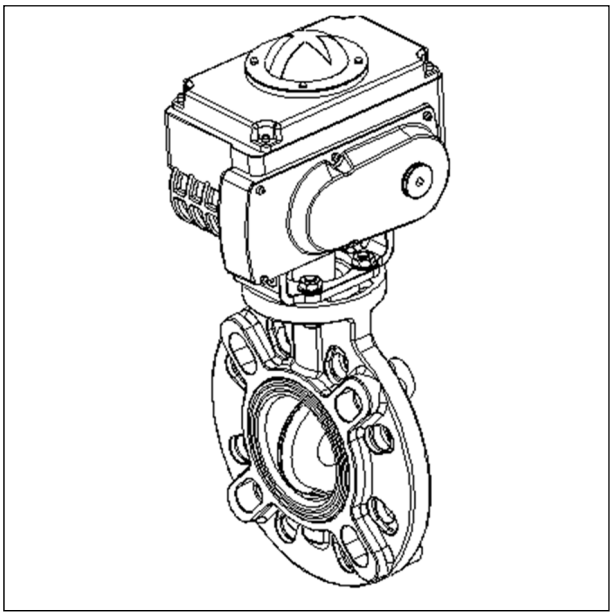
Butterfly valve
Electric Actuated Type T
Type 57: 40～350mm

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.
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	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not touch moving parts during operation with hands, feet or tools.
Forcing	**There is a danger of injury.** ▶ 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 use the product in places where it may be submerged. ▶ Do not subject the valve to large vibrations.

⚠Caution

Forcing

There is a danger of injury.
The valve can be damaged, or leak.

▶ This valve is structurally dead space. Vaporizing fluids such as hydrogen hydroxide (H_2O_2) and soda hypochlorite (NaClO) may vaporize in the dead space and cause an abnormal pressure rise inside the valve. Be very careful. (Gas with abnormal pressure increase due to vaporization is a compressible fluid. Therefore, if a valve should break, fragments will scatter explosively, which is very dangerous.)

There is a danger of injury.

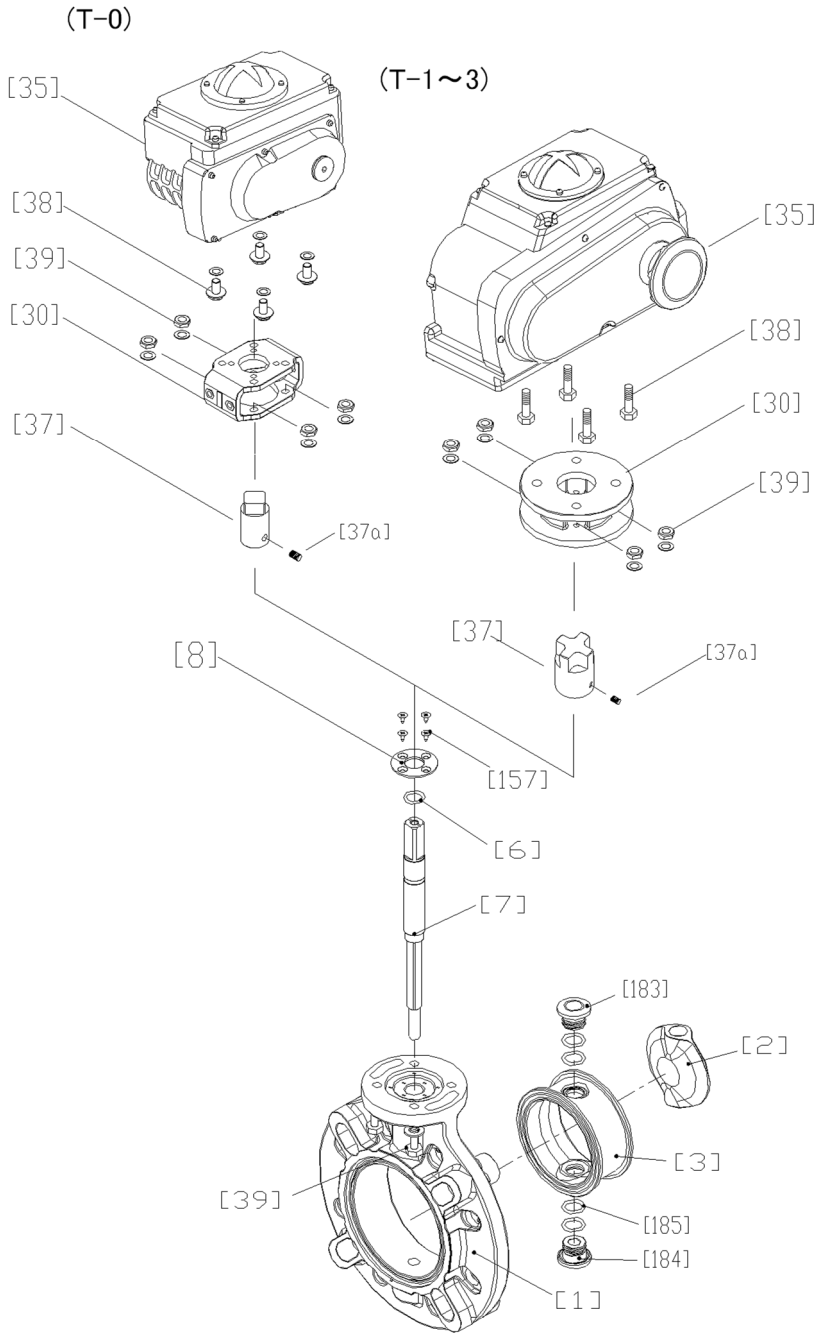
▶ Use the supplied handle or a tool specified by the manufacturer for manual operation.
▶ When performing manual operation, make sure that the actuator is not operated by the motor.
▶ Secure sufficient space for maintenance and inspection when piping.

The valve can be damaged, or leak.

▶ Check the voltage on the power supply and nameplate before use.
▶ 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.
▶ During operation, the surface temperature of the actuator may rise due to heat generated by internal equipment. Pay attention to the opening/closing frequency so that the temperature does not exceed the allowable range.
▶ 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 fluids containing crystalline material under conditions that do not recrystallize.
▶ Avoid any place where the valve is constantly exposed to splashes of water and dust, or direct sunlight, or protect the valve with a cover or the like to cover the entire area.
▶ Perform maintenance periodically by referring to "**10. Inspection items**". Pay particular attention to temperature changes and aging during long-term storage or shutdown or use.
▶ If internal leakage occurs when the valve is fully closed, adjust the stopper.
▶ When installing a valve, provide an appropriate valve support so that excessive force is not applied to the valve and piping.
▶ Always use the product within the indicated product specifications.
▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. If any abnormality is found, be sure to consult your dealer or us for inspection.
▶ Keep the ambient temperature of the installation location within-10 to 50° C.
▶ Avoid locations with volatile gases or poor atmospheres. Provide a cover, etc., to cover the entire area.

3. Name of each part

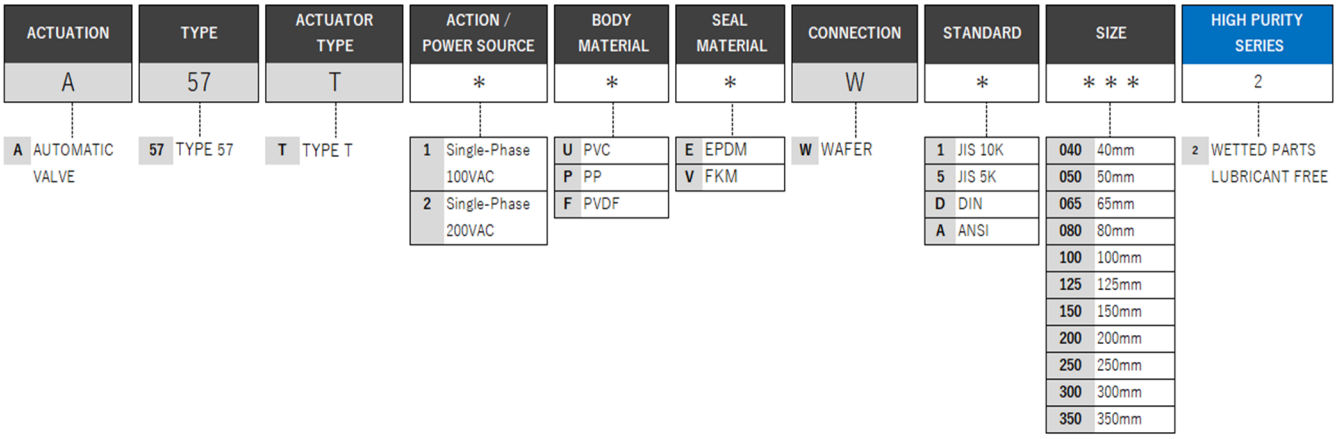
40mm～350mm



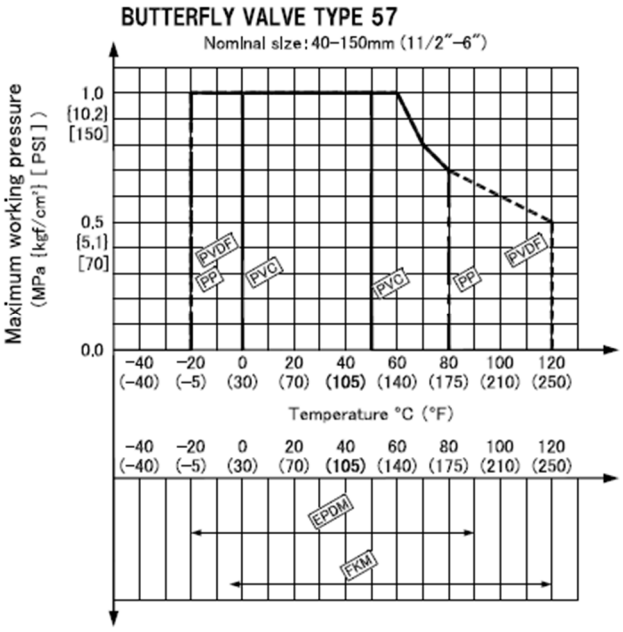
[1]	Body	[30]	Stand	[157]	Set screw (F)
[2]	Disc	[35]	Actuator	[183]	Sheet bush A
[3]	Seat	[37]	Joint (A)	[184]	Sheet bush B
[6]	O-ring (C)	[37a]	Screw (C)	[185]	O-ring (I)
[7]	Stem	[38]	Bolt (E)		
[8]	Stem Holder (A)	[39]	Bolt/nut (A)		

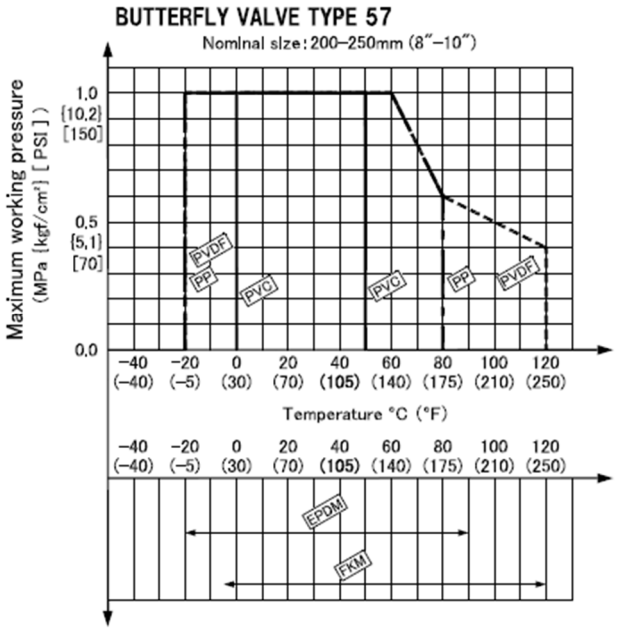
4. Product Specifications

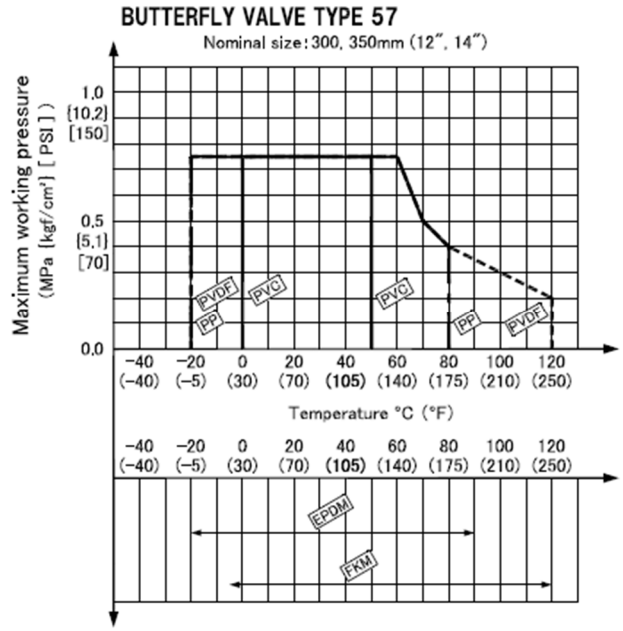
Model number table



Relationship between maximum allowable pressure and temperature







Actuator

Applicable Nominal size (mm)			40～100	125	150	200	250～350
Actuator model			T-0	T-1	T-2	T-2.5	T-3
Open/close time (sec)		50Hz	25			37	55
		60Hz	20			30	50
Degree of protection			JIS C 0920 protection class 5 jet-proof (equivalent to IP65)				
Motor start Current (A) 50/60Hz	100VAC	*100V	1.2/1.2	1.6/1.4	2.4/2.4		5.1/4.8
	110VAC		1.4/1.4	1.7/1.7	2.5/2.5		6.1/6.6
	200VAC	*200V	0.5/0.5	0.7/0.7	1.1/1.1		2.6/2.4
	220VAC※1		0.7/0.7	0.8/0.9	1.2/1.2		3.1/3.0
	220VAC※2	*220V	—	0.7/0.7	1.1/1.0		2.3/2.3
Motor rating Current (A) 50/60Hz	100VAC	*100V	0.50/0.50	0.70/0.60	0.90/1.20		1.60/1.70
	110VAC		0.60/0.60	0.90/0.70	1.00/1.20		1.70/1.80
	200VAC	*200V	0.25/0.25	0.40/0.30	0.50/0.80		0.80/1.00
	220VAC※1		0.30/0.30	0.50/0.40	0.60/0.80		0.90/1.00
	220VAC※2	*220V	—	0.40/0.30	0.50/0.50		0.70/0.80
Manual operation handle revolution (0 to 90 degrees)			6.7	16.5			
Cable connector Nominal size			G1/2 (PF1/2) Two locations				
Motor rated output (W)			8	20	30		90
Motor insulation type			Class E				
Motor rated time (min)			30				
Limit switch capacity			250VAC 10A				
Space heater rated output (W)			8				

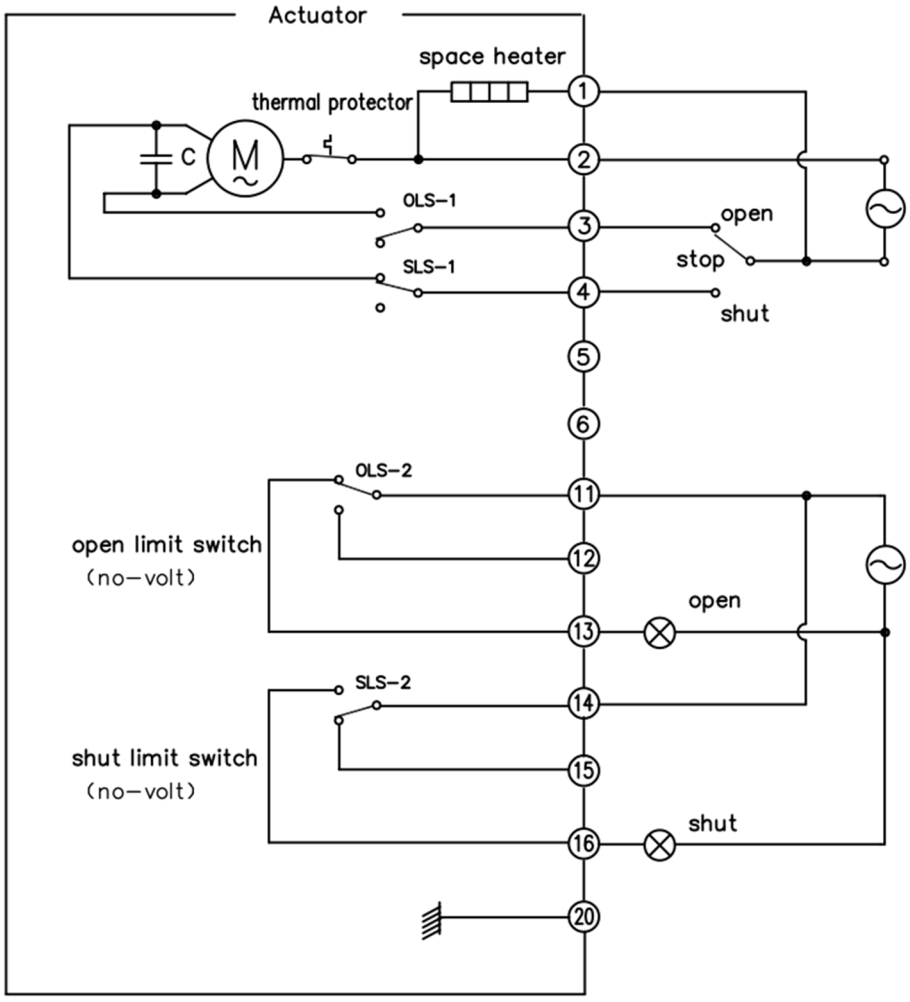
* : Motor voltage

※1 : Standard, with potentiometer, with no-voltage intermediate limit switch

※2 : With speed controller and electro-static positioner

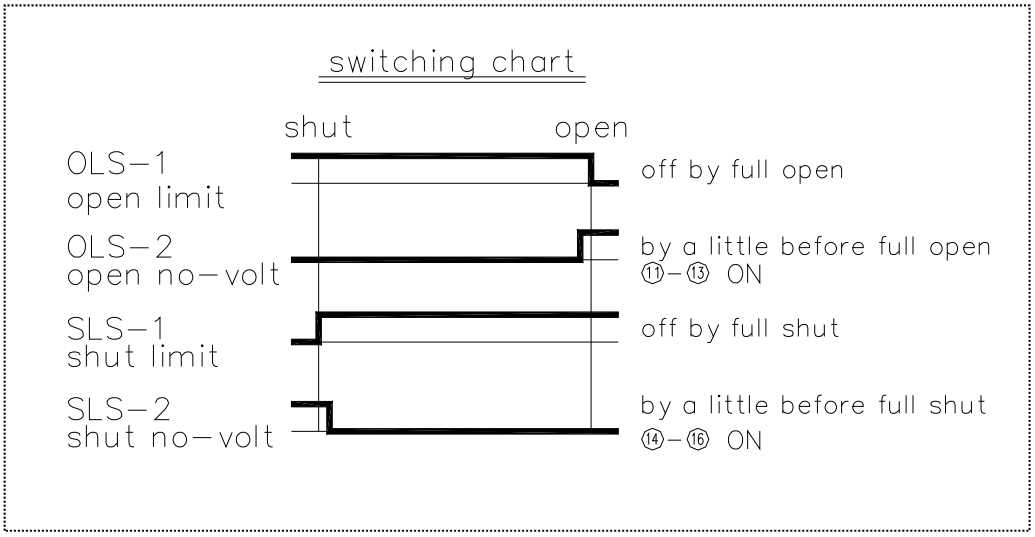
Wiring Diagram

・Reference Wiring Example



NOTE: The wiring diagram shows when the opening operation ends.

Switching chart



About parallel wiring

If several (two or more) electrically operated valves are connected in parallel and operated simultaneously with a single open/close switch (or relay contact), current flows as shown by the dotted lines, causing malfunction. In this condition, the actuator may cause chattering and the actuator may fail. Avoid such wiring connections. (See Fig. 4-1.)

Provide an open/close switch (or relay contact) for each unit to ensure correct operation. (See Fig. 4-2.)

Fig 4-1

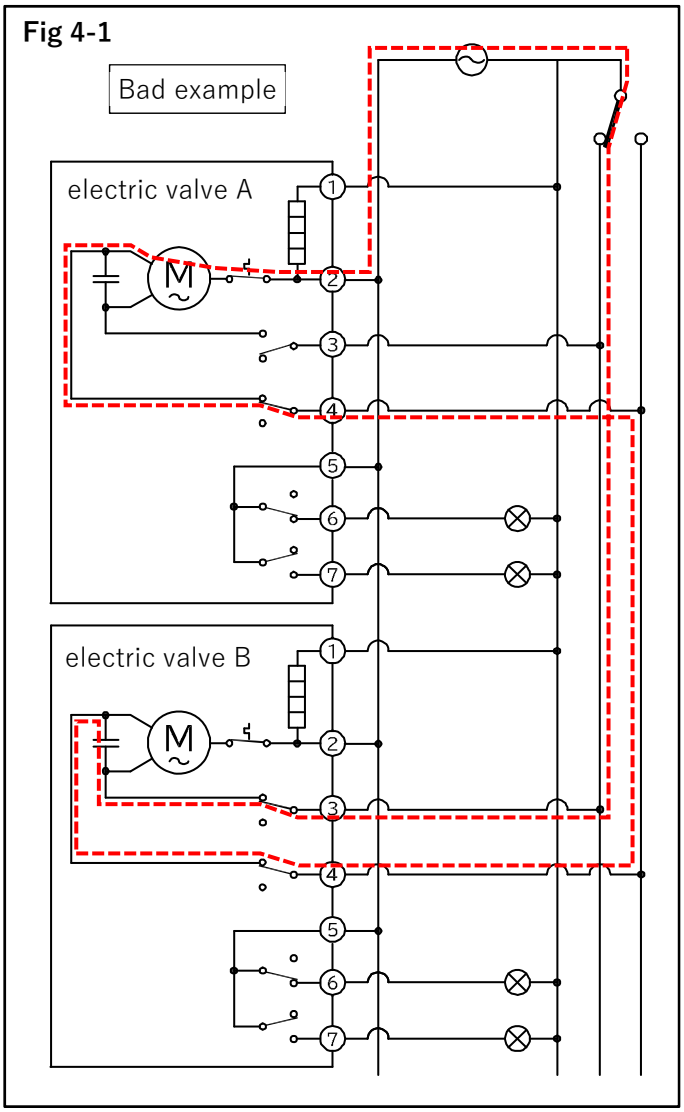
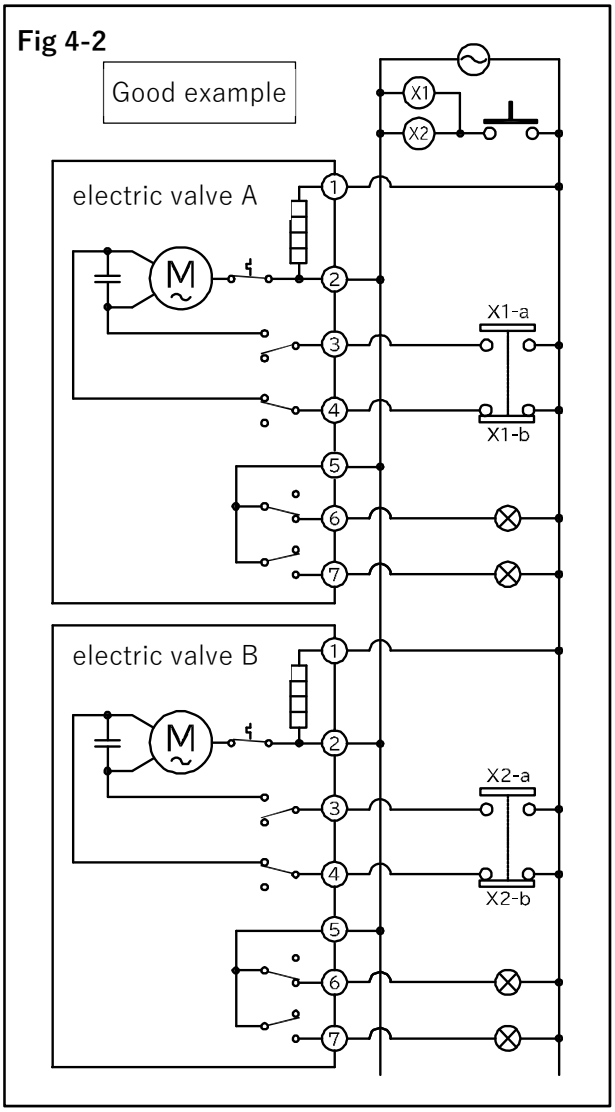


Fig 4-2



Standard option

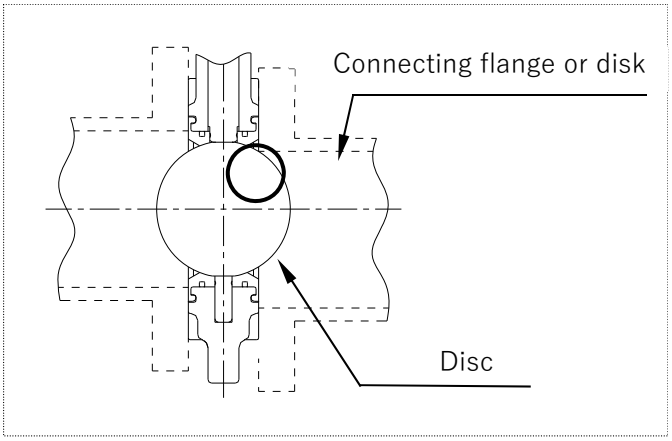
Option name	Objectives and specifications	Remarks
Space heater	・Control of condensation inside the actuator ・Possible to retrofit	Standard equipment
Potentiometer	・Outputs the opening of the valve as a resistance value ・Select from 135 Ω or 500 Ω	
Intermediate limit switch	・Detects the intermediate position (one for each opening/closing) ・Without switching voltage limit switch	
Servo unit (Power Positioner)	・Operates in proportion to DC4～20mA input signal	
Speed controller	・Delay of opening and closing time is possible	
Manual handle	・Valve can be opened and closed during power loss	Standard equipment

Contact us for combinations of the above options and other special options.

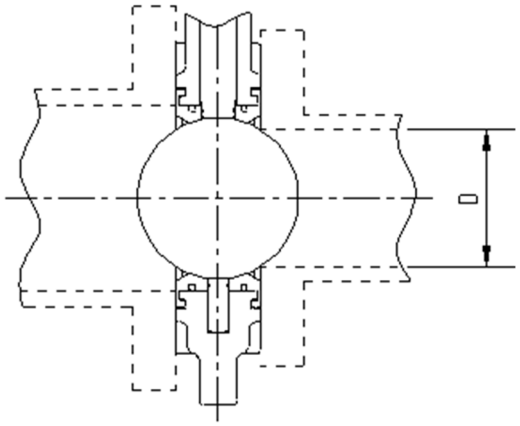
5. Piping method

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 tighten the bolts and nuts for piping to the specified torque values in Table 5-2.
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 according to the type of work being performed. **The valve can be damaged, or leak.** ▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve. ▶ When connecting to metal piping, do not apply piping stress to the valve. ▶ Use a connection flange with a full-face seat. ▶ Check that there is no difference in mutual flange standards. ▶ Keep the axis misalignment and parallelism of the flange surface below the values shown in **Table 5-1** "Axis misalignment and parallelism." ▶ Tighten the bolts and nuts for piping diagonally with the specified torque values in **Table 5-2**.



Butterfly valve 57 is designed to be used for piping of various materials. However, especially when using a large wall thickness of the connecting part (flange pipe) with the valve, it is necessary to chamfer the inner end of the connecting part in order to avoid contact between the valve Disc and the inner surface of the connecting part. There is no problem if the inner diameter of the connecting part is equal to or greater than the following value.



SIZE (mm)	Bore diameter D (mm)
40	31
50	43
65	57
80	67
100	91
125	115
150	137
200	179
250	231
300	280
350	333

Preparations	▶ Torque Wrench ▶ Wrench ▶ Manual override lever ※ ▶ Through bolts, nuts, and washers

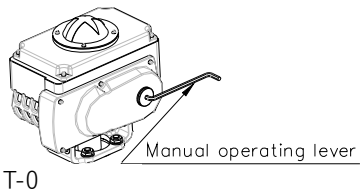
※Manual handle

T-0 is equipped with a manual override (Allen key: 5mm) on the back of the actuator.

T-1～T-3 is equipped with a round hand wheel in the actuator.

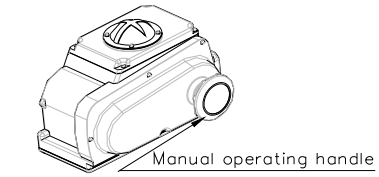
[Procedure]

1) Slightly open the disc [2] with the hand wheel.
※Make sure that the disc [2] does not protrude from between the seat surfaces.
(The disc [2] may be damaged.)



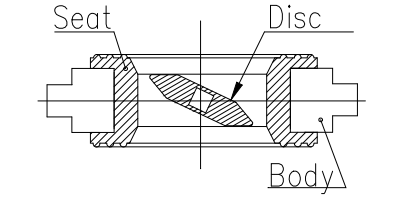
T-0

2) Set the valve between the connecting flanges.



3) Temporarily set by hand with through bolts, nuts, and washers for connection.

4) Gradually tighten to the specified torque value diagonally with a torque wrench. (Refer to **Fig. 5-1**.)



⚠Caution

Forcing

Damage or leakage may occur.

▶ Tighten the bolts and nuts of the connection flange diagonally to the specified torque.

(Fig 5-1)

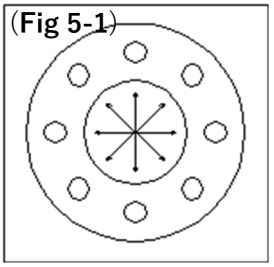


Table5-2 Flange Tightening Specified Torque　　Units: N•m {kgf･cm}

Nominal size	40mm	50,65mm	80,100mm	125,150mm	200,250mm	300,350mm
Torque value	20.0{204}	22.5{230}	30.0{306}	40.0{408}	55.0{561}	60.0{612}

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)	d 1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	(11/2")	M16	115	40	-	-	-	-	4	-	8
50	(2")		125								
65	(2 1/2")		135	45							
80	(3")		135						8		16
100	(4")		145								
125	(5")	M20	165	50							
150	(6")		175	55							
200	(8")		195						12		24
250	(10")	M22	225	60							
300	(12")		245						16		32
350	(14")		255	65							

Note 1. The above values are for Nominal sizes of 40 to 350mm when AVTS flange is used.

Note 2. The number of nuts and washers for bolt A is 2 sets (1 bolt/2 nuts, 2 washers),
In the case of bolt B, this is the quantity of one set (one bolt, one nut, one washer).

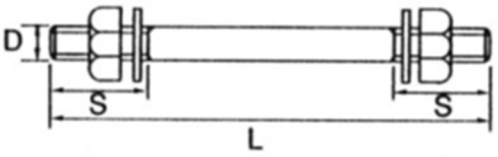
▼JIS5K

Nominal size		Bolt A			Bolt B				Quantity		
Mm	(inch)	D	L(mm)	S(mm)	d 1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	(11/2")	M12	100	30	-	-	-	-	4	-	8
50	(2")		105								
65	(2 1/2")		110								
80	(3")	M16	120	35					8	-	16
100	(4")		130	40							
125	(5")		140								
150	(6")		150								
200	(8")	M20	195	55					12	-	24
250	(10")		225								
300	(12")		240								
350	(14")		245	60							

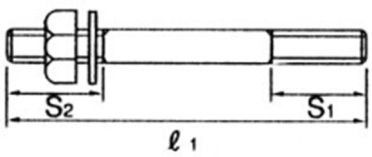
Note 1. The above values are for Nominal sizes of 40 to 350mm when AVTS flange is used.

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

Bolt A



Bolt B

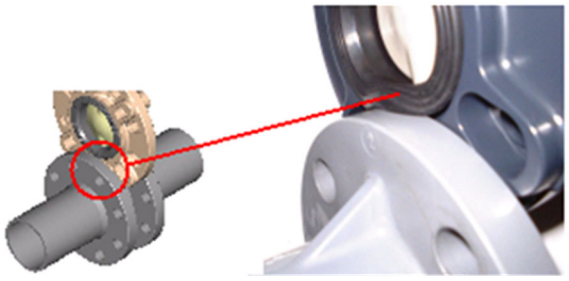


⚠Caution

Forcing

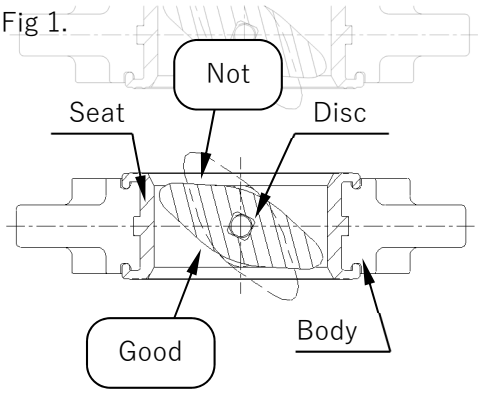
Damage may occur.

▶ When inserting the valve between the flanges, fully widen the space between the faces before inserting.
(If the valve is forcibly inserted without sufficiently expanding the space between the flanges, the seat may be flipped off and scratches may occur.)



▶ The unit is shipped in the "Good" state as shown in the figure. If the valve is opened or closed during piping installation, be sure to return the disc to the normal position (as shown in the figure) after operation. Never carry or install the disc in the condition shown in the figure as it will scratch the sealing surface of the disc.

Fig 1.

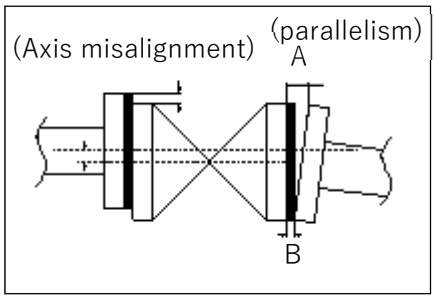


Otherwise, stress may be applied to the piping, resulting in damage.

▶ Flange surface parallelism and shaft misalignment should be less than the values shown in the table below.

Table 5-1 Axis misalignment and parallelism

Nominal size (mm)	Shaft misalignment	Parallelism (a-b)
40～80	1.0mm	0.8mm
100～150	1.0mm	1.0mm
200～350	1.5mm	1.0mm



Product support

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc. ▶ When installing a valve in the piping around the pump, do not cause large vibrations in the valve.
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 according to the type of work being performed. **The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc.

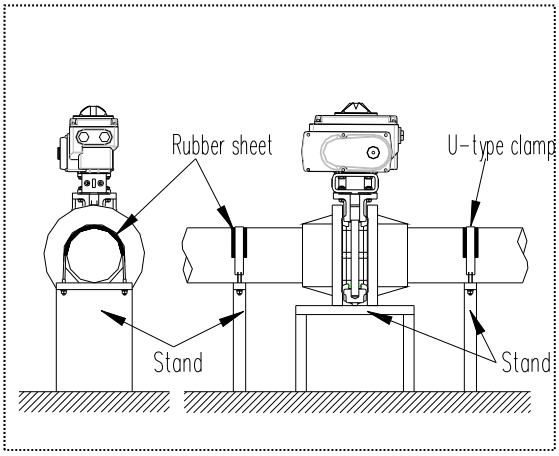
Preparations ▶ Spanner ▶ U-band (with bolt) ▶ Rubber seat

Horizontal piping

(Support installation example)

Place the frame under the valve.

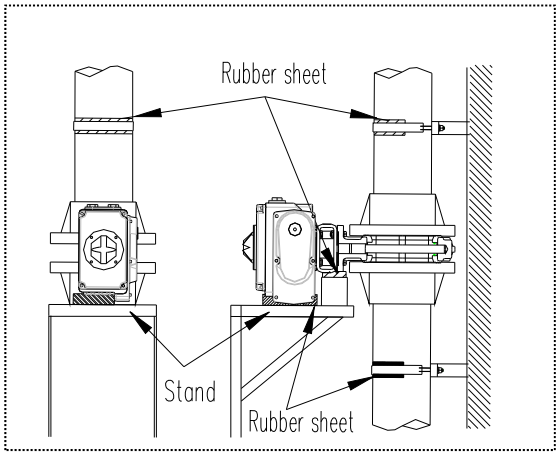
Lay a rubber sheet on the top of the pipe and secure it with the U-band.



Vertical piping

Place a rubber sheet on the actuator and Stand,
Install the frame.

Lay a rubber sheet on the pipe and secure it with the U-band.



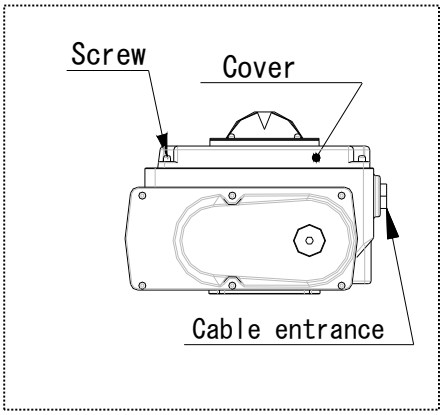
6. Electrical Wiring

Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not perform wiring while the power is on. ▶ Do not touch any other parts on the board or the terminal block wiring part. ▶ Do not perform wiring work in an environment where rain water or moisture may splash on the wiring work (e.g. outdoor work in rainy weather). ▶ Do not perform wiring work with wet hands or tools.

Caution	
Prohibition	**Doing so may cause the actuator to fail or malfunction.** ▶ Do not apply a load to the non-voltage limit switch exceeding the contact capacity. For use with small loads (1mA～100mA, 5V～30V), please contact us. ▶ Without wiring multiple (two or more units) in series, provide one open/close switch (or relay contact) at a time. ▶ Do not use the product near high-voltage lines, inverters, or other objects that generate noise or magnetism. ▶ If the actuator is installed outdoors or in a location where rainwater or moisture may enter the actuator, prevent rainwater or the like from entering the actuator through the wiring port of the actuator or the actuator cover.
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 according to the type of work being performed. **Doing so may cause the actuator to fail or malfunction.** ▶ Check that the power supply voltage of the actuator matches the power supply voltage to be wired. ▶ Be sure to connect the ground wire. ▶ Perform wiring work when there is no insulation defect. ▶ Wire correctly according to the wiring diagram. ▶ After wiring, make sure that the screws (crimp terminals, etc.) are not tightened or loosened. ▶ Install the cable connector and actuator cover securely.

Preparations	▶ Hex key ▶ Phillips screwdriver ▶ wire stripper ▶ Crimp Contact ▶ Terminal Crimp Tool

[Procedure]



1) Loosen the four hexagon socket head cap screws holding the actuator cover with using an Allen wrench and remove them.
※With sealing material for the cover mounting screws other than the top cover
Attached. Driver runs idle during removal
Be careful not to do so.
The cross-recessed screw may be damaged.
2) Remove the protective equipment from the lead entry.
3) Attach the connector to the lead entry and pass the cable through.
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 block with a Phillips screwdriver according to page 13.
・Be sure to connect the ground wire. Failure to observe this warning may cause an electric shock. (Refer to page 13.)
・Tighten the screws securely. (There is a risk of electric leakage or electric shock.)
7) Tighten the four hexagon socket head cap screws holding the actuator cover with using an Allen wrench to attach the cover.

7. Commissioning method

Warning	
Prohibition	**Serious injury can result.** ▶ Never touch any moving parts (valves and actuators) during operation.

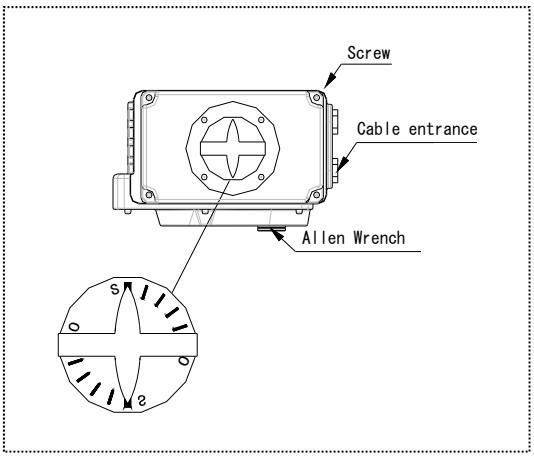
Caution	
Prohibition	**You may be electrocuted or injured.** ▶ Do not perform electric operation with the actuator cover open. ▶ Do not perform manual operation while the power is on. ▶ Keep hands free of moisture and oil when adjusting or checking. **Doing so may damage the actuator.** ▶ Do not turn the manual override further than necessary from the fully open/closed positions.
Forcing	**Doing so may cause the actuator to fail or malfunction.** ▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. If any abnormality is found, be sure to consult your dealer or us for inspection. ▶ If the valve body and seat are not wet, they may not operate properly. This phenomenon occurs because there is no lubrication between the valve body and the seat. When operating the valve alone, operate with the valve body and seat wet or with water after piping.

Manual operation

[Procedure]

[For T-0]

1) Remove the manual override lever (hex wrench) on the back of the main unit.
2) Insert the manual override lever into the seal cap hexagon socket (black: made of resin) on the front of the main unit and remove it.
3) Insert the manual override lever into the hexagon socket and turn it while looking at the opening meter.
   Clockwise: Close Direction
   Counterclockwise: Open direction
4) After operation, remove the manual override lever, fit the seal cap while confirming that the O-ring is worn, and fix it.



[For T-1～T-3]

1) The manual handle can be turned left or right while pulling it all the way to the front. Releasing the hand will automatically recover the unit.
2) Turn the manual handle while watching the valve travel meter.
   Clockwise: Close Direction
   Counterclockwise: Open direction
   ※ Excessive turning of the manual override lever or handle may cause failure of the stopper bolt or other parts.
   Do not operate the valve more than fully open/close by looking at the valve travel display.

Electric operation method

[Procedure]

1) Turn on the power.
2) Open or close the external selector switch to check that the displayed direction of the valve matches the operating direction.
3) Fully open "O" or fully closed "S" to turn off the power.

8. How to disassemble/assemble for parts replacement

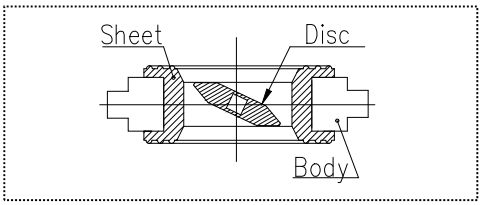
If internal leakage (seat leakage) or external leakage occurs when the valve is fully closed, the leakage may be improved by replacing the parts.
If the leak does not improve after replacing the parts, remove and replace the valve according to this item.

⚠ Warning	
Forcing	**Serious injury can result.** ▶ A little fluid remains in the valve. Wear protective gloves and eye protection.

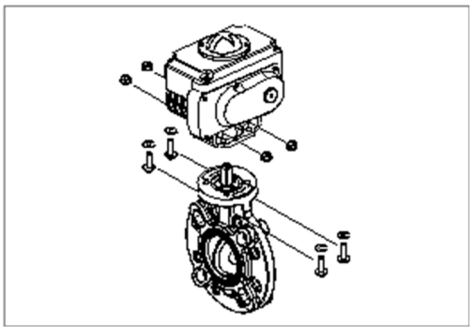
Preparations	▶ Jack ▶ Pipe ▶ Plate ▶ Pliers ▶ Silicone grease ▶ Hex key ▶ Thrust bearing ▶ Phillips screwdriver ▶ flat-blade screwdriver ▶ protective gloves ▶ protective goggles

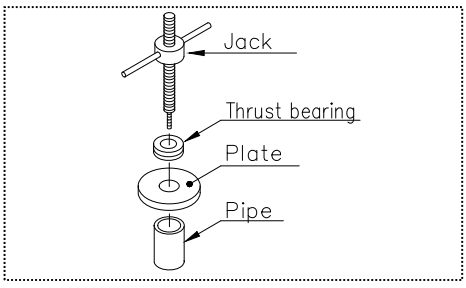
<**Disassembly**>

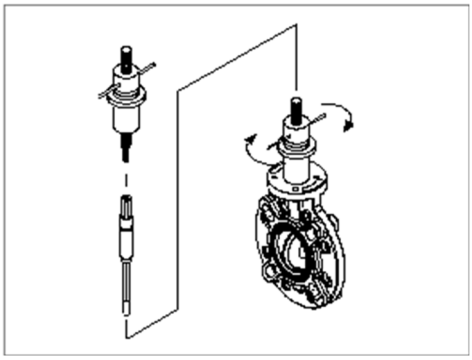
[Procedure]



1) Completely drain the fluid in the piping.
2) Fully close the valve by motor or manual operation.
3) Turn off the power.
4) Slightly open the valve using the manual handle.
5) Loosen the connecting bolts and nuts with a spanner and remove the valve.
6) Loosen the screw (C) [37a] with a hex key.
7) Remove bolts and nuts (A) [39], and remove actuator [35] and mount [30] from body [1].
8) Use a Phillips screwdriver to remove the stem retainer [8].
9) Remove stem [7] with pliers or hand for Nominal size 40mm～100mm.
For the Nominal size 125mm～350mm, attach the jack, thrust bearing, plate and pipe to the valve. Screw the jack shaft into the stem [7], and turn the handle of the jack to remove the stem [7].
10) Set disc [2] to half-open.
11) Use a flat-blade screwdriver to create a gap between the body [1] and the sheet [3]. Insert a flat-blade screwdriver or a Phillips screwdriver into the gap and remove the sheet [3] and the disc [2] by pushing them out.
12) Remove the disc [2], seat bush A [183] and seat bush B [184] from the seat [3].
13) Remove O-ring (C) [6] and O-ring (I) [185].



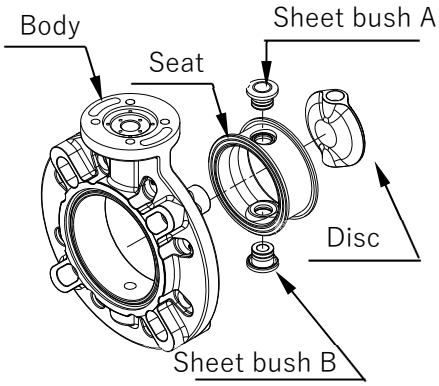




<Assembly>

[Procedure]

<Assembly>4) Reference drawing



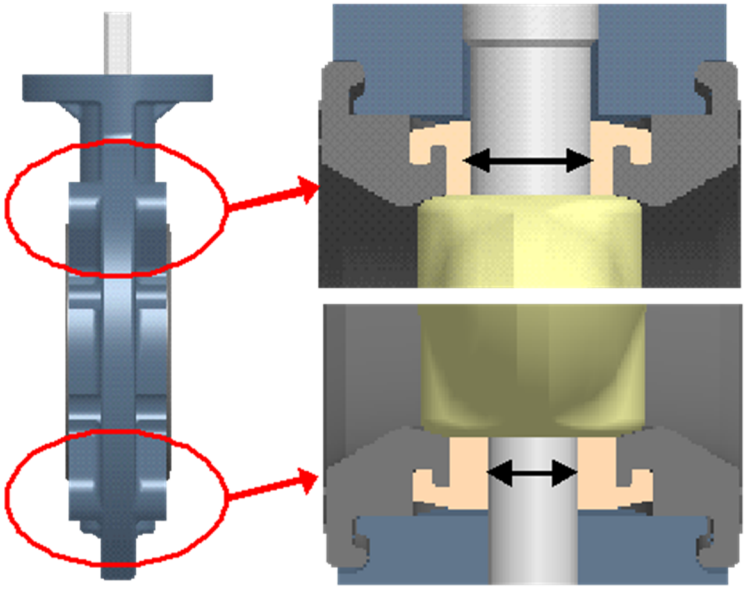
1) Before assembly, apply silicone grease to O-rings (C) [6] and O-rings (I) [185].
2) Install O-ring (C) [6] on stem [7], and O-ring (I) [185] on seat bush A [183] and seat bush B [184].
3) Apply silicone grease to disc [2] and sheet [3] (sliding section).
4) Mount the disc [2] on the inside of the seat [3] and the seat bushes A [183] and B [184] on the outside. (The attached one is referred to as the sheet disc set below.)
   * The seat [3] can be deformed into an ellipse for smooth attachment.
5) Put the disc [2] of the seat disc set in half-open position, align the stem hole of the body [1] with the stem hole of the seat disc set and fit the seat [3] inside the body [1].

⚠Caution

Forcing

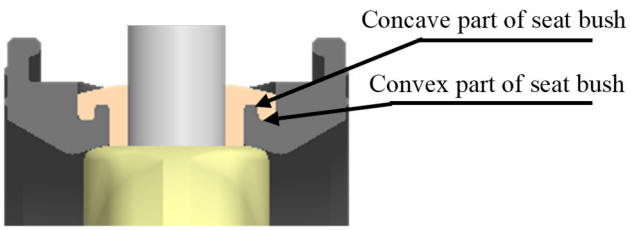
Otherwise, the valve may be damaged or leak.

▶ Note that the size of the shaft holes for sheet bush A [183] and sheet bush B [184] of the sheet/Disc set differs. Sheet bush A [183] (shaft hole "large") is at the top. If assembled upside down, the stem [7] cannot be inserted.



Shaft bore "Large" is at the top.

The shaft hole "Small" is at the bottom.

⚠Caution	
Forcing	**Otherwise, the valve may be damaged or leak.** ▶ After inserting into the body, make sure that the convex part of the seat shaft hole and the convex part of the seat bush are not detached. 

6) Insert stem [7].

7) Tighten the stem retainer [8] with the flat side facing downwards and with the setscrew (F) in the groove of the body [1].

8) Align the positions of the bolt holes on the actuator [35] and Stand [30], and install the bolts (E) [38] and bolts and nuts (A) [39].

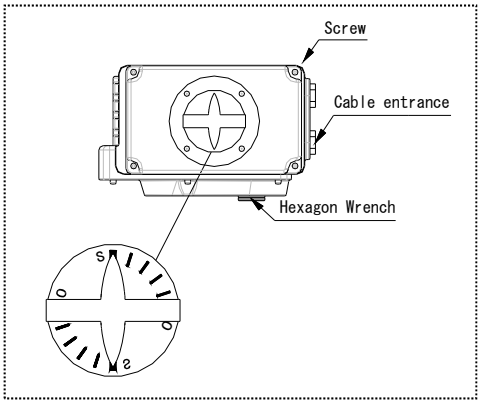
※Actuator position indication matches the disc orientation.

9) After assembly is complete, perform manual operation and check if the disc [2] fits sufficiently in the seat [3].

10) Check the operation with an electric operation (see page 25).

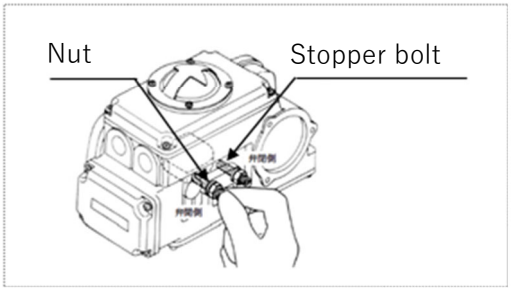
※If the position is not correct, turn off the power and remove the actuator cover with a Phillips screwdriver.

Adjust the opening.



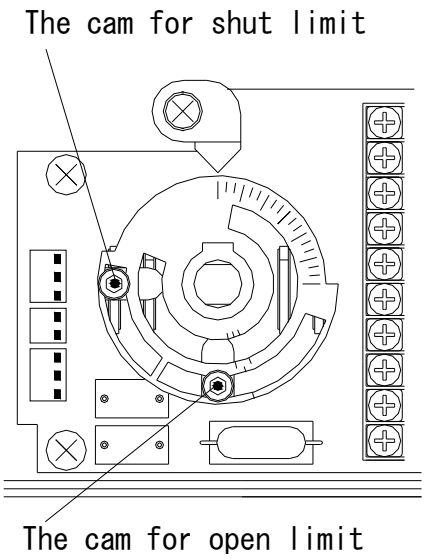
9. How to adjust the limit switch

⚠Caution	
Forcing	**Doing so may damage the actuator.** ▶ Before adjusting the limit switch, be sure to loosen the stopper bolt fixing nut and loosen the stopper bolt 4 to 5 turns. (The limit switch and stopper bolt are already adjusted when shipped from the factory.)

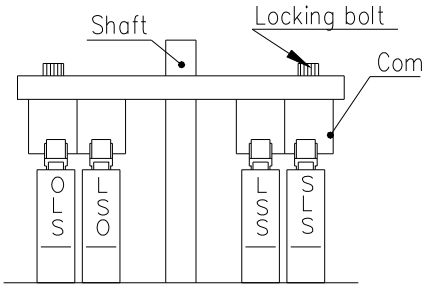


Preparations	▶ Hex key (3mm)	▶ Phillips screwdriver

[Procedure]



1) Turn off the power to the actuator and completely drain the fluid from the piping.
2) Loosen and remove the hexagon socket head cap screw on the actuator cover with an Allen wrench, and then pull out the indicator upward.
3) Manual operation is performed to the opening (fully open or fully closed) to be adjusted by the manual handle. (Refer to page 25.)
4) Loosen the set screw of the cam for the limit switch you want to adjust with a hex wrench.
5) Move the cam by hand in the direction you want to adjust. Check that the limit switch has operated.
6) While lightly supporting the cam by hand, tighten the set screw with an Allen wrench. The position where these limit switches are kicked is the stop position for fully open and fully closed, and the opening of 2% to 3% before is the respective signal output position.
7) Move the stopper bolt in the closing direction by hand after moving the limit cam to the position where the limit switch kicks in the closing side by manual operation (refer to page 25), and tighten the nut with the stopper bolt 1/4 to 1/2 turn loosened from the position where the rotation has stopped. In the same way, manually move the limit cam to the position where the limit switch kicks in the opening direction, and then adjust the opening direction stopper bolt in the same way as in the closing direction. Check that the opening is the one that you want to adjust manually.
   If the adjustment is insufficient, repeat 3, 4, 5, 6).



LSS : shut no-volt
LSO : open no-volt
SLS : shut limit
OLS : open limit

8) Attach the actuator cover and tighten the hexagon socket head cap screws with an Allen wrench.
9) Fully open and closed with electric operation (see page 25). Confirm that the opening is pointing to fully open "O" or fully closed "S."

10. Inspection item

⚠Caution	
Forcing	**Fluid may leak from the valve or the actuator may fail.** ▶ 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. **You may be electrocuted or injured.** ▶ Turn off the power before removing the actuator cover. ▶ 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 "**11. Cause of malfunction and remedy**."

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: 8. How to disassemble/assemble for parts replacement)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 8. How to disassemble/assemble 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: 8. How to disassemble/assemble for parts replacement)
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. (Ref: 8. How to disassemble/assemble for parts replacement)
Misalignment of operating position (visual inspection)	No deviation	Actuator opening display	Remove the actuator cover and adjust the limit switch operating position. (Refer to 9. How to adjust the limit switch.)
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Safety Instructions)

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
Odor ※1) (sniffing)	No odor	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)

※1) Failure to do so may result in burnout or fire.

Periodic inspection

●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Operating time (Measurement)	Error within ±1 second	Actuator opening display	Check the power supply voltage (±10%). (Ref: Actuator nameplate)
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
Vibration (palpation)	No different from other parts	Valves and actuators	Recheck the operating conditions and remove the source of vibration. (Ref: 2.Safety Instructions)
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2.Safety Instructions)

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 or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
Looseness of bolts (visual and palpation)	No Loose	For Stand + valve	Retighten the mounting bolts
		For Stand + actuator	Retighten the mounting bolts
		For fixing the actuator cover	Retighten the screws
		Terminal block	Retighten the screws
		For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method)
Water-intrusion ※1) (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 8. How to disassemble/assemble for parts replacement)
Intrusion ※1) of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 8. How to disassemble/assemble for parts replacement)
Measured ※1) of the isolation resistance (Measurement)	Must be 50MΩ or more	Inside the actuator	Replace the actuator (Ref: 8. How to disassemble/assemble for parts replacement)
Corrosion Or rust ※1) (visual inspection)	No corrosion or rust	Appearance of the product and in the actuator	Remove the valve from the pipe and replace the valve or actuator. (Ref: 8. How to disassemble/assemble for parts replacement)

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator. (Refer to P26_8. Disassembly method for replacing parts)

※1) Failure to do so may result in burnout or fire.

11. Cause of malfunction and remedy

⚠Caution	
Forcing	**You may be electrocuted or injured.** ▶ 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. ▶ Turn off the power before removing the actuator cover.

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
The Allen key does not turn (does not turn) during manual operation.	The valve is already fully open (or fully closed).	Rotate the hex wrench in the reverse direction (Ref.: 7. Commissioning method)
	The power remains supplied in the opposite direction of the handle operation direction.	Turning the power off and then manually operating
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 8. How to disassemble/assemble 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 Instructions)

Failure phenomenon	Possible cause	Measures and measures
Do not open or close with electric operation	The power is off.	Check the voltage and turn on the power.
	Wiring to the terminal block is disconnected.	Stop operation immediately and recheck the connection status. (Ref: 4. Product Specifications)
	The cable or the connection inside the actuator is broken.	Replace the cable or the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	Simultaneous switching energizing or incorrect wiring to the terminal block	Stop operation immediately and recheck the connection status. (Ref: 4. Product Specifications)
	The power supply voltage is different.	Check the voltage with a tester to obtain the correct voltage.
	Power supply voltage is low.	Check the voltage with a tester to obtain the correct voltage.
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 8. How to disassemble/assemble for parts replacement)

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Do not open or close with electric operation	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 Instructions)
	The thermal protector is activated.	Stop using the product immediately, and lower the ambient temperature or the opening/closing frequency.
	The capacitor is burnt out (punctured).	Stop using the product immediately and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	Water or foreign matter has entered the actuator causing a short circuit.	Stop using the product immediately and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	The actuator does not move due to external corrosion of the actuator.	Stop using the product immediately and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	The insulation resistance of the actuator has dropped.	Stop operation immediately, check the insulation resistance, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 8. How to disassemble/assemble for parts replacement)
	Sheet is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 8. How to disassemble/assemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks from valve (external leak)	O-ring is scratched, worn, melted, or altered	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)
	Scratches or wear are found on the sliding or fixing surfaces of the O-ring.	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)
	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem, disc, or Joint (A)	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)

Failure phenomenon	Possible cause	Measures and measures
The actuator emits a bad smell, heat, or smoke.	Actuator is defective	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	Wrong connection to the terminal block	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	An overcurrent is flowing to the actuator	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
	The actuator is affected by lightning.	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
Actuator is corroded	The watch is exposed to water, chemical liquids, or other liquids.	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 8. How to disassemble/assemble for parts replacement)
Valve is corroded or deformed	The watch is exposed to water, chemical liquids, or other liquids.	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 8. How to disassemble/assemble for parts replacement)

12. Disposal method of residual materials and waste materials

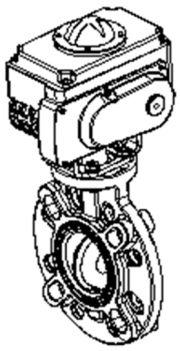
⚠ Warning	
Forcing	**When burnt, toxic gas is generated.** ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

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

[User's Manual]

Butterfly valve motorized T-type
Type 57: 40mm～350mm
(automatic valve)



https://www.asahi-yukizai.co.jp/en

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