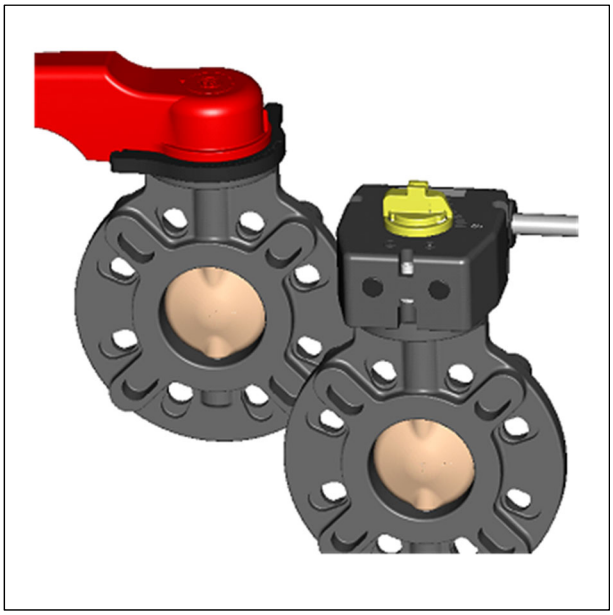
Rotary damper
Type 57: 40～350mm
Type 56: 400mm
Type 75: 450～600mm

User's Manual



Thank you for choosing our product.
This instruction manual contains important information for safe use of our product, so please be sure to read it before handling the product.
After reading this manual, please be sure to keep it in a place where the user can see it at any time.

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

This instruction manual is written on the assumption that the person who handles our products has a basic knowledge of our products, electrical equipment, machinery, control, etc., and it contains technical terms depending on the handling contents.
Please read this manual carefully and fully understand the contents and observe the safety precautions for proper use.

In this manual, the warning, caution, prohibition, and enforcement are categorized together with the symbol to inform the situation and scale of human injury or property damage.
Failure to observe this precaution may result in unexpected failure or damage. Be sure to observe this precaution.

<WARNING/CAUTION indications>

Warning	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
Caution	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

<Prohibited/Forced display>

Prohibition	In the handling of the product, it is prohibited to do it in "Do not do it".
Forcing	In the handling of the product, it is forced by "contents to be carried out without fail".

Table of contents

1. Our product warranty coverage

Unless otherwise stated in the Contract or Specifications, etc., the warranty for the piping material products (hereinafter referred to as "applicable products") such as valves manufactured or sold by us is as follows.

Applicable to

This warranty applies only when the product is used in Japan. If you intend to use the product overseas, please contact us.

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

In the event of failure or malfunction due to our responsibility during the above warranty period, we will replace or repair the product with a substitute free of charge.
Provided, however, that even within the warranty period, the warranty shall not apply to any of the following cases (charged service).

- ▶ When the storage, operating conditions, precautions, etc. described in the specifications, instruction manual, etc. are not adhered to in the construction, installation, handling, maintenance, etc.
- ▶ Defects, such as the design of the customer's equipment or software, caused by other than the target product.
- ▶ The fault is due to modification or secondary processing of the product by something other than us.
- ▶ In the case of a failure which can be deemed to have been avoided if the periodic inspection described in the instruction manual, etc. or the maintenance or replacement of consumable parts has been performed normally.
- ▶ The component is used for purposes other than the product's intended use.
- ▶ Failure or malfunction due to causes that could not be foreseen by our level of science and technology at the time of shipment.
- ▶ The fault is due to an external factor that is not our responsibility, such as natural disaster or disaster.

Disclaimer

- ▶ The warranty will not cover secondary damage (damage to equipment, loss of opportunity, loss of profit, etc.) or any other damage caused by the failure of our product.
- ▶ Although we strive to improve the quality and reliability of our products, we do not guarantee their integrity. Especially when using this product for equipment that may infringe human life, body or property, take appropriate safety design measures, etc., with full consideration of problems that may normally occur. We assume no responsibility for such use if we have not obtained our consent in advance in writing of specifications, etc.
- ▶ Please observe the product specifications and precautions when using our products. We shall not assume any responsibility for any damage to the customer caused by the customer's negligence. However, this does not apply to damage caused by a defect in our product.

2. Safety Instructions

Unpacking, Transportation and Storage

⚠ Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.

⚠ Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc. ▶ Do not hang the handle when transporting the valve.
Forcing	**The valve can be damaged, or leak.** ▶ Keep in cardboard until just before piping, and store indoors (at room temperature) away from direct sunlight. Also, avoid storing the product in places of high temperature. (The strength of cardboard packaging decreases when it gets wet. Be very careful when storing and handling it.) ▶ After unpacking, make sure that the product is correct and that it meets the specifications.

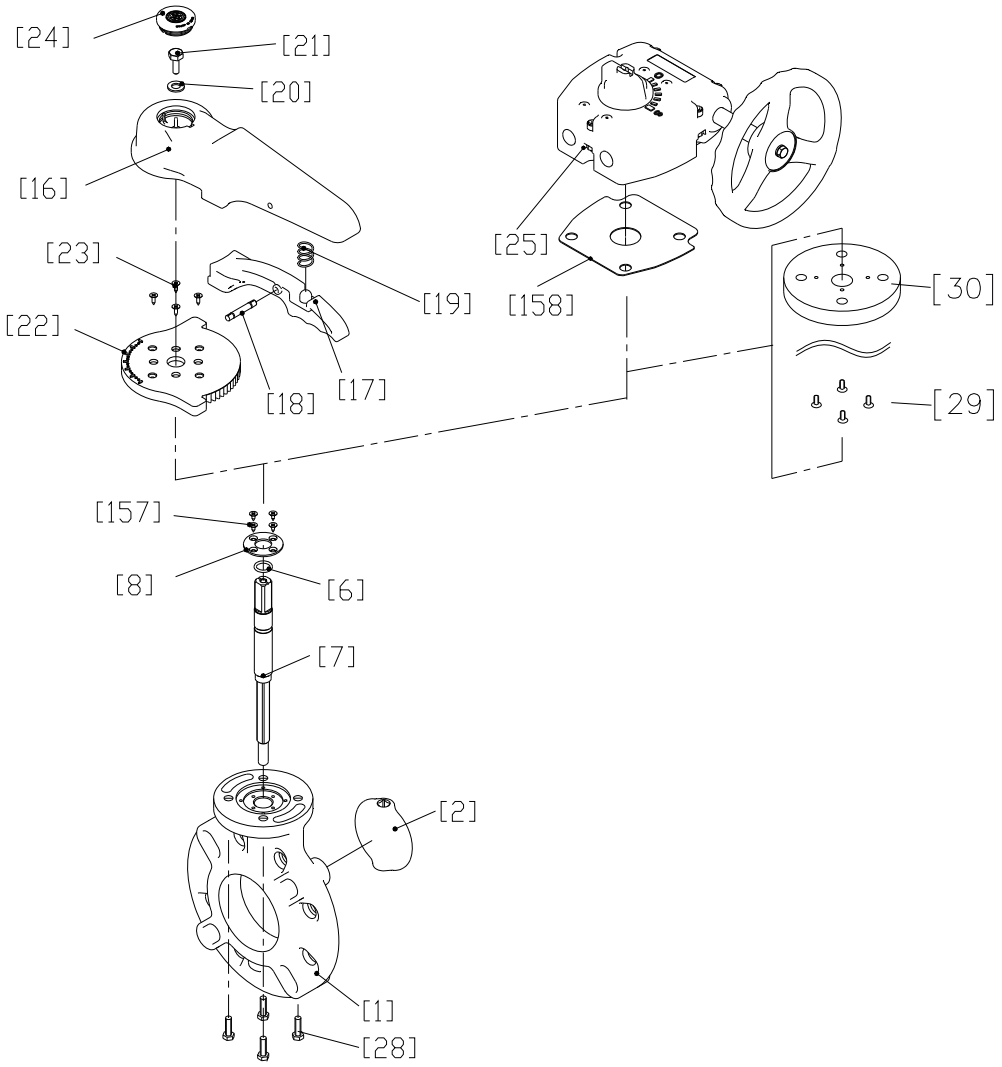
Product Handling

⚠ Warning	
Forcing	**The valve can be damaged, or leak.** ▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately. ▶ When conducting a pipe leak test after completion of piping construction, be sure to check with water pressure. Contact us in advance if you are unavoidable to test with a gas.

⚠ Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects. ▶ Do not subject the valve to large vibrations. ▶ Do not use instruments or tools to assist manual operation.
Forcing	**There is a danger of injury.** ▶ Allow sufficient space for maintenance and inspection. **The valve can be damaged, or leak.** ▶ Pay attention to the atmosphere where the valve is installed. Avoid locations where the product is exposed to sea breezes, corrosive gases, chemical liquids, sea water, steam, etc. ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ Use a valve of suitable material for the operating conditions. (Depending on the type of chemical liquid, the parts may be damaged. Contact us in advance for details.) ▶ Use the product under conditions that do not recrystallize in fluids containing crystalline substances. ▶ Avoid any place where water or dust is constantly splashed or where the product is exposed to direct sunlight, or provide a cover or the like to cover the entire area. ▶ Perform periodic maintenance by referring to "**9. Inspection items**". Pay particular attention to temperature changes or aging during long-term storage, resting or use.

3. Name of each part

Type 57 (40～350mm) / Body material: U-PVC, PP



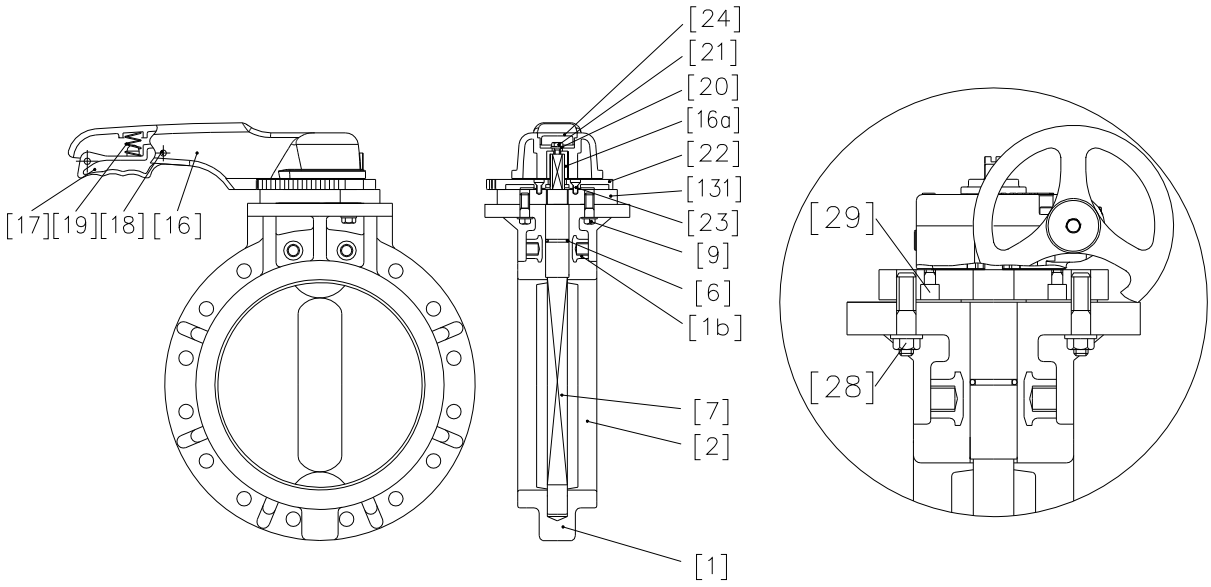
No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[18]	Pin	[25]	Gear box
[2]	Disc	[19]	Spring	[28]	Bolt (C) *1)
[6]	O-Ring (C)	[20]	Washer (A)		Bolt (G) *3)
[7]	Stem	[21]	Bolt (B)	[29]	Bolt (D) *2)
[8]	Stem Holder (A) *1)	[22]	Locking plate	[30]	Stand *3)
[16]	Handle (A)	[23]	Set screw (F)	[157]	Set screw (F) *1)
[17]	Handle lever	[24]	Cap (A)	[158]	Gasket (L)

*1) Used for 40 to 200mm

*2) Used for 300mm and 350mm

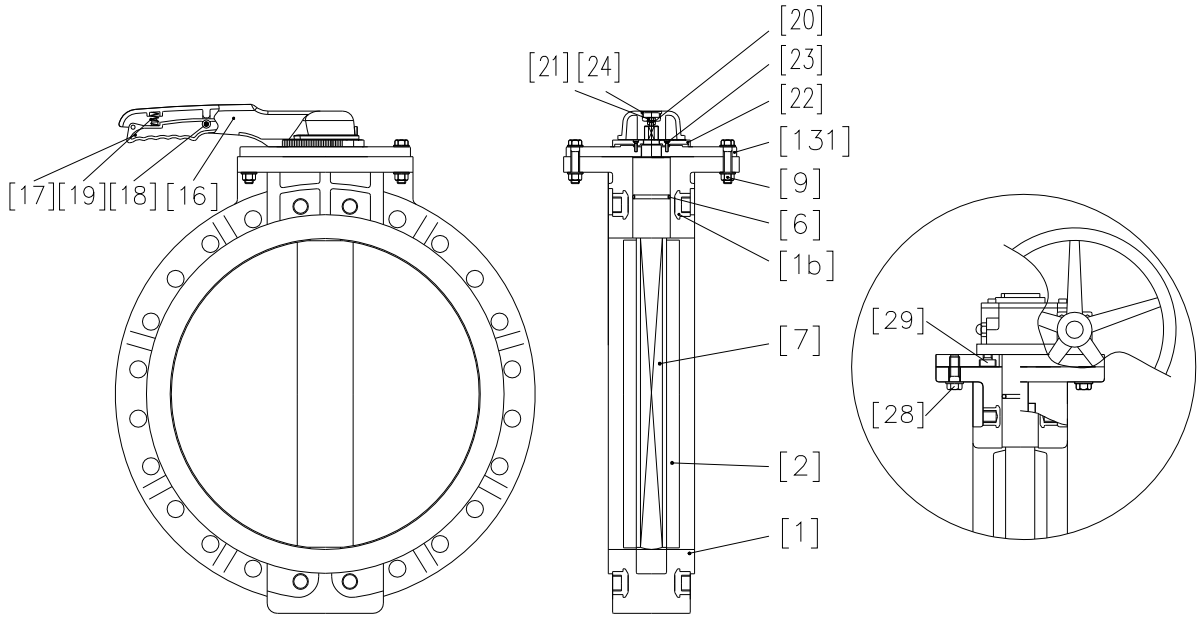
*3) Used for 250 to 350mm

Type 56 (400mm) / Body material: PP



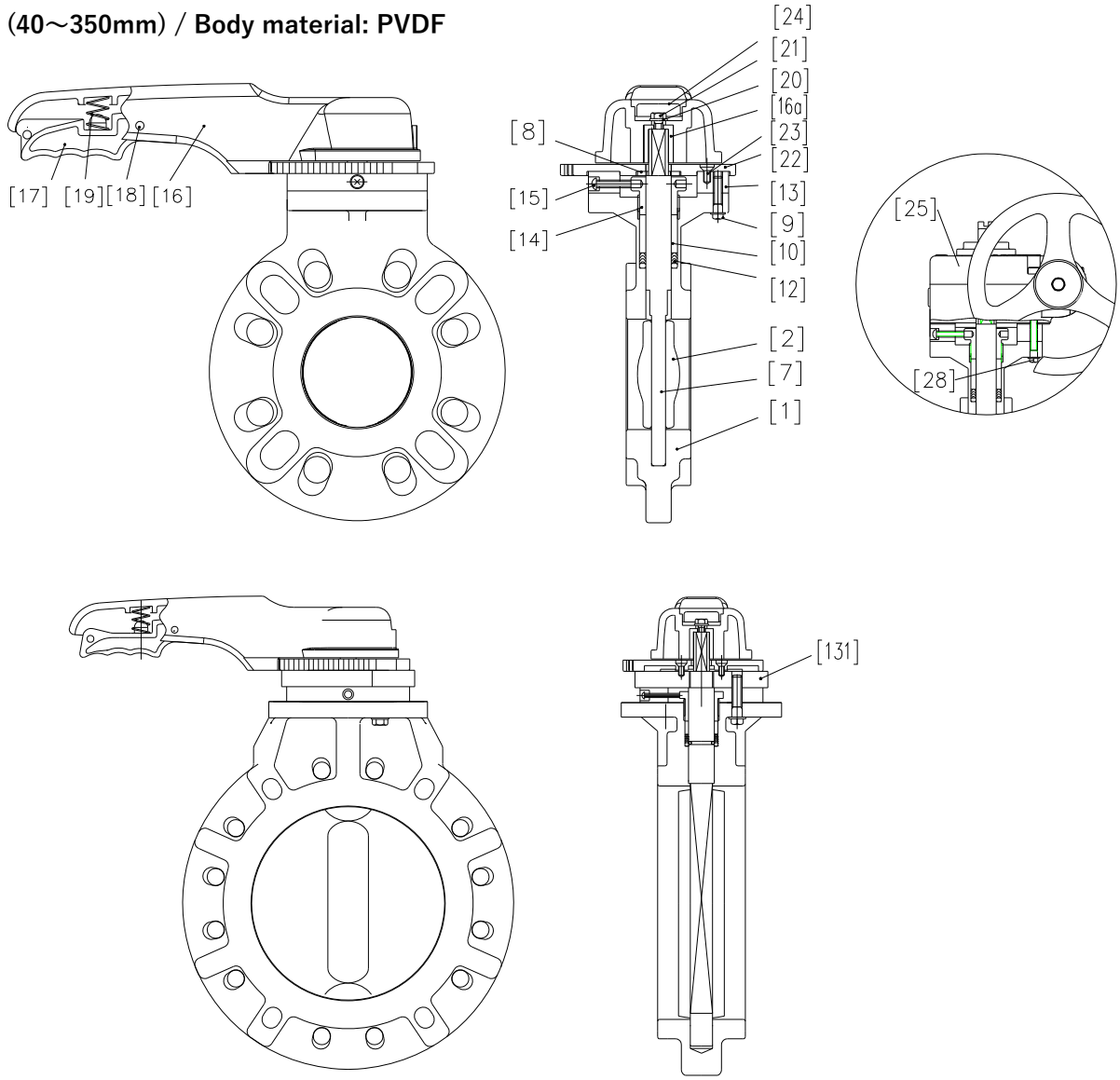
No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[16a]	Insert Metal of Handle	[23]	Set screw (B)
[1b]	Insert Metal of Body	[17]	Handle lever	[24]	Cap (A)
[2]	Disc	[18]	Pin	[28]	Bolt (G)
[6]	O-Ring (C)	[19]	Spring	[29]	Bolt (D)
[7]	Stem	[20]	Washer (A)	[131]	Stem Holder (C)
[9]	Bolt (A)	[21]	Bolt (B)		
[16]	Handle (A)	[22]	Locking plate		

Type 75 (450～600mm) / Body material: PP



No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[16]	Handle (A)	[22]	Locking plate
[1b]	Insert Metal of Body	[17]	Handle lever	[23]	Set screw (B)
[2]	Disc	[18]	Pin	[24]	Cap (A)
[6]	O-Ring (C)	[19]	Spring	[28]	Bolt (G)
[7]	Stem	[20]	Washer (A)	[29]	Bolt (D)
[9]	Bolt (A)	[21]	Bolt (B)	[131]	Stem Holder (C)

Type 57 (40～350mm) / Body material: PVDF

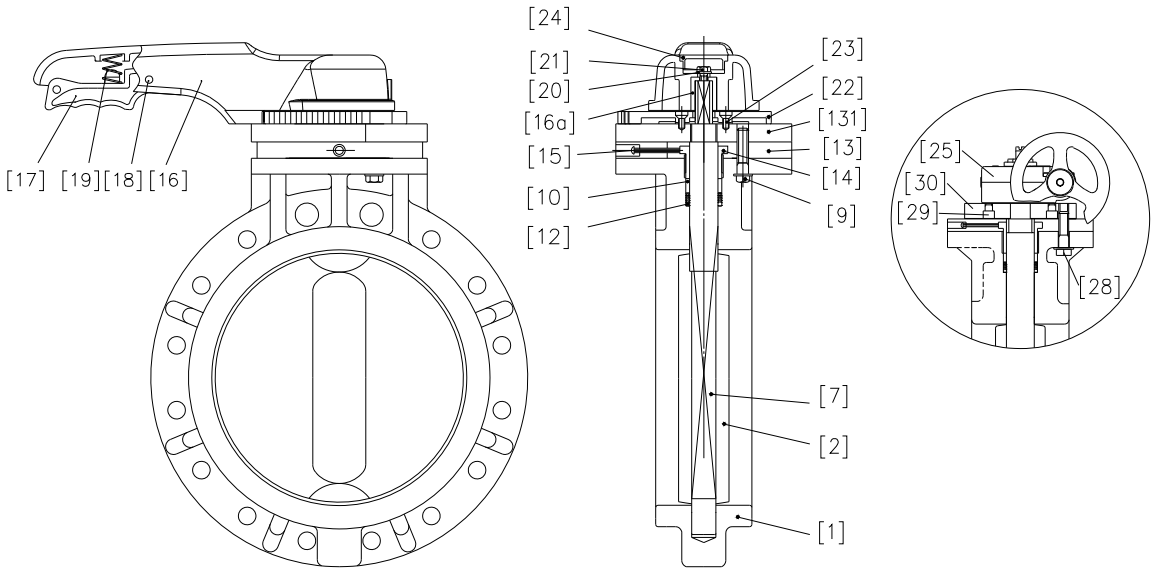


No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[14]	Ground	[21]	Bolt (B)
[2]	Disc	[15]	Screw (A)	[22]	Locking plate
[7]	Stem	[16]	Handle (A)	[23]	Set screw (B)
[8]	Stem Holder (A) *1)	[16a]	Insert Metal of Handle	[24]	Cap (A)
[9]	Bolt (A)	[17]	Handle lever	[25]	Gearbox
[10]	Bush (A)	[18]	Pin	[28]	Bolt (C)
[12]	V packing	[19]	Spring	[131]	Stem Holder (C) *2)
[13]	Spacer (A)	[20]	Washer (A)		

*1) Used for 40～200mm

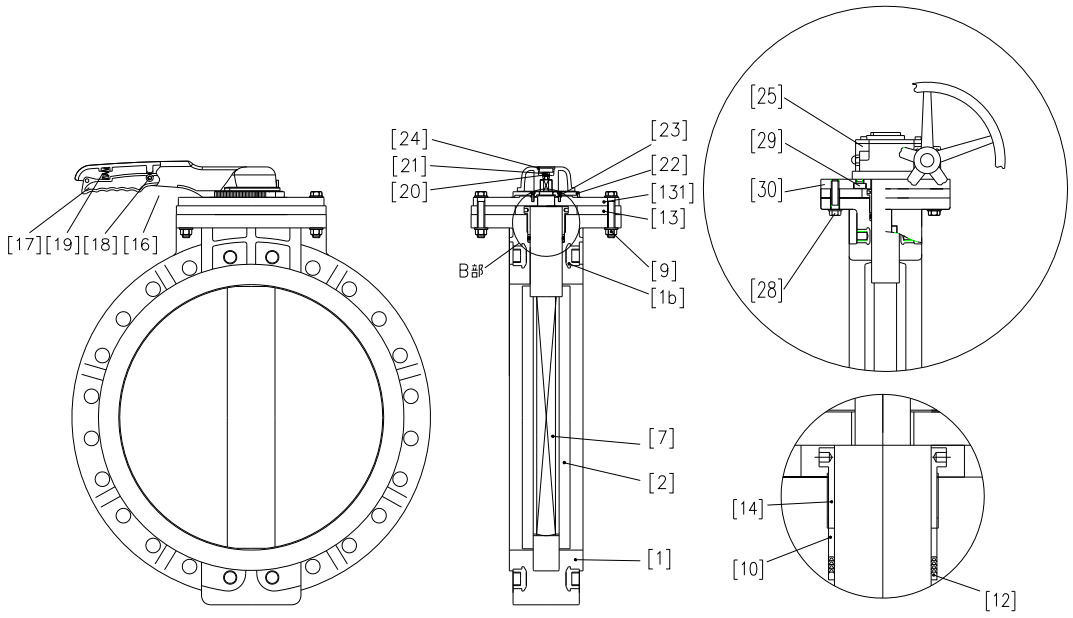
*2) Used for 300, 350mm

Type 56 (400mm)/Body material: PVDF



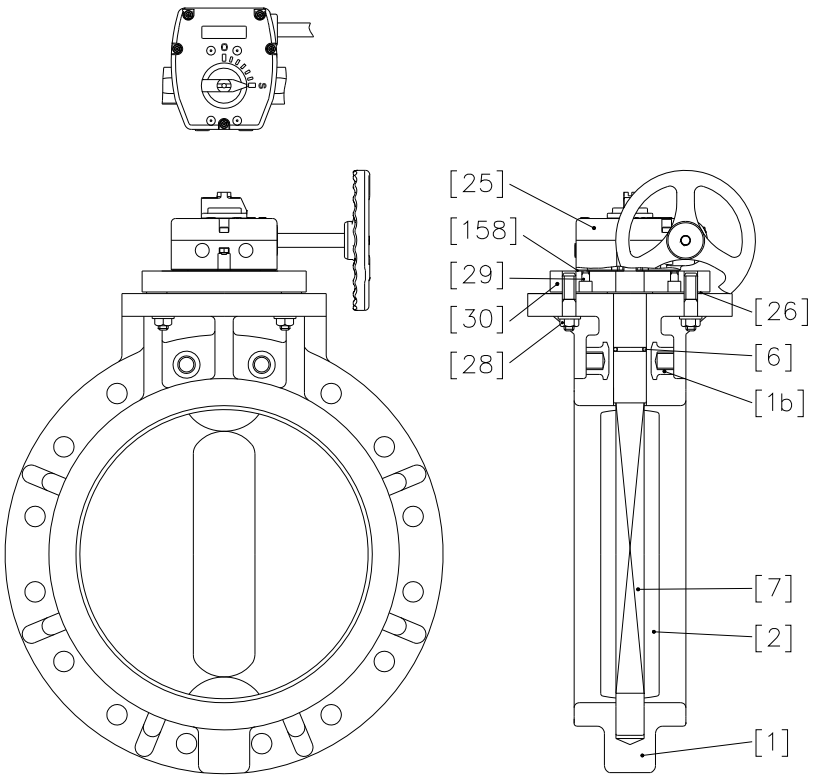
No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[15]	Screw (A)	[22]	Locking plate
[2]	Disc	[16]	Handle (A)	[23]	Set screw (B)
[7]	Stem	[16a]	Insert Metal of Handle	[24]	Cap (A)
[9]	Bolt (A)	[17]	Handle lever	[25]	Gearbox
[10]	Bush (A)	[18]	Pin	[28]	Bolt (C)
[12]	V packing	[19]	Spring	[29]	Bolt (D)
[13]	Spacer (A)	[20]	Washer (A)	[30]	Stand
[14]	Ground	[21]	Bolt (B)	[131]	Stem Holder (C)

Type 75 (450～600mm) / Body material: PVDF



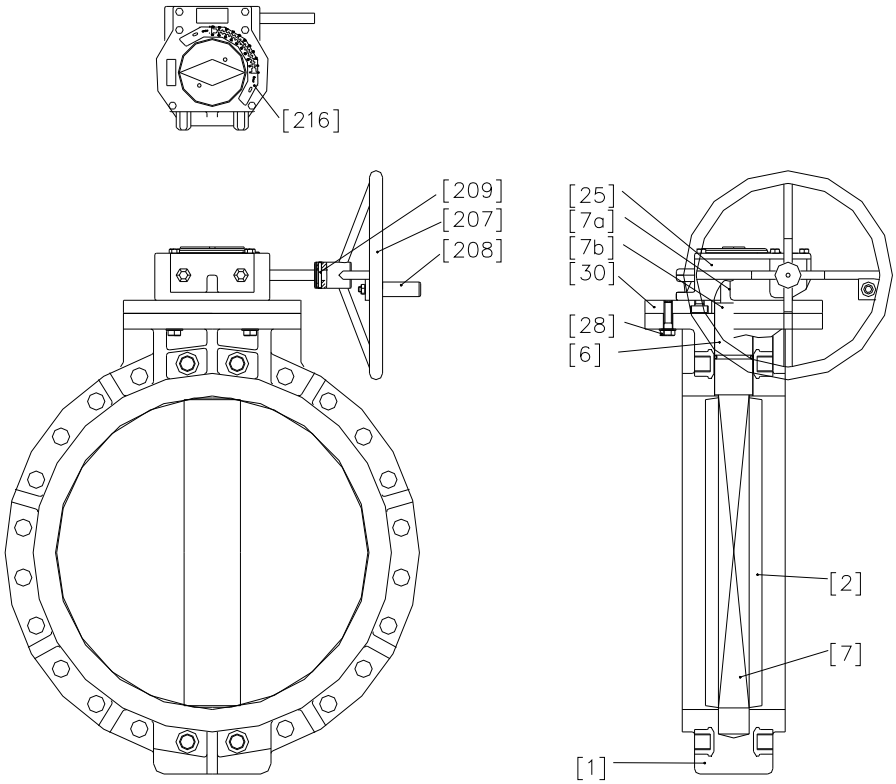
No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[14]	Ground	[23]	Set screw (B)
[1b]	Insert Metal of Body	[16]	Handle (A)	[24]	Cap (A)
[2]	Disc	[17]	Handle lever	[25]	Gearbox
[7]	Stem	[18]	Pin	[28]	Bolt (C)
[9]	Bolt (A)	[19]	Spring	[29]	Bolt (D)
[10]	Bush (A)	[20]	Washer (A)	[30]	Stand
[12]	V packing	[21]	Bolt (B)	[131]	Stem Holder (C)
[13]	Spacer (A)	[22]	Locking plate		

Type 56 (400mm) / Body material: PP



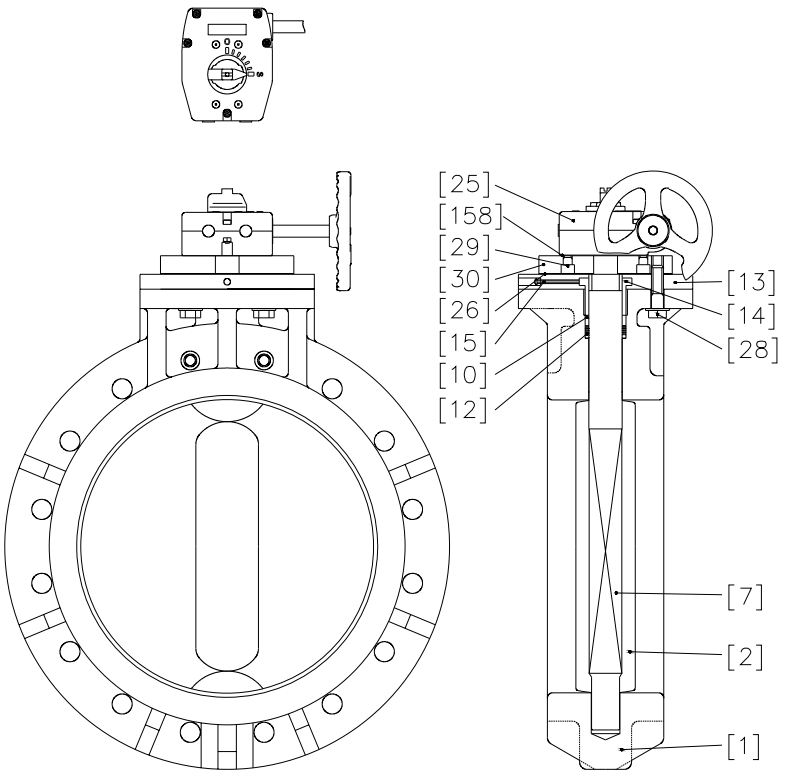
No.	DESCRIPTION
[1]	Body
[1b]	Insert Metal of Body
[2]	Disk
[6]	O-Ring (C)
[7]	Stem
[25]	Gearbox
[26]	Gasket (A)
[28]	Bolt/nut (G)
[29]	Bolt (D)
[30]	Stand
[158]	Gasket (L)

Type 75(450～600mm) / Body material: PP



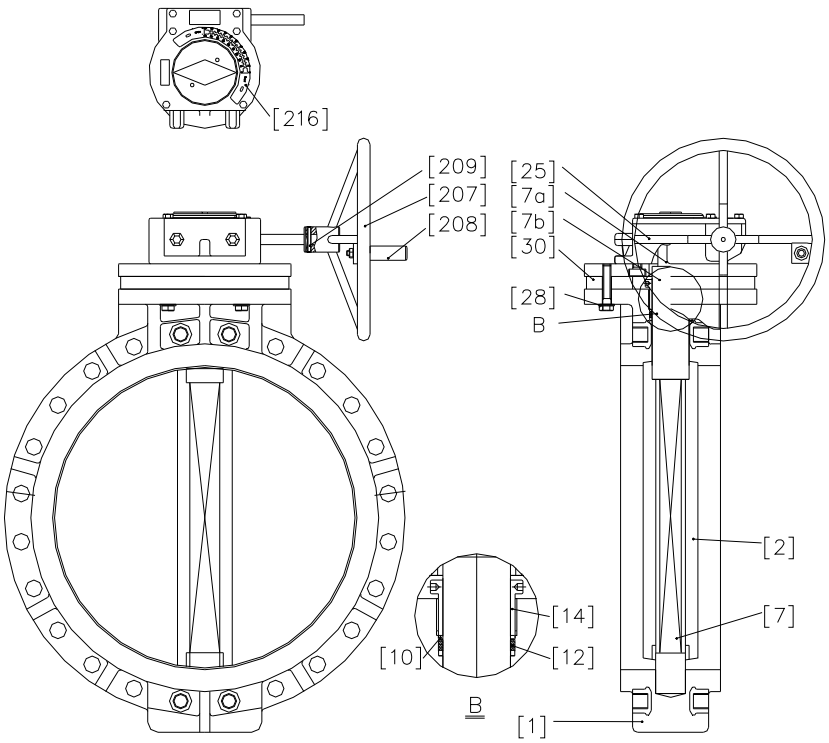
No.	DESCRIPTION
[1]	Body
[1b]	Inserted Metal of Body
[2]	Disk
[6]	O-Ring (C)
[7]	Stem
[7a]	Key (A)
[25]	Gearbox
[28]	Bolt (C)
[30]	Stand
[207]	Handle (C)
[208]	Handle grip
[209]	Spring pin
[216]	Scale Plate

Type 56(400mm) / Body material: PVDF



No.	DESCRIPTION
[1]	Body
[2]	Disk
[7]	Stem
[10]	Bush (A)
[12]	V packing
[13]	Spacer (A)
[14]	Ground
[15]	Screw (A)
[25]	Gearbox
[26]	Gasket (A)
[28]	Bolt (C)
[29]	Bolt (D)
[30]	Stand
[158]	Gasket (L)

Type 75 (450mm)/Body material PVDF



No.	DESCRIPTION
[1]	Body
[1b]	Inserted Metal of Body
[2]	Disk
[7]	Stem
[7a]	Key (A)
[10]	Bush (A)
[12]	V packing
[13]	Spacer (A)
[14]	Ground
[25]	Gearbox
[28]	Bolt (C)
[30]	Stand
[207]	Handle (C)
[208]	Handle grip
[209]	Spring pin
[216]	Scale Plate

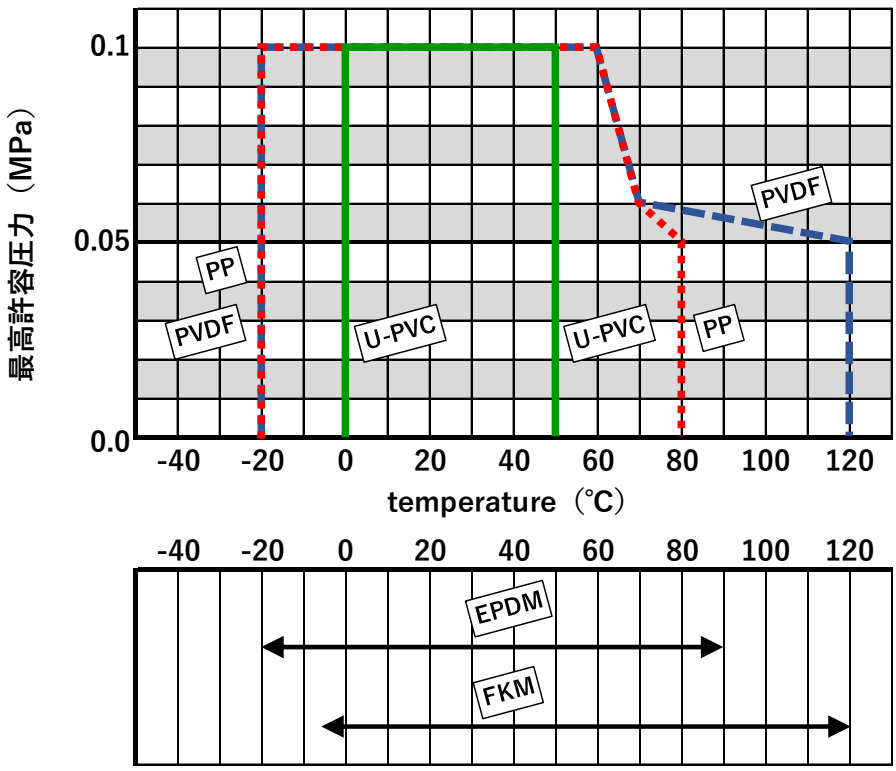
4. Product Specifications

Product Model Code List

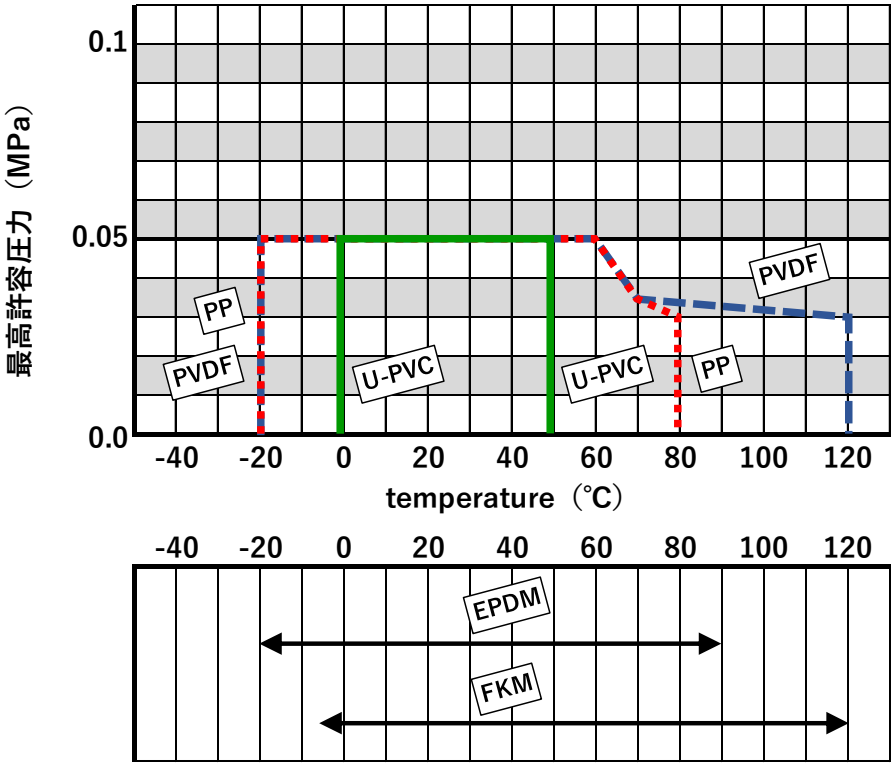
ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	Connection	Standard	Size
V	* *	* *	*	*	W	*	* * *
V MANUAL VALVE	**D7** TYPE 57	**LV** LEVER TYPE	**U** U-PVC	**E** EPDM	**W** WAFER	**1** JIS10K	**040** 40mm
	D6 TYPE 56	SG SIDE GEAR TYPE	**P** PP	**V** FKM		**5** JIS5K	**050** 50mm
	DP TYPE 75		**F** PVDF	T PTFE		W –	**065** 65mm
						D DIN	**080** 80mm
						A ANSI	**100** 100mm
							125 125mm
							150 150mm
							200 200mm
							250 250mm
							300 300mm
							350 350mm
							400 400mm
							450 450mm
							500 500mm
							600 600mm

Relationship between maximum allowable pressure and temperature

Rotary damper Type 57 40～200mm



Rotary damper Type 57 250～350mm
Rotary damper Type 56 400mm
Rotary damper Type 75 450~600mm



Limit switch specifications

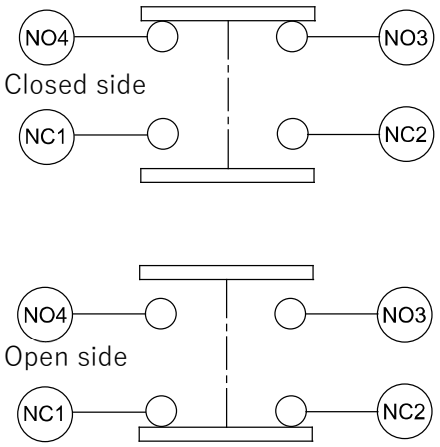
SIZE mm	Operation method	Model	Protection grade
40～200	Lever type	1LS1-J	IP67
40～400	Side gear type	TA2-SB2	IP65

Limit switch rating

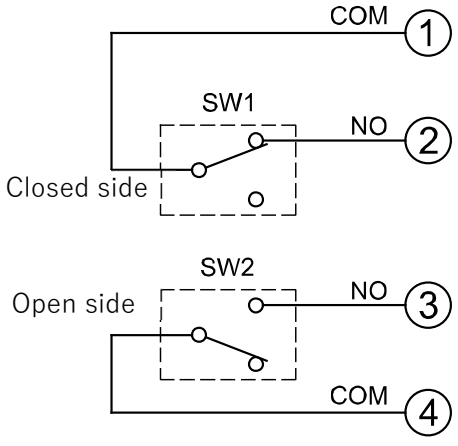
Model	Rated voltage	Resistance load (A)	Induction load (A)
1LS1-J	125VAC	10	6
	250VAC	10	6
	115VDC	0.8	0.2
	230VDC	0.4	0.1
TA2-SB2	125VAC	11	7
	250VAC	11	7
	125VDC	0.5	-
	250VDC	0.25	-

Internal circuit

1LS1-J
※The figure shows the end of the closing operation.



TA2-SB2 / TA-200-SB2
※The figure shows the end of the closing operation.

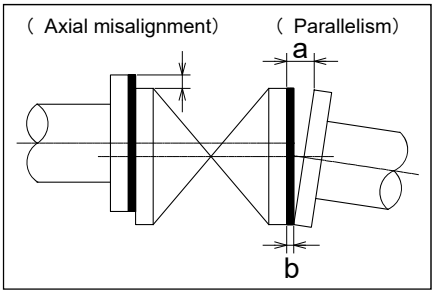


5. Piping

Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.

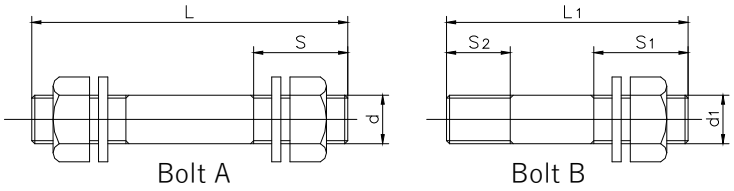
Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten when piping support is removed with a U-band, etc. ▶ Do not tighten the bolt nut for piping with the specified torque or more.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment for the work details when installing piping. **The valve can be damaged, or leak.** ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Use a connection flange with a full-face seat. If a flange other than the full face seat (flange adapter/backing flange, etc.) is unavoidably used, the flange corners may bite into the seat depending on the size of the valve, causing damage to the seat. Contact us in advance. ▶ Check that the flange standards of each other are correct. **The valve can be damaged, or leak.** ▶ Flange surface parallelism and shaft misalignment should be less than the values shown in the table below. (The piping may be damaged due to stress applied to it.)

SIZE (mm)	Shaft misalignment	Parallelism (a-b)
40～80	1.0 mm	0.8 mm
100～150	1.0 mm	1.0 mm
200～600	1.5 mm	1.0 mm



Preparations	▶ Torque Wrench ▶ Wrench ▶ Through bolts, nuts, and washers (with the following dimensions) ▶ AV packing or gasket

Dimensions of through bolt (bolt A) and screw-in bolt (bolt B)



▼JIS10K

Nominal size		Bolt A			Bolt B				Quantity		
Mm	Inch	D	L(mm)	S(mm)	d1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	$1^1/_2$	M16	115	40	—	—	—	—	4	—	8
50	2		125	45							
65	$2^1/_2$		135								
80	3								8		16
100	4		145								
125	5	M20	165	55							
150	6		175								
200	8		195						12		24
250	10	M22	225	60							
300	12		245						16		32
350	14		255	65							
400	16	M24	290	60	M24	115	60	30	14	4	32
450	18		305	65		120	65		16	8	40
500	20		315								
600	24	M30	350	75	M30	135	70	40	20		48

▼JIS5K

Nominal size		Bolt A			Bolt B				Quantity		
Mm	Inch	D	L(mm)	S(mm)	d1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	$1^1/_2$	M12	100	30	—	—	—	—	4	—	8
50	2		105	35							
65	$2^1/_2$		110								
80	3	M16	120	40					8	—	16
100	4		130								
125	5		140								
150	6		150								
200	8	M20	195	55					12		24
250	10		225	60							
300	12		240								
350	14		255	65							
400	16	M22	260	55					16		32
450	18		270								
500	20		280						20		40
600	24	M24	315	60							

Note 1. The above figures are the Nominal size 40～350mm for AVTS flange and the Nominal size 400～600mm for JISB2220 "steel pipe flange."Dimensions when nominal 10k type is used.

Note 2. The quantity of nuts and washers is the quantity of two sets (one bolt/two nuts and two washers) for bolt A, and one set (one bolt/one nut and one washer) for bolt B.

▼ water

Nominal size		Bolt A			Bolt B				Quantity		
Mm	Inch	D	L(mm)	S(mm)	d1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
50	2	M16	125	40	—	—	—	—	4	—	8
80	3		135								
100	4		150						6		12
125	5		160								
150	6		165						8		16
200	8		185								
250	10	M20	225	50					10		20
300	12		240								
350	14	M22	240	60					12		24
400	16		280								
450	18	M24	300								
500	20		310								
600	24		330						16		32

Note 1. The above values are for a Nominal size of 40 to 350 mm with a AVTS fl ange, and for a Nominal size of 400 to 600 mm with a JISG5527 "Ductile cast iron deformed pipe" with a nominal pressure 7.5k.

Note 2. The quantity of nuts and washers is the quantity of two sets (one bolt/two nuts and two washers) for bolt A.

[Procedure]

1) Turn valve fully closed.

2) Install a AV seal or gasket between the valve and flange.

3) Temporarily set by hand with through bolts, washers, and nuts for connection.
(For 450-600mm with JIS 10K connecting standards, screw-in screws are also used.)

4) Gradually tighten to the specified torque value diagonally with a torque wrench.

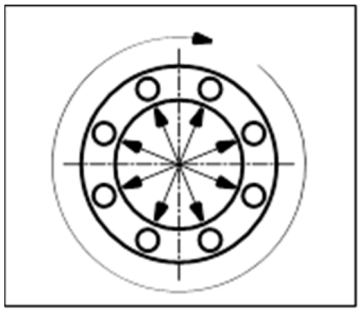
5) Tighten clockwise at least two turns at the specified torque value.

Specified torque value

Units;N•m{kgf・cm}

Nominal size (㎜)	40	50～65	80, 100	120, 150	200, 250	300, 350	400, 450	500, 600
Torque value	20.0 {204}	22.5 {230}	30.0 {306}	40.0 {408}	55.0 {561}	60.0 {612}	80.0 {816}	100.0 {1020}

※Up to 40～350mm, the specified torquevalue when AV packing is used, but there is no AV packing above 400mm.These values are for reference.



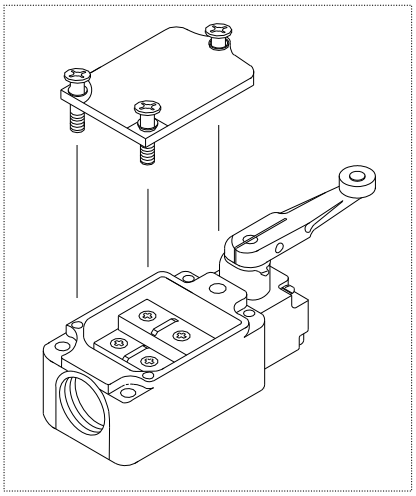
Limit switch wiring method

Warning	
Prohibition	**Serious injury can result.** ▶ Do not connect or separate lines to the limit switch in the power supply status. (Electric shock or sudden start of opportunity)

Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not leave or use with the cover open. (Water or dust may penetrate and cause operation failure.) ▶ Connect the wires using solderless terminals with insulation covering so that they do not come into contact with the cover or housing. (If the crimp terminal comes into contact with the cover, the cover may not tighten or a ground fault may occur.)
Forcing	**The valve can be damaged, or leak.** ▶ Contact CKD when using the limit switch in a 1mA～100mA, DC5～30V. ▶ Securely attach the cover. (Rainwater may enter and cause malfunction.)

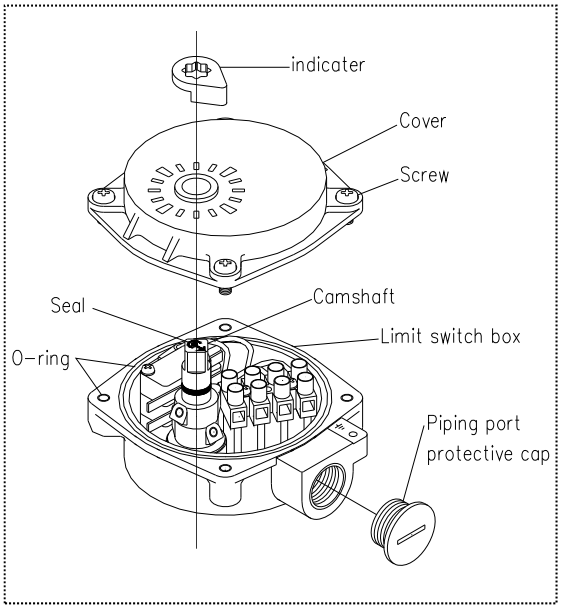
Preparations	▶ Phillips screwdriver ▶ Connector (G1/2) ▶ Flat-blade screwdriver ▶ Wire stripper

[Procedure] (1LS1-J)



1) Loosen the three screws holding the limit switch cover with a Phillips screwdriver and remove the cover.
(The screws are structured so that they do not come off the cover.)
2) Pull off the resin protective cap.
3) Pass the cable through the connector.
4) Peel off the outer skin of the cable with a wire stripper.
5) Use a terminal crimping tool to attach the crimping terminal to the lead wire.
6) Wire the terminal screws with a Phillips screwdriver according to the internal circuit diagram on page 15.
* Tighten the screws firmly.
7) Tighten the three screws holding the limit switch cover with a Phillips screwdriver to attach the cover.
8) Tighten the cable with the connector

[Procedure] (TA2-SB2)



1) Remove the pointer by hand.
2) Loosen the four screws holding the lid with a Phillips screwdriver and remove them. ※Do not lose the O-ring.
3) Turn the pipe port protection cap counterclockwise to remove it.
4) Pass the cable through the connector.
5) Peel off the outer skin of the cable with a wire stripper.
6) Wire the terminal screw with a flathead screwdriver according to the internal circuit diagram on page 15.
7) Tighten the connector to secure the cable.
8) After attaching the lid, tighten the four screws alternately and evenly with a Phillips screwdriver.
9) Insert the pointer so that the direction of the seal arrow on the camshaft head matches the direction of the pointer.

6. Operation method

▶ Valve opening and closing operations

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not turn the handle unnecessarily with excessive force when fully closing or opening the valve. ▶ Do not open or close the valve with dust or other foreign matter in the fluid.

⚠Caution	
Forcing	**The valve can be damaged, or leak.** ▶ Since foreign matter such as sand may remain in the pipeline even after the valve is installed, open and close the valve after cleaning the inside of the pipe. ▶ Handle operation must be done by hand. ▶ Be sure to pass water before opening/closing the oil-prohibited parts.

▶ Turn gently to open/close operation.

▶ For the lever type, the handle and the disc are oriented in the same direction.

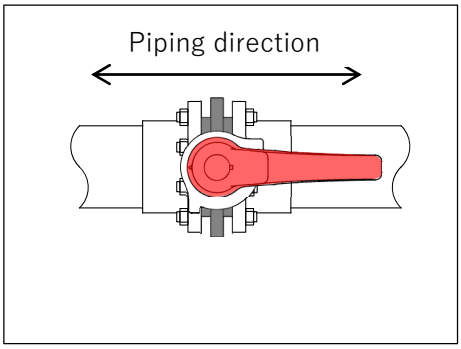
▶ When fully opened, the handle is parallel to the piping direction.

▶ When fully closed, the handle is perpendicular to the piping direction.

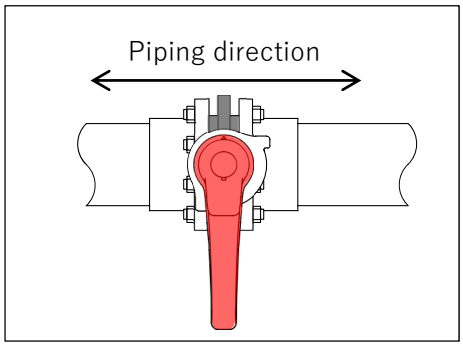
The fully closed position has a tightening allowance of approx. 5° in angle. If it is within the closed side graduation of the locking plate, apply fluid.

Can be sealed. (See Fig. 8-1.)

Fully open state



Fully closed state

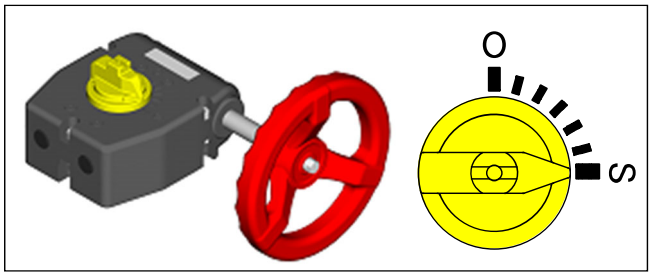


▶ For the gear type, check the movement of the opening instruction at the top of the gear box.

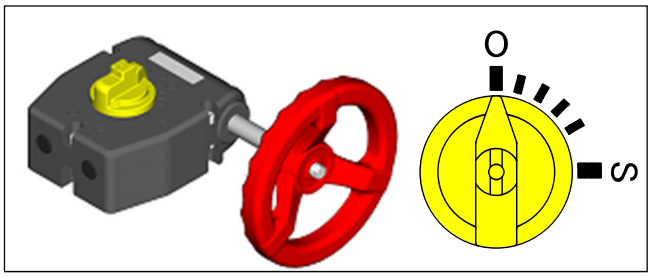
・When the valve is fully closed, the position of "S" (SHUT) is pointed.

・When the valve is fully open, the position of "O" (OPEN) will be oriented.

Fully closed state

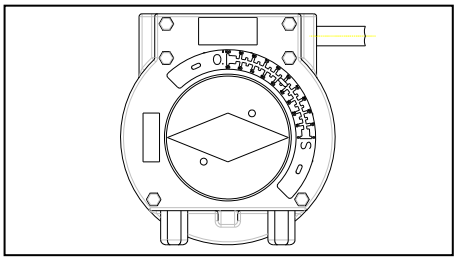


Fully open state

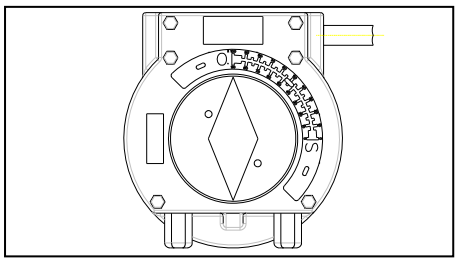


Nominal size 450mm - 600mm

Fully closed state



Fully open state



7. How to disassemble/assemble parts for replacement

Warning	
Prohibition	**Serious injury can result.** ▶ The handle [16] and the gearbox [25] can be replaced even when the fluid pressure is applied. However, do not remove the stem retainer. This could cause the stem to pop out and is dangerous.
Forcing	**Serious injury can result.** ▶ Be sure to perform safety inspections of the machine tool and power tool before starting operation. ▶ Wear appropriate protective equipment for the work details when installing piping.

Caution	
Forcing	**The valve can be damaged, or leak.** ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Completely drain the fluid in the piping when replacing the valve or replacing parts.

Preparations	▶ Protective gloves ▶ Protective glasses ▶ wrench ▶ hex wrench ▶ socket wrench ▶ Plier ▶ silicone grease ▶ flat-blade screwdriver ▶ Phillips screwdriver ▶ Jack ▶ Thrust Bearing ▶ Plate ▶ Pipe

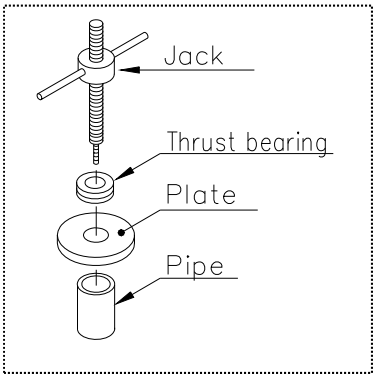
Body material: U-PVC, PP

<Disassembly>

1) Completely drain the fluid in the piping and fully close the valve.

2) Loosen the connecting bolts and nuts with a wrench.

3) Disconnect the valve from the pipe.

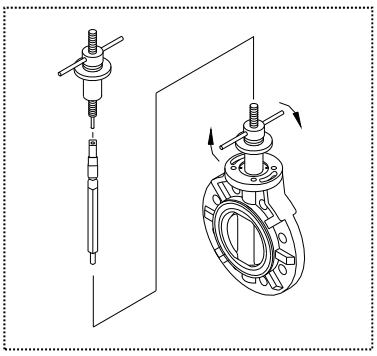


For lever type

4) For how to remove handle (A) [16], refer to "10. How to Attach Handle" (page 29).

5) After removing the handle (A) [16], loosen the set screw (B) [23] and remove the locking plate [22].

6) <For Nominal size 40～350mm> Loosen the set screw (F) [157] and remove the stem retainer (A) [8]. <For Nominal size 400～600mm> Loosen screws (A) [9] and remove stem retainer (C) [131].



For gear type

4) <For Nominal size 40～200mm> Loosen screws (C) [28] and pull gearbox [25] upwards to remove. <For Nominal size 250～600mm> Loosen the screws (G) [28] and pull the mounting base [30] up together with the gearbox [25] to remove it.

5) <For Nominal size 250～600mm> Loosen the screws and remove the gearbox [25] from the mounting base [30].

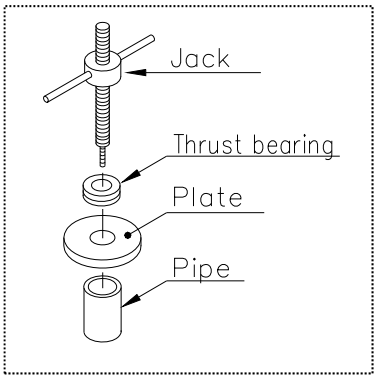
7) <Nominal size 40mm～100mm> Remove stem [7] with pliers or hands. <Nominal size 125mm～600mm> Attach the jack, thrust bearings, plate/pipe to the valve. Screw the jack shaft into the stem [7], and turn the handle of the jack to remove the stem [7].

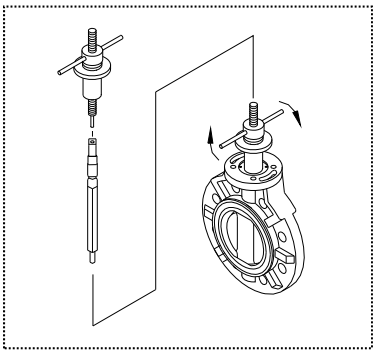
<Assembly>

1) Apply silicone grease to the O-rings (C) [6] before assembly.

2) To assemble parts, reverse the disassembly procedure.

Body material: PVDF





<Disassembly>

1) Completely drain the fluid in the piping and fully close the valve.

2) Loosen the connecting bolts and nuts with a wrench.

3) Disconnect the valve from the pipe.

For lever type

4) For how to remove the handle, refer to "10. How to Attach Handle" (page 29).

5) Loosen setscrew (B) [23] and remove locking plate [22].

6) <For Nominal size 40～400mm> Loosen and remove screws (A) [15].

7) <For Nominal size 40～250mm> Loosen screws (A) [9] and remove spacers (A) [13]. <For Nominal size 300～600mm> Loosen screws (A) [9] and remove spacers (A) [13] and stem retainer (C) [131].

For gear type

4) <For Nominal size 40～400mm> Loosen and remove screws (A) [15].

5) <For Nominal size 40～350mm> Loosen screws (C) and spacers (A) [13]
Remove gearbox [25]. <For Nominal size 400～600mm>
Loosen screws (C) [28] and remove spacer (A) [13] and mounting bracket [30] with gearbox [25].

6) <For Nominal size 400～600mm> Loosen the screws and remove the gearbox [25] from the mounting base [30].

8) Loosen and remove gland [14].

9) <Nominal size 40mm～100mm> Remove stem [7] with pliers or hands. <Nominal size 125mm～600mm> Attach the jack, thrust bearings, plate/pipe to the valve. Screw the jack shaft into the stem [7], and turn the handle of the jack to remove the stem [7].

<Assembly>

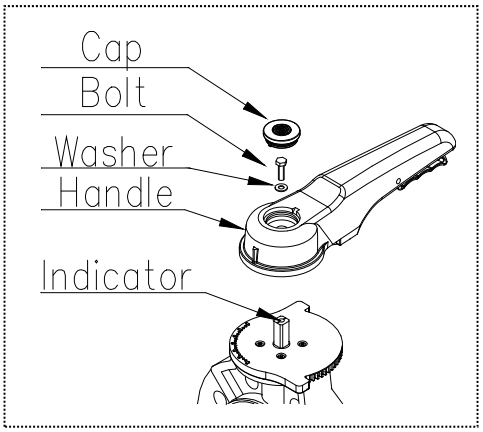
1) Lubricate the sliding parts beforehand with silicone grease before assembly.

2) To assemble parts, reverse the disassembly procedure.

How to attach the hand

Preparations	▶ Plastic hammer ▶ Socket wrench ▶ flat-blade screwdriver ▶ Protective goggles ▶ Protective gloves

<Lever type mounting>
[Procedure]

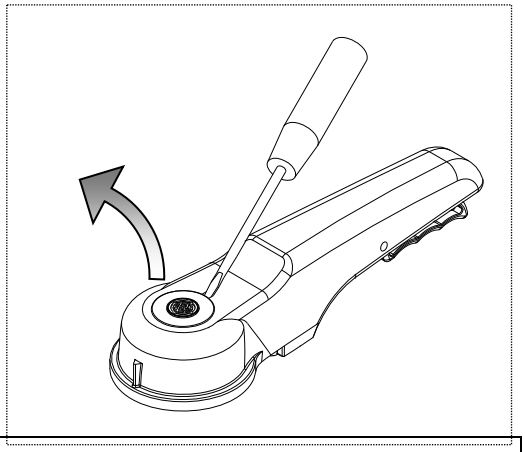


1) Attach the handle to the stem while holding the handle lever. Align the handle with the indicator line on the top of the stem.
2) Use the socket wrench to secure the handle to the top of the stem with the supplied bolt and washer.
3) Align the convex part on the side of the cap with the concave part on the handle side, and lightly tap with a plastic hammer to snap the cap into place.

Socket size for socket wrench

Valve Nominal size	40-100 mm	125-400 mm	450-600mm
Bolt dimensions	M6×15L	M8×15L	M8×20L
Socket designation	10	13	13

<Gear type mounting>
[Procedure]



1) Apply silicone grease to the inside of the gearbox [25] mating hole on the handle (C) [207], and install while aligning the spring pin hole position.
2) Use a hammer to push in the spring pin [209].

<Lever type removal >
[Procedure]

1) Remove the cap by pushing it up from the side with a flathead screwdriver.
2) Use a socket wrench to loosen the bolt and washer to remove the handle.

⚠Caution	
Prohibition	**Damage may occur.** ▶ Do not apply excessive force to the cap when attaching or removing the cap.

<Gear-type removal>

1) Use a tool to push out the spring pin that connects the handle (C) [207] and the gearbox [25].
2) Pull out handle (C) [207] from gearbox [25].

8. How to adjust the stopper for the gear type

Preparations	▶ Protective gloves	▶ Hex Wrench
	▶ Wrench	

※If you want to tighten the disc deeper, you can do so by adjusting the stopper bolts on the gearbox.

For fully closed side adjustment

[Procedure]

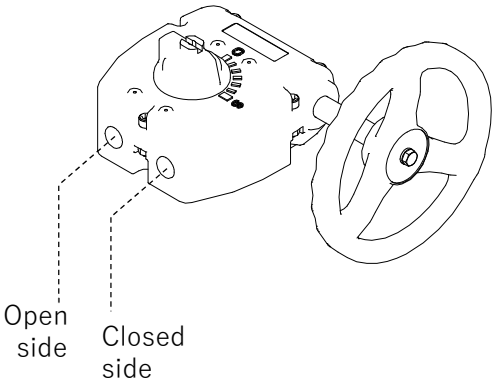
1) Remove the fully closed side cap of the gearbox by hand.
(For Nominal size 450mm～600mm, remove the nut.)
2) Loosen the stopper with an Allen wrench.
3) Carry out manual operation of the valve and move the disc to the position where you want to tighten.
4) By applying silicone grease to the stopper bolt
Tighten with a hex wrench.
5) Attach the fully closed side cap of the gearbox by hand.
(For the Nominal size 450mm～600mm, attach the nut.)

For full-open side adjustment

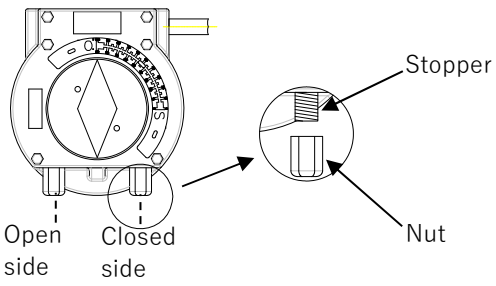
[Procedure]

1) Remove the fully open side cap of the gearbox by hand.
(For Nominal size 450mm～600mm, remove the nut.)
2) Loosen the stopper with an Allen wrench.
3) Carry out manual operation of the valve and move the disc to the position where you want to open.
4) By applying silicone grease to the stopper bolt
Tighten with a hex wrench.
5) Attach the fully closed side cap of the gearbox by hand.
(For the Nominal size 450mm～600mm, attach the nut.)

Nominal size 40mm～400mm



Nominal size 450mm～600mm



9. Inspection item

⚠Caution	
Forcing	**The valve can be damaged, or leak.** ▶ Maintenance should be performed every 3 to 6 months as a guide in order to keep the watch in normal condition and use it for a long time. Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work. ▶ If any trouble is found, take the appropriate action referring to "10. Troubleshooting."

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and re-tighten the pipe bolts. (Ref: 5. Piping method)
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble for parts replacement)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)
Internal leakage (visual and measurement)	No leakage	Leakage to secondary side when valve is fully closed	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble for parts replacement)
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble for parts replacement)
Abnormal noise (hearing)	No abnormal noise	Valve	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Safety Precautions [Handling the Product])
Odor (sniffing)	No odor	Valve	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)

Periodic inspection

●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Vibration (palpation)	No difference from other parts	Valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions [Handling the Product])
			Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions [Handling the Product])

Periodic inspection

●Guideline of the inspection cycle: 6 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Operability of manual handle (touch)	Rotates smoothly	Manual operation unit	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)
Looseness of bolts (visual and palpation)	No Loose	For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method)
Corrosion Or rust ※1) (visual inspection)	No corrosion or rust	Product appearance and	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble for parts replacement)

10. Cause of malfunction and remedy

⚠Caution	
Forcing	**There is a danger of injury.** ▶ If any malfunction is found, immediately stop using the product and take appropriate action. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work.

Failure phenomenon	Possible cause	Measures and measures
The handle does not turn (cannot turn) during manual operation.	The valve is already fully open (or fully closed).	Rotate the handle in the opposite direction (Ref.: 8. How to operate)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 7. How to disassemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Ref: 2. Safety Precautions [Handling the Product])
	Gearbox failure	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 7. How to disassemble for parts replacement)
	Stem corroded or damaged	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 7. How to disassemble for parts replacement)

Cause of malfunction and remedy (Continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid does not stop even when fully closed (Internal leakage)	High fluid pressure	Use below the maximum allowable pressure (Ref: 2. Safety Precautions [Handling the Product])
	Worn or scratched body or disc	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 7. How to disassemble for parts replacement)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 7. How to disassemble for parts replacement)
	Piping bolts are over-tightened or uni-tightened	Retighten the piping bolts (Ref: 5. Piping method)
(external leak)	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 7. How to disassemble for parts replacement)

11. Disposal method of residual materials and waste materials

Warning	
Forcing	**When burnt, toxic gas is generated.** ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

Contact the nearest dealer, our sales office, or our web website for inquiries about this product.

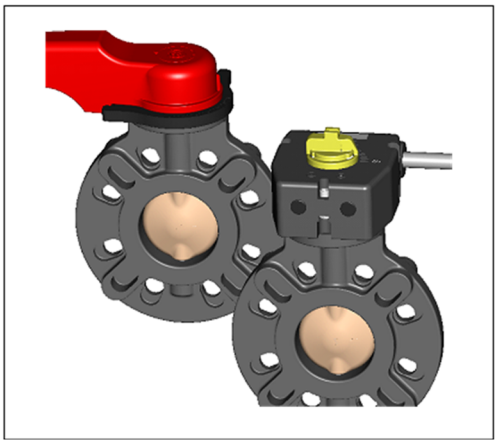
[Instruction Manual]

Rotary damper (for manual use)

Type 57: 40～350mm

Type 56: 400mm

Type 75: 450～600mm



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Please note that the content of this manual is subject to change without notice. **March 2024**