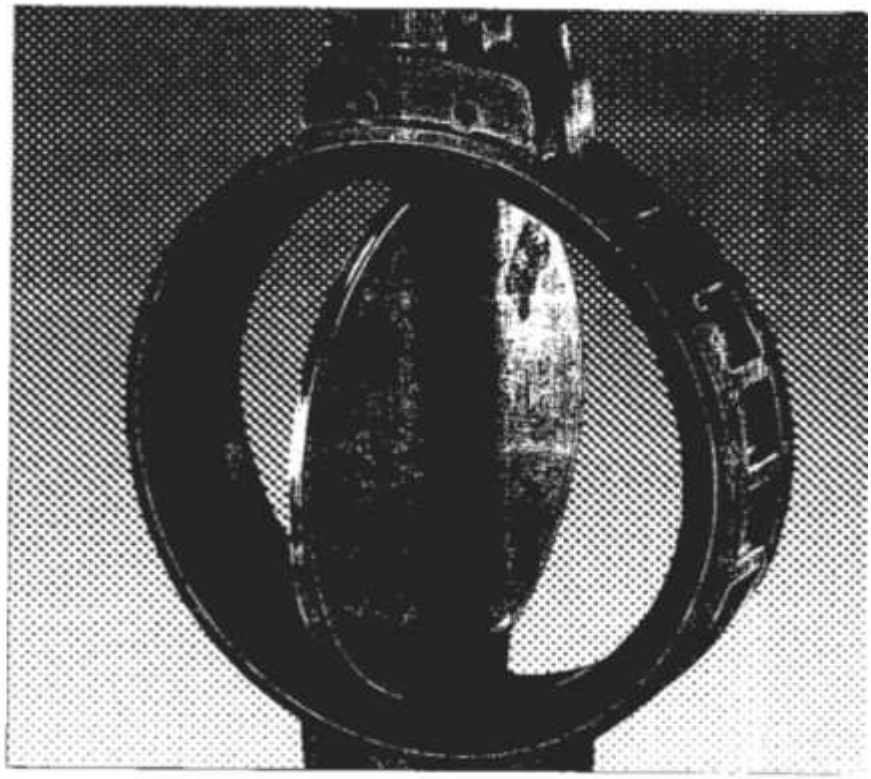
OKM

Butterfly Valves

615

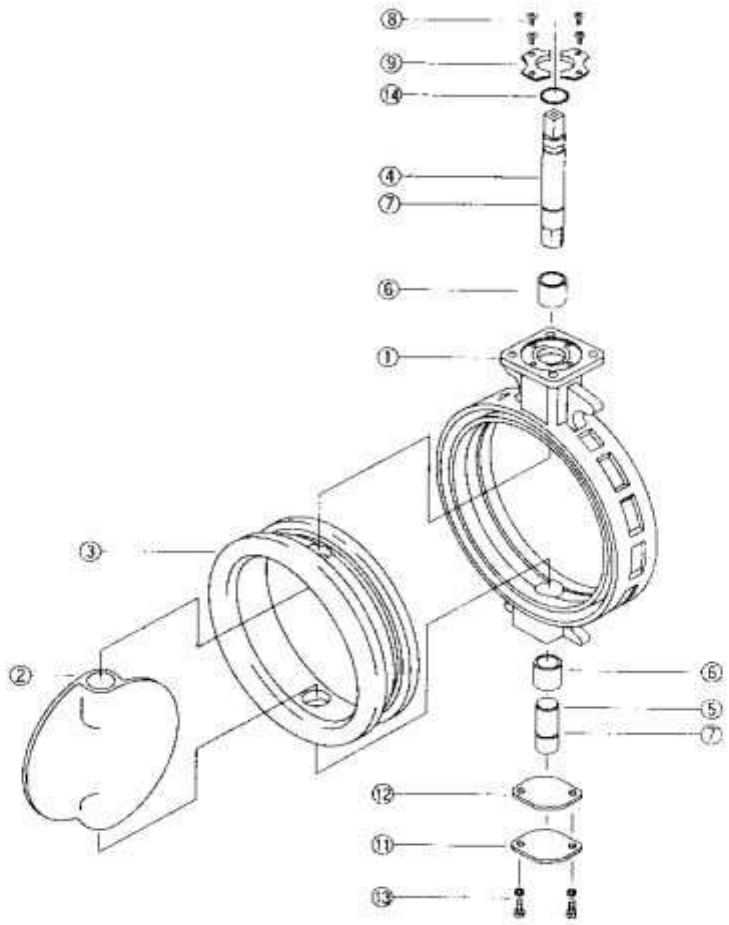


Handling Manual

OKUMURA ENGINEERING corp.

Structural Drawing
(40mm to 300mm)

The Figure Shown : 40mm to 300mm



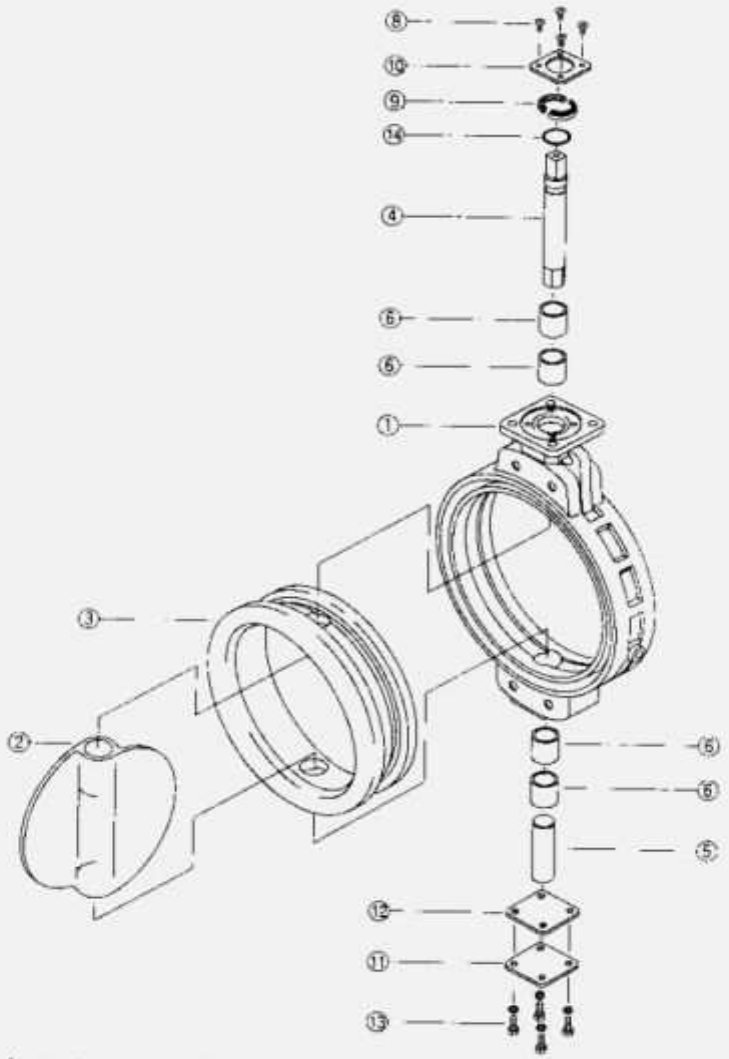
The shape of parts changes according to the valve size.

Fig 1 A

No.	Parts Name	Q'ty	No.	Parts Name	Q'ty
①	Body	1	⑧	Screw	4
②	Disc	1	⑨	Bushing (for securing shaft)	1 set
③	Seat-Ring (lining)	1	⑪	Cover	1
④	Upper Shaft	1	⑫	Gasket	1
⑤	Lower Shaft	1	⑬	Bolt/Spring Washer	1 set
⑥	Bushing	2	⑭	O-Ring	1
⑦	Wire-Ring(40mm to 200mm only)	1 set			

Structural Drawing
(350mm to 600mm)

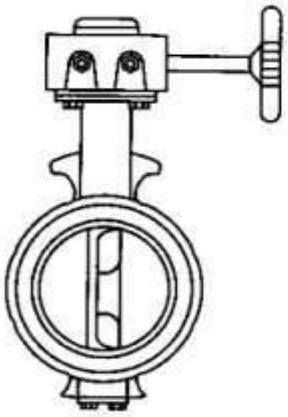
The Figure Shown : 350mm to 600mm



The shape of parts changes according to the valve size.

Fig 1 - B

No.	Parts Name	Q'ty	No.	Parts Name	Q'ty
①	Body	1	⑨	Bushing (for securing shaft)	1 set
②	Disc	1	⑩	Plate (for securing shaft) (350mm to 600mm only)	1
③	Seat-Ring (lining)	1	⑪	Cover	1
④	Upper Shaft	1	⑫	Gasket	1
⑤	Lower Shaft	1	⑬	Bolt/Spring Washer	1 set
⑥	Bushing	4	⑭	O-Ring	1
⑧	Screw	4			



Read This Instruction Manual Carefully Before Using 615 Valve.

This instruction manual shows how to use 615 valve.
The unique "Touch" seat design and multiple sealing structure allows 615 valve to be compact, light, high reliability and high cost-efficiency.
For proper use, be sure to read this instruction manual carefully.

Standard Specification & Materials

Model	**615**
Size	40mm to 600mm
Applicable Flange Standard	JIS 5K, 10K · ANSI125Lb, 150Lb · ISO PN10 others
Max.Service Pressure	0.98Mpa (10kgf/cm²) · 1.56Mpa (16kgf/cm²)
Max. Service Temperature	NBR (0℃ to 80℃) · EPDM (0℃ to 120℃)
Face to Face	Conforms to JIS: 40 to 300mm(1 1/2 to 12inch)(No.46), 350 to 600mm(14 to 24inch)(No.47)

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Stocking, Handling, Un-packing

Protect valve from vibration, dust, sudden rise or fall in temperature.

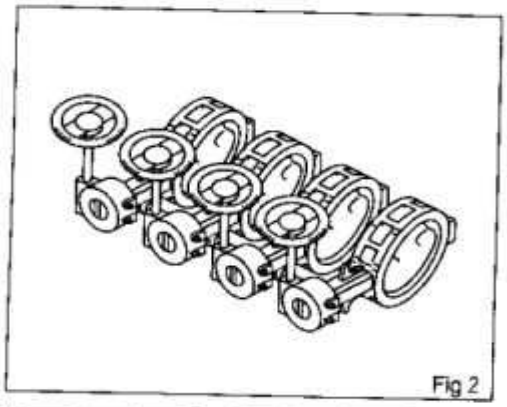


Fig 2

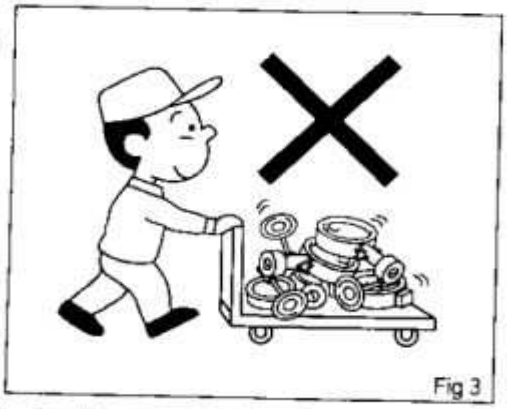


Fig 3

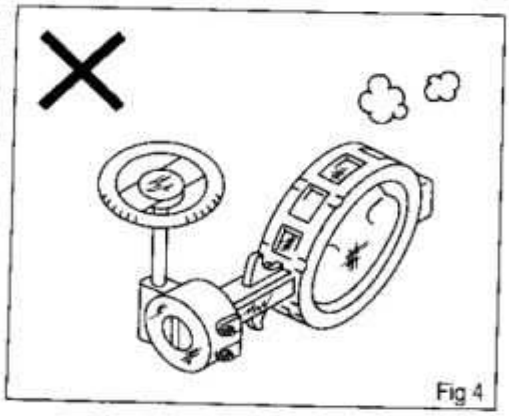


Fig 4

1, Stocking

■**Stocking (packed)** : Valve to be kept/stored indoors under cool and dark condition(temp:-5℃～60℃,humidity less than 70%), if valve not installed to pipings immediately after delivery.

■**Stocking (un-packed)** : When valve to be stored without packing, any excessive force to its actuator part to be avoided. Cover-sheet to be put onto valve at dusty place. (Fig 2)

■**Stocking** : Apply anti-rust to the plated-parts(indicators, bolts nuts worm shafts, etc…) once a year if valve is stored for one year or longer.

2, Handling

■**Cares while handing** : When valve to be kept/stored under packed condition, package(s) to be put on stable place so that collapse of package(s) to be avoided.
Upon carriage, valve to be nicely loaded so that any collapse to valve could be avoided. When valve to be carried after removing packing,excessive force to valve to be avoided and cover-sheet to be put onto valve in dusty-place. (Fig 3)

■**Truckig** : To use a truck with canopy is recommended if possible. Cover valve to prevent dust if a truck with no canopy is used.

■**Shipping (seaborne)** :Use a container for shipping to protect valve from sea breeze. Sea breeze will damage valve.

3, Un-Packing

■**Un-packing** : Un-packing of valve to be recommended before its installation to pipings. If valve stored being unpacked for long, dust or foreign matter will get into the valve. It will cause malfunctions. (Fig 4)

■**Check disc position** : Make sure if valve is in the closed position when package is opened.

Piping Work 1
—Cares Before Installation Valve To Pipings

Clean valve body, flanges, pipings, carefully before installation procedures to pipings.

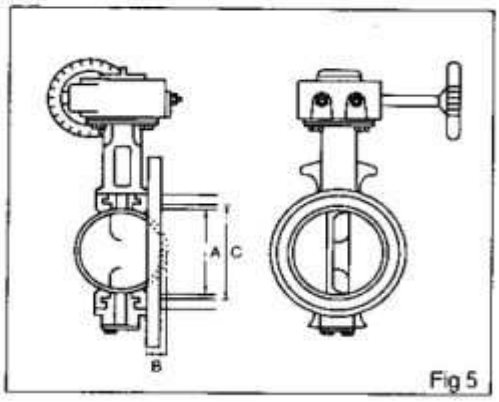


Fig 5

1, Checking Valve Body

■**Check sizes and material of valve** :Sizes & Specifications of Trim Materials are indicated on package and valve, and re-confirmation of sizes/specifications before its installation to pipings is recommended.

■**Check piping sizes** : Check the valve sizes fit the piping sizes. (Fig 5)

■**Check the number and the sizes of bolts.** : Before using bolts and nuts, apply a seizure preventive to bolts and nuts.

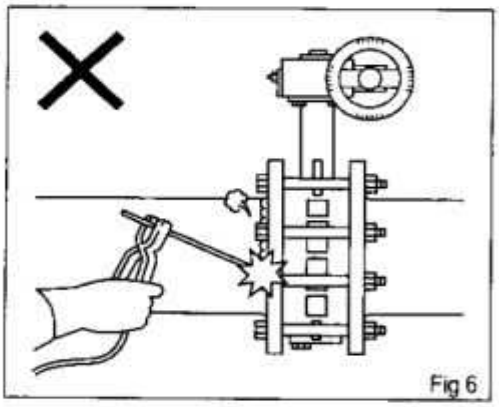


Fig 6

2, Welding Before Installation To Pipings

■**Cares when welding flanges** : Installation of the valve immediately after welding of the flange to be avoided, and installation to be made only after welded-part cooled down.
Welding of flange or reparing works through welding, while keeping the valve installed to pipings, to be avoided.(Fig 6)
Make sure welding work is completely done before installation the valve to the piping. Flanges to check and confirm no deflection or miscenter-alignment of flange and no spatter sticked.

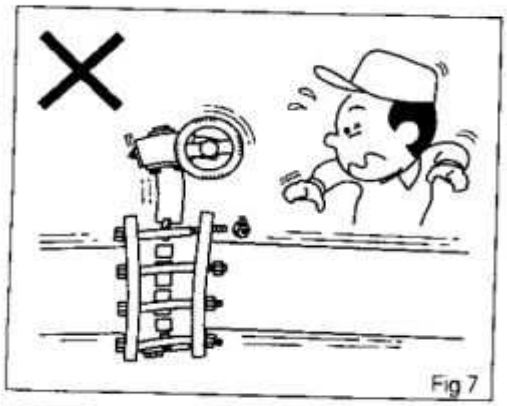


Fig 7

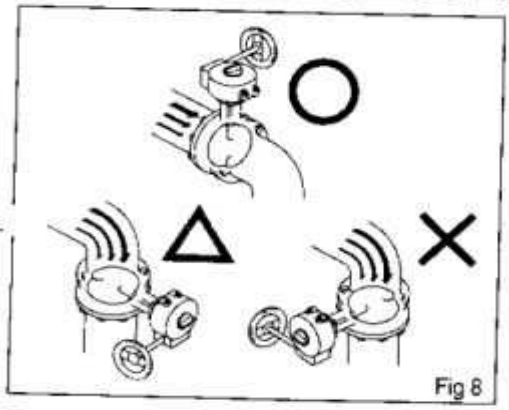


Fig 8

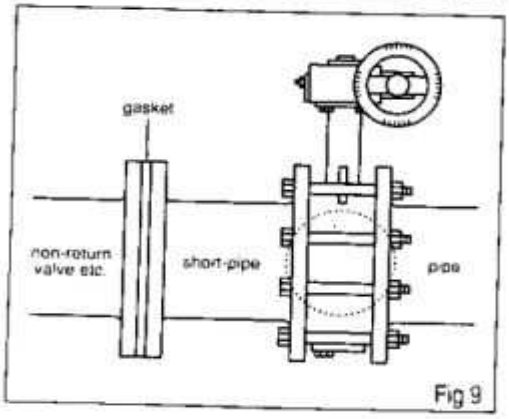


Fig 9

3, Check Piping Flanges

■**Make sure no deflection or damage to pipings** : Make sure no deflection or miscenter-alignment of flanges and no score or spatter sticked. Clean spatter sticked on the edge of the flanges completely in order not to damage the flanges.

■**Cleaning** : Flange surface is to be air-purged for cleaning. If rust or foreign matter is sticking on the surface of the flanges. Wash the surface of the flanges in detergent. After washing, make sure no detergent remains on the seat ring. If detergent remains on the seat-ring, it will damage the seat ring.

4, Cares Before Installation Valve To Pipings

■**Installation place** : Application to heavy-vibrant positions to be avoided.To keep enough space for maintenance work. (Fig 7)

■**Installation work** : Connect the valve and the piping flanges correctly. Forcing the valve to insert between the piping flanges to be avoided.

■**Gasket packing** : No gasket to be inserted between the valve and the piping-flanges.

■**Disc position** : Keep the valve in closed position when installation to the pipings.

■**Installation the valve to a bent pipe** : Upon installation of the valve to the pipings, no definite limitation of direction of the valve being installed but, under such condition as illustrated in Fig 8, direction of stem to be cared.

■**Installation the valve to a return valve, etc**··· : When the valve to be installed directly to return valves, pumps, etc···, there may be cases in which disc touches to other upon its full opening. In this case, short-pipe to be fixed before installation of the valve. (Fig 9)

Piping Work 2
— Cares After Installation Valve To Pipings

Read the procedures shown under carefully.

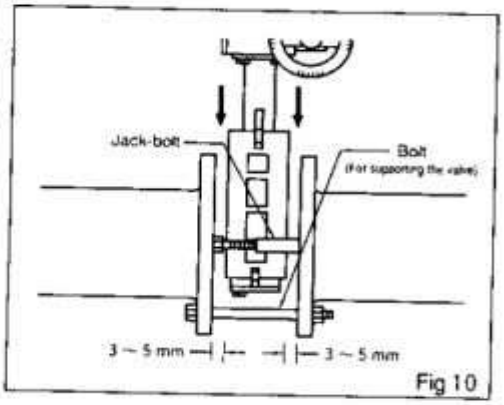


Fig 10

1, Installation Procedures To Pipings

1. **Cleaning** : Remove foreign matter from part of valves touches surface of flanges by air blow.

2. **Check the valve position** : Make sure the disc is in the closed position.

3. **Suspend(Support)the valve** : Insert bolts into the lower flange holes, then put nuts on either side of bolts to support the valve.

4. **Set jack bolts** : Keep space of about 3mm to 5mm between the valve and the flanges on each side. (Fig10)

5. **Insert the valve** : Do not insert the valve between the piping flanges forcefully.

6. **Center the valve to the piping flanges** : Insert bolts into the flange holes to suspend the valve, then center the valve to the flanges accurately.

7. **Tighten up bolts** : After checking the valve connects the flanges accurately, tighten all the piping bolts evenly and diagonally. In doing this, un-balanced fastening among bolts shall be avoided. Fasten the bolts until the piping flanges touch the metal-face of the valve body.

8. **Check the disc movement** : After installation of the valve, operate the valve (from/to open and close) to make sure the disc does not touch any part of the pipings.

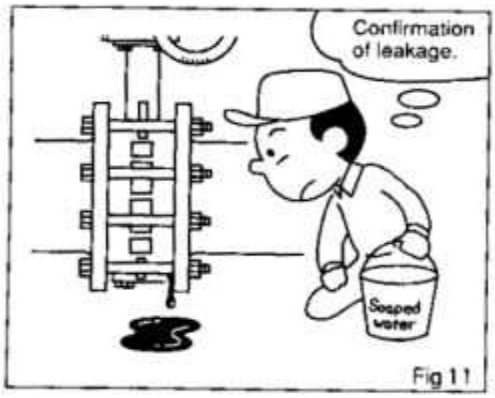


Fig 11

2, Cares After Installation To Pipings

■**Check leakage** : Before operation of the valve, pressure inside the pipings to be raised and to make sure no-leakage between the piping-flanges and the valve. When gas used as fluid, use soaped water for checking leakage. However, pressure inside the pipings not to be raised beyond the valve specifications, and set the disc of the valve in the open position while checking the leakage. (Fig11)

■**In case of leakage** : In case of leakage between the valve and the piping flanges, release the pressure, bolts to be re-fastened well balanced.

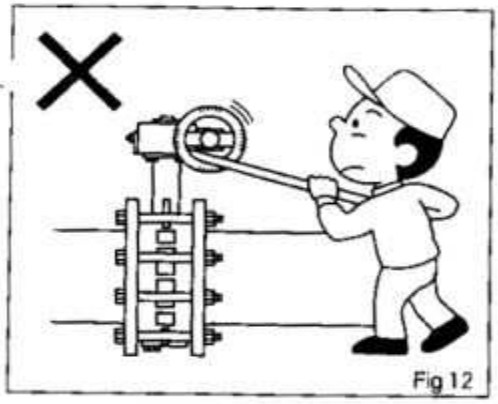


Fig 12

3, Other Points To Be Cared

■**Trial run(Check-up run)** : Operate the valve by manual before operating.

■**Cares while operating the valve with a handwheel** : Be sure to turn the handwheel by the hand. Do not turn the handwheel with a wrentch or lever in order not to cause trouble. (Fig12)

■**Do not use blank flange** : Keep the valve fully opened while pressure test, etc., Do not use the fully closed valve as a blind flange.

Check-up, Maintenance 1
— Periodic Check-up, Removal From Pipings

To maintain high operationability and reliability, periodic check-up and maintenance is recommended.

- For large-size valves, fix the valves by a vise.
- Concerning parts number, refer to page 1 and 2.

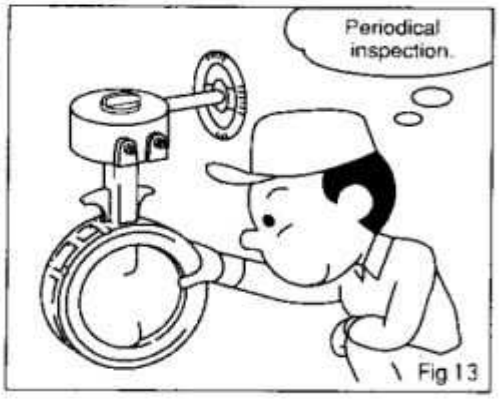


Fig 13

1, Checkup

■**Periodic checkup** : Inspect the disc or seat-ring at least once a year. Make sure no disc is corroded or weared. (Fig 13)

■**Long no use after installation** : If the valve is not to be used for extended periods after installation, open and close it manually or automatically at least once two weeks.

■**Trouble happened** : If valve operates inproperly, foreign matter or damage to seat-ring or something may be of the cause of the problem. Please see the trouble shooting chart shown in P.15.

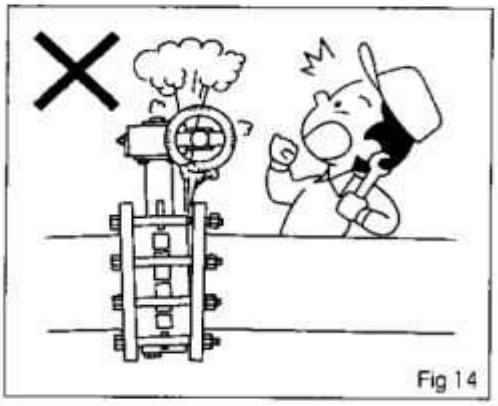


Fig 14

2, Removal From Pipings

■**Check pressure inside pipings before removing the valve from pipings** : When the valve removes from pipings, make sure the pressure inside the pipings is lowered.
In case of fluid remaining inside the pipings, drain it out from the pipings. (Fig14)

■**How to remove the valve from the pipings** : Set the valve in the closed position, then pull out bolts and nuts. In doing this, remain a few bolts and nuts in the lower holes of flanges to support the valve. For easy-removal work, inserting jack bolts is recommended.

Check-up, Maintenance 2
—Disassemble The Valve Body

Refer to the attached structural drawings.

- For large-size valves, fix the valves by a vise.
- Concerning parts number, refer to page 1 and 2.

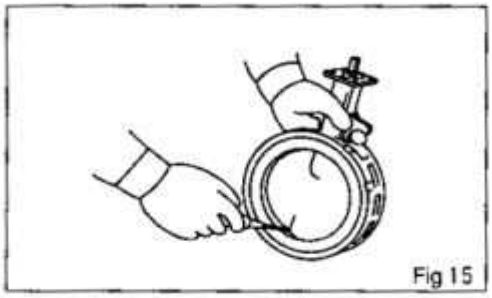


Fig 15

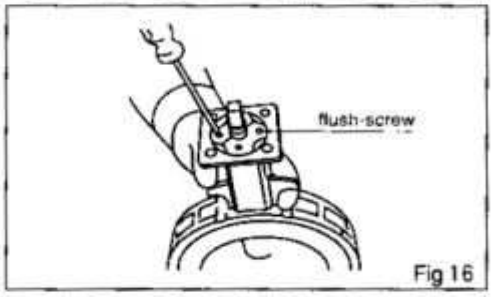


Fig 16

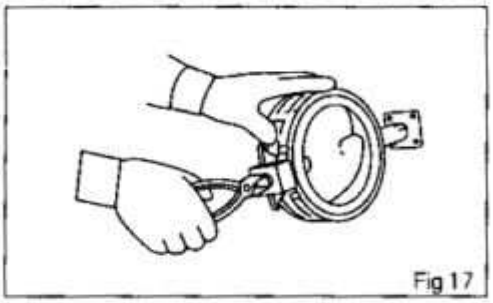


Fig 17

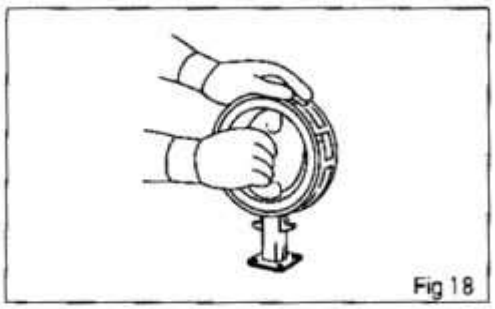


Fig 18

1, How To Disassemble the Valve Body

1. **Discharge air remained inside the pipings** : Air may remains inside the pipings by wear of or damage to the seat-ring. In case of this, the shaft④&⑤may jump out from the valve. To avert this, release the cover bolts⑬ slightly to make sure no air remains inside the pipings. If air remains, discharge air by inserting a regular screwdriver with a round tip between the seat-ring③ and the upper & lower part of the disc②. (Fig15)

2. **Remove the cover** : Fix the valve by a vise, remove hexagonal bolts, spring washer⑭, cover⑪, gasket⑫ from the valve body①.

3. **Remove the screw⑧** : Remove the plate⑩ securing the upper shaft④ the bushing⑨ and screws⑧ fixing O-ring⑮. When screws⑧ removed, to avert air remaining in the shaft hole, loosen the screw⑧ gradually. (Fig16)
   ※The valves, 40 to 300mm have no plate⑩.

4. **Remove the lower shaft** : Use the hexagonal bolt⑬ which fixed the cover. Screw the hexagonal bolt into the thread of the lower shaft⑤, then pull the hexagonal bolt⑬, so the lower shaft⑤ comes out with the hexagonal bolt⑬. (Fig17)

5. **Remove the upper shaft** : Fix the head of the upper shaft④ by a vise, then, draw the valve body, so the upper shaft comes out.

6. **Remove the disc** : First, lay soft-cushion underneath to protect the valve. Set the disc in almost fully open position. Push out the disc with it twisting. (Fig18)

Check-up, Maintenance 3
--Valvere Assembly

Refer to the attached structural drawings.

- For large-size valves, fix the valves by a vise.
- ConcerNing parts number, refer to page 1 and 2.

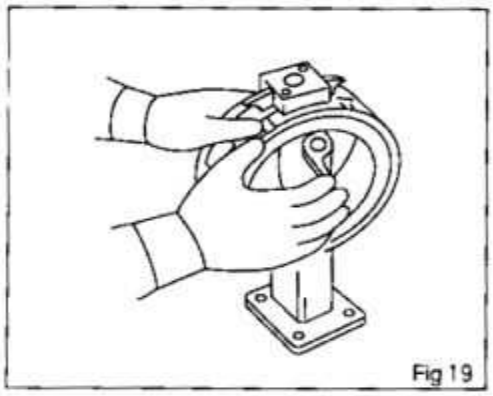


Fig 19

1, Valvere Assembly Procedures

1. **Check parts** : Before start of re-assembly procedures, to make sure all components are ready in reference to construction drawing, and also to cofirm no damage to all components. If damage found, replacement of such component to be made.

2. **Replace parts** : Replacement of O-ring⑱, gasket⑰ etc. used once is recommended even though no damage is found on these components.

3. **Clean parts** : To clean all conponents being re-used and to make sure no dust sticking on components. Do not wash seat -ring in detergent.

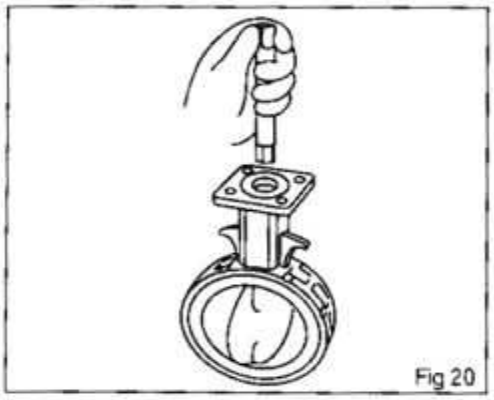


Fig 20

4. **Insert the disc** : Apply silicone oil to the disc②, then, insert the disc② into the rubber-lined valve body. (Fig19)

5. **Insert the lower shaft** : Center the disc② and the upper shaft hole of the body. Insert the bushing⑥, and the lower shaft⑤ to the shaft of the body. In doing this, apply grease to the seat-ring and the shaft.

6. **Insert the upper shaft** : Center the disc② and the upper shaft hole of the body. Insert the upper shaft④ and connect the bushing⑥. (Fig20)

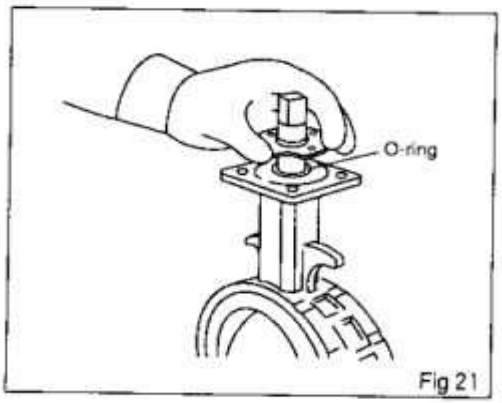


Fig 21

7. Insert O-ring : From the top of the valve, fit the O-ring⑭ to upper shaft④, and apply silicone oil to O-ring, then, fit the bushing⑨ to the groove provided on upper shaft (Fig21)

8. Fasten screws : Insert the upper shaft into the hole with the bushing⑨ holding by the hand. Set the plate⑬ , then fasten the screws⑧.

※The valves, 40 to 300mm have no plate⑬

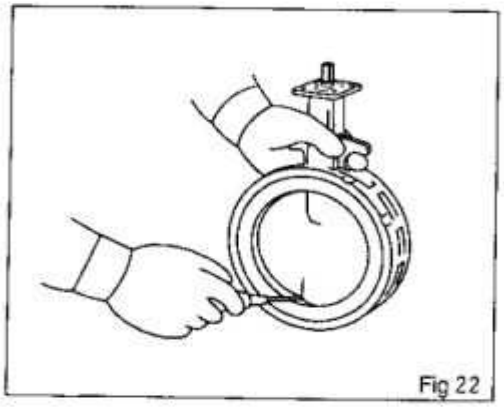


Fig 22

9. Discharge air from the valve : After the screw⑧ fastened, discharge air pooled between the valve body① and the seat-ring③ with flat-face screw driver, etc··· (Fig22)

10. Set the gasket and the cover : Set the gasket⑫ and the cover ⑪. For protecting the valve, set the valve in closed position.

Check-up, Maintenance 4
—— Actuator Removal

Refer to the attached structural drawings.

- For large-size valves, fix the valves by a vise.
- Concerning parts number, refer to page 1 and 2.

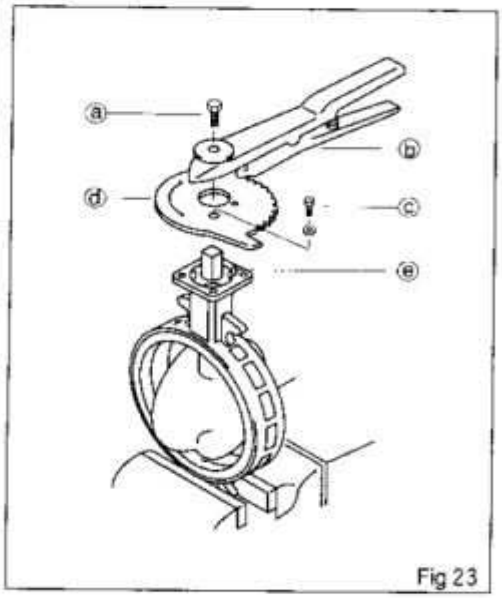


Fig 23

1, How To Removal The Actuator From The Valve

Fix the valve body by a vise before disassembling the valve.

1. Lever operation type (Fig 23)

1. **Remove the upper bolts** : Remove the bolt ⓐ fixing the name plate to the lever ⓑ.
2. **Remove the lever** : Grip the lever and remove it from the valve.
3. **Remove the indicator** : Remove the two bolts fixing the indicator ⓓ. Then, hitting pin ⓔ by a plastic-headed hammer to remove the pin from the indicator.

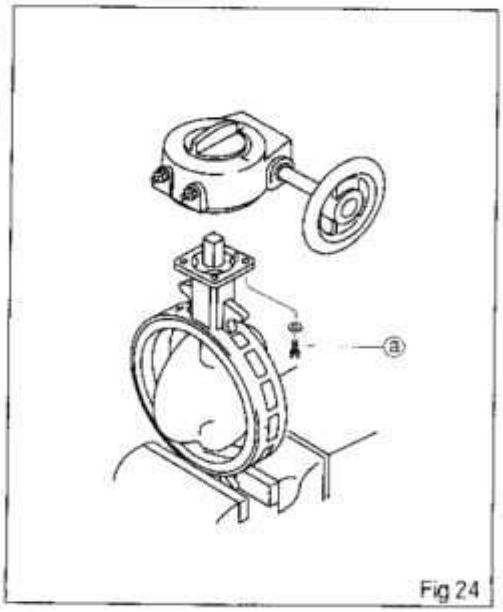


Fig 24

2. Gear operation type (Fig 24)

1. **Remove the bolts** : Remove the bolt ⓐ fixing the gear operator from the body.
2. **Remove the actuator** : Lift the gear operator and remove it from the body.

※ For air-cylinder or electric motor type valve, contact your OKM sales representative.

Check-up, Maintenance 5
— Actuator Setting

Refer to the attached structural drawings.

- For large-size valves, fix the valves by a vise.
- Concerning parts number, refer to page 1 and 2.

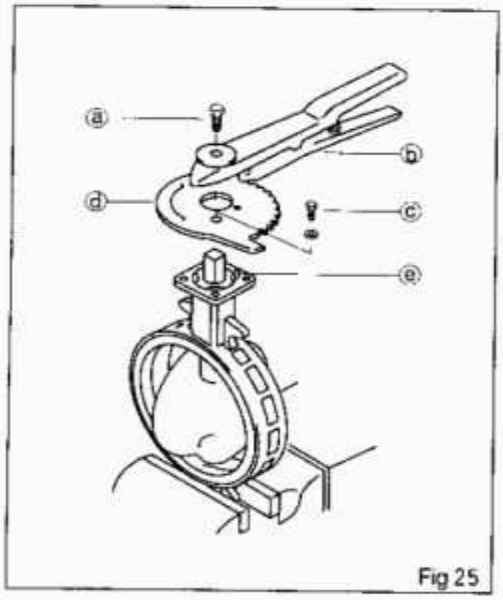


Fig 25

1, How To Set The Actuator On The Valve

Fix the valve body by a vise before disassembling the valve.

1. Lever operation type (Fig 25)

1. **Check the disc position** : Open the valve fully.
2. **Fix the indicator** : After inserting the pinⓔ into the hole on the valve neck, put the indicatorⓓ through the pinⓔ Then, fix the indicator to the valve body by two boltsⓒ
3. **Set the lever** : Set the leverⓑ to the letter [S] marked on the indicator. Then, fix the name plate to the indicator by boltⓐ
4. **Check the disc movement** : Turn the lever to make sure if the lever can operate smoothly and the nose of the lever can point at graduation on the indicatorⓓ accurately After checking the above(lever position), keep the valve in almost fully closed position.

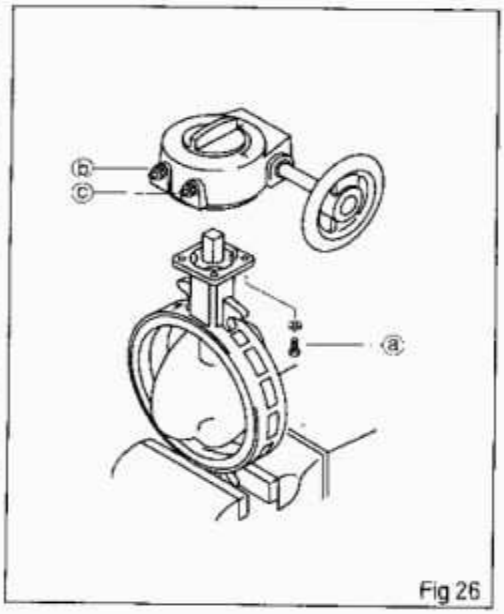


Fig 26

2. Gear operation type (Fig 26)

1. **Check the disc position** : Open the valve fully.
2. **Check the gear position** : Keep the valve fully opened by turning the handwheel.
3. **Set the actuator** : Connect and fix the gear operator to the upper shaft with four boltⓐ
4. **Opening or closing adjustment**

[How to set Opening point] Release lock nutⓑ tighten the adjustment bolt until it slightly stops, then, quarter-turn the adjustment bolt, tighten the lock nutⓑ

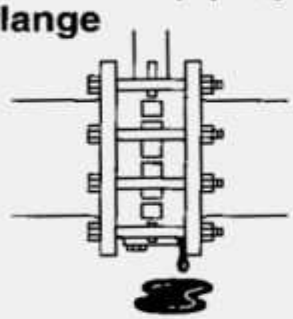
[How to set closing point] Release lock nutⓒ open the valve fully by turning the handwheel after checking the disc touches the rubber seat fully, tighten the adjustment boltⓒ until it slightly stops, then,quarter-turn the adjustment boltⓒ tighten the lock nutⓒ

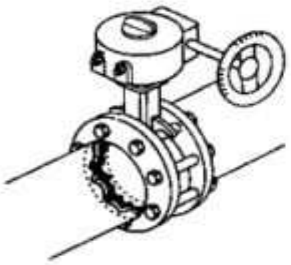
5. **Check the valve** : Make sure if the valve can operate smoothly by turning handwheel. After checking, keep the valve in almost closed position.

※For air-cylinder or electric motor type valve, contact your OKM sales representative

Trouble shooting
--For Valve Body Trouble

In case of trouble, refer to trouble shooting chart.

Trouble	Possible Cause	Remedy
Leakage between valve and piping-flange 	Un-balanced fastening of piping-bolts	Bolts to be once loosened and to be re-fastened well balanced
	Dirty or scored the surface of the flange	Remove the valve and check the flange and clean it
	The valve is not being centered on the piping flanges	Loosen bolts and centering is required
Valve not to be operated or not to be operated smo-othly 	Something plugs the pipings	Substances to be flew away keeping valve on full -open position, or to be removed with valve to be once removed from pipings
	In case of actuated type (pneumatically or electric-ally), supply-source not to be as per requirement	Confirmation of supply-source with pressure guage or tester
	Mis-piping or wiring for supply-source	Set the valve in right direction
	Damaged seat ring (Damaged valve body,etc···)	Remove the valve check the damaged part and replace it

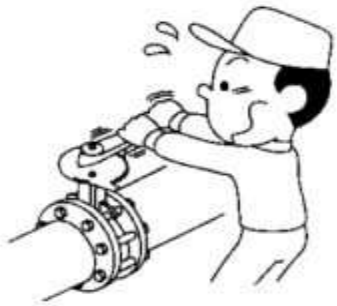
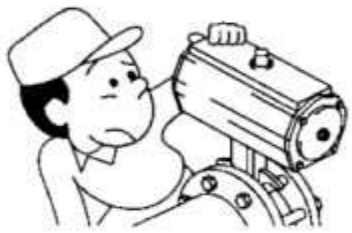
Trouble	Possible Cause	Remedy
Leakage from seat inside pipings 	Weared seat-ring	Replace the seat-ring
	Operation beyond the designated fluid or specifications	Check the specifications
	Damaged disc, foreign matter sticked	Remove the valve check the disc remove foreign matter
	Subject to corrosive fluid	Choose valve whose material is suitable for the fluid consult OKM sales representative
	Subject to incorrect assembly or adjustment	Adjust the closing point

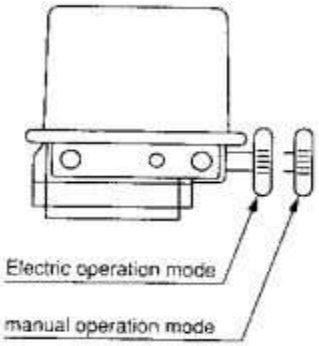
※Consult OKM sales representative if problem occurs.

Trouble shooting — For Actuator Trouble

In case of trouble, refer to trouble shooting chart.

●Actuator shape changes according to its size.

Trouble	Possible Cause	Remedy
Lever or gear operation type (No operation, non-easy operation) 	Mismatch the pipe size and valve size	Replace the valve with correct one in size
	The disc toches the pipe	Put spacer or short-pipe (see p.6)
	Wrong with actuator	Check the actuator
	Operation beyond valve specification	Check the specification
Cylinder operation type (No operation, non-easy operation) 	Shortage of operational air pressure	Keep the specified operational air pressuer 0.39 to 0.68 Mpa (4 to 7 kgf/cm²)
	Leakage inside the piping something plugs the piping	Clean or repair the piping

Trouble	Possible Cause	
Electric operation type (No operation) 	The handle set in manual operation mode	Set the handle in electric operation mode
	The power is being off	Turn on power
	Wrong selection of electric supply	Check the electric supply
	Wrong wiring	Check the actuator rewire it

※Consult OKM sales representative if problem occurs.