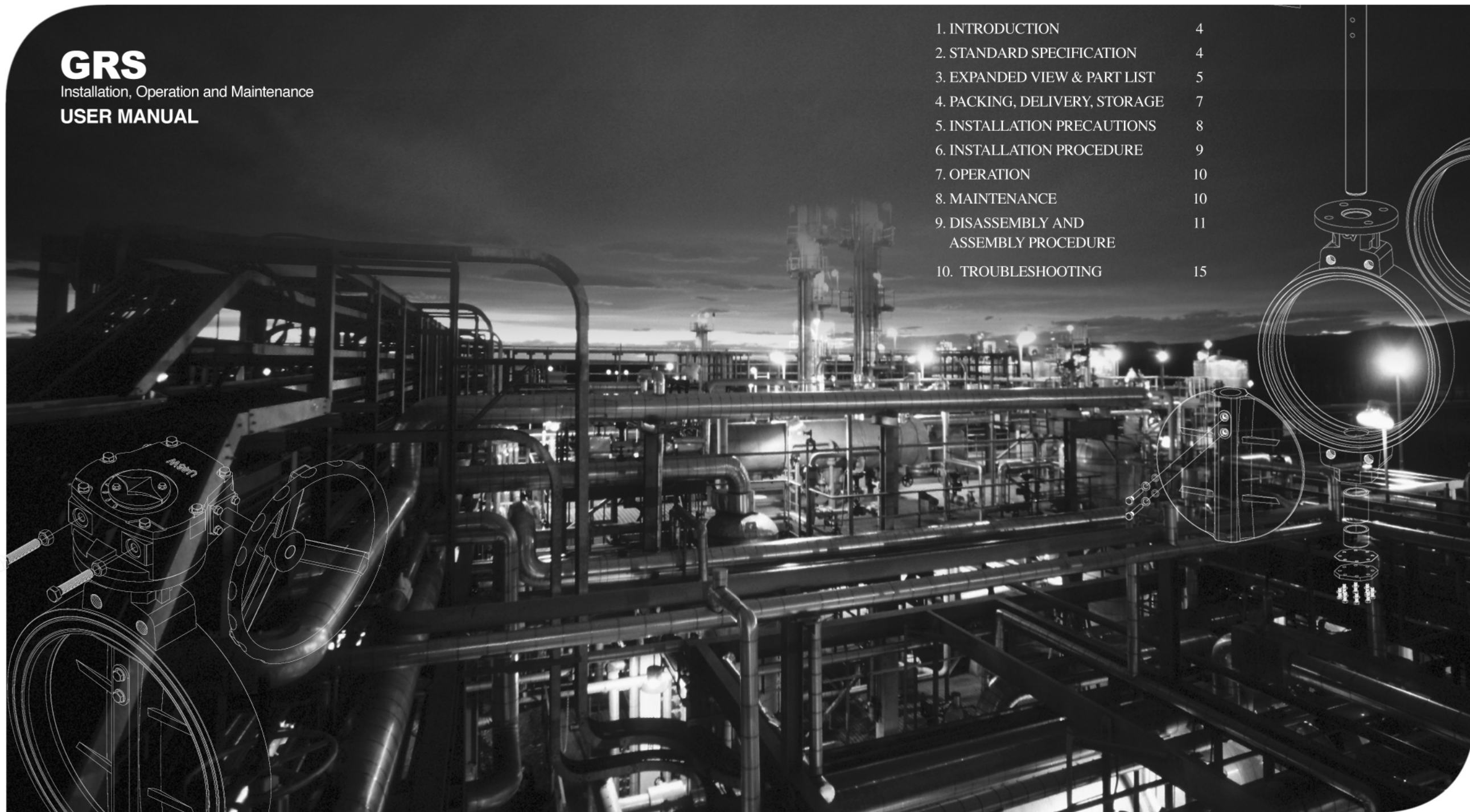
Installation, Operation and Maintenance

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1. INTRODUCTION

This document should be made available to personnel responsible for standard usage of Rubber seated Butterfly Valves "GRS 10, GRS 16".

Refer to the applicable bulletin for information regarding materials of construction and product limitation.

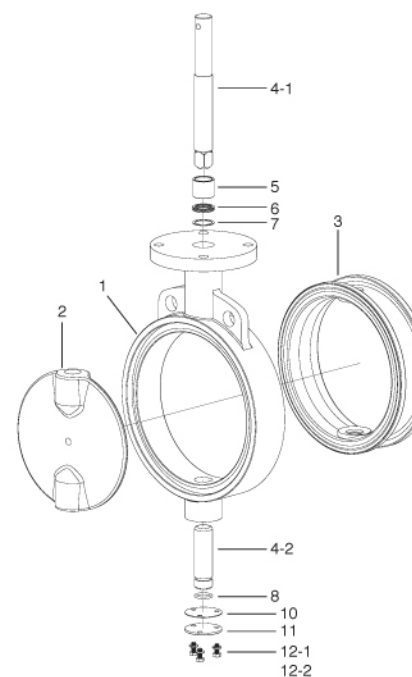
Please read this manual thoroughly in order to ensure correct use of the product.

2. STANDARD SPECIFICATION

Model Type		GRS 10	GRS 16
Rating		ANSI Cl. 150 / JIS 10K / PN10	ANSI Cl. 150 / JIS 16K / PN16
Size		2in ~ 40in	2in ~ 24in
End Connection		Wafer Type, Lugged Type	
Face-to-Face Dimensions		API 609 / DIN3202(K1) / ISO 5752 / MSS SP67	
Max Working Pressure		10 kg/cm ²	16 kg/cm ²
M A T E R I A L	Body	A126 Cl B A395 / A536 A216 Gr WCB A351 Gr CF8 / CF8M	
	Disc	A351 Gr CF8 / CF8M / CF3 / CF3M A217 Gr CA15 B148 MONEL	
	Seat	NBR EPDM VITON CR	
	Stem	A276 Tp 304 / 316 / 410 / 420 17-4 PH MONEL	
Manual Actuator		Lever Handle (2in ~ 6in) Worm Gear (2in ~ 40in)	Lever Handle (2in ~ 6in) Worm Gear (2in ~ 24in)

3. EXPANDED VIEW & PART LIST

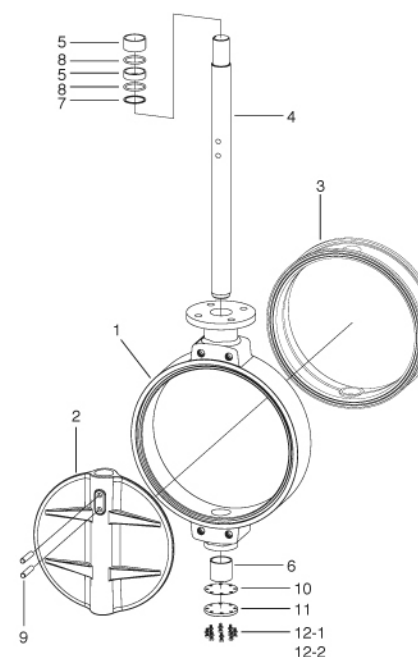
GRS 10 | 50mm to 300mm



No.	Description	Q'ty	Remark
1	Body	1	
2	Disc	1	
◆ 3	Rubber Seat	1	
4-1	Upper Stem	1	
4-2	Lower Stem	1	
5	Bush	1	
◆ 6	X-Ring	1	
7	Retainer	1	
◆ 8	O-Ring	1	
10	Gasket	1	
11	End Flange	1	
12-1	Hexagon Bolt	3	
12-2	Spring Washer	3	

※The ◆ Indicates recommended spare parts.

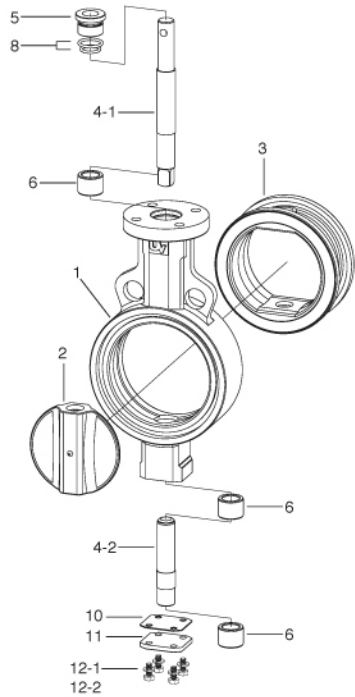
GRS 10 | 350mm to 1000mm



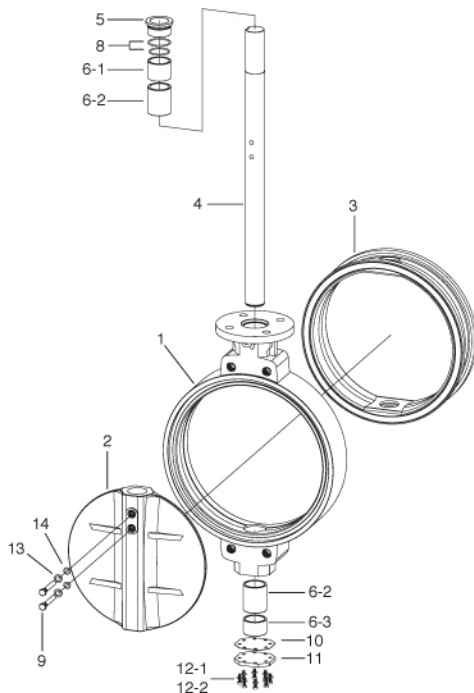
No.	Description	Q'ty	Remark
1	Body	1	
2	Disc	1	
◆ 3	Rubber Seat	1	
4	Stem	1	
5	Upper Bush	1	
6	Lower Stem	1	
7	Retainer	1	
◆ 8	O-Ring	1	
9	Disc Pin	1 set	
10	Gasket	1	
11	End Flange	1	
12-1	Hexagon Bolt	8	
12-2	Spring Washer	8	

※The ◆ Indicates recommended spare parts.

GRS 16 | 50mm to 200mm



GRS 16 | 250mm to 600mm



No.	Description	Q'ty	Remark
1	Body	1	
2	Disc	1	
◆ 3	Rubber Seat	1	
4-1	Upper Stem	1	
4-2	Lower Stem	1	
5	Bush	1	
◆ 6	X-Ring	1	
7	Retainer	1	
◆ 8	O-Ring	1	
10	Gasket	1	
11	End Flange	1	
12-1	Hexagon Bolt	3	
12-2	Spring Washer	3	

※ The ◆ Indicates recommended spare parts.

No.	Description	Q'ty	Remark
1	Body	1	
2	Disc	1	
◆ 3	Rubber Seat	1	
4	Stem	1	
5	Upper Bush	1	
6	Lower Stem	1	
7	Retainer	1	
◆ 8	O-Ring	1	
9	Disc Pin	1 set	
10	Gasket	1	
11	End Flange	1	
12-1	Hexagon Bolt	8	
12-2	Spring Washer	8	

※ The ◆ Indicates recommended spare parts.

4. PACKING, DELIVERY, STORAGE

PACKING

- ▶ The plastic protective plate is attached to the flange face of the valve body (piping flange contact surface) to prevent damage to the seat face, disc edge, or butterfly valve interior.
- ▶ The valve is kept open about 10 degrees from its closed position when shipped.

DELIVERY

- ▶ The content of the delivery is listed in the consignment note. Completion of the delivery has to be checked immediately on receipt.

STORAGE

- ▶ Valve should be stored indoors with face protectors intact. Temperature should preferably be 5°C... to 30°C.... If outdoor storage is necessary, the valve should be wrapped in plastic and stored high enough so that it will not be immersed in water or buried in snow.
- ▶ When valves are stored for a long time, open and close the valve once every 3 months.
- ▶ Store valves so that no heavy loads are applied to the bodies.



It is strictly forbidden to store heavy materials on the valve package.

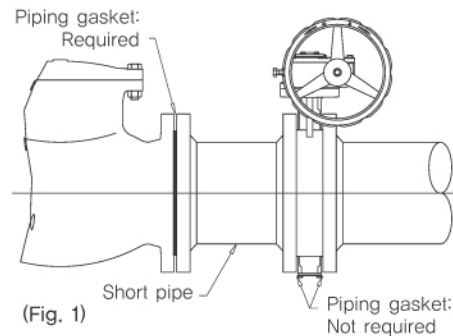
5. INSTALLATION PRECAUTIONS

- 1) When tack welding will be done, remove the bolts and the valve from the pipe flanges and complete the welding of the flanges. Be sure to let the pipe and flanges cool before installing the valve.

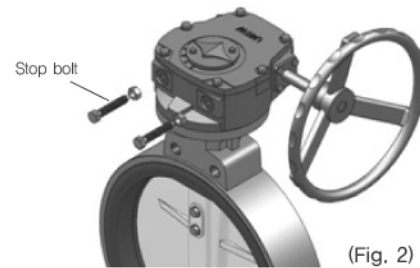


Never complete the welding process (after tacking) with the valve between pipe flanges. This causes severe seat damage due to heat transfer.

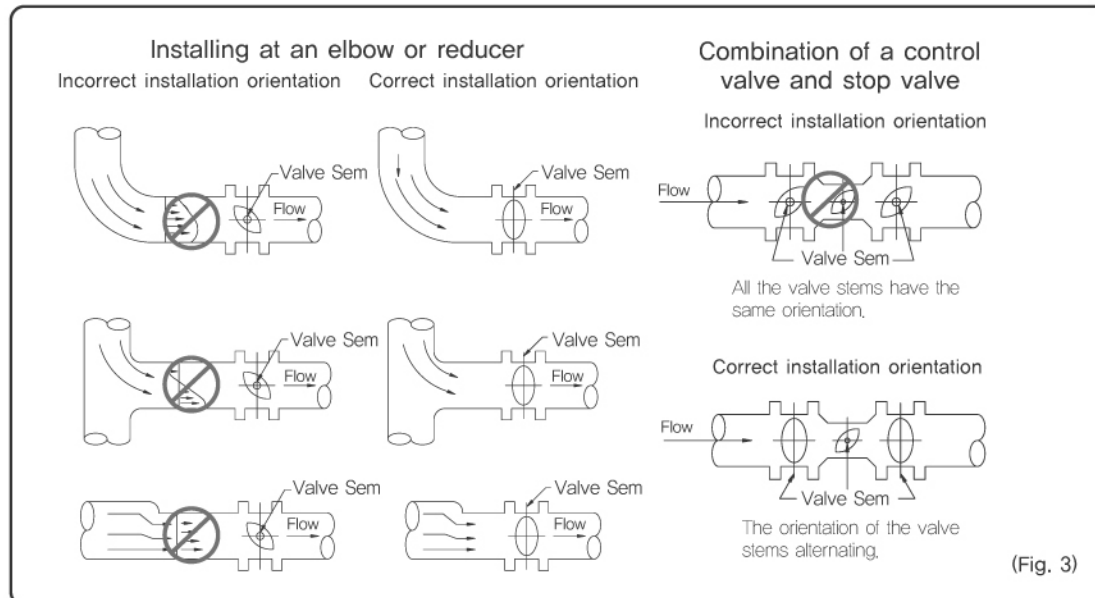
- 2) A piping gasket is not required. The UNICOM rubber seat has molded o-ring on the face of the seat. As a result, no gaskets are required as these o-rings serve the function of a gasket. (Fig. 1)
- 3) When the butterfly valve is connected to a check Valve or pump, use a short pipe or an expansion joint between them to ensure the disc does not interfere with the adjacent equipment. (Fig. 1)
- 4) Do not touch the stop bolts on the gear box. Changing the valve close position will cause valve seat leakage. (Fig. 2)
- 5) Butterfly valves should be installed, if possible, minimum of 6 pipe diameters from the other line elements, i.e., elbows, pumps, valves, etc. Of course, 6 pipe diameters are not always practical, but it is recommendable to have a such distance. (Fig. 2)
- 6) Valve orientation
Be careful of the stem direction when piping conditions are as shown in Fig. 3.



(Fig. 1)



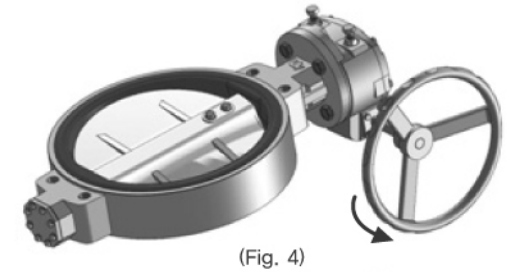
(Fig. 2)



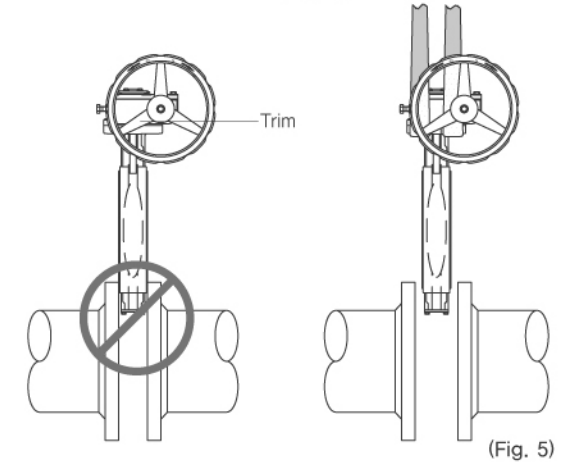
(Fig. 3)

6. INSTALLATION PROCEDURE

- 1) Make sure the pipeline and pipe flange faces are clean. Any foreign material such as pipe scale, metal chips, welding slag, welding roads, etc., can obstruct disc movement or damage the disc or seat.
- 2) During installation or removal, check to see that the valve disc has been positioned to a partially open position, with the disc edge about 1/4" to 3/8" from the face of the seat, approximately 10° open. (Fig. 4)
- 3) Align the piping and then spread the pipe flanges a distance apart so as to permit the valve body to be easily dropped between the flanges without contacting the pipe flanges. (Fig. 5)
- 4) Insert the valve between the flanges as Fig. 5. Taking care not to damage the seat faces. Always pick the valve up by using a nylon sling on the neck of the body. Never pick up the valve by the actuator or operator mounted on top of the valve. (Fig. 5)



(Fig. 4)

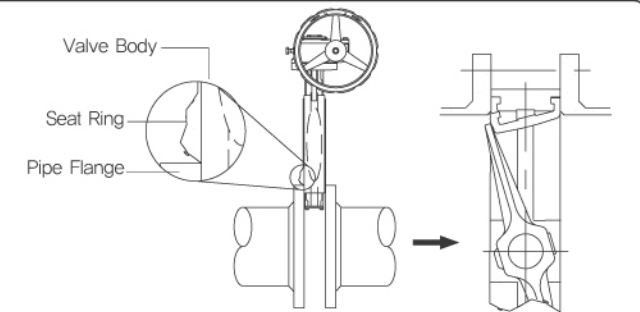


(Fig. 5)

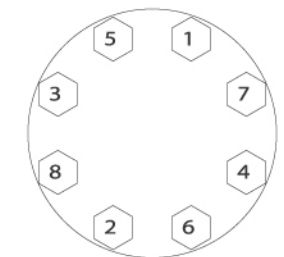


WARNING!

Insert as shown in the diagram, taking care to avoid damaging the seat ring faces of the valve. If the valve is forcibly pushed between the piping edges, the seat ring will be damaged and leakage will result



- 5) Place the valve between the flanges, center it, and then span the valve body with all flange bolts, but do not tighten the bolts. Carefully open the disc to the full open position, making sure the disc does not touch the adjacent pipe I.D. And then hand-tighten the flange bolts as shown in Fig. 6.
Very slowly close the valve disc to ensure disc edge clearance from the adjacent pipe flange I.D. Now open the disc to full open and tighten all flange bolts per specification as shown in Fig. 6. Finally, repeat a full close to full open rotation of the disc to ensure proper clearances.



Recommended Bolt Tightening Sequence (Fig. 6)

7. OPERATION

The valve is classified into a lever handle, manual gear, operated actuator by electronic or pneumatic. The fluid flows through the pipe should be controlled by rotating the disc located at the inside of valve. A quarter turn of the manual operator(lever handle, worm gear) clockwise closes the valve and counter clockwise fully opens the valve.



WARNING! Opening and closing operation of the lock lever type and worm gear type must be done by hand. Do not use a pipe on the lever or a long wrench on the gear handle. Doing so can damage the lever and handle, or break the valve.

8. MAINTENANCE

Maintenance works are recommended for safety and longer lasting lifetime as below.

- ▶ Check up the valve when abnormal sound is perceived during operation.
- ▶ Check up the leak out of the valve and between the body and pipe flange faces.
- ▶ Ensure that tightness of each the bolts/nuts.

1) Seat ring

If it sounds the leakage from inside of the valve after full closing of disc, or if the fluid flows over the drain valve which is equipped at the bottom of piping, then check the seat condition and necessity of the replacement.

2) Actuator (Worm gear box)

If an operator doesn't work properly, then take off the cover of the worm gear box and then grease a worm and gear-teeth.
Check a level of the grease of inner gear box once per year.
Clean regularly to prevent deposited dust on the worm gear box.

3) Re-painting

When the paint peels off during the service, user shall re-paint the part worn out.



CAUTION All the repair works (disassembly and replacement etc.) of valve should be performed by well-trained experts.

After maintenance works, (if any suspected) please call/send us to the under mentioned address.
Please be sure to get advice from trained personnel or service engineer.

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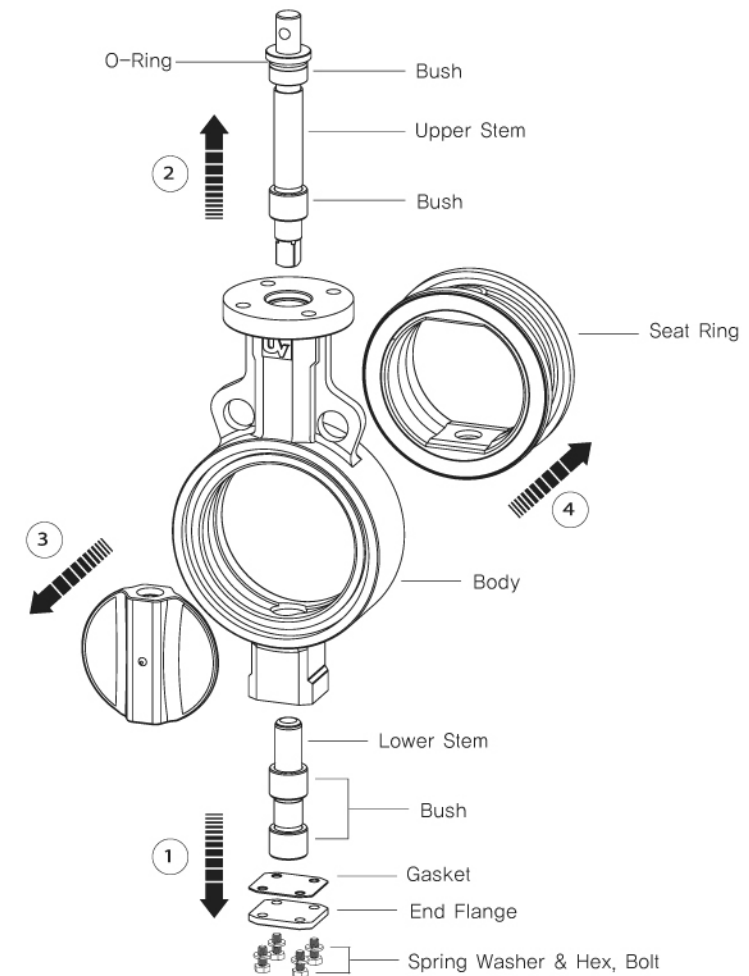
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9. DISASSEMBLY AND ASSEMBLY PROCEDURE

When performing periodic inspection or when trouble has occurred due to a worn or damaged seat ring, refer to the expanded view and follow the steps below to disassemble the valve.

1) Disassembly procedure of Upper/Low Stem type (Fig. 7)

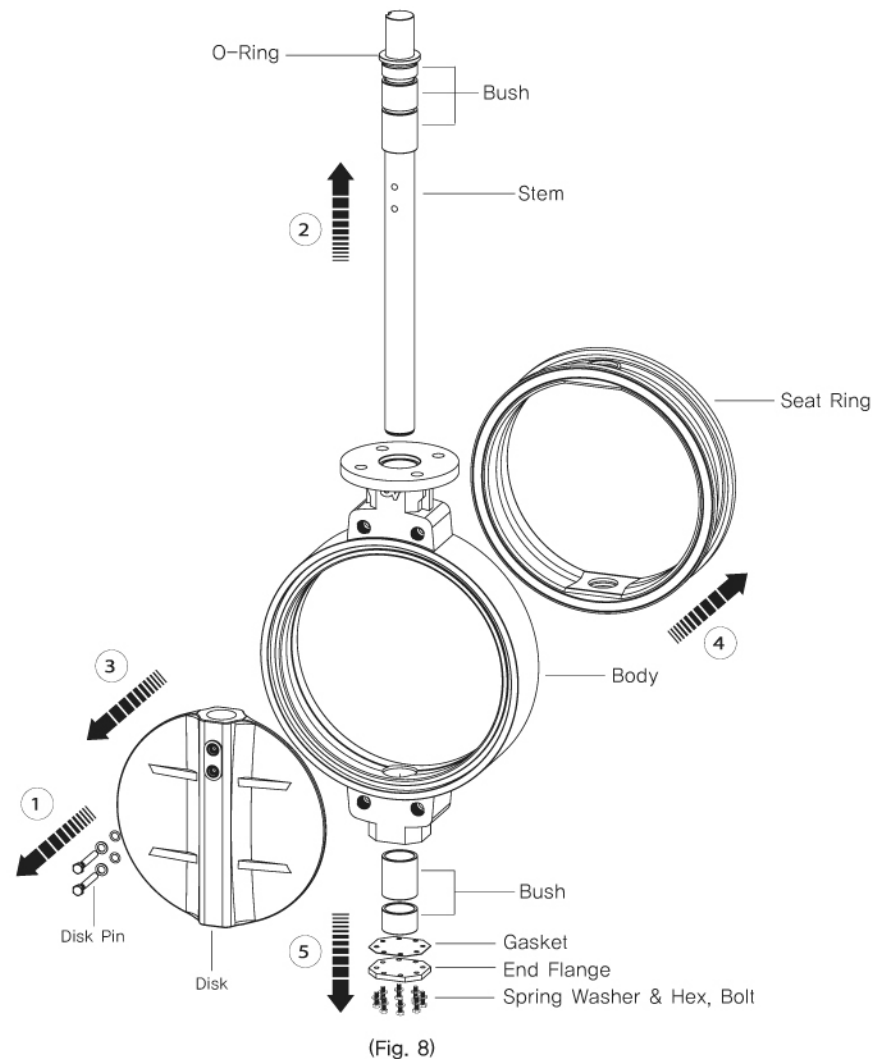
- ① Remove the hex. bolts and spring washers securing the end flange, and remove the end flange and gasket. To remove the lower stem, one hex. bolt removed in the previous step into the threaded hole in the lower stem about 3 to 5 threads, and then pull the hex. bolt to pull out the lower stem.
- ② Pull the upper stem from the body. Remove the bush from the upper stem.
- ③ Push the disc out and remove it from the seat ring, protecting disc edge at all times.
- ④ Insert a flat-blade screwdriver between the outer periphery of the seat ring and the valve body in order to remove the seat ring. Push the seat into an oval shape, then remove the seat from the body.



(Fig. 7)

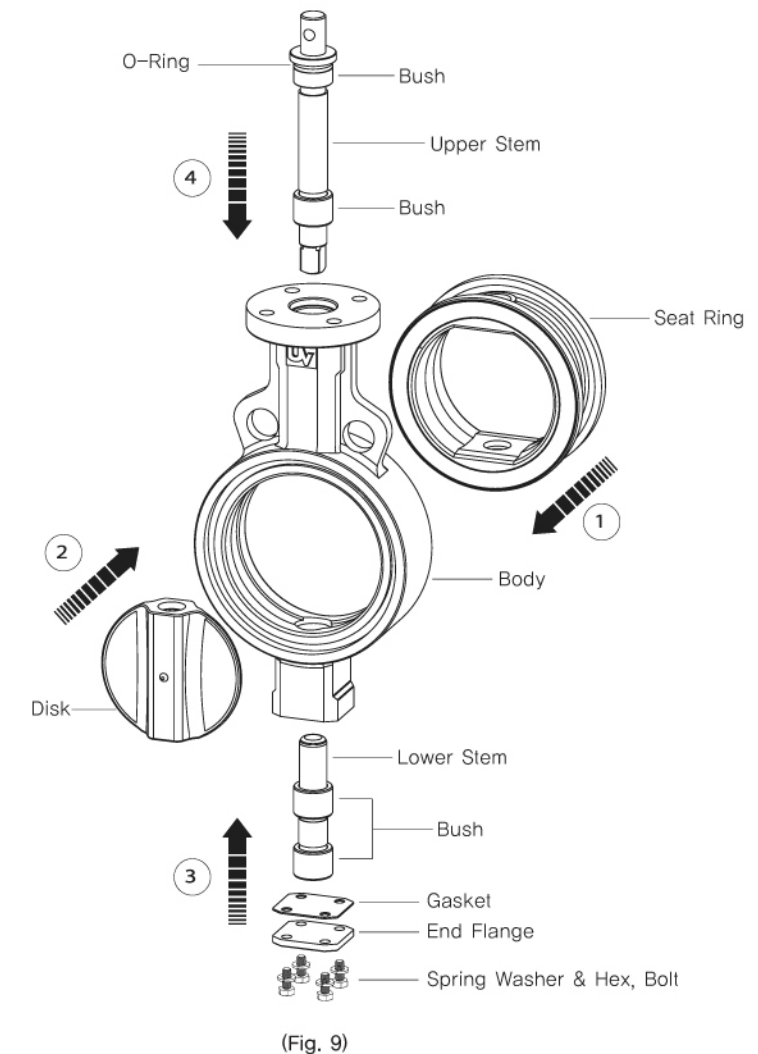
2) Disassembly procedure of One Stem type (Fig. 8)

- ① Remove the disc pin from disc. (Refer to the expanded view)
- ② Pull the stem from the body. Also remove the bush from the stem.
- ③ Rotate the disc 90° so that it is fully open, then push the disc out and remove it from the seat ring, protecting disc edge at all time.
- ④ Insert a flat-blade screwdriver between the outer periphery of the seat ring and the valve body in order to remove the seat ring. Push the seat into an oval shape, then remove the seat from the body.
- ⑤ Remove the hex. bolts and spring washers securing the end flange, and remove the end flange and gasket.



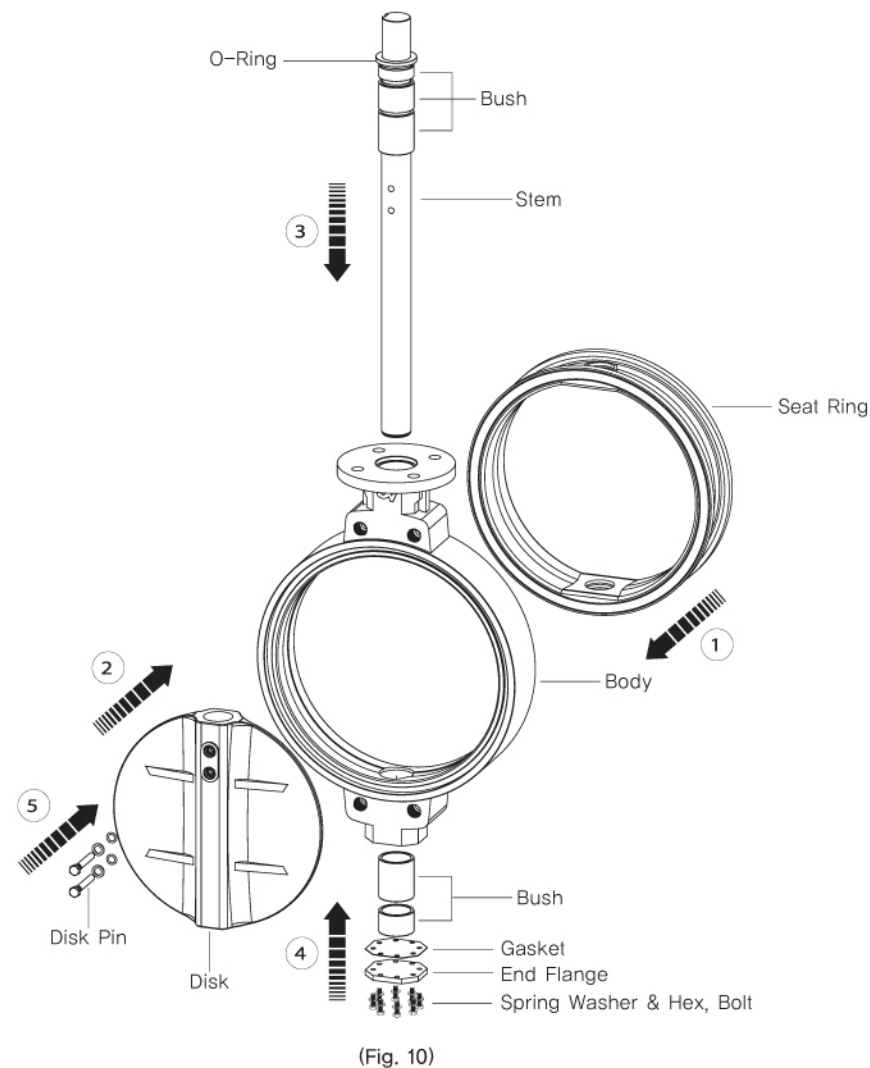
3) Assembly procedure of Upper/Lower Stem type (Fig. 9)

- ① Before assembly, all part should be cleaned. When inserting the seat ring into the valve body, Insert from the bottom side. Make sure that the holes in the seat ring are correctly aligned with the holes in the body.
- ② Apply silicon oil or similar lubricant to inside the seat ring and the disc into the seat ring.
- ③ Insert the bush and lower stem. Apply silicon grease and insert the stem carefully to prevent damage to the hole in the seat ring. Once the stem has been correctly inserted, secure the gasket and end flange to the bottom of the valve body with hex. bolts and spring washers.(Refer to the expanded view)
- ④ Align the disc with the upper stem square, apply sufficient silicon grease to the upper stem, and insert the upper stem and bush. (Refer to the expanded view)



4) Assembly procedure of the One Stem type (Fig. 10)

- ① Before assembly, all part should be cleaned. When inserting the seat ring into the valve body, Insert from the bottom side. Make sure that the holes in the seat ring are correctly aligned with the holes in the body.
- ② Apply silicon oil or similar lubricant to inside the seat ring and the disc into the seat ring.
- ③ Insert the stem. When inserting the stem and bush, apply silicon grease to inside of the bush and insert carefully to prevent damage to the hole in the seat ring.(Refer to the expanded view)
- ④ Insert bush to the bottom of the valve body, apply silicon grease to inside of the bush. Secure the gasket and end flange to the bottom of the valve body with hex. bolts and spring washers.(Refer to the expanded view)
- ⑤ Rotate the stem and verify that the pin holes in the disc and stem aligned. And then insert pin in the hole of the disc.(Refer to the expanded view)



10. TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	COUNTNERMEASURE
Leak between the body and pipe flange Faces.	The piping bolts are loose or they were not tightened evenly.	Loosen the bolts and then re-tighten them
	The flange gasket face is scratched or there is waste material.	Remove the body and clean the flange gasket face. Clean the piping flange gasket face and re-install the valve.
	The valve is misaligned.	Loosen the bolts and re-align the valve correctly.
	Torn or damaged seat ring.	Remove the valve body and check the seat ring for signs of tearing or other damage. If any damage is observed, replace the seat ring.
Leak form the top or bottom of the valve.	The end flange installation bolts are loose	Re-tighten the end flange installation bolts.
	The seat packing is damaged or deteriorated.	Replace the seat packing with a new one.
There is leaking from the valve seat.	There is damage to the disc or seat ring due to the presence of foreign material inside the piping.	Replace the disc seal wrapping and the seat ring.
	Movement of disc in the fully closed position due to loose actuator installation bolts.	Re-adjust the fully closed disc position by re-tightening the installation bolts.
	The disc cannot fully close due to insufficient output from the actuator	Refer to the actuator selection table for correction.
	There is torsion of stem due to an unusual increase in opening/closing torque.	Replace the valve body.
	Wearing of seat ring due to long period of use.	Replace the seat ring.
The valve does not work.	Prescribed actuator air pressure or voltage not being supplied.	Check by using a pressure gauge, tester, or similar.
	By-pass valve is tn the open position.	Close the by-pass valve.
	Insufficient output due to damaged cylinder parts.	If defective parts are suspected, replace them with new parts.
	Erroneous actuator selection.	Refer to the actuator selection table for correction.
	Increased torque due to prsence of foreign material in the piping.	Keep valve in th fully opened position and flush out the foreign material.