Butterfly valve Type 75/75D
Electric Actuated TYPE S
450～600mm

User's Manual

Thank you for choosing our product.
This User's 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 User's 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, User's 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 User's 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.

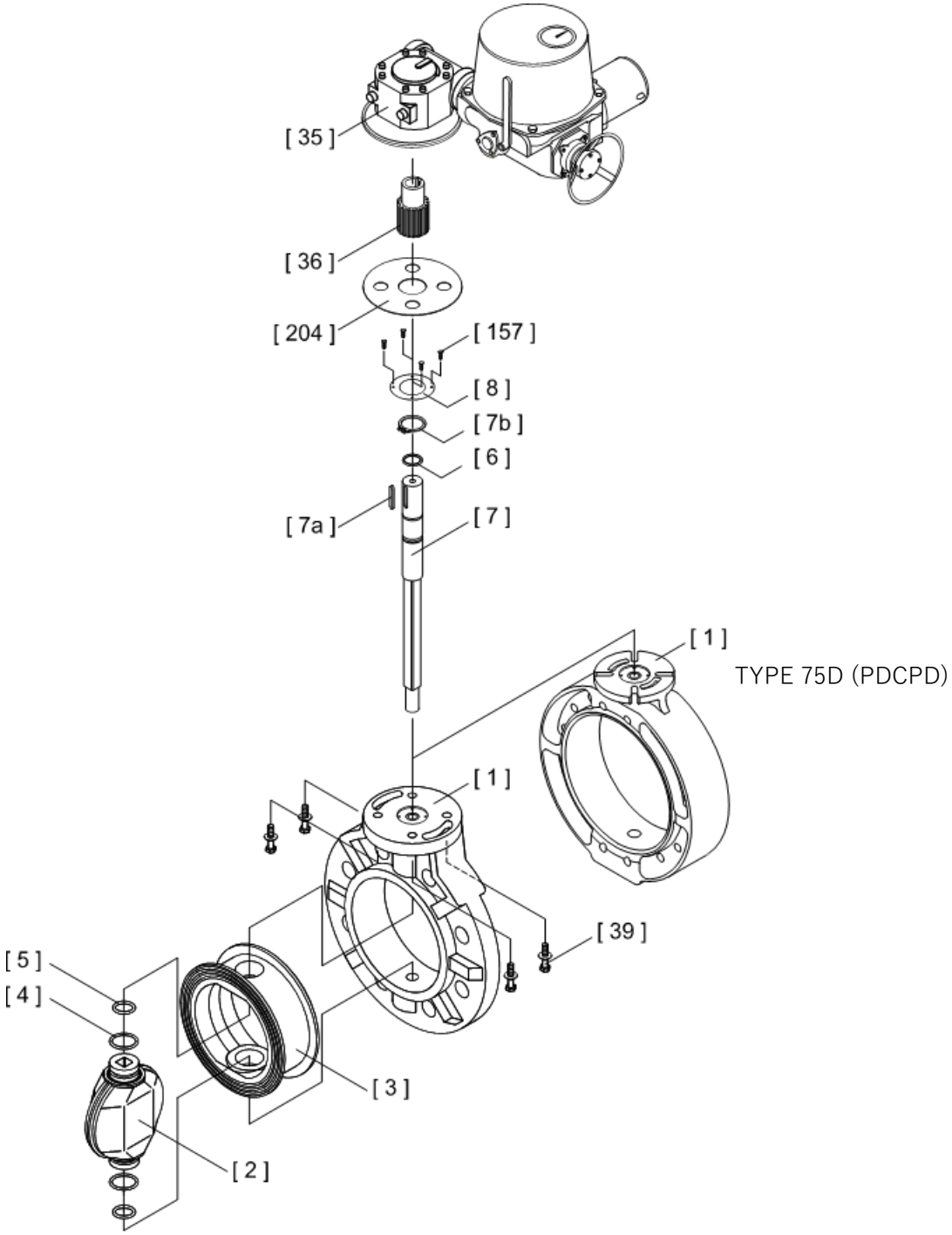
⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ 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	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. **Otherwise, you may get caught in your hand or arm.** ▶ Do not touch moving parts during operation.
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. ▶ Check the voltage on the power supply and nameplate before use. A different voltage may cause damage or malfunction of the equipment. ▶ Perform manual operation after confirming that the actuator is not operated by the motor.

⚠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. (There is a risk of deformation, damage or fire.) ▶ Do not use the product in places where it may be submerged. ▶ 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. ▶ Do not subject the valve to large vibrations. ▶ Do not leave the actuator in a soil or a water reservoir other than the water resistant type.
Forcing	**There is a danger of injury.** ▶ Secure sufficient space for maintenance and inspection when piping. **The valve can be damaged, or leak.** ▶ 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 on a regular basis referring to "**11.Inspection items**." Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ The tightening bolts and nuts of the diaphragm (between the bonnet and body) may become loose due to changes in temperature or creep during storage or use. After checking, tighten the bolts and nuts diagonally to the values in the bonnet tightening torque table. ▶ Provide appropriate valve support when installing the valve. (Excessive force is applied to the valve body and piping, which may cause damage.) ▶ Always use the product within the indicated product specifications. ▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. ▶ Use the supplied handle for manual operation. ▶ When using in an explosive atmosphere, make sure that the actuator conforms to the explosion-proof specifications. ▶ Keep the ambient temperature of the installation site within the range of-10°C to 50°C. ▶ If corrosive gas or atmosphere is bad, please install a cover to cover the whole area.

3. Name of each part



[1]	Body	[6]	O-ring (C)	[35]	Actuator
[2]	Disc	[7]	Stem	[36]	Stem bushing
[3]	Seat	[7a]	Key (A)	[39]	Bolt (K)
[4]	O-ring (A)	[7b]	C type retaining ring	[157]	Set screw (F)
[5]	O-ring (B)	[8]	Stem retainer (A)	[204]	Gasket (O)

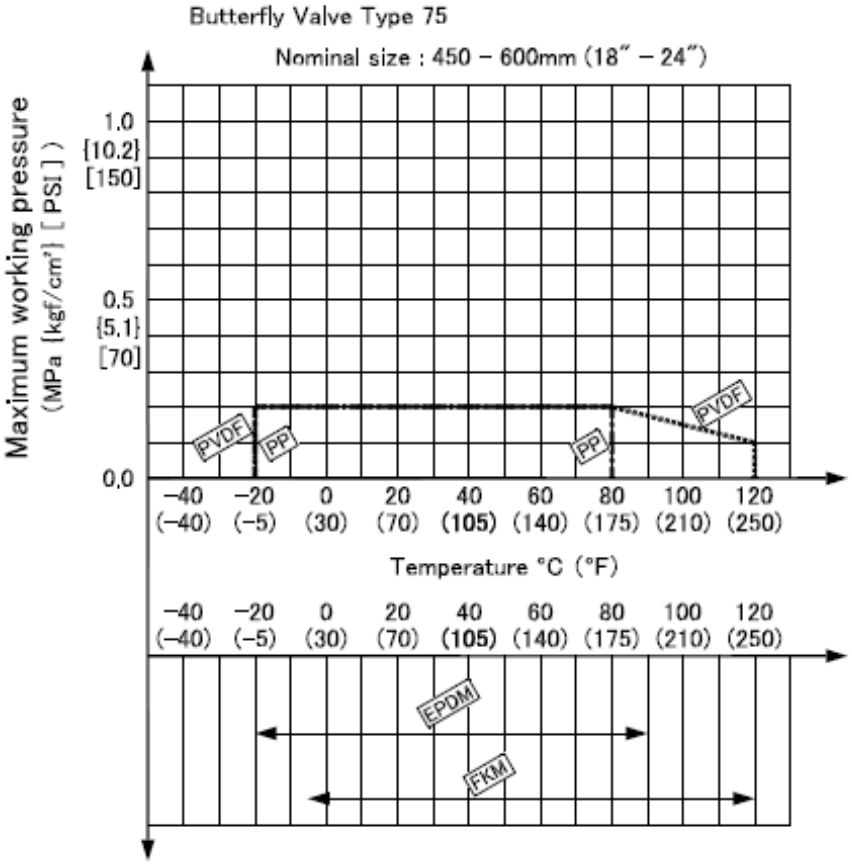
4. Product Specifications

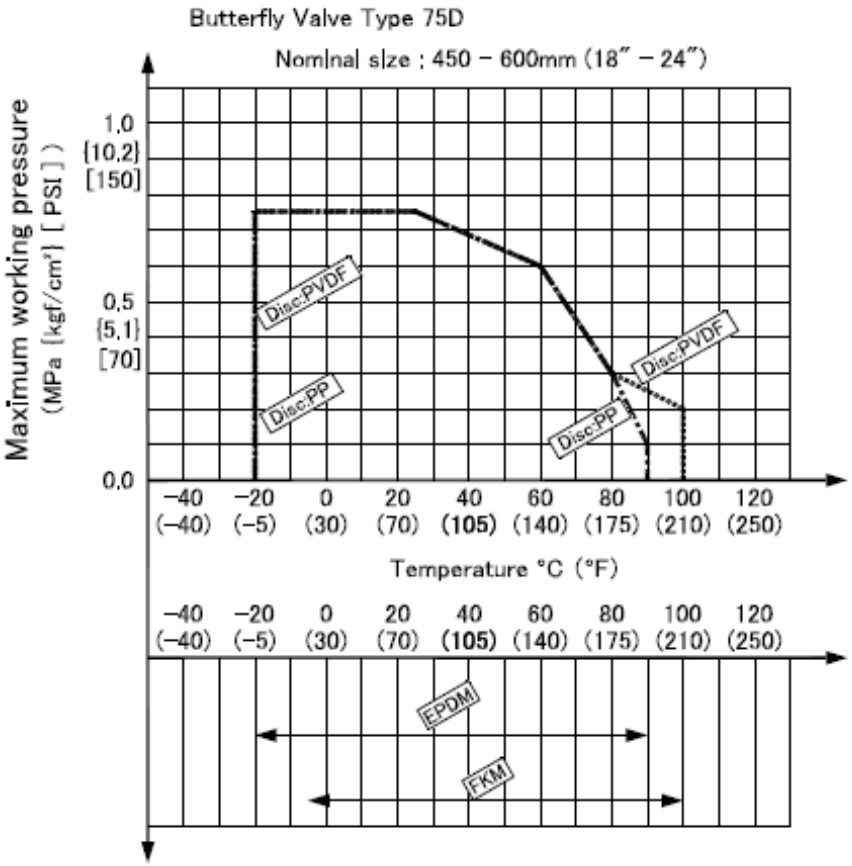
Model number table

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	75	S	*	*	*	W	*	* * *
A AUTOMATIC	75 TYPE 75	S TYPE S	3 Three-Phase 200VAC 4 Three-Phase 400VAC	P PP F PVDF	E EPDM V FKM	W WAFER	1 JIS 10K D DIN A ANSI	450 450mm 500 500mm 600 600mm

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	DISC PVDF
A	75	S	*	D	*	W	*	* * *	0Q※
A AUTOMATIC	75 TYPE 75D	S TYPE S	3 Three-Phase 200VAC 4 Three-Phase 400VAC	D PDCPD	E EPDM V FKM	W WAFER	1 JIS 10K D DIN A ANSI	450 450mm 500 500mm 600 600mm	※ Used when the disc material is PVDF.

Relationship between maximum allowable pressure and temperature





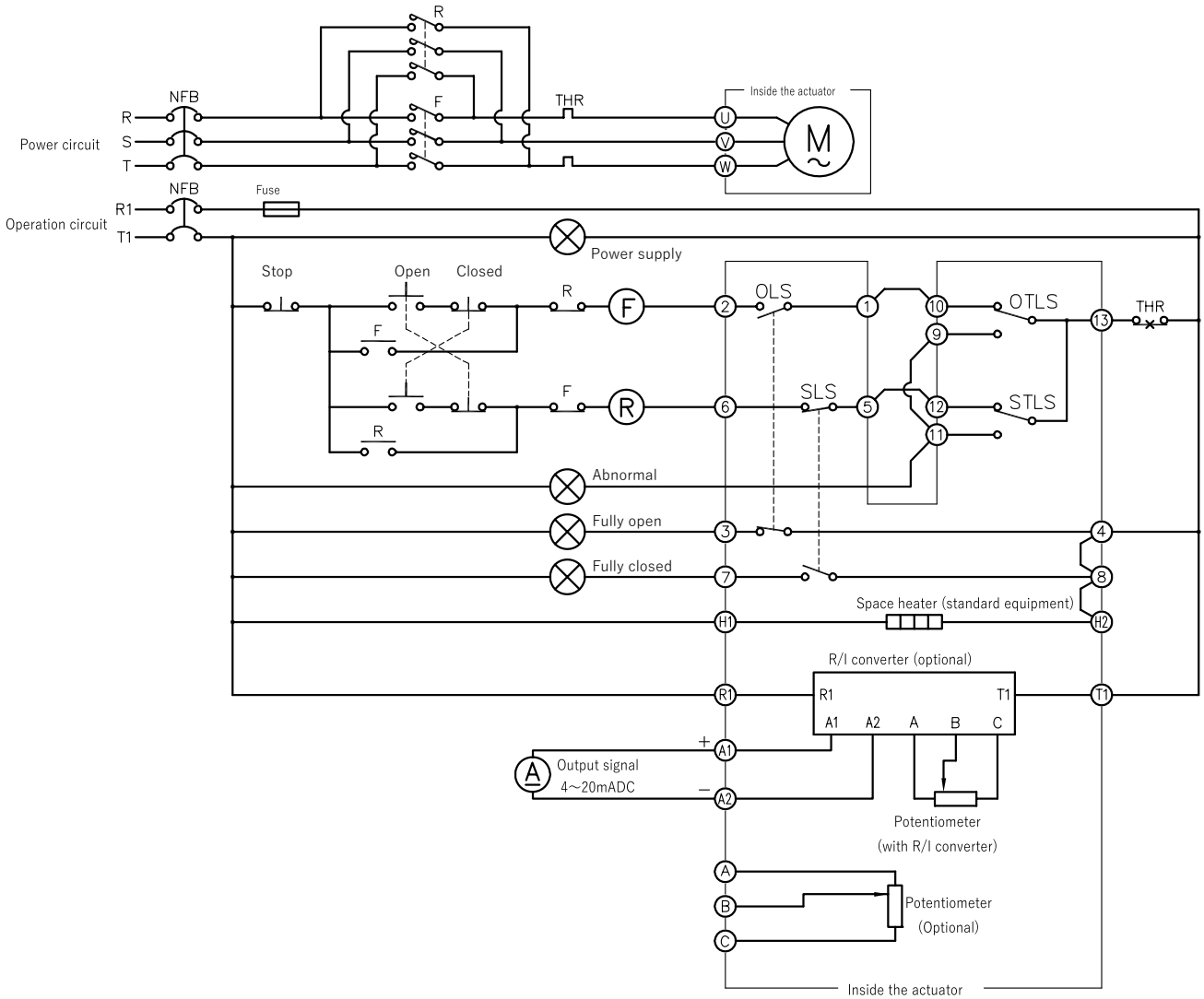
Actuator

Specifications List

Valve model		Type 75			Type 75D		
Size (mm)		450	500	600	450	500	600
Actuator model		LTRM-01/ BRM-2			LTMD-01/ BRM-3		
Open/close time (sec)	50Hz	41			38	49	
	60Hz	34			41	50	
Cable connector Size		Operating circuitry: 3-G1 Motor circuits :1-G¾			Operating circuitry: 2-G1 Motor circuits :1-G¾		
Space heater rated power (W)		10			30		
Degree of protection		IP 55					
Motor start current (A) 50/60Hz	200VAC	10.2/9.6					
	400VAC	4.6/4.4					
Motor Rated Current (A) 50/60Hz	200VAC	2.5/2.2					
	400VAC	1.2/0.99					
Manual operation handle revolution		15					
Power consumption (W) 50/60Hz	200VAC	620/593					
	400VAC	625/556					
Motor rated output (W)		400					
Motor insulation type		Class B					
Motor rated time		15 minutes					
Limit switch capacity		250VAC 5A					
Number of motor poles (P)		4					
Potentiometer Between A and C Max. applied voltage (V)	100Ω	15					
	200Ω	20					
	500Ω	30					
	1000Ω	45					

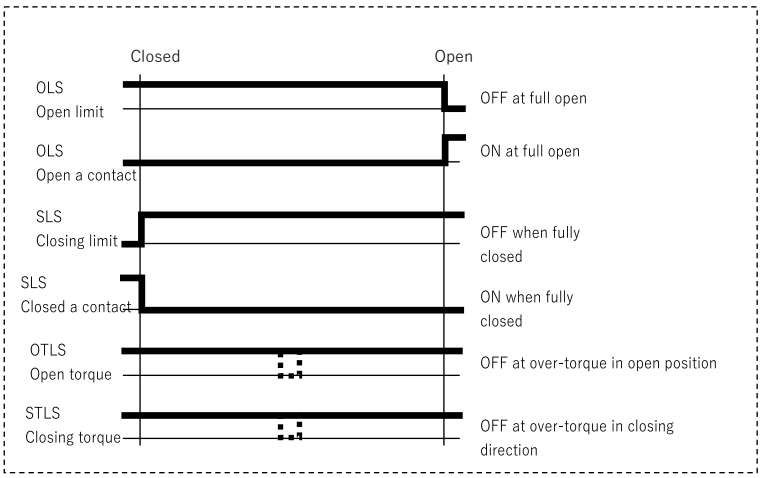
*The actuator model is LTMD-01Z/BRM-2, 3 for types with electro-static positioner.

Wiring diagram LTRM, LTMD

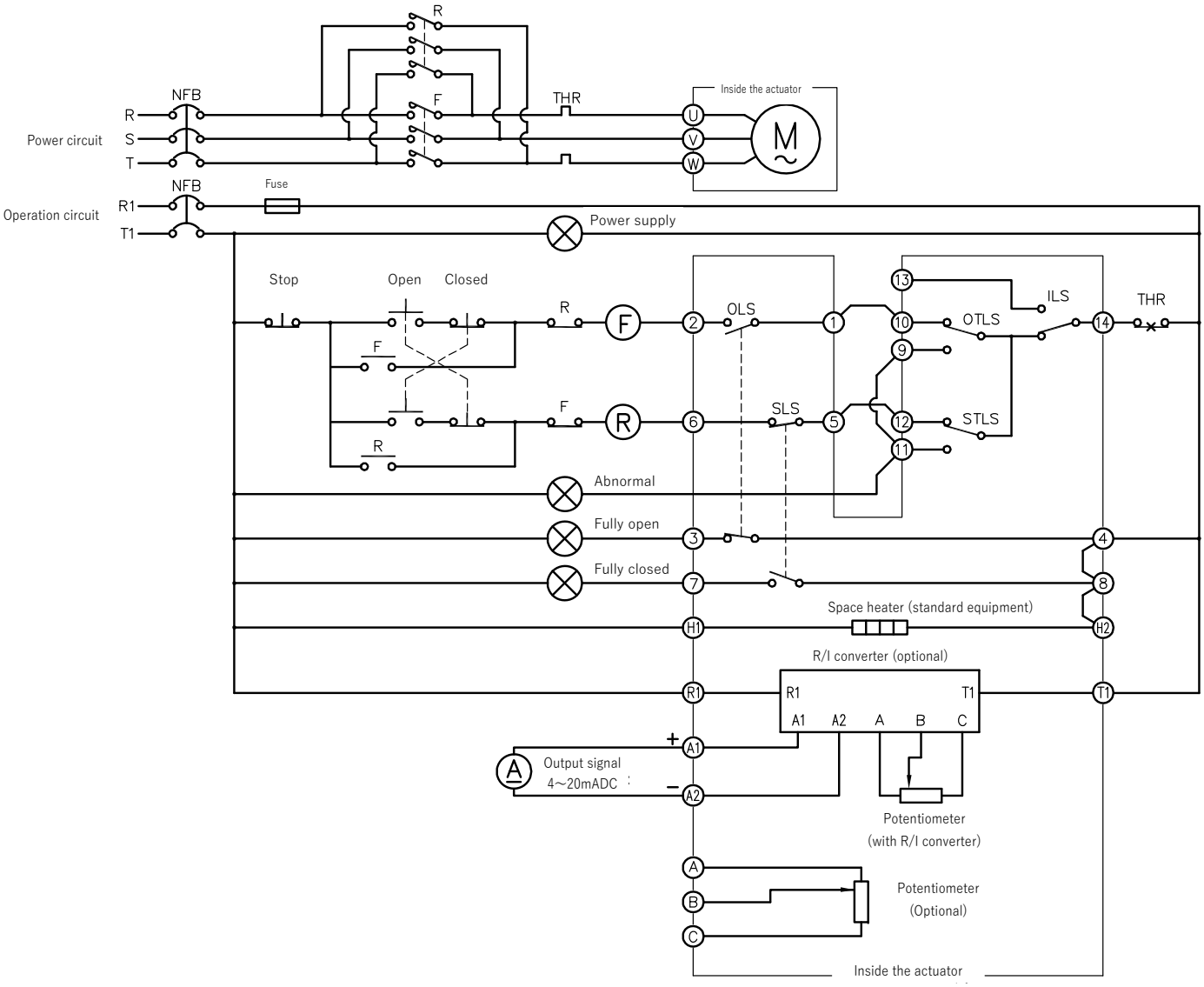


NOTE; The wiring diagram shows the end of the opening operation.

Switching chart

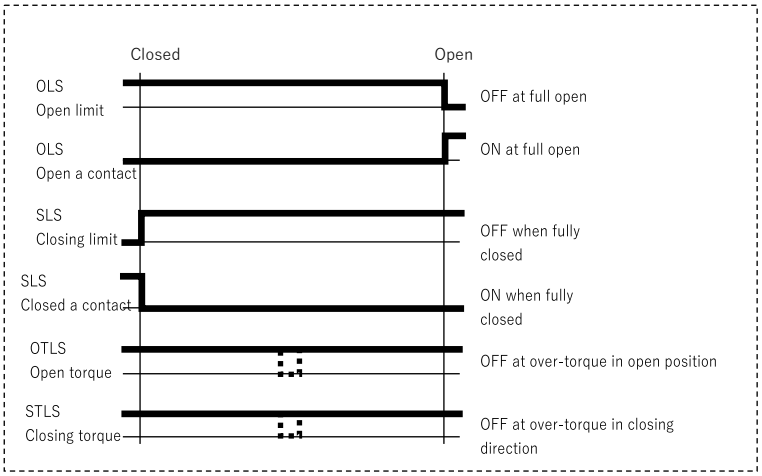


Wiring diagram LTRH, LTKD



NOTE; The wiring diagram shows the end of the opening operation.

Switching chart



5. Mounting 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.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details.

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ When installing piping, gaskets are basically not required. However, when connecting to a resin flange that is prone to dents, scratches, or warping, use gaskets to ensure stable sealing performance. ▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like. **The valve can be damaged, or leak.** ▶ When installing piping, do not install it in the fully closed state. (The disc may bite into the seat, causing the operation torque to become heavy and the open/close operation may become impossible.)

⚠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.

▶ Use a connection flange with a full-face seat.

▶ Check that the flange standards of each other are correct.

▶ When installing piping, do not install it in the fully closed state.
(The disc may bite into the seat, causing the operation torque to become heavy and the open/close operation may become impossible.)

▶ The internal diameter of the connecting part should be equal to or greater than the following value.

▶ The unit is shipped in the "Good" state as shown in Fig. 1. If you open or close the valve when installing the piping, be sure to return the disc to the normal position (as shown in the figure) after operation. Never transport or install the disc in the condition shown in Fig. 1 as this will damage the sealing surface of the disc.

▶ If the inner diameter of the connection (flange/pipe) is small, chamfer the inside of the connection to avoid contact between the valve disk and the inner surface of the connection. (Refer to Fig. 2.)

Fig.1

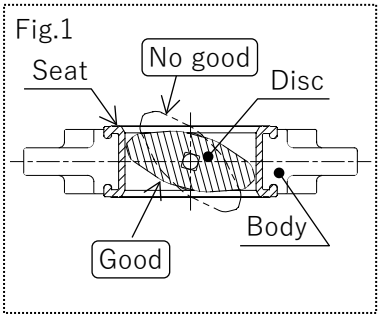
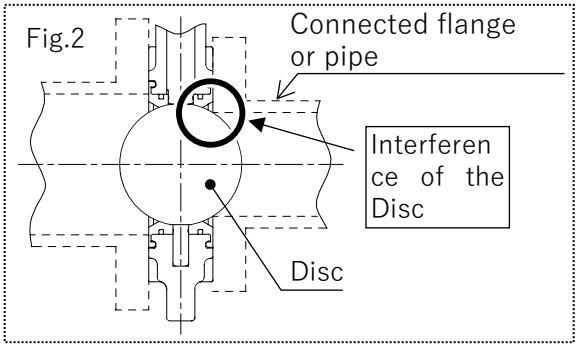
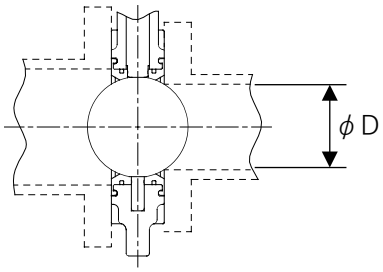


Fig.2



▶ When using one with a large wall thickness of the connecting part (flange/pipe) with the valve, make sure that the inner diameter of the connecting part is equal to or greater than the following value to avoid contact between the disk and the inner surface of the connecting part. Perform chamfering of the inner end of the connecting part in the following cases.

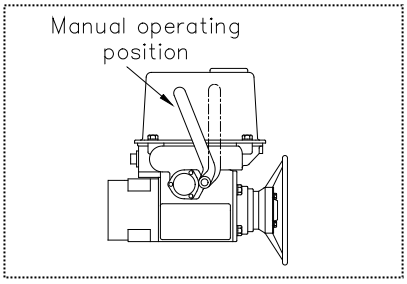
Size (mm)	D (mm)
450	422
500	472
600	572

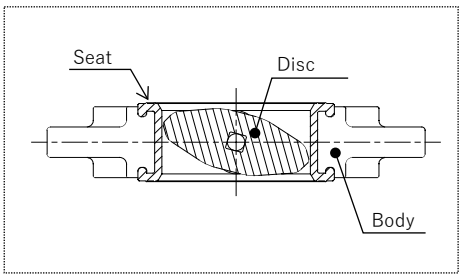


Preparations	▶ Torque Wrench ▶ Wrench ▶ Through-bolts, nuts and washers (see dimensions on page 17)

[Procedure]

1) Push the changeover lever to the manual side and use the manual handle to slightly open the disc [2].
※Make sure that the disc [2] does not protrude from between the seat surfaces.
(The disc [2] may be damaged.)





2) Set the valve between the connecting flanges.

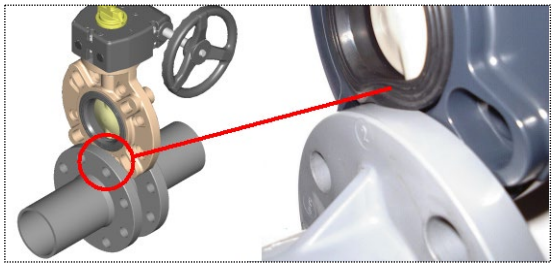
3) Temporarily set by hand with through bolts, nuts, and washers for connection.

⚠Caution

Forcing

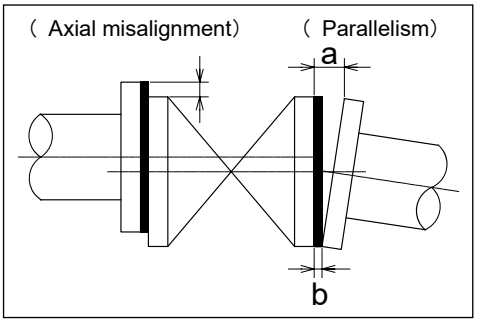
Doing so may cause the sheet to turn and scratch.

▶ 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.)



Danger of damage

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



Size (mm)	Axial Misalignment	Parallelism (a-b)
450～600	1.5mm	1.0mm

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.

⚠Caution

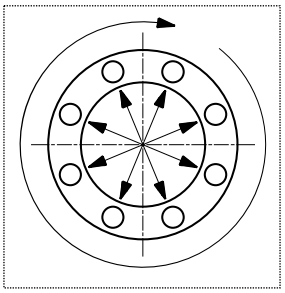
Prohibition

The valve can be damaged, or leak.

▶ Do not tighten more than the specified torque.

Specified torque value　　Units: N•m {kgf・cm}

Size	450mm	500、600 mm
Torque value	80.0 {816}	100.0 {1020}



Dimensions of Through Bolt (Bolt A) and Screw Bolt (Bolt B)

▼JIS10K (body material; PP, PVDF, PDCPD)

Size		Bolt A			Bolt B		Quantity		
(mm)	(inch)	D	L (mm)	S (mm)	d1	L1 (mm)	Bolt A	Bolt B	Nut and washer
450	(18")	M24	310	65	M24	120	16	8	40
500	(20")		320	75					
600	(24")	M30	350	70	M30	140	20		48

Note 1. The above values are the bolt dimensions when JIS B 2220 "Steel Pipe Flange" nominal pressure 10K is used.

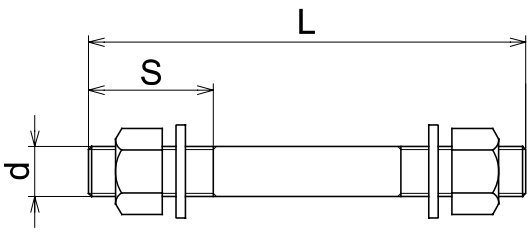
Note 2. The number of nuts and washers is 2 sets for bolt A (1 bolt/2 nuts),
Quantity of 1 set (1 bolt/1 nut/washer) for bolt B.

▼JIS5K (body material; PP, PVDF)

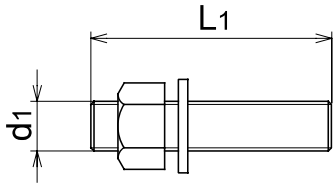
Size		Bolt A			Bolt B		Quantity		
(mm)	(inch)	D	L (mm)	S (mm)	d1	L1 (mm)	Bolt A	Bolt B	Nut and washer
450	(18")	M22	270	55	-	-	16	-	32
500	(20")		280				20		40
600	(24")	M24	320	60					

Note 1. The above values are the bolt dimensions when JIS B 2220 "Steel pipe flange" nominal pressure 5K is used.

Note 2. The quantity of nuts and washers is the quantity of 2 sets (1 bolt/2 nuts) in the case of bolt A.



Bolt A



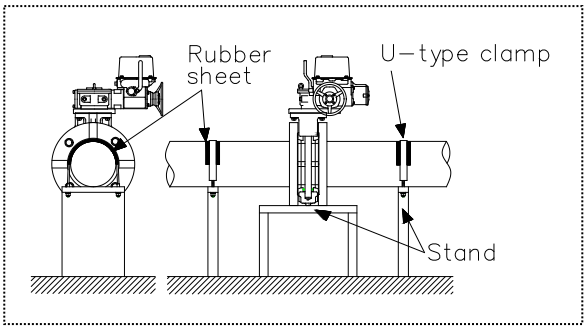
Bolt B

6. Support installation method

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not cause large vibrations to the valve by the piping around the pump.
Forcing	**The valve can be damaged, or leak.** ▶ Install a valve support. (Excessive force is applied to the valve body and piping, which may cause damage.)

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

(Support installation example)

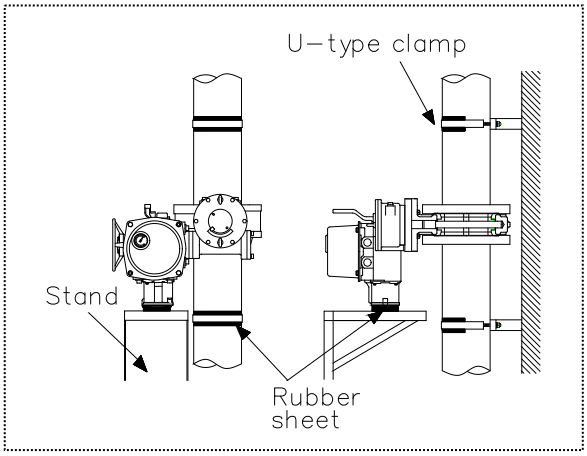


Horizontal piping

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



Rubber sheets are laid on the connecting parts of the actuator and body, Fix with the frame.

Wrap the rubber sheet around the pipe and secure it with the U-band.

7. Electrical Wiring

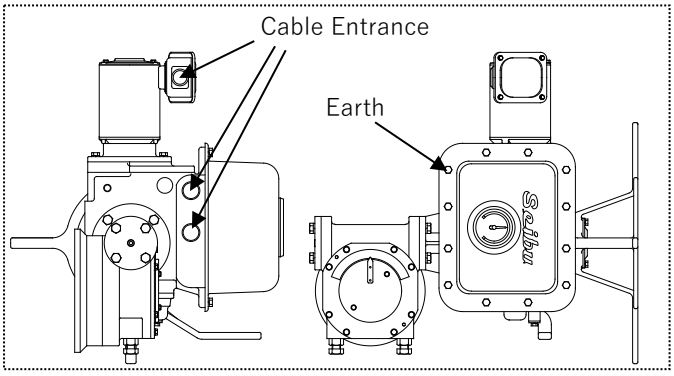
⚠ Warning	
Prohibition	**Serious injury can result.** ▶ Do not connect or separate lines when the power is on. Also, do not touch any other parts on the board or the terminal block wiring part. (risk of electric shock or damage to equipment)
Forcing	**Serious injury can result.** ▶ Be sure to connect the ground wire. (Poor grounding may cause electric shock, fire, etc. due to electric leakage.) ▶ Keep hands free of moisture and oil when adjusting or checking. (risk of electric shock or damage to equipment)

⚠ Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Do not apply a load to the non-voltage limit switch exceeding the contact capacity. Also consult with CKD when using this product under a minute load (1mA～100mA, 5V～30V). ▶ Do not connect multiple (two or more) motorized valves in series. In addition, open/close switches (or relay contacts) should be provided for each electric valve. ▶ Do not use the product near high-voltage lines, inverters, or other objects that generate noise or magnetism. (Doing so may cause malfunction or failure.)
Forcing	**The valve can be damaged or leak.** ▶ Check that there is no insulation failure when performing wiring work. (Danger of damage to wiring) ▶ Securely tighten the covers of each part. (Rainwater, dust, etc. may penetrate and cause malfunction.) ▶ Be sure to connect the wires correctly as shown in the wiring diagram. After wiring, be sure to check that the connection is secure, and then turn on the power. (Failure to do so may cause malfunction or failure.) ▶ Each lid part is sealed by an O-ring. When removing and reinstalling the cover, such as when wiring, be sure to confirm that the O-ring is set in place and securely sealed. (If the seal is insufficient, rainwater or other liquid may enter the actuator and cause electric shock or malfunction.) ▶ If the actuator is used outdoors or in a location where it will be exposed to rainwater or water drops, make sure that rainwater does not enter the actuator through the wiring port. (Rainwater or other liquid may enter the actuator, causing electric shock or malfunction.) ▶ Check the power supply and voltage on the nameplate before use. A different voltage may cause damage or malfunction of the equipment.

Preparations	▶ Phillips screwdriver	▶ Wire stripper	▶ crimp terminal
	▶ Connector	▶ Terminal crimping tool	▶ wrench

[Procedure]

1) Loosen the screws holding the actuator cover with a wrench and remove the cover.
2) Loosen the plug at the lead entry with a spanner and remove it.
3) Attach the connector to the lead entry.
4) Pass the cable through the connector.
5) Peel off the outer skin of the cable with a wire stripper.
6) Use a terminal crimping tool to attach the crimping terminal to the lead wire.
7) Wire the terminal block with a Phillips screwdriver as shown in the wiring diagram.
※Tighten the screws securely. (There is a risk of electric leakage or electric shock.)



8) Tighten the connector.
※Tighten the connector securely. (There is a risk of electric leakage or electric shock.)
9) Tighten the screws holding the actuator cover with a wrench to attach the cover.
10) Attach the ground.

8. Commissioning method

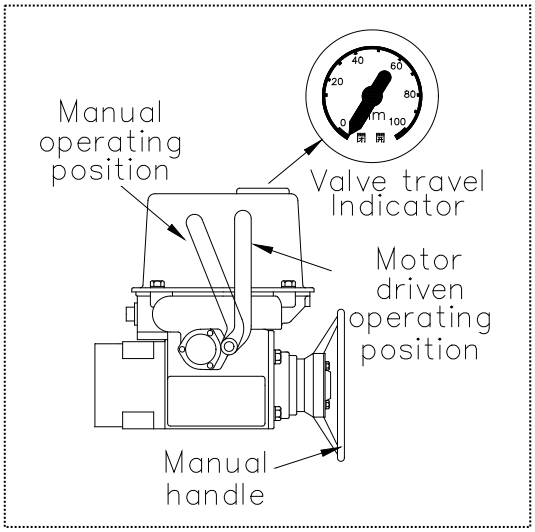
⚠Warning	
Prohibition	**Serious injury can result.** ▶ Do not connect or separate lines when the power is on. Also, do not touch any other parts on the board or the terminal block wiring part. (risk of electric shock or damage to equipment) ▶ Be sure to connect the ground wire. (Poor grounding may cause electric shock, fire, etc. due to electric leakage.) ▶ Never touch the moving parts during operation. (Hand or arm may become entangled.)
Forcing	**Serious injury can result.** ▶ Keep hands free of moisture and oil when adjusting or checking. (risk of electric shock or damage to equipment) ▶ Perform manual operation after confirming that the actuator is not operated by the motor.

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not use the product near high-voltage lines, inverters, or other objects that generate noise or magnetism. (Doing so may cause malfunction or failure.)
Forcing	**The valve can be damaged, or leak.** ▶ Check that there is no insulation defect when performing wiring work. (Danger of damage to wiring) ▶ Securely tighten the covers of each part. (Rainwater, dust, etc. may penetrate and cause malfunction.) ▶ Be sure to connect the wires correctly as shown in the wiring diagram. After wiring, be sure to check that the connection is secure, and then turn on the power. (Failure to do so may cause malfunction or failure.) ▶ Each lid part is sealed by an O-ring. When removing and reinstalling the cover, such as when wiring, be sure to confirm that the O-ring is set in place and securely sealed. (If the seal is insufficient, rainwater or other liquid may enter the actuator and cause electric shock or malfunction.) ▶ If the actuator is used outdoors or in a location where it will be exposed to rainwater or water drops, make sure that rainwater does not enter the actuator through the wiring port. (Rainwater or other liquid may enter the actuator, causing electric shock or malfunction.) ▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. (There is a possibility that a fire may occur if you use the watch without feeling any abnormality. If you find any abnormality, contact your dealer or us for inspection.)

Manual operation

[Procedure]

1) Push the changeover lever to the manual side. If the switch is not smooth, press the switch lever while turning the manual handle to either side.
   ※Do not forcibly turn the manual handle further from the fully open "O" and fully closed "S". (It will malfunction.)
2) Turn the manual handle while watching the valve travel meter.
   Rotate clockwise → Close direction
   Counterclockwise rotation → Open direction
3) LTRM, LTMD (auto reset)
   Turn on the power and press the OPEN or CLOSE button.
   (Switching lever automatically returns to the electric position)



⚠Caution	
Prohibition	**The valve can be damaged or leak.** ▶ The switch lever cannot be returned to the electric side by manual operation. Do not perform manual operation to the motorized side. (It will malfunction.)

LTRH (manual return)

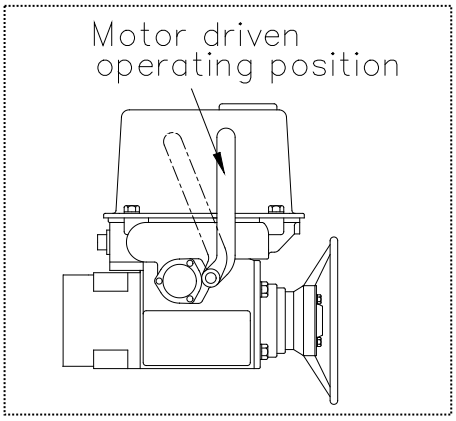
Move the switching lever to the electric position manually.

⚠Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Do not operate the switching lever with excessive force. (It will malfunction.)

Electric operation

⚠Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Do not leave the actuator cover open. (If the terminal is touched, an electric shock will occur.)

[**Procedure**]



1) Turn on the power.

2) Open and close the valve by motor operation to check that the indicated direction of the valve matches the operating direction.
If they do not match, check the wiring diagram and perform the operation from 1) again.

3) Turn off the power by fully opening or closing the valve.

9. How to disassemble/assemble for parts replacement

Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not connect or separate lines when the power is on. Also, do not touch any other parts on the board or the terminal block wiring part. (risk of electric shock or damage to equipment)
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details. ▶ Completely drain the fluid in the piping when replacing the valve or replacing parts. If the fluid does not escape, reduce the fluid pressure to zero.

Caution	
Forcing	**The valve can be damaged or leak.** ▶ Securely tighten the covers of each part. (Rainwater, dust, etc. may penetrate and cause malfunction.) ▶ The actuator is adjusted at the factory before shipment. However, if the setting needs to be changed or adjusted, perform the adjustment properly as described in the User's manual. (Failure to do so may cause malfunction or failure.) ▶ Each lid part is sealed by an O-ring. When removing and reinstalling the cover, such as when wiring, be sure to confirm that the O-ring is set in place and securely sealed. (If the seal is insufficient, rainwater or other liquid may enter the actuator and cause electric shock or malfunction.)

Preparations	▶ Jack ▶ Pipe ▶ plate ▶ pliers ▶ Thrust bearing ▶ Hex Wrench ▶ 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) Push the changeover lever to the manual side and slightly open the valve with the manual handle.

5) Loosen and remove the connecting bolts and nuts.

6) Remove the valve from the piping.

7) Loosen bolt (K) [39] and remove actuator [35].

8) Loosen the set screw (F) [157] with a Phillips screwdriver and remove the stem retainer (A).

9) Attach the jack, thrust bearing, plate and pipe to the valve and screw the jack shaft into the stem [7].

10) Turn jack handle and pull out stem [7].

11) Remove stem [7] from jack.

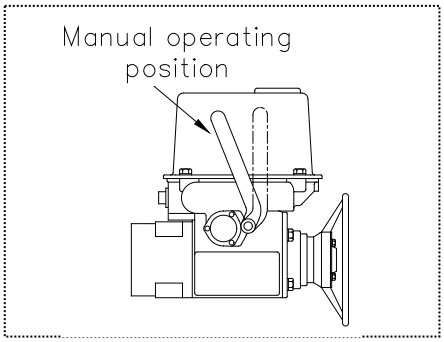
12) Remove the O-ring (C) [6].

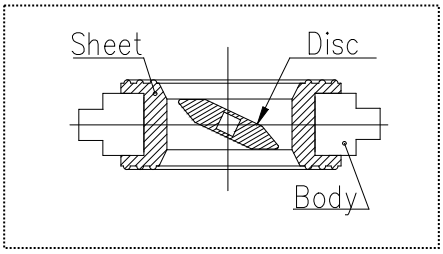
13) Put the disc [2] in the fully open state.

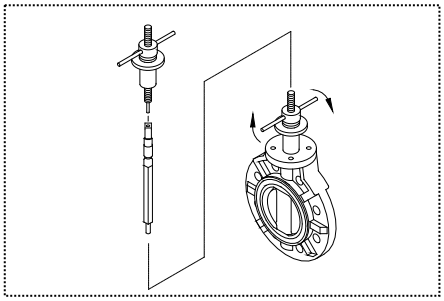
14) Pull out both ends of the sheet [3] and remove the sheet [3] and the disc [2] gradually while shaking them.

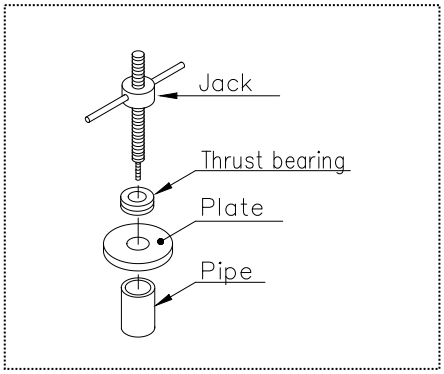
15) Remove disc [2] from sheet [3].

16) Take out O-ring (A) [4] and O-ring (B) [5].





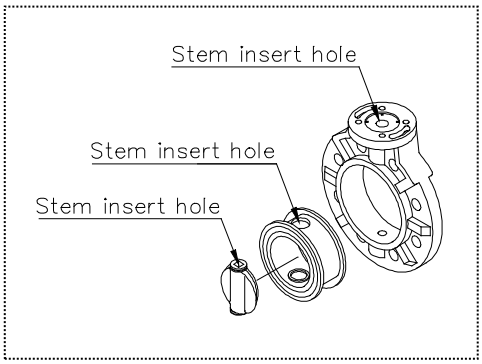




<Assembly>

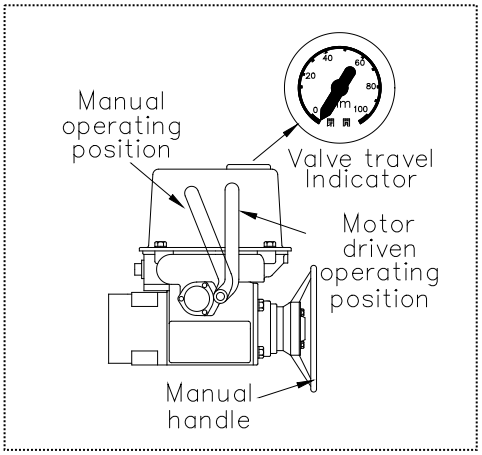
[Procedure]

1) Before assembly, apply silicone grease to O-rings (A) [4], O-rings (B) [5], and O-rings (C) [6].



2) To assemble parts, follow the disassembly procedure from step 16) to reverse.
However, when inserting the sheet [3] with the disc [2] set into the body [1], open the disc [2] halfway and insert the outer rim of the sheet [3] inside the body [1] around the hole direction of the stem [7] (align the stem hole positions of the body [1] and the sheet [3]) while holding it in place by hand.

3) Carry out manual operation and check if the disc [2] fits sufficiently in the seat [3].



4) Check whether the opening of the disc [2] and the value indicated by the valve gauge are correct.

5) Check the operation with an electric operation.
※If the degree of opening and the degree of opening are misaligned, turn off the power, remove the actuator cover with the wrench, and adjust the degree of opening.

10. How to adjust the limit switch

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 the machine)

Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Do not leave or use the actuator cover open.
Forcing	**The valve can be damaged or leak.** ▶ Contact CKD when using the limit switch in a 1mA～100mA, 5V～30V.

Preparations	▶ Hex key ▶ wrench ▶ dedicated handle (accessory)

[Procedure]

1) Turn off the power, remove the fluid in the piping completely, and then loosen the actuator cover with a spanner to remove it.

2) Perform manual operation (refer to page 22) to the opening to be adjusted (fully open or fully closed).

3) Insert the special handle into the clutch shaft and push it in and turn it about 30 degrees until the clutch shaft is retracted.
※Moving to operation 4) without performing operation 3) may damage the limit switch mechanism.

4) The switch assigned to the moved opening (check in the setting opening display [2], for example "O" switch when fully open) is settled.

5) Insert the special handle into the reduction shaft [3] (Fig. 1) that is closest to the applicable switch, turn the reduction shaft in the direction that requires less number of turns, and find where the arrow on the switch changes from "N" to "A" or "A" to "N."

6) Pull out the special handle when the arrow changes from "N" to "A" with the arrow pointing to N.

7) Insert the special handle into the clutch shaft again, and turn the handle to put the clutch shaft back on.

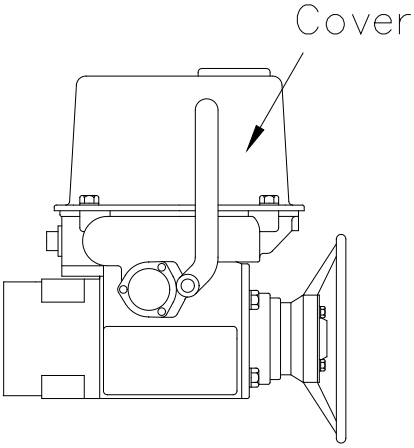
8) Check whether the limit switch follows the operation of the valve by manual operation (see page 22).

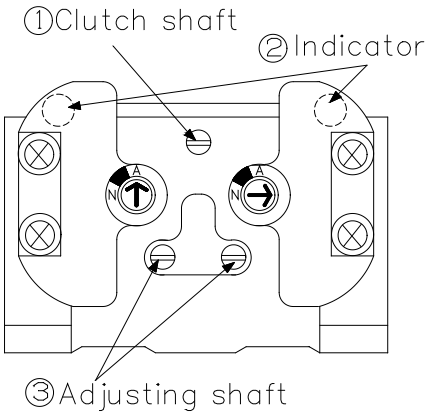
9) Attach the actuator cover and tighten with a wrench.

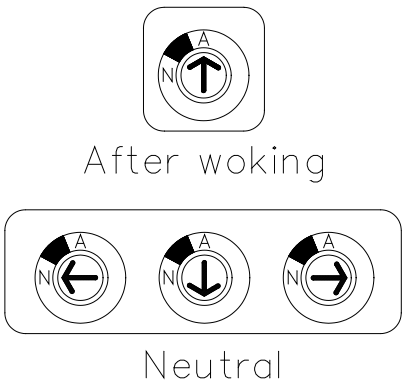
10) Fully close the valve with an electric operation (see page 23). Make sure that the opening scale indicates fully closed "0."

※ If they are misaligned, loosen the actuator cover with a wrench, remove the switch cover, pull out the pointer, and adjust the opening scale to "0" to push in the pointer.

Special handle (accessory)







There are four states of limit switch as above. The switch works when the arrow moves [N] to [A].

11. 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 "12. 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. Mounting method)
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 9.How to disassemble/assemble for parts replacement)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 9.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: 9.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: 9.How to disassemble/assemble for parts replacement)
Operation position shift (visual inspection)	No misalignment	Actuator opening display	Remove the actuator cover and adjust the limit switch operating position. (Ref: 10. How to adjust limit switch)

Daily Inspection (continued)

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 9.How to disassemble/assemble for parts replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Safety Instructions)
Odor ※1) (sniffing)	No odor	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 9.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
Opening and closing 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: 9.How to disassemble/assemble for parts replacement)
Vibration (palpation)	No difference 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: 9.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: 9.How to disassemble/assemble for parts replacement)
Looseness of bolts (visual and palpation)	No Loose	For mounting base + valve	Retighten the mounting bolts
		For mounting base + actuator	Retighten the mounting bolts
		For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Mounting method)
Water-intrusion ※1) (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 9.How to disassemble/assemble for parts replacement)
Intrusion ※1) of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 9.How to disassemble/assemble for parts replacement)
Measured ※1) of the isolation resistance (Measurement)	Must be 50 MΩ or more	Inside the actuator	Replace the actuator (Ref: 9.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: 9.How to disassemble/assemble for parts replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator. (Ref: 9.How to disassemble/assemble for parts replacement)

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

12. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
Manual hand wheel does not turn (cannot turn) during manual operation	Already fully open (or fully closed)	Turn the hand wheel in the reverse direction. (Ref: 8. Manual operation of test run 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: 5. Mounting method)
	Piping stress is applied to the valve.	Remove the piping stress
Do not open or close with electric operation	The operation panel is turned off.	Turn on the power.
	Torque is increasing due to piping stress	Remove the valve from the piping and remove the piping stress. (Ref: 5. Mounting method)
	Torque is increasing due to the effect of fluid (temperature, components, pressure)	Check the operating conditions. (Ref: 4. Product Specifications)
	The cable to the actuator is disconnected.	Check the connection status. (Ref: 4. Product Specifications)
	The power is turned on at the same time.	

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks even when fully closed	Seat is worn	Replace seat (Ref: 9.How to disassemble/assemble for parts replacement)
	Scratches on disc, seat or body	Replace applicable parts (Ref: 9.How to disassemble/assemble for parts replacement)
	Foreign matter caught in valve	Open and close several times to allow foreign matter to flow out
	The connecting bolts are unscrewed, over-tightened, or loose.	Retighten
	Incorrect adjustment of limit switch	Adjust the limit switch normally. (Ref: 10. How to adjust limit switch)
	Low voltage	Check the voltage
Fluid leaks from valve	O-ring is damaged or worn.	Replace the O-ring (Ref: 9.How to disassemble/assemble for parts replacement)
	O-ring protrudes from the groove.	
	O-ring fold surface (or fixed surface) is damaged or worn.	Replace applicable parts (Ref: 9.How to disassemble/assemble for parts replacement)
Actuator is operating, but valve is not open or closed	Damaged stem or fitting	Replace stem or fitting (Ref: 9.How to disassemble/assemble for parts replacement)
	The mating surfaces of the stem and disc are damaged.	Replace applicable parts (Ref: 9.How to disassemble/assemble for parts replacement)
An error signal is output.	Torque is increasing due to piping stress	Remove the valve from the piping and remove the piping stress. (Ref: 5. Mounting method)

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

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: 7. Electrical Wiring)
	The cable or the connection inside the actuator is broken.	Replace the cable or the actuator. (Ref: 9.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: 7. Electrical Wiring)
	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: 9.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: 9.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: 9.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: 9.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: 9.How to disassemble/assemble for parts replacement)
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 9.How to disassemble/assemble for parts replacement)
	Seat or disc is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 9.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: 9.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: 9.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)	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 9.How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem, disc, or fitting	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 9.How to disassemble/assemble for parts replacement)
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: 9.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: 9.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: 9.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: 9.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: 9.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: 9.How to disassemble/assemble for parts replacement)

13. 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 Type 75/75D Electric actuated Type S
450～600mm

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

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