
KITZ

Operation Manual

For

XJ TYPE BUTTERFLY VALVE

(WAFER TYPE)

Thank you for having chosen KITZ products.

For safe and trouble-free function and performance of the product, make sure to read and understand all items of this manual before valve mounting and operation.

Keep this manual in a convenient place for your valve operators' easy access.

This manual applies to the KITZ manual XJ type butterfly valve of wafer type.

For electric or pneumatic valve operation, refer to the operation manual of relevant valve actuators prepared by the manufacturers.

CAUTION AND WARNING

To ensure safe and trouble-free function and performance of the product, please read all items of this manual before handling, mounting and operation of the units.

The items listed here are indicated to prevent personal injury and product damages.

Please follow the cautions described here.

The signal words "WARNING" and "CAUTION" are defined as follows:



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury and product damages.



Indicate prohibition of an action.



Indicate mandatory implementation of an action.

NOTES TO USERS

This manual is designed to show an appropriate usage of products for transportation, storage, installation, operation and maintenance.

Ensure to read the manual before starting any of transportation, storage, installation, operation, maintenance, and handling valves. Also ensure to read the operation manual (No. D36) enclosed with the product in the package.

This manual does not cover the whole scope of conceivable usage of products for transportation, storage, installation, operation and maintenance. If technical assistance beyond the scope of this manual is required, contact KITZ Corporation or its distributors.

The specifications for transportation, storage, installation, operation and maintenance described in this manual have been determined with valve maintenance taken into consideration. DO NOT use products beyond the specifications.

The illustrations given in this manual do not introduce all details. If more detailed data are required, refer to our relevant valve assembly drawings.

* Any information provided in this operation manual is subject to revision at any time without notice. This edition cancels all previous issues.

C O N T E N T S

	Sheet
I Construction and Design Features	1
II Valve Operation Device	6
III Transportation and Storage of Valves	9
IV Valve Installation	12
V Valve Operation	16
VI Periodic Inspection	20
VII Disassembly and Reassembly of Valves	24

CHAPTER I

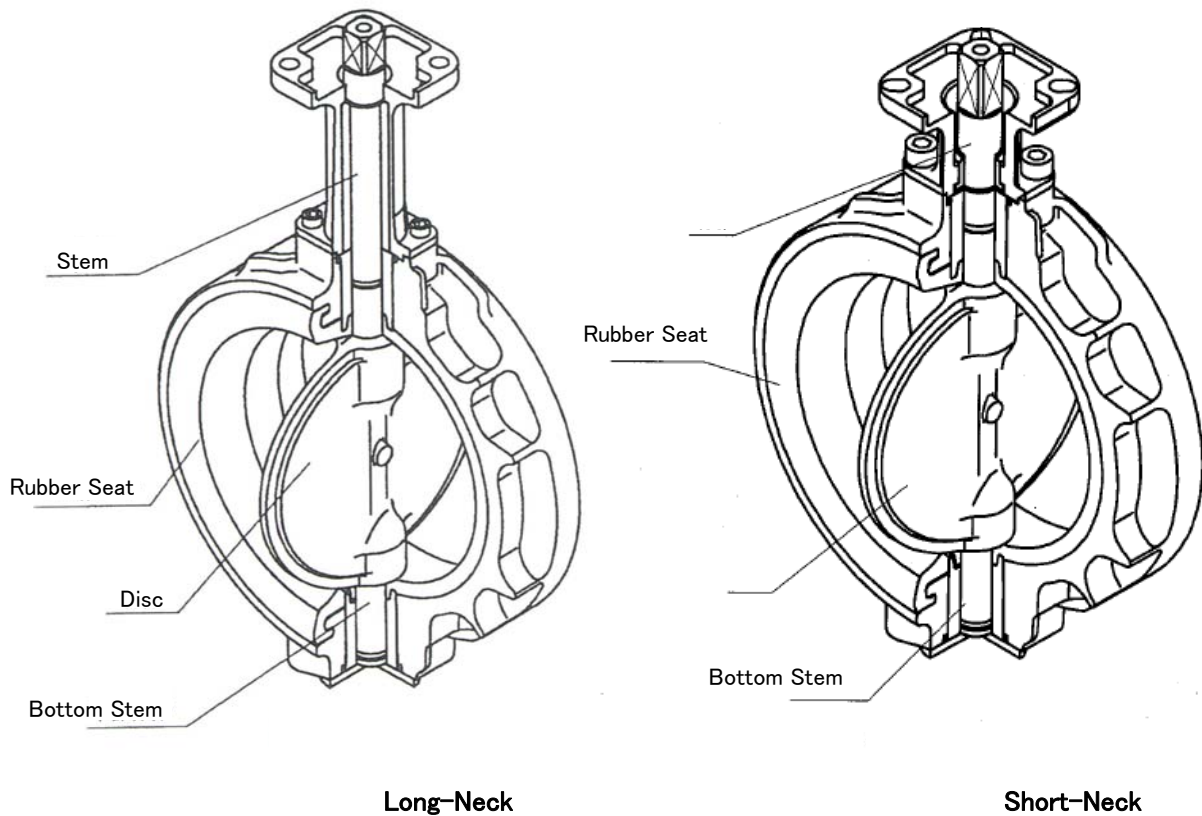
Construction and Design Features

I Construction and Design Features

XJ Butterfly Valves

1. Construction and Function

- 1.1 The valve design and the name of the parts are shown below.
- 1.2 90° rotation of the stem opens and closes the valve.
- 1.3 Butterfly valve is serviceable in fully open, closed and intermediate position for volume control.
- 1.4 XJ type butterfly valve has center drive mechanism.
- 1.5 The bi-directional flow is available for butterfly valve.



I Construction and Design Features

2. General Feature

2.1 Selectable Neck Design

Neck design can be selected from 2 types of long and short as required.

2.2 Interchangeability to JIS Products

It complies with JIS B 2032 standardized for butterfly valve. It should be interchangeable to the JIS standard existing butterfly valve. And gear-operated valve complies with public building operation, too. (nominal diameter 50~300A)

2.3 Improved Operability

Light body of aluminum alloy die-casting is made alignment easy.

2.4 Supportable to Various Fluid

Stainless-steel (SCS14A) disc and EPDM seat are provided as standard items which are applicable to various fluids. (But EPDM seat can't be used for oil.)

2.5 Stable Operating Torque

Application of bearing prevents the stem galling and realizes stable operating torque.

2.6 Easy Mounting of Various Actuators

Actuator mounting flange complies with ISO 5211, so actuators can be mounted directly to the valve body.

2.7 High Performance of Condensation Prevention

The longneck type is provided with condensation preventive system. Heat insulation work at gear will be unnecessary and condensation will be prevented at chilled water line. (as for gear-operated valve.)



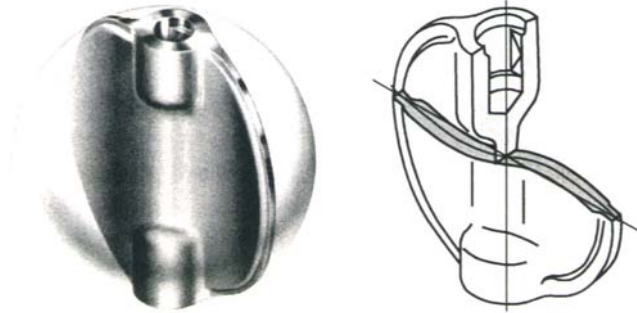
[Rubber Seat]

Improved stability by rib-reinforced spherical surface seat

- ① Wide seal valve seat: High-performance wide seal structure is adopted.
- ② Rib-reinforced seat: Providing rib in rubber seat prevents misalignment from the position and separation caused by friction to the disc or load of fluid.
- ③ Stem seal: Stabilized sealing performance by thrusting into bearing..
- ④ Flange seal surface (no need for gasket)

I Construction and Design Features

[S Shape Valve Disc]



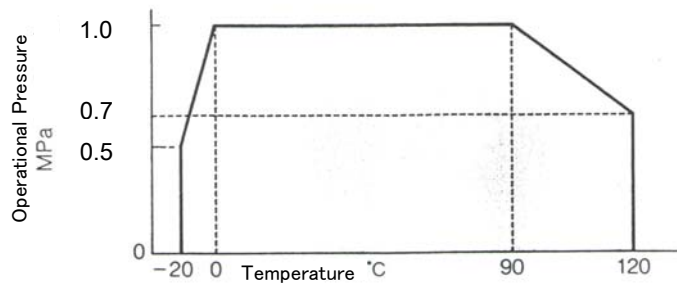
Spherical disc and it contacts the seat internal evenly

3. Valve Specification and Pressure-Temperature Rating

3.1 Valve Specification

- 3.1.1 Maximum allowable pressure: 1.0 MPa
- 3.1.2 Service temperature range: from 20°C to +120°C
(See PT chart for more details)
- 3.1.3 Continuous operation fluid temperature range: from 0°C to +100°C
- 3.1.4 Face to face dimension: JIS B 2032 (46 series)
- 3.1.5 Shell test pressure (hydrostatic): 1.5 MPa
- 3.1.6 Seat test pressure (hydrostatic): 1.1 MPa

3.2 Pressure-Temperature Rating. (P-T Rating)

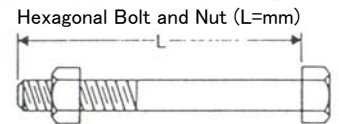


I Construction and Design Features

4. Size and Number of Mounting Bolt and Nut

JIS 10K

Valve Size		No.	Nominal Size	Length (L)
mm	inch			mm
40	1 1/2	4	M16	85
50	2	4	M16	95
65	2 1/2	4	M16	105
80	3	8	M16	105
100	4	8	M16	110
125	5	8	M20	120
150	6	8	M20	125
200	8	12	M20	130
250	10	12	M22	150
300	12	16	M22	160



5. Minimum Inside Diameter of Applicable Pipes

Never apply the pipes with smaller inside diameter than the figures shown in the following table. That will cause unwanted contact of the valve disc with the pipe ends.

Valve Size		Pipe Inside Dia.
mm	inch	mm
40	1 1/2	28
50	2	30
65	2 1/2	50
80	3	70
100	4	90
125	5	116
150	6	144
200	8	194
250	10	244
300	12	292

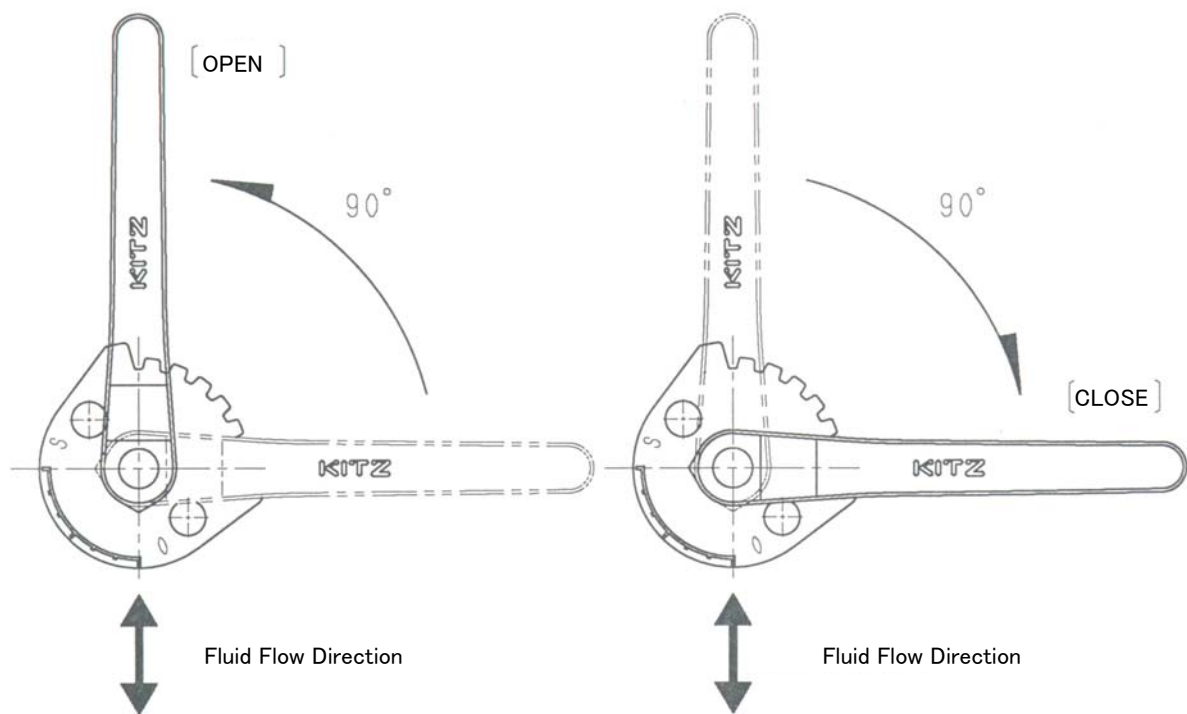
CHAPTER II
Valve Operation Device

II Valve Operation Device

1. Lever Handle Type

1.1 The lever handle is directly mounted on the valve.

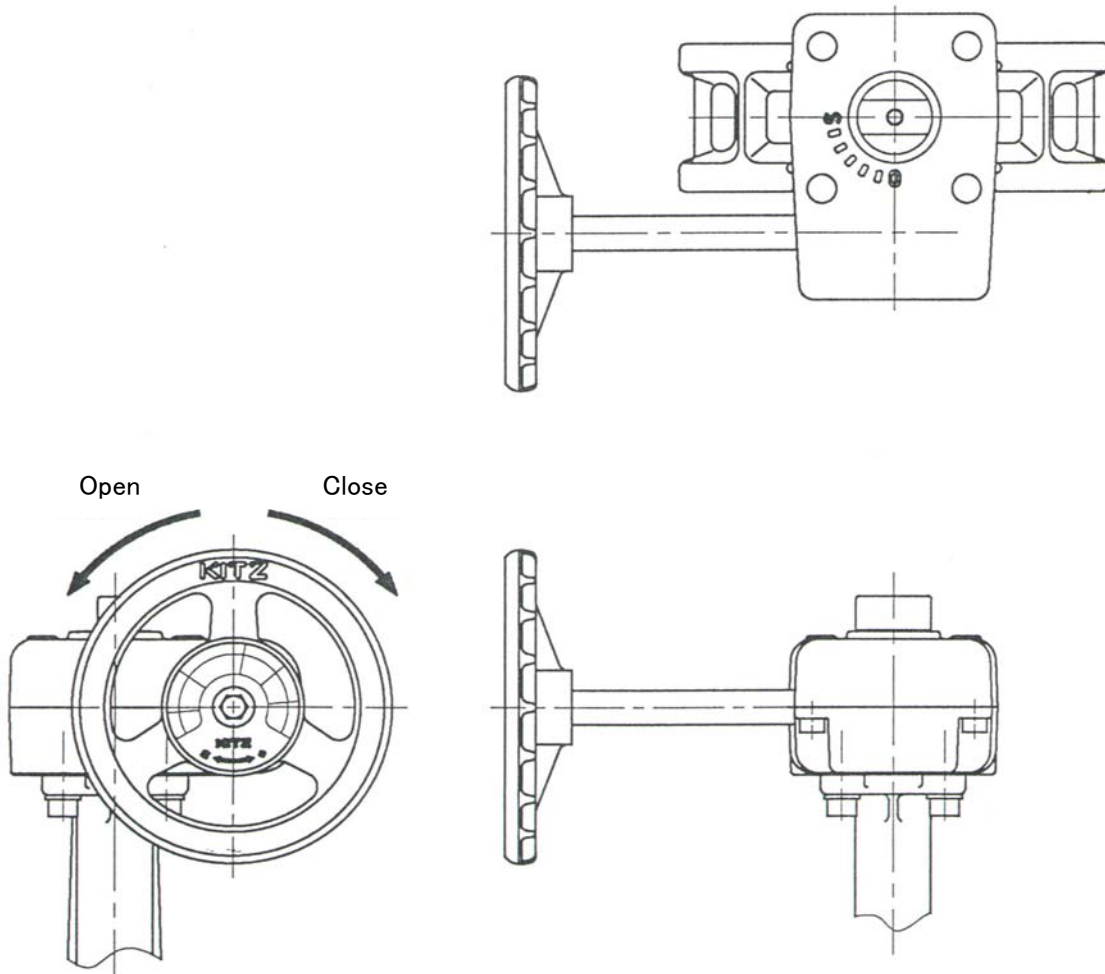
1.2 Turning the lever handle 90° clockwise will close the valve, and turning the lever handle 90° counterclockwise will open the valve.



II Valve Operation Device

2. Worm Gear Type

- 2.1 The worm gear operation device is mounted on the valve.
- 2.2 According to the letter or arrow on the hand wheel, turning the hand wheel clockwise will close the valve, and turning the hand wheel counterclockwise will open the valve.
- 2.3 Hand wheel operating torque depends on the size and opening position.
- 2.4 Worm gear operator is to transmit a large torque to valve stem, converting a torque from drive shaft by means of reduction gearing unit using worm gears.





CHAPTER III



Transportation and Storage of Valves

III Transportation and Storage of Valves

1. Transportation of Valves

1.1 Caution for safety

 WARNING	
	<ul style="list-style-type: none">● Keep off the valve lifting area to prevent personal injury caused by unsecured valves when transporting the valve by lifting.

 CAUTION	
	<ul style="list-style-type: none">● Take care not to damage the valve painting surfaces during transportation, which may subsequently cause corrosion and get the valve rusty. The damaged surfaces should be touched up adequately.● Take care the handling and storage of the carton packed product. The high humidity may damage the cartons.

1.2 Transportation of Valves



1.2.1 Keep the packages as they are delivered just before installation.

1.2.2 Handle valves carefully so that they should not fall or drop on the ground. Avoid any extraordinary mechanical impact.

III Transportation and Storage of Valves

2. Storage

2.1 Caution for safety

 CAUTION	
	<ul style="list-style-type: none">● DO NOT store valves in the corrosive environment; otherwise, it may cause corrosion on threaded portions of valves.● DO NOT drop or shake the valves during storage and DO NOT apply any heavy load; otherwise, valves may damage.● DO NOT carelessly pile up products to avoid risk of product damage and personal injury caused by unstable piling.

2.2 Storage

2.2.1 Store the valve indoors under a dust-free, least humid and well-ventilated condition.

2.2.2 Do not place the valves directly on the ground or concrete floor.
Place packed valves on racks for storage.



2.2.3 In case the valve is stored for a long period of time, keep the valve open by 10° for the protection of the rubber seat from deformation.




CHAPTER IV

Valve Installation

IV Valve Installation

1. Cautions for Installation




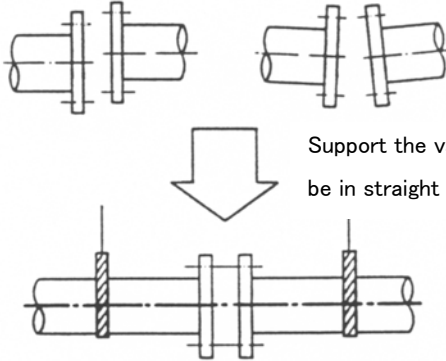
 WARNING	
	<ul style="list-style-type: none"> ● Check the valve specifications with the catalogs and/or attached nameplate. The substantial part and seat materials determine the characteristic of service fluid and service range of pressure and temperature. Services beyond the valve specifications will cause the leakage problem or other accidents.

 CAUTION	
	<ul style="list-style-type: none"> ● Keep the firm footing for valve installation and operation. ● Prepare sufficient lighting for valve installation and operation. ● Use supports for firmly holding pipes as required so that the large amount of load will not be applied on the pipes by mass or operation of valve.
	<ul style="list-style-type: none"> ● DO NOT connect the butterfly valve directly with check valve or pumps, which may damage the valve disc by unwanted contact.

- 1.1 Provide sufficient room for operation, installation and subsequent maintenance of valves.
- 1.2 Take appropriate measures for smooth operation, inspection and maintenance of valves if they are forced to be installed in small spaces.
- 1.3 Try not to install valves in the places where valve functions may be hampered by such outer forces as vibrations and others.

IV Valve Installation

2 Cautions for Piping

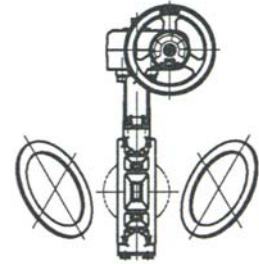
 CAUTION	
	<ul style="list-style-type: none"> ● NEVER use the flange gasket for piping, which may cause the leakage. ● DO NOT forcibly tuck the valve into too narrow space between pipes when piping, which may cause the deformation of the rubber seat and the leakage.
	<ul style="list-style-type: none"> ● After flanges are welded with pipes, wait until the welding heat cools down enough before installing the valves. ● Chamfer or round edge of welded flanges appropriately to prevent the rubber surface from damages. ● Before installation of valves, clean the connecting pipes to remove any foreign object such as sand, dust or welding spatters. ● Make sure that the flange surfaces have no damage and deflection. Remove any foreign object from the flange surfaces. (Make sure that EPDM seats must be free from oil.) ● Align the primary side and secondary side piping accurately. The leakage from the flange connection is caused by the inaccurate alignment. <div style="text-align: center; margin: 10px 0;">  <p style="text-align: right; margin-right: 50px;">Support the valve and pipes for tube axis be in straight line for correct alignment.</p> </div> <ul style="list-style-type: none"> ● Install or dismantle the valve with the valve open by approx. 10° to the full close.

IV Valve Installation

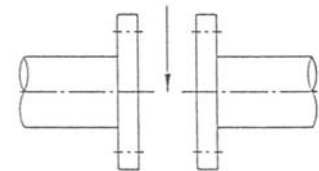
3 Valve Mounting

3.1 Set jack bolts to adjust the dimension between pipe flanges as required. The dimension between pipe flanges must be 6 to 10mm wider than the dimension between the valve faces for installation.

3.2 After setting 2 bolts temporary at the lower part of the valve, insert the valve between piping flanges. Take care not to damage the rubber seat. Then, set 2 bolts shown above. Rubber seats will seal the connections between the flanges of pipes and valve, so do not use any gaskets.



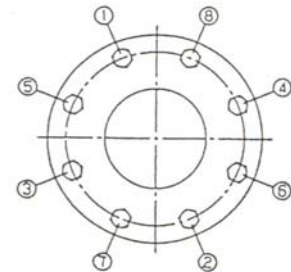
3.3 Tighten upper and bottom four bolts temporary. Align the pipes and valve accurately.



3.4 Before tightening piping bolts, make sure that the disc does not get any contacts with the pipe inside in fully open position.

3.5 Thread other bolts through the holes of pipe flanges.

3.6 Take care not to tighten certain bolts completely before tightening all the bolts evenly. Tighten bolts evenly and alternately in a star pattern.



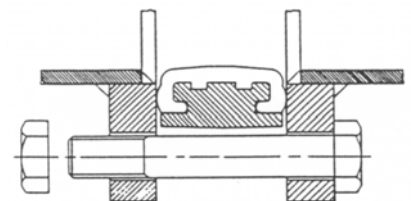
3.7 Tighten bolts and nuts so that the piping flanges get enough contacts with the metal of the body.

※Excessive tightening torque causes serious damages for the valve body.

※DO NOT use an impact wrench to tighten.

※Tightening torque is following table.

Valve size	Torque (N·m)	Bolt size
DN40 to 100	49	M16
DN125 to 200	88	M20
DN250 to 300	118	M22






CHAPTER V

Valve Operation

V Valve Operation

1. Cautions for Safety

 CAUTION	
	<ul style="list-style-type: none"> ● DO NOT loosen bolts or nuts of flange area on pressuring. ● DO NOT remove the operator on pressurizing, which makes the stem blow-off from the upper hole. ● DO NOT use the valve as a blank flange by fully closing. when the pipeline is tested for exceeding the design pressure. ● DO NOT touch the stopper bolts in the gear operator. It may change the stopper position, which may result in internal leakage. ● The stopper in the gear operation device functions at the full admission and totally enclosed position of the indicator. DO NOT apply excessive control force from this position. The gear is destroyed.
	<ul style="list-style-type: none"> ● When the pipeline is tested for exceeding the design pressure, fully open the valve. ● To operate the valve, avoid the use of special tools such as pipes or wrenches, which may damage the valves. ● When the valve is to be used with an opening position less than 30°, contact KITZ or its distributor for technical advises.

2. Operation

2. 1 Lever Handle Type

Turning the lever handle 90° clockwise will close the valve and 90° counterclockwise will open the valve.

2. 2 Worm Gear Type

According to the arrow or letter on the hand wheel, turning the hand wheel clockwise will close the valve, and turning the hand wheel counterclockwise will open the valve.

V Valve Operation



3. Daily Inspection

The maintenance of the valves is performed at daily inspection and inspection during operation. The below is the list of inspection items.

Items to be inspected	Areas to be inspected	Inspection Method	Countermeasures
External Leakage	Flange area	Visual check Soap water	Retighten flange bolts.
	Body surface	Visual check Soap water	Change the valve.
Abnormal Noises	Valve body	Auditory check	Consult a piping engineer.
	Loosened bolts	Auditory check	Retighten bolts.
	Vibration of pipes	Auditory check	Consult a piping engineer.
Loosened bolts and nuts	Bolts and nuts	Visual and tactile check	Retighten bolts and nuts.
Seat leakage	—	—	Remove the foreign objects on seat liner. Disassemble and inspect the valve. Change the valve.
Valve operation	Valve position	Visual Check	Make sure that the valve is in predetermined open/close position.
	Disturbed operation	Visual and tactile check	Inspect the dismantled valve. Change the valve.

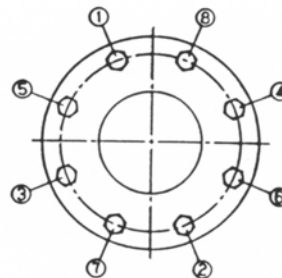
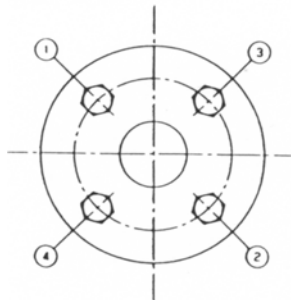
V Valve Operation

4. Countermeasures

 CAUTION	
	<ul style="list-style-type: none"> ● Wear the protective items such as eye protectors, gloves, and working boots. ● Take some safety measures for maintenance of valves which handle toxic, flammable or corrosive fluid. ● Reduce the line pressure to the atmospheric level before retightening of flange bolts and nuts.

4.1 Leakage from the flange area.

Take care not to tighten certain bolts completely before tightening all the bolts evenly. Tighten flange bolts evenly and alternately in a star pattern.



CHAPTER VI

Periodic Inspection

VI Periodic Inspection



1. Periodic Inspection
 - 1.1 Carry out periodic inspection about once a year with the valve on pipes.
 - 1.2 Make sure that valve is operating smoothly and functioning sufficiently without threatening safety.
 - 1.3 Refer to Section V “Daily Inspection” for the inspection items and inspection methods.
 - 1.4 Carry out the periodic inspection of valves which are not operated for long period or not daily inspected. (All valves should be subjected to inspection.)
 - 1.5 It is extremely important to check valves when the valves are used under the following services or conditions. Dismantle from the pipe and overhaul as required
 - a) Valves important for the whole plant operation.
 - b) Valves for pipes which the fluid is easily adhered or clogged.
 - c) Valves which erosion and corrosion of valve interior are expected.



VI Periodic Inspection

2. Maintenance and Inspection.

When piping facilities where the valves are installed are to be set open for periodic maintenance and inspection, carry out the seat and external leakage test and operation test as required. If any signs of seat/external leakage are found, overhaul and make sure it is satisfactory.

2.1 Cautions for dismantling of valves from or installation of the valves on pipelines.

 WARNING	
	<ul style="list-style-type: none"> ● Discharge the fluid from the pipes and reduce the line pressure to the atmospheric level when dismantling the valves from the pipe lines. Removing the valves with trapped pressure or fluid is very dangerous and cause accidents resulting in personal injury. ● Take some measures for maintenance of valves which handle toxic, flammable, corrosive and explosive fluid. For storage and discard of these valves, they should be treated with safety. Do not have any personnel get contact with any untreated valves. ● For valves with electric or pneumatic actuators, refer to the operation manuals prepared by the manufactures of the actuators. ● Keep off the valve lifting area to prevent damages which may be caused by an extraordinary mechanical impact or load.

 CAUTION	
	<ul style="list-style-type: none"> ● Wear the protective items such as eye protectors, gloves and working boots. ● Keep a secure footing for valve dismantle and installation. ● Provide support stands appropriate for the mass for firmly holding the valve and pipes to prevent pipe misalignment. ● Before dismantling valves from the pipe, mark the valve body and coupled pipe flanges with their original position. Reinstall the valve on pipes according to the marks for assembly.

2.2 Disassembly and Reassembly

Disassemble and reassemble the valve according the instruction in Section VII of this manual.

VI Periodic Inspection

2.3 Test and Inspection



The following is the main items for test and inspection.

2.3.1 Operation test

- (1) Operate the valve smoothly by lever handle or worm gear handle without galling or sticking.
- (2) Connect the stem firmly with the disc.
- (3) In fully open position, the disc must be parallel to the fluid flow.

2.3.2 Shell test and seat leakage test.

- (1) Cautions for shell test and seat leakage test

 CAUTION	
	<ul style="list-style-type: none">● Wear the protective items such as eye protectors, gloves and working boots.● Take cautions for shell test and seat leakage test for operators' safety.

- (2) Shell test and seat leakage test

All valves should be subjected to a hydrostatic or pneumatic shell test and seat leakage test at the required pressure after tests and inspections.

Refer to the JIS B 2003 for test methods.



CHAPTER VII



Disassembly and Reassembly of Valves

VII Disassembly and Reassembly of Valves

1. Disassembly

1.1 Cautions for Safety

 WARNING	
	<ul style="list-style-type: none">● Operator should take an appropriate caution for not being exposed to the fluid or not to catch fire.

 CAUTION	
	<ul style="list-style-type: none">● Wear the protective items such as eye protectors, gloves and working boots.● Take care not to pinch fingers during disassembly.

1.2 Before Disassembly



1.2.1 Place the valve in a dust-free place.

1.2.2 Take care not to damage the sealing surfaces such as disc seat surface and rubber seat.

VII Disassembly and Reassembly of Valves

1.3 Reassembling Instruction

Dismantle the valves from the pipes before rearrangement.

 WARNING	
	<ul style="list-style-type: none"> ● DO NOT dismantle the neck (stand) on pressing. The stem may blow out if dismantled on pressing.

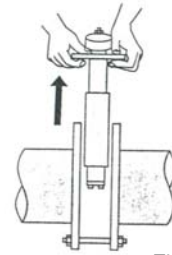




Figure 1

 CAUTION	
	<ul style="list-style-type: none"> ● When dismantling the valve from pipes, make sure the pressure in the pipes is 0. Loosening the bolt on pressing is very dangerous. If fluid still remains in the pipes, drain out and make sure there is no fluid left inside before starting the valve dismantling. ● Dismantle the valve from pipes with the valve opening fully closed. In order to dismantle the valve without damaging the rubber seat, set the jack bolt and adjust the flange space. The face-to-face dimension at this point should be approximately 6 to 10mm wider than the valve dimension. (Figure 1) ● Reassemble the valve at a dust-free place with sufficient space. Take care not to damage the seat surface.

VII Disassembly and Reassembly of Valves

1.4 Disassembly (Dismantling the operation device)

1.4.1 Gear Operation Device

- ① Fully close the valve.
- ② Match-mark the gear unit (102), stand (61), and body (1) in order to smooth the reassembly and avoid misplacing the direction of parts.
- ③ Remove the bolt for gear set (99) and then remove the gear unit (102).

1.4.2 Lever Operation Device

- ① Fully close the valve.
- ② Match-mark the open/close indicator plate (98), stand (61), and body (1) in order to smooth the reassembly operation and avoid misplacing the direction of parts.
- ③ Remove the cover (90) and handle retaining bolt (10) and then remove the lever handle (9).
- ④ Remove the bolt and nut for open/close indicator plate (99A and 99B) and then remove the spring washer (145B) and open/close indicator plate (98).

DN40 : Removal is not applicable to the lever type operating device.

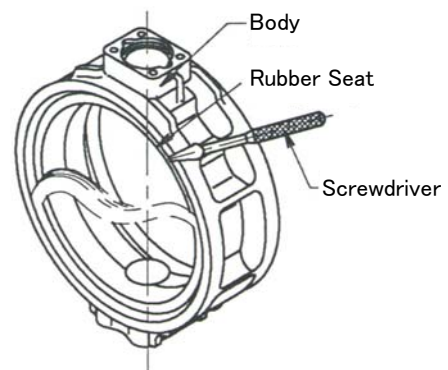
VII Disassembly and Reassembly of Valves

1.5 Disassembly (40A)

- 2.1.1 Remove the stand mounting bolt (63) and stand (61).
- 2.1.2 Pull out the stem (3) from the body (1).
- 2.1.3 Remove the disc (4) from the body (1).
- 2.1.4 Remove the rubber seat (106) by inserting a flat blade screwdriver between the body (1) and seat to make the space and putting the hand into that space to take out the rubber seat (106).
- 2.1.5 Pull out the bearing (67).

1.6 Disassembly (50A~200A)

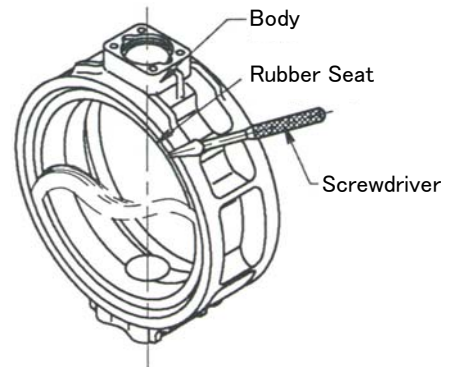
- 1.6.1 Remove the stand mounting bolt (63) and stand (61).
- 1.6.2 Pull out the stem (3) from the body (1).
- 1.6.3 Remove the endplate bolt (35), the spring washer (145A), and endplate (147).
- 1.6.4 Insert the endplate bolt (35) into the bottom stem (103) and pull out the bottom stem (103) from the body (1) by using the inserted bolt. At this point, the bottom stem (103) and O-ring (45B) are removed together.
- 1.6.5 Remove the disc (4) from the body (1).
- 1.6.6 Remove the rubber seat (106) by inserting a flat blade screwdriver between the body (1) and seat to make the space and putting the hand into that space to take out the rubber seat (106).
- 1.6.7 Pull out the bearing (67) by hammering from inside with the plastic hammer.



VII Disassembly and Reassembly of Valves

1.7 Disassembly (250A~300A)



- 1.7.1 Remove the stand mounting bolt (63) and stand (61).
(In case of Short-Neck type, it is unnecessary to remove them without a stand.)
- 1.7.2 Remove the gland plate bolt (36) and gland plate (144).
- 1.7.3 Pull out the stem (3) from the body (1).
- 1.7.4 Remove the endplate bolt (35), the spring washer (145A), and the endplate (147).
- 1.7.5 Insert the endplate bolt (35) into the bottom stem (103) and pull out the bottom stem (103) from the body (1) by using the inserted bolt. At this point, the bottom stem (103) and O-ring (45B) are removed together.
- 1.7.6 Remove the disc (4) from the body (1).
- 1.7.7 Remove the rubber seat (106) by inserting a flat blade screwdriver between the body (1) and seat to make the space and putting the hand into that space to take out the rubber seat (106).
- 1.7.8 Pull out the stem bearing (67A) from the stem (3).
- 1.7.9 Pull out the stem bearing (67B) from the bottom stem (3).
- 1.7.10 Pull out the stem bearing (67C) from the stem (3).
(In case of Short-Neck type, it is unnecessary to remove them without a stand.)



VII Disassembly and Reassembly of Valves

2. Reassembly

2.1 Cautions for safety

 CAUTION	
	<ul style="list-style-type: none">● Wear the protective items such as eye protectors, gloves and working boots.● Take not to catch fire during reassembly.● Take care not to pinch hands or fingers during reassembly.● Change O-ring with new one. The reuse of O-rings may cause leakage.

2.2 Before Reassembly

- 2.2.1 Check all necessary parts before reassembly. If the valve is found dissatisfactory in its function, change the valve.
- 2.2.2 Clean reusing parts to completely remove the oil, dust and other foreign objects.
- 2.2.3 Reassemble the valve at a dust-free place.
- 2.2.4 Take care not to damage the seating area of the disc and rubber seat.
- 2.2.5 Tighten all bolts and nuts securely.

VII Disassembly and Reassembly of Valves

2.3 Assembly (40A)

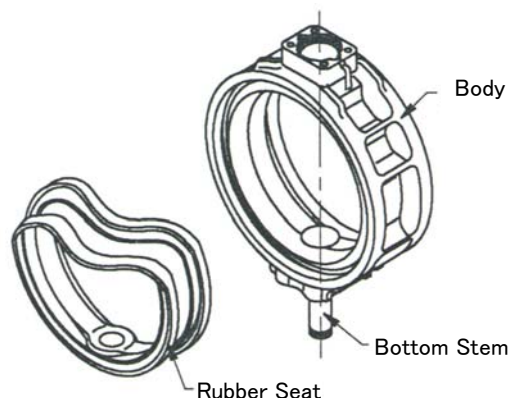
- 2.3.1 Assemble the O-ring (45C) to the bearing (67), apply the liquid packing (ThreeBond 1215) around the bearing and assemble into the body (1).
- 2.3.2 Fix the upper side of the body (1) done up. Curve as concave, holding on the bottom of the rubber seat (106) by the thumb, fit the rubber seat (106) into the body (1) from the upper side to the bottom side. Be careful to insert to match the projection of outer in rubber seat (106) and cutting lack part at edge of valve casing. Then insert the boss of outer in rubber seat (106) in the body (1) surely. Spread the silicon grease on the axis hole side of the body (1).
- 2.3.3 After inserting the rubber seat (106), confirm that the hole of the rubber seat (106) is accurate with the axis hole side of the body (1).
- 2.3.4 Be careful not to damage the edge of the disc (4), and push by the full open condition, maintaining the disc (4). At this time, spread the silicon grease (*1) on sphere seat of the disc (4), sphere part and seal in rubber seat (106). Be suited both upper and lower holes, looking into from the upper part of the disc (4). (Confirm the direction of setting, combined with the stem (3) before the disc (4) is assembled.)
- 2.3.5 Drive the stem (3) with the tree hammer according to the corner hole of the disc (4). Spread the grease (*2) on the stem (3) thinly.
- 2.3.6 Assemble the O-ring (45B), thrust bearing (74), snap ring (48), and stand (61). Then fix them with stand mounting bolt (63).

(*1) : Recommended grease is "KF96-100,000 cst or more" made by "Shinetsu" silicon company.

(*2) : Recommended grease is "Molyrubber grease No.1" made by "Sumikoujunksu" company.

2.4 Assembly (50A~200A)

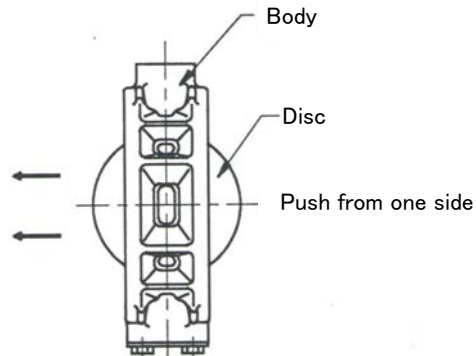
- 2.4.1 Assemble the O-ring (45A) to the bearing (67), apply the liquid packing (ThreeBond 1215) around the bearing and assemble into the body (1).
- 2.4.2 Insert the bottom stem (103) into the body (1) beforehand as shown in the figure in order to use as a guide at assembly of the rubber seat (106) to the body (1).



VII Disassembly and Reassembly of Valves

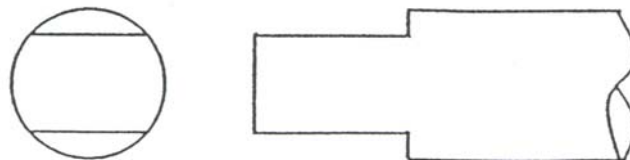
2.4.3 Place the hole located at the bottom of the rubber seat (106) into the bottom stem (103) then assemble into the body (1). After completing the rubber seat (106) assembly, pull out the bottom stem (103).

2.4.4 Manually insert the disc (4) at the angle of fully open as shown. At this point, the side with the stem hole is two/four-faced should be faced up.






2.4.5 Make sure that the stem hole is in the correct position for insertion when observed from the holes on top and bottom of the body (1).

2.4.6 The tip of stem (3) is as shown below. Insert matching the two faces of the disc (4) and stem.



2.4.7 Assemble the O-ring (45A), thrust bearing (74), snap ring (48), and stand (61) and fix them with stand mounting bolt (63). (Tightening torque of stand mounting bolt 12~15N · m)

 CAUTION	
	● DO NOT tighten stand installation bolt unevenly.
	● Confirm tightening firmly again.

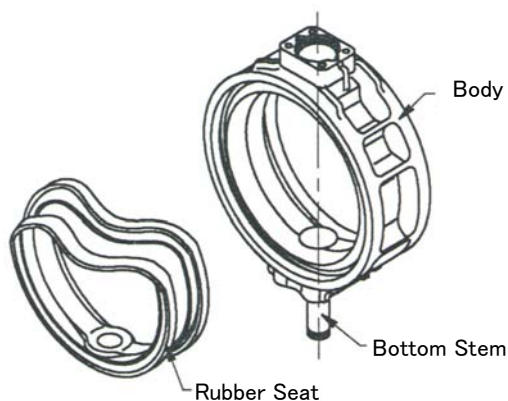
2.4.8 Assemble the bottom stem (103) and O-ring (45B).

2.4.9 Insert the bottom stem (103) and tighten the endplate (147) with endplate bolt (35). At this point, assemble the spring washer (145A) to the endplate (147).

VII Disassembly and Reassembly of Valves

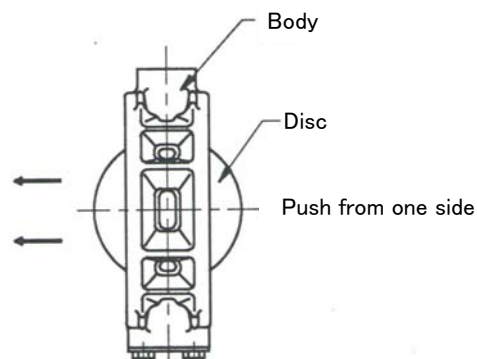
2.5 Assembly (250A~300A)

2.5.1 Insert the bottom stem (103) into the body (1) beforehand as shown in the figure in order to use as a guide at assembly of the rubber seat (106) to the body (1).



2.5.2 Place the hole located at the bottom of the rubber seat (106) into the bottom stem (103) then assemble into the body (1).
After completing the rubber seat (106) assembly, pull out the bottom stem (103).

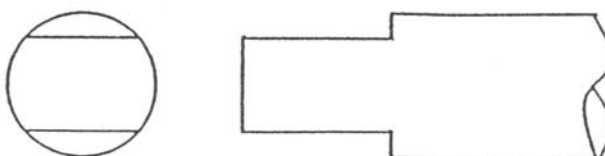
2.5.3 Manually insert the disc (4) at the angle of fully open as shown. At this point, the side with the stem hole is two/four-faced should be faced up.



2.5.4 Make sure that the stem hole is in the correct position for insertion when observed from the holes on top and bottom of the body (1).

2.5.5 Assemble the O-ring (45A) and the stem bearing (67A,C) to the stem (3).

2.5.6 The tip of stem (3) is as shown below. Insert matching the two faces of the disc (4) and the stem (3).



2.5.7 Assemble the O-ring washer (7) and tighten the gland plate (144) with gland plate bolt (36).

2.5.8 Assemble the stand (61) and fix them with stand mounting bolt (63). (Tightening torque of stand mounting bolt 12~15N · m)
(In case of Short-Neck type, it is unnecessary to install a stand.)

⚠ CAUTION	
	● DO NOT tighten stand installation bolt unevenly.
	● Confirm tightening firmly again.

VII Disassembly and Reassembly of Valves

2.5.9 Assemble the bottom stem (103) and O-ring (45B) and the stem bearing (67B).

2.5.10 Insert the bottom stem (103) and tighten the end plate (147) with end plate bolt (35). At this point, assemble the spring washer (145A) to the end plate (147).

2.6 Operation Devices Assembly

2.6.1 Gear Operation Device

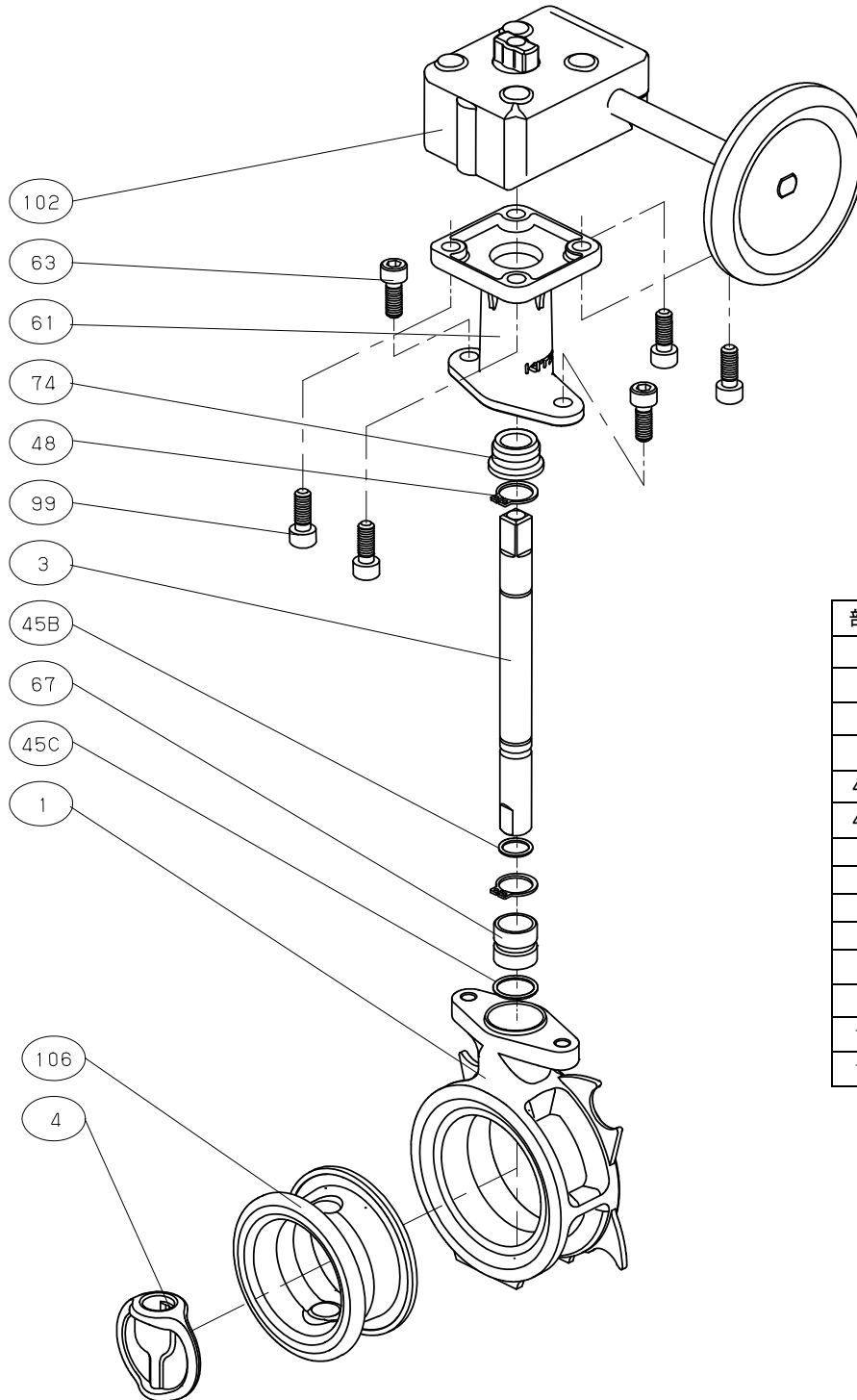
- (a) Adjust the open/close position of the disc (4) and gear unit (102). Fix the gear unit (102) to the body (1) with bolt for gear set (99). At this time, assemble according to the combination mark.

2.6.2 Lever Operation Device

- (a) Fix the open/close indicator plate (98) and spring washer (145B) to the body (1) with bolt and nut for open/close indicator plate (99A and 99B). At this point, assemble matching the marks marked before disassembly.
- (b) Assemble the lever handle (9) to the stem (3) adjusting to the open/close position of the body, fix it with handle tap-bolt, and assemble the cover (A).
(Tightening torque of steering wheel suppression bolt 12~15N · m)

VII Disassembly and Reassembly of Valves

3.1 Cross-Sectional Assembly Drawing. (Gear Type, 40A)

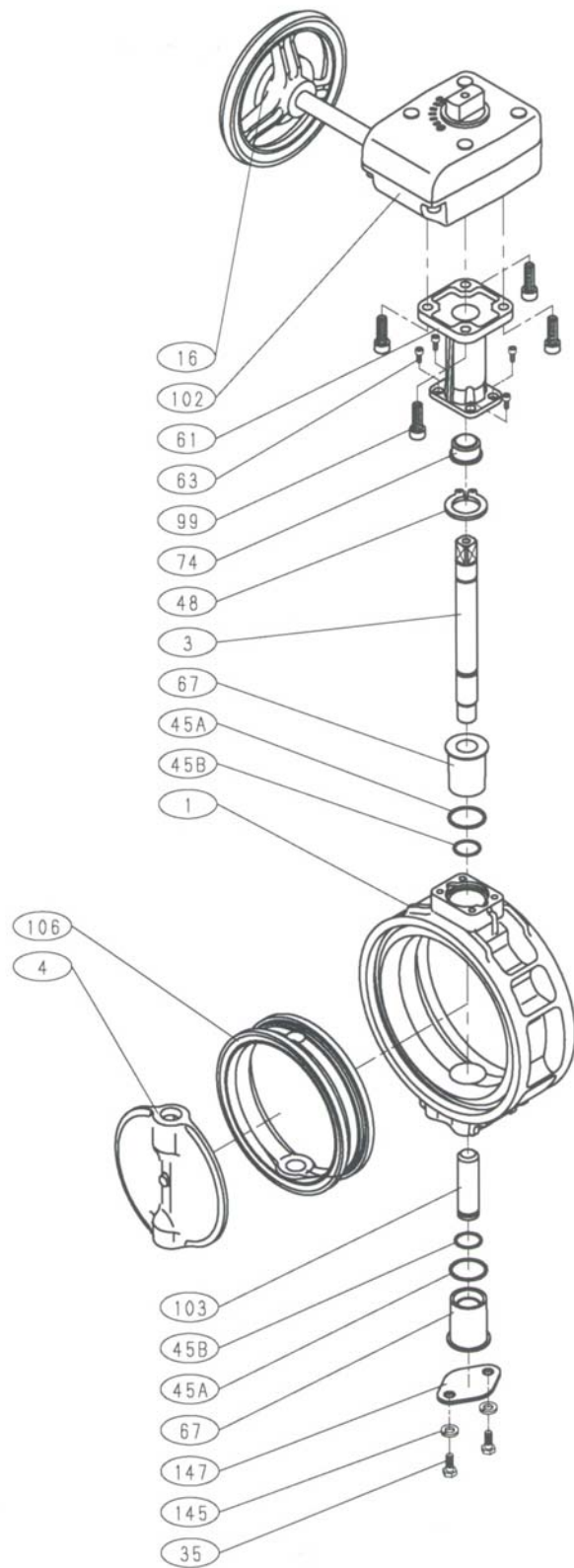


部番	部 品 名
1	Body
3	Stem
4	Disc
16	Nameplate
45B	O-ring
45C	O-ring
48	Snap ring
61	Stand
63	Stand mounting bolt
67	Bearing
74	Thrust bearing
99	Bolt for gear set
102	Gear unit
106	Rubber seat

This drawing indicates a typical construction of the valve.
Refer to the approval drawing before disassembly and assembly

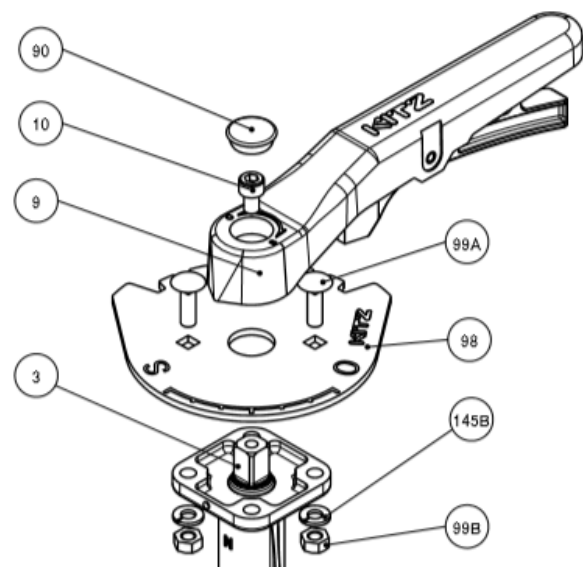
VII Disassembly and Reassembly of Valves

3.2 Cross-Sectional Assembly Drawing. (Gear Type, 50A~200A Long-Neck and Lever type 40A~150A)



No.	Parts Name
1	Body
3	Stem
4	Disc
16	Nameplate
35	Endplate bolt
45A	O-ring
45B	O-ring
48	Snap ring
61	Stand
63	Stand mounting bolt
67	Bearing
74	Thrust bearing
99	Bolt for gear set
102	Gear unit
103	Bottom stem
106	Rubber seat
145	Spring washer
147	End plate

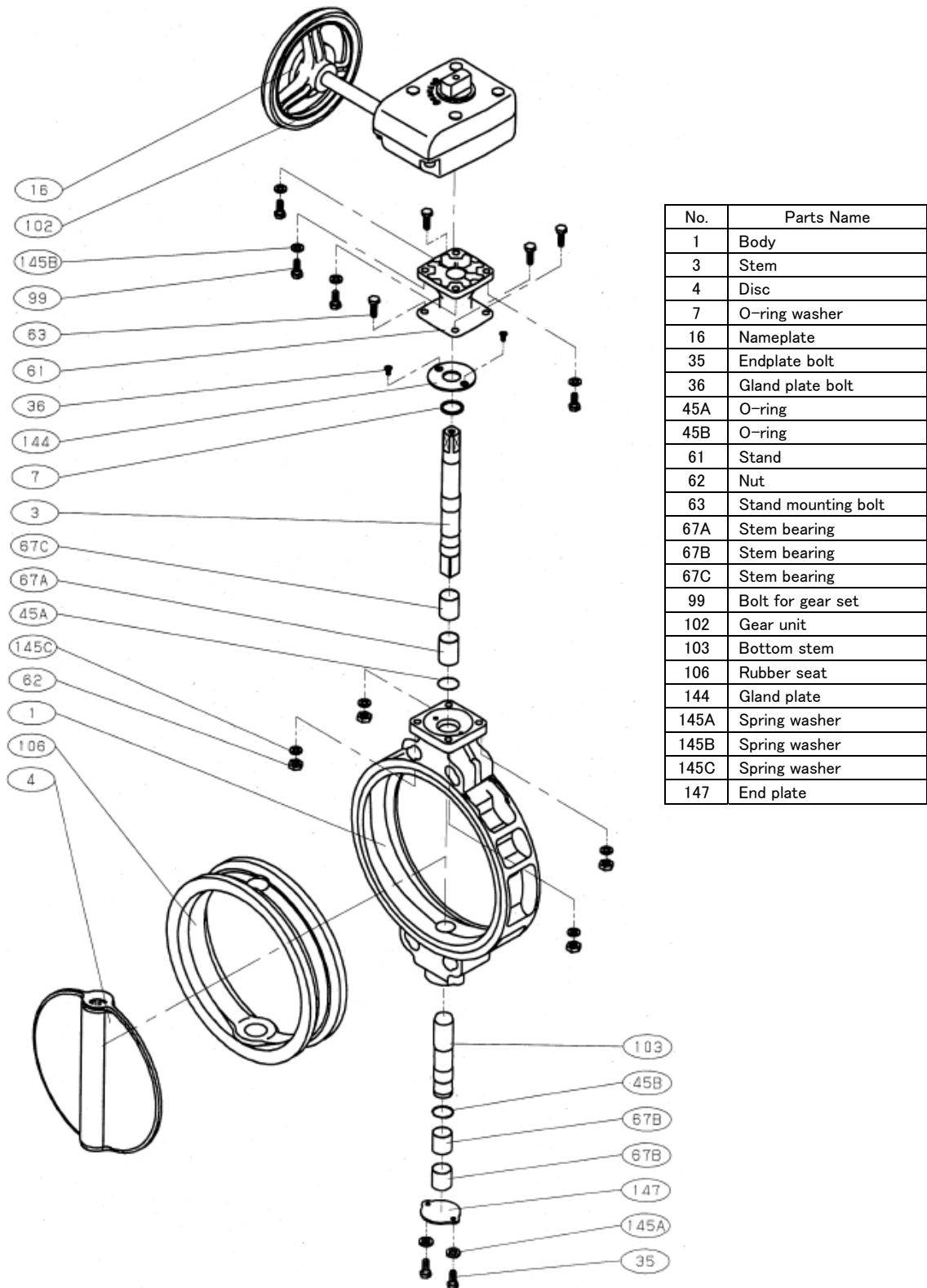
No.	Parts Name (Only lever handle)
9	Lever handle
10	handle retaining bolt
90	cover
98	Indicator plate
99A	Bolt
99B	Nut
145B	Spring washer



This drawing indicates a typical construction of the valve.
Refer to the approval drawing before disassembly and assembly.

VII Disassembly and Reassembly of Valves

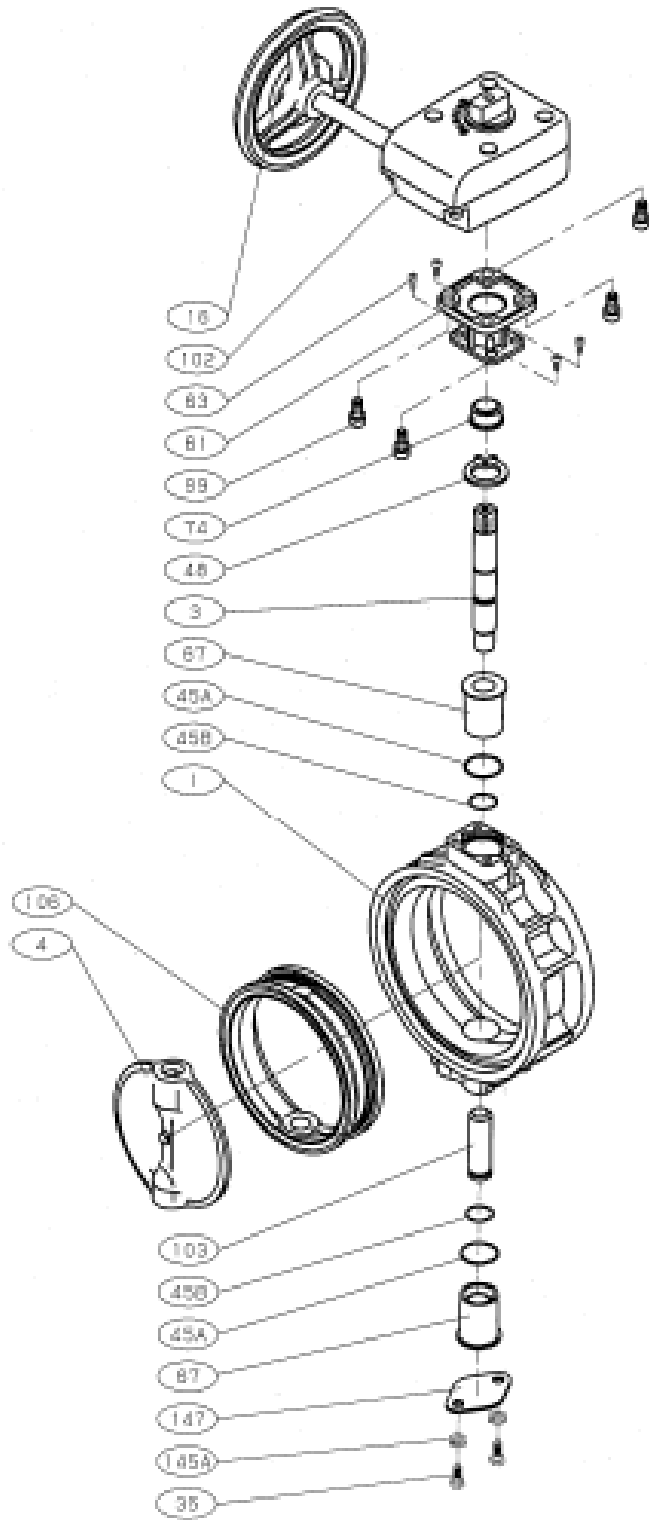
3.3 Cross-Sectional Assembly Drawing. (Gear Type, 250A~300A Long-Neck)



This drawing indicates a typical construction of the valve.
 Refer to the approval drawing before disassembly and assembly.

VII Disassembly and Reassembly of Valves

3.4 Cross-Sectional Assembly Drawing. (Gear Type, 50A~100A Short-Neck)

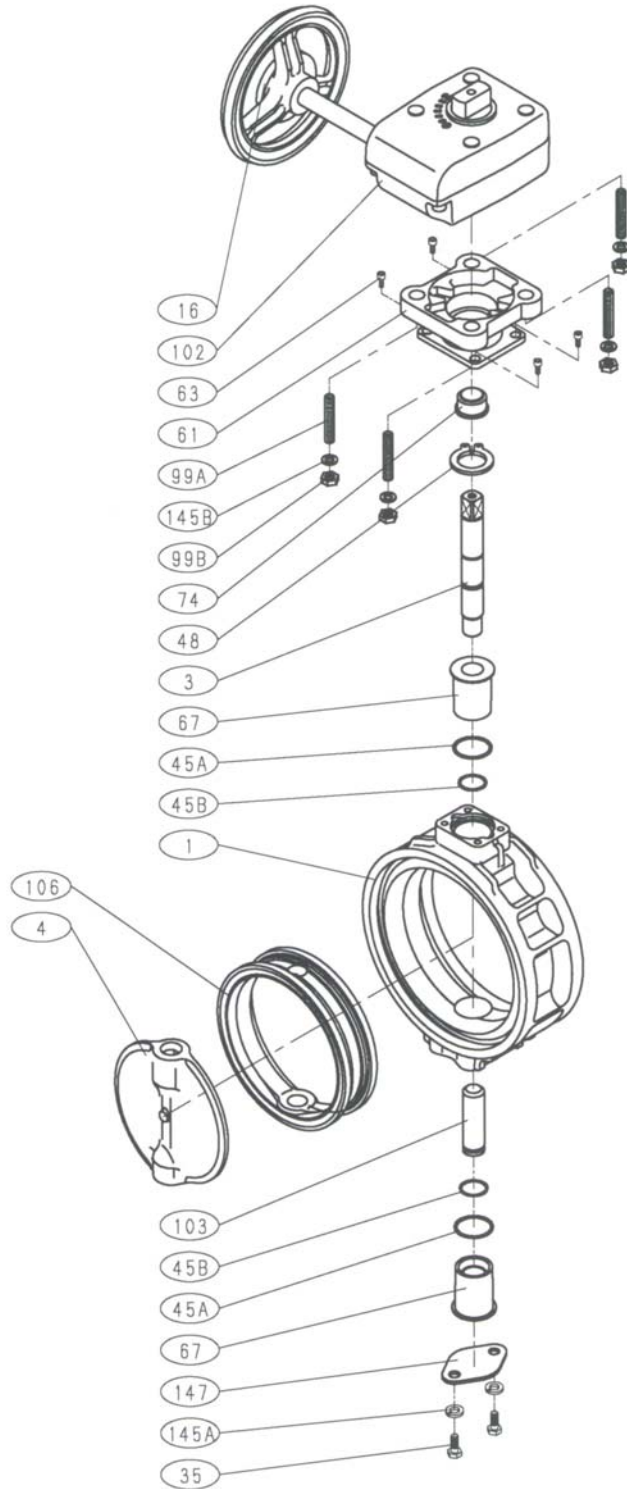


No.	Parts Name
1	Body
3	Stem
4	Disc
16	Nameplate
35	Endplate bolt
45A	O-ring
45B	O-ring
48	Snap ring
61	Stand
63	Stand mounting bolt
67	Bearing
74	Thrust bearing
99	Bolt for gear set
102	Gear unit
103	Bottom stem
106	Rubber seat
145A	Spring washer
147	End plate

This drawing indicates a typical construction of the valve.
Refer to the approval drawing before disassembly and assembly.

VII Disassembly and Reassembly of Valves

3.5 Cross-Sectional Assembly Drawing. (Gear Type, 125A~200A Short-Neck)

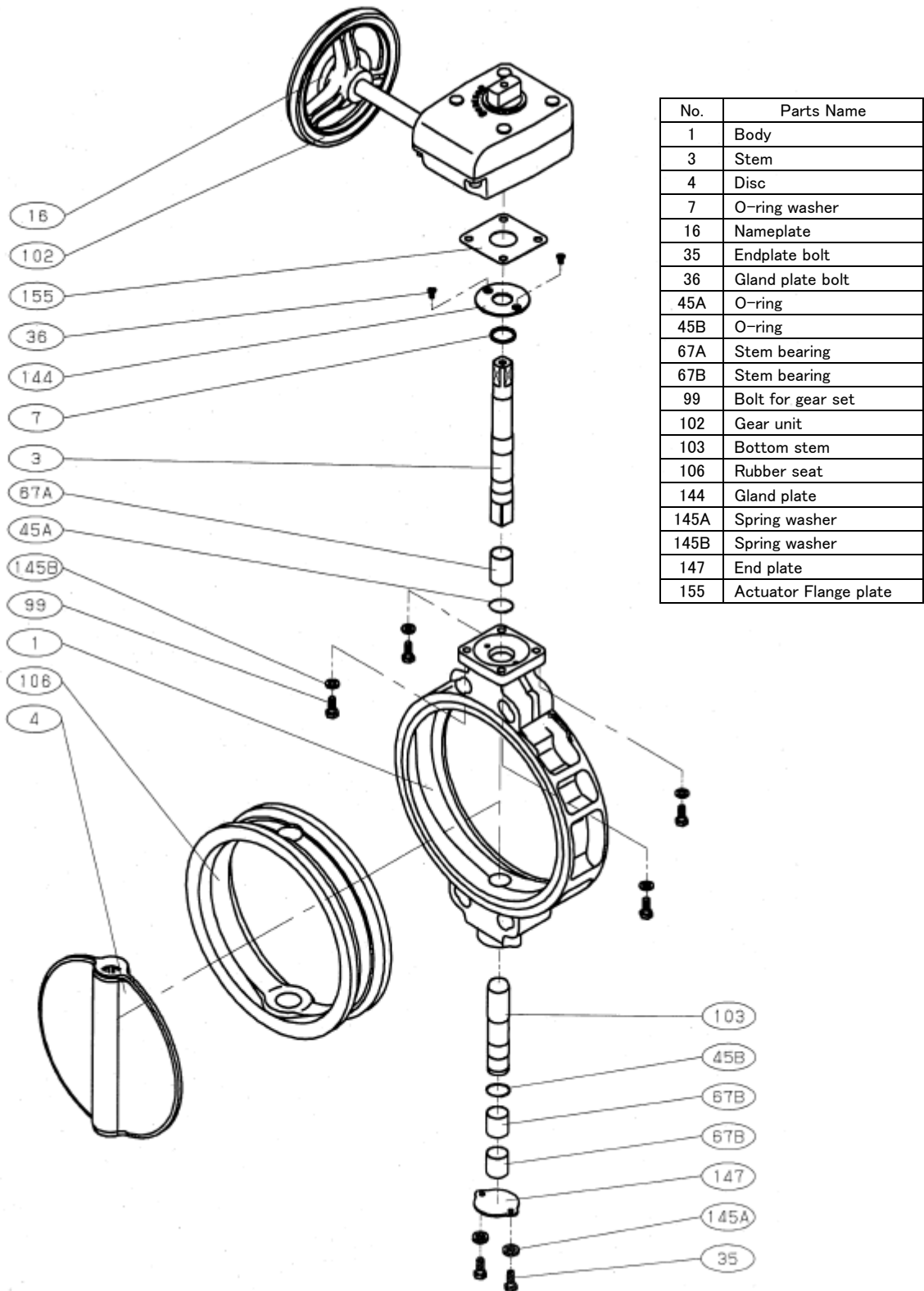


No.	Parts Name
1	Body
3	Stem
4	Disc
16	Nameplate
35	Endplate bolt
45A	O-ring
45B	O-ring
48	Snap ring
61	Stand
63	Stand mounting bolt
67	Bearing
74	Thrust bearing
99A	Hex. Socket set screw
99B	Hex. Nut
102	Gear unit
103	Bottom stem
106	Rubber seat
145A	Spring washer
145B	Spring washer
147	End plate

This drawing indicates a typical construction of the valve.
Refer to the approval drawing before disassembly and assembly.

VII Disassembly and Reassembly of Valves

3.6 Cross-Sectional Assembly Drawing. (Gear Type, 250A~300A Short-Neck)



This drawing indicates a typical construction of the valve.
 Refer to the approval drawing before disassembly and assembly.