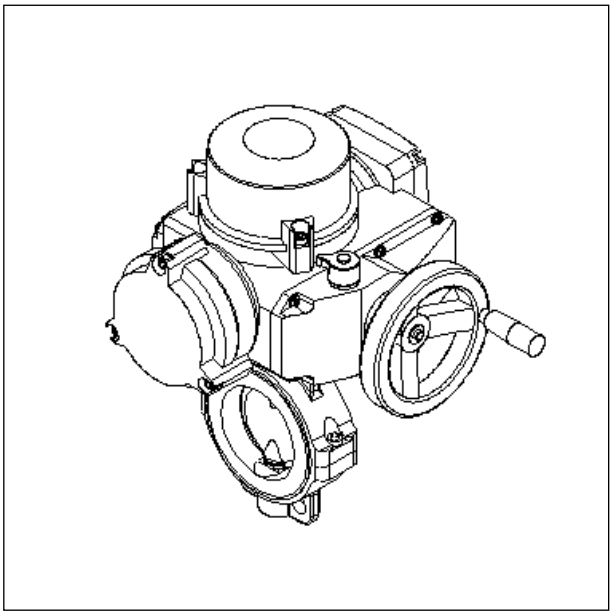
Butterfly Valve Type 55 50～250mm
Butterfly Valve Type 55IS 50～400mm
Electric Actuated Type S

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.

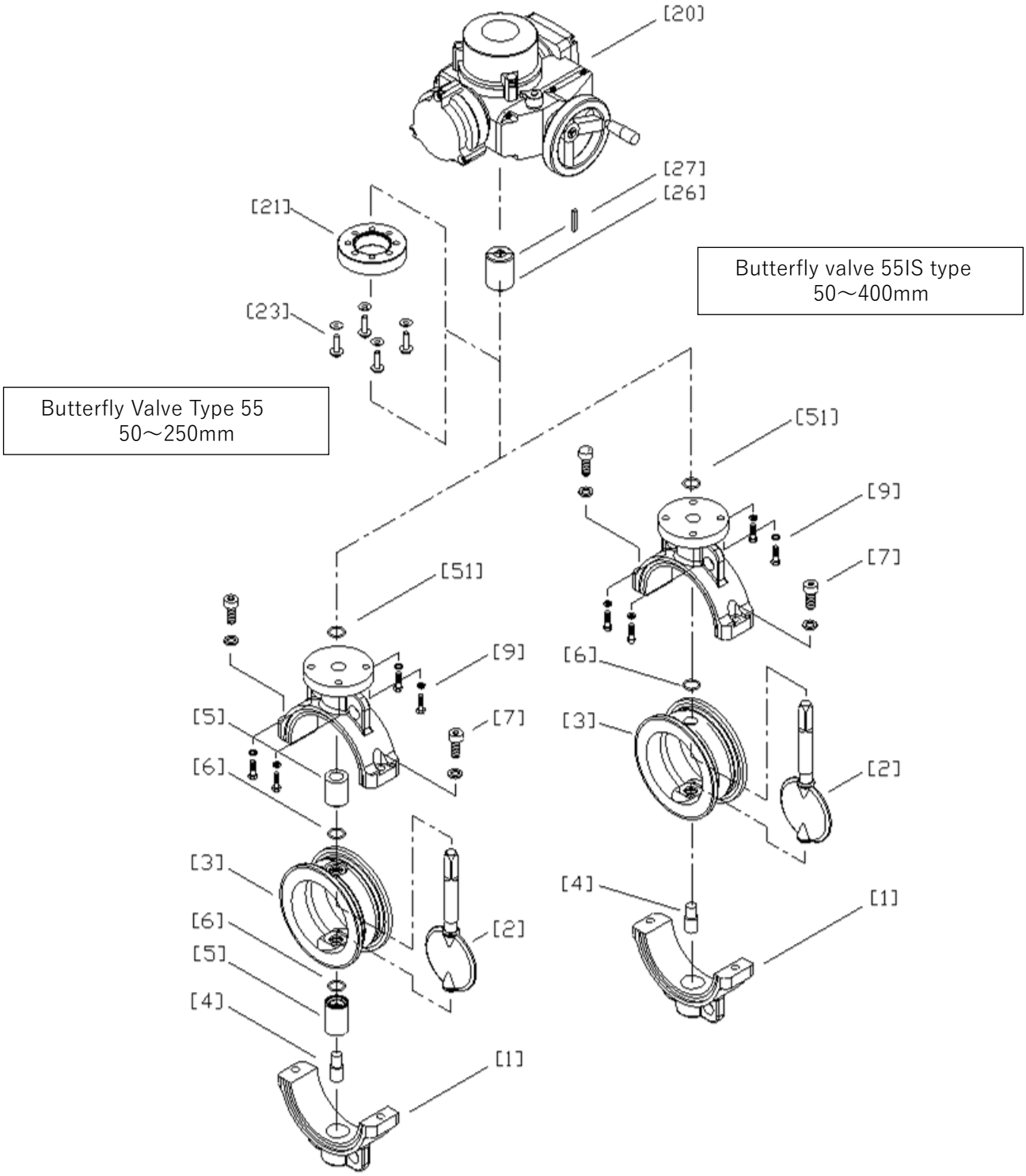
Product Handling

⚠ Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not touch moving parts during operation with hands, feet or tools. ▶ 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.** ▶ 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. ▶ 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. ▶ 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. ▶ 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.

⚠Caution	
Forcing	**There is a danger of injury.** ▶ Secure sufficient space for maintenance and inspection when piping. ▶ 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.) **The valve can be damaged, or leak.** ▶ Do not subject the valve to large vibrations. ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ 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. ▶「11. Perform maintenance on a regular basis referring to "Inspection items." Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ 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. ▶ Avoid places with corrosive gases or poor atmospheres, and provide a cover or the like to cover the entire area. ▶ 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. ▶ 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 location within-10 to 50°C. ▶ Do not leave the actuator in a soil or a water reservoir other than the water resistant type.

3. Name of each part



[1]	Body	[6]	O-ring	[23]	Bolt (D)
[2]	Disk	[7]	Bolt (A)	[24]	Bolt (E) ※
[3]	Seat	[20]	Actuator	[26]	Stem bushing
[4]	Stem	[21]	Stand ※	[27]	Key (A)
[5]	Bushing	[22]	Joint	[51]	O-ring (B)

※Standing base [21], screws (E) [24] are used when Size is 125 and 150mm.

4. Product Specifications

Model number table

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	55	S	*	S	T	W	*	* * *

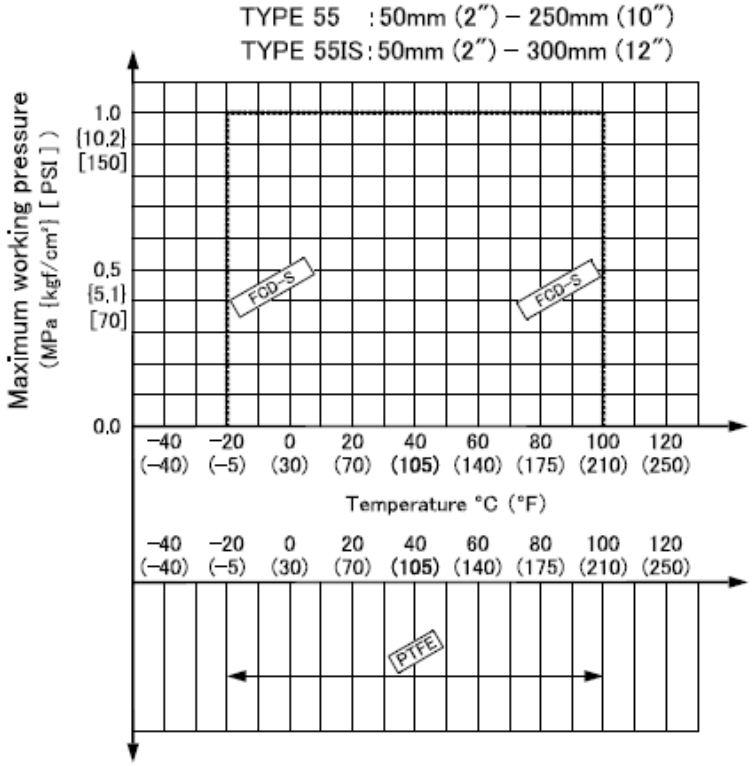
A AUTOMATIC VALVE	55 TYPE 55	S TYPE S	3 Three-Phase 200VAC 4 Three-Phase 400VAC	S FCD-S	T PTFE	W WAFER	1 JIS 10K 5 JIS 5K D DIN A ANSI	050 50mm 080 80mm 100 100mm 125 125mm 150 150mm 200 200mm 250 250mm

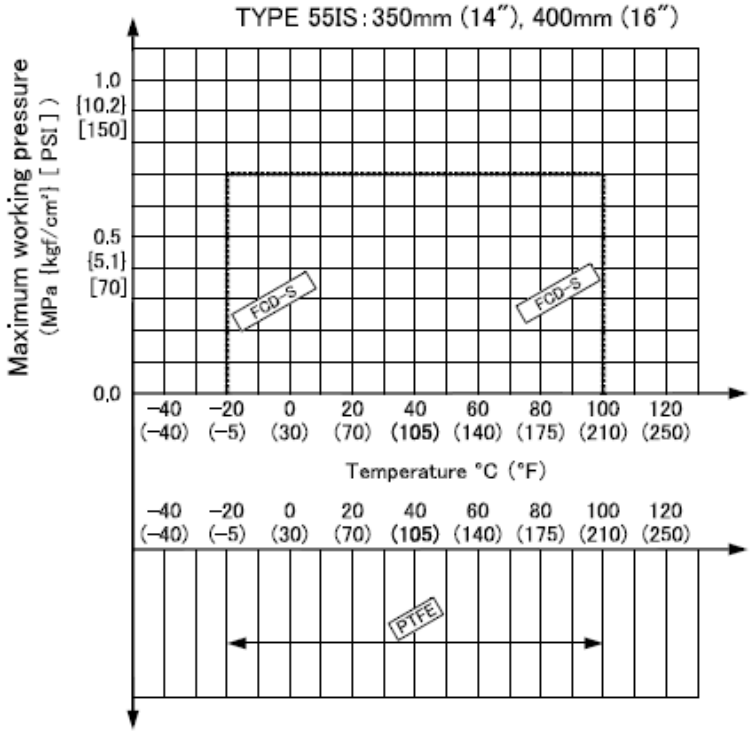
ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	5S	S	*	S	T	W	*	* * *

A AUTOMATIC VALVE	5S TYPE 55IS	S TYPE S	3 Three-Phase 200VAC 4 Three-Phase 400VAC	S FCD-S	T PTFE	W WAFER	1 JIS 10K D DIN A ANSI	050 50mm 065 65mm 080 80mm 100 100mm 125 125mm 150 150mm 200 200mm 250 250mm 300 300mm 350 350mm 400 400mm

Relationship between maximum allowable pressure and temperature

Butterfly Valve Type 55 50～250mm
Butterfly valve 55IS type 50～400mm





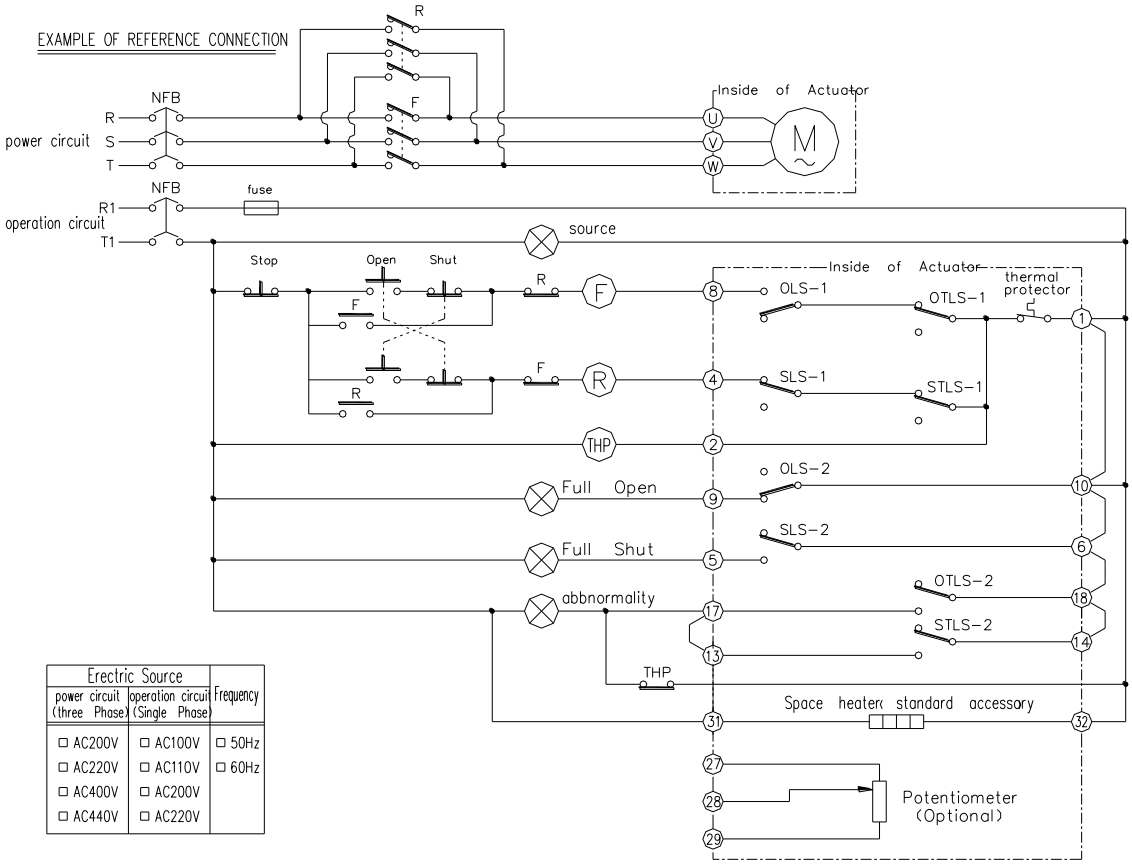
Actuator

Specifications List

Size (mm)		50～100	125,150	200,250	300,350	400
Actuator model		SRJ-010	SRJ-020	SRJ-060	LTRM-01/BRM-1 (automatic return type) LTRH-01/BRM-1 (manual return type)	LTRM-01/BRM-2 (automatic return type) LTRH-01/BRM-2 (manual return type)
Open/close time (sec)	50Hz	18	36	36	43	41
	60Hz	15	30	30	36	34
Degree of protection		IP 68			IP 55	
Motor starting current (A) 50/60Hz	200VAC	1.27/1.19		1.89/1.77	7.60/7.00	10.20/9.60
	400VAC	0.63/0.58		0.94/0.90	4.10/3.80	4.60/4.40
Motor Rated Current (A) 50/60Hz	200VAC	0.53/0.45		0.74/0.67	1.80/1.40	2.50/2.20
	400ACV	0.26/0.22		0.37/0.34	0.91/0.75	1.20/0.99
Manual operation handle revolution		21		26	15	
Electricity consumption (Watts) 50/60Hz	200VAC	82.7/76.0		162/156	240/215	620/593
	400VAC	84.7/78.8		163/159	229/220	625/556
Cable connector Size		G1				
Motor rated output (W)		40		100	200	400
Motor insulation type		Class B				
Motor rated time		15 minutes				
Limit switch capacity		250VAC 2A			250VAC 5A	
Number of motor poles (P)		4				
Space heater rated output (W)		8			10	
Potentiometer Between A and C Max. applied voltage (V)	100 Ω	-			15	
	135 Ω	7.3			-	
	200 Ω	12.6			20	
	500 Ω	14			30	
	1k Ω	-			45	

※The power supply used is single phase (AC100V,200V) for the type with electro-static positioner.

Wiring Diagram SRJ

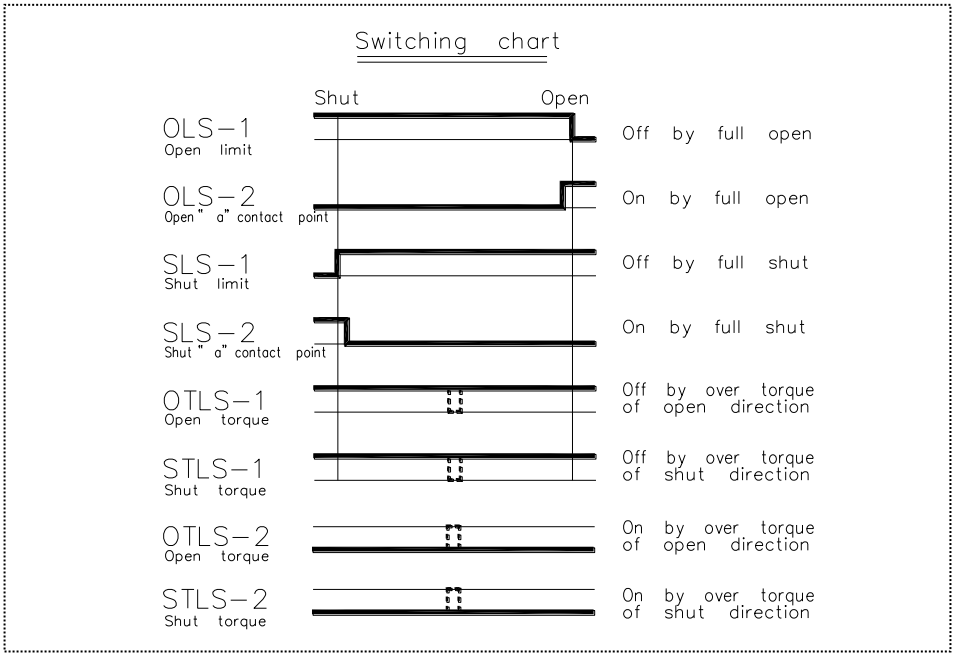


Erectric Source		
power circuit (three Phase)	operation circuit (Single Phase)	Frequency
□ AC200V	□ AC100V	□ 50Hz
□ AC220V	□ AC110V	□ 60Hz
□ AC400V	□ AC200V	
□ AC440V	□ AC220V	

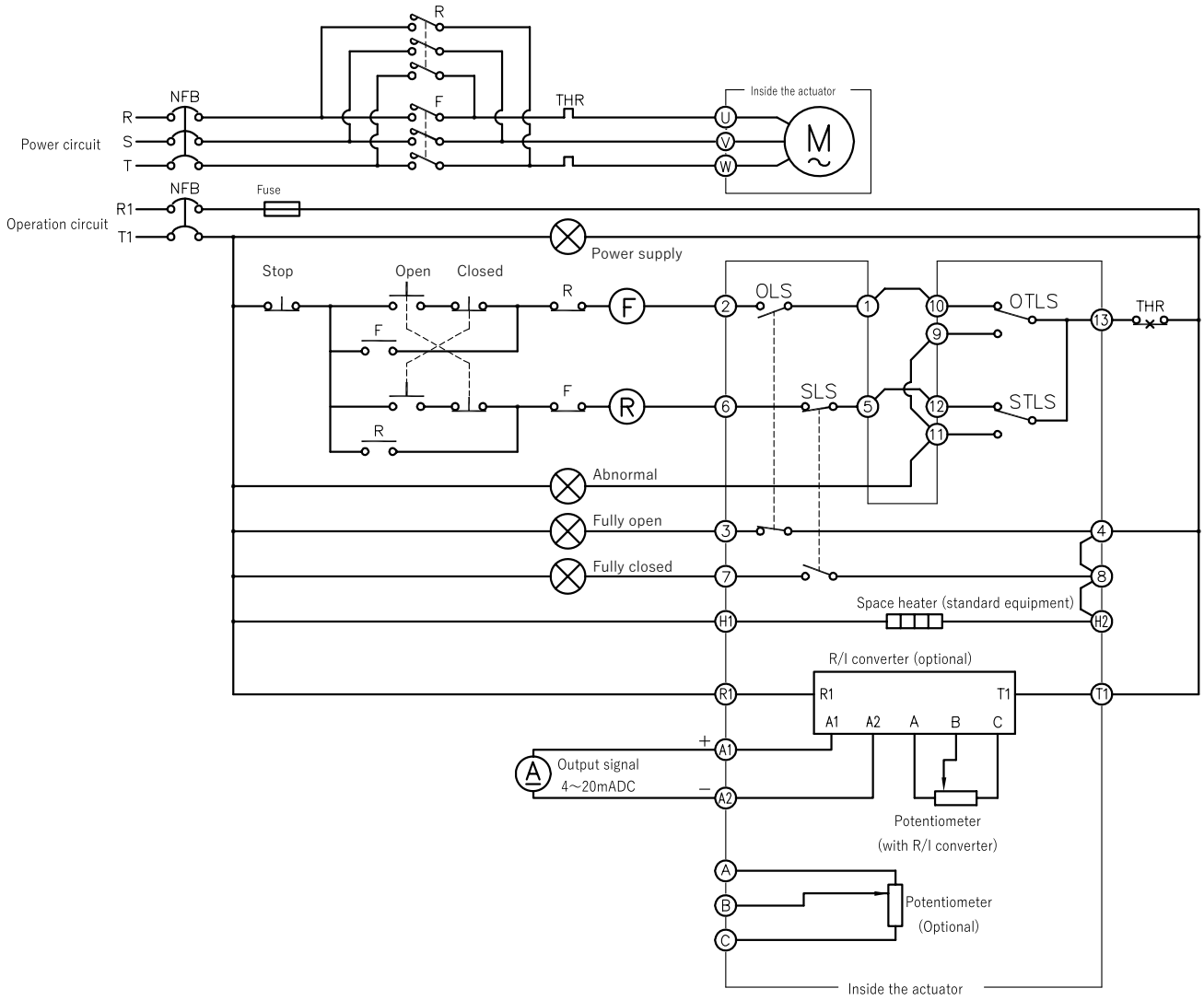
Spec.	Potentiometer
□ Standard(with Space heater)	□ 135Ω
□ Potentiometer	□ 200Ω
	□ 500Ω
	□ 1000Ω

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

Switching chart

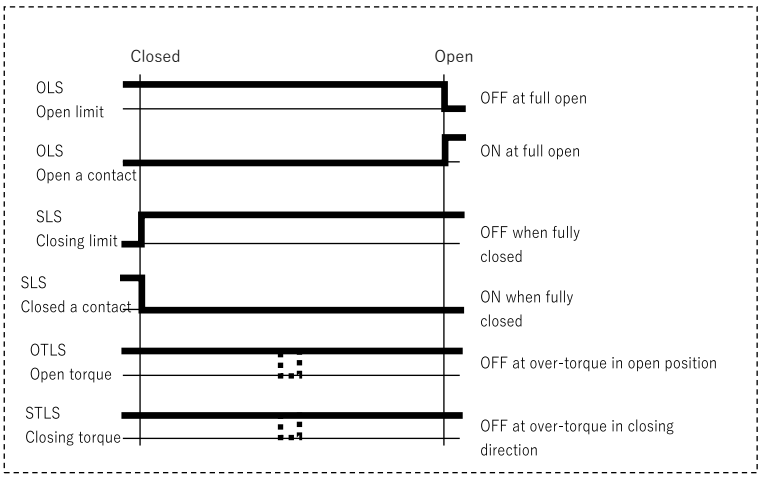


Wiring diagram LTRM

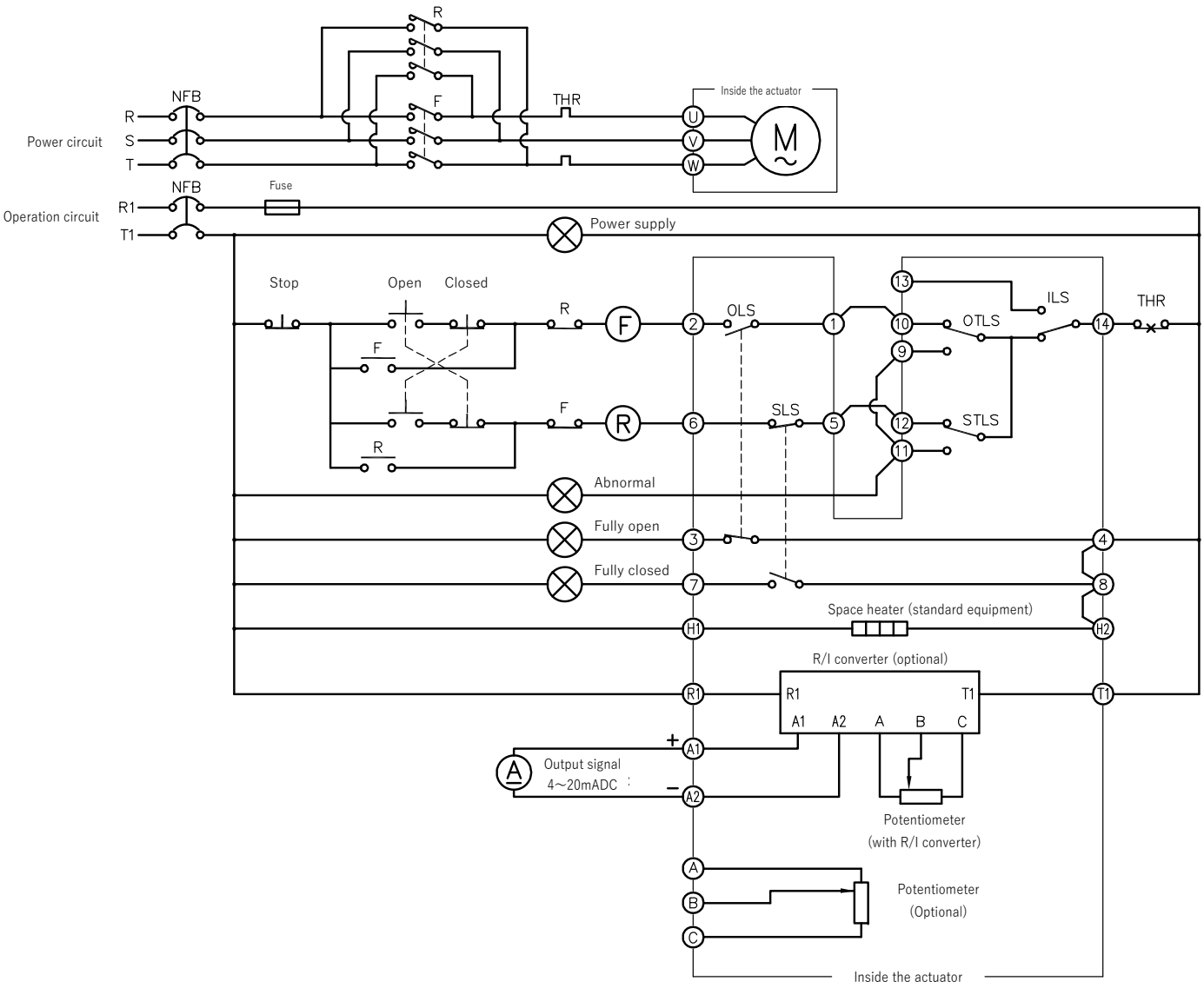


NOTE; The wiring diagram shows the end of the opening operation.

Switching chart

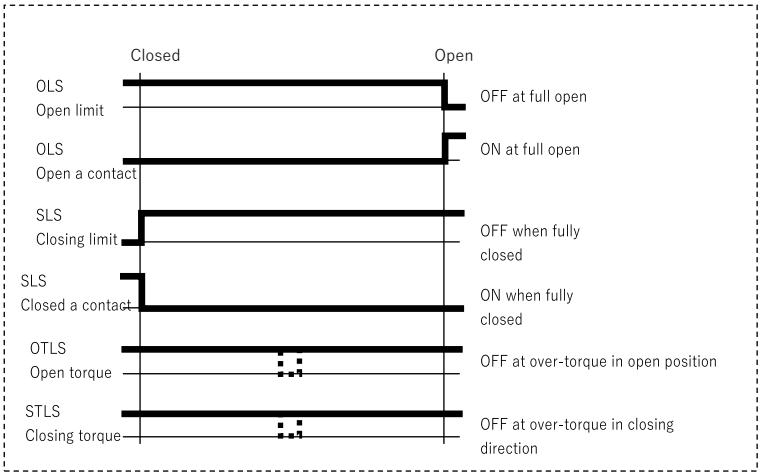


Wiring diagram LTRH



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

Switching chart



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. ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.
Forcing	**There is a danger of injury.** ▶ 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.

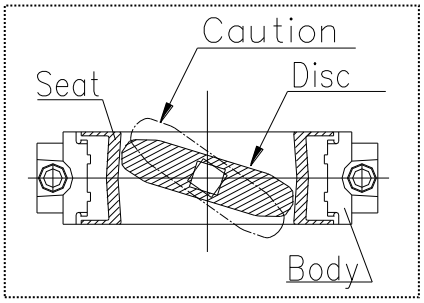
▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like.

Forcing

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.)

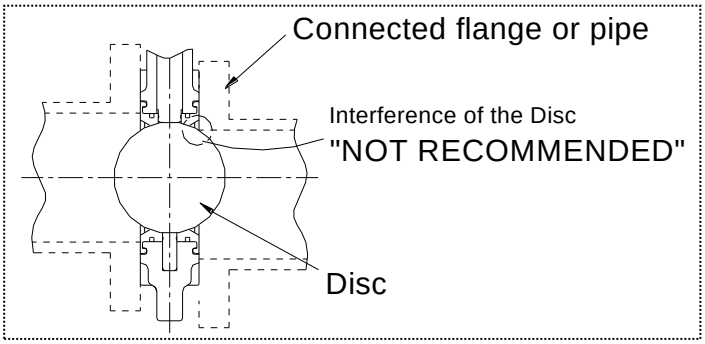
▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve.



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

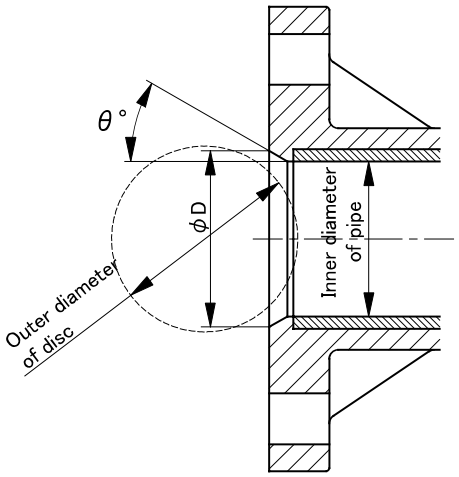
▶ Check that the flange standards of each other are correct.

▶ 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.



▶ 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.

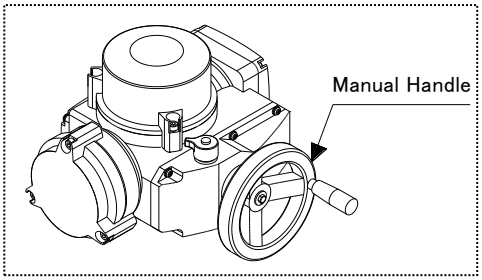
○Confirm that the inner diameter of the connecting part is equal to or greater than the value in the table below. Perform chamfering in the cases below the numerical values in the table below. (Disk outer diameter interferes)



Size (mm)	Bore diameter D (mm)		Chamfer angle θ°
mm (inch)	Type 55	55IS type	Type 55 and 55IS Common
50 (2)	47	42	40
65 (2½)	-	54	40
80 (3)	71	74	30
100 (4)	92	94	30
125 (5)	119	121	25
150 (6)	143	149	25
200 (8)	182	186	15
250 (10)	237	241	15
300 (12)	-	293	15
350 (14)	-	322	15
400 (16)	-	372	15

Preparations	▶ Torque Wrench ▶ Wrench ▶ Through bolts, nuts, and washers (see dimensions on page 14) ▶ AV packing (if required)

[Procedure]

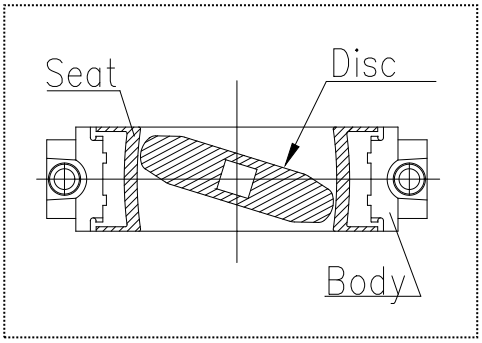


1) Use a wrench to open the disc [2].
※Make sure that the disc [2] does not protrude from between the seat surfaces.
(The disc [2] may be damaged.)

2) Set the valve between the connecting flanges.

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

4) Gradually tighten to the specified torque value diagonally (see Fig. 1) with a torque wrench.



⚠Caution

Forcing

The valve can be damaged, or leak.

▶ 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.)

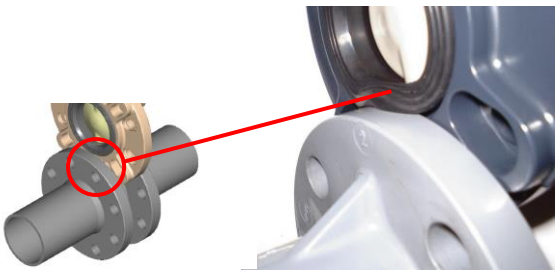
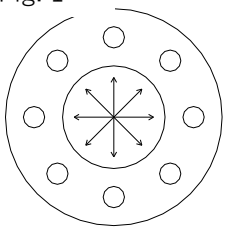


Fig. 1



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

▶ The bolt hole position provided in the Size 80mm of the butterfly valve 55IS type is a hole for JIS10K・DIN.

Specified torque. Unit: N•m {kgf・cm}

Size	50mm	80、100 mm	125、150 mm	200、250 mm
Type 55	22.5 {230}	30.0 {306}	40.0 {408}	55.0 {561}

Size	50～100mm	125、150 mm	200、250 mm	300、350 mm	400mm
Type 55IS	30.0 {306}	40.0 {408}	55.0 {561}	60.0 {612}	80.0 {816}

Dimensions of Through Bolt (Bolt A)

▼JIS10K

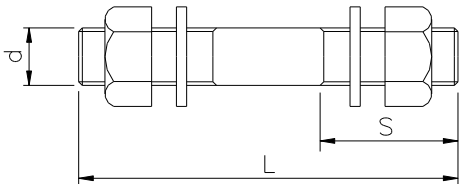
Size	D	Bolt A				Quantity	
		Type 55		55IS type			
mm (inch)		L(mm)	S(mm)	L(mm)	S(mm)	Bolt A	Nut and washer
50 (2")	M16	130	35	130	35	4	8
65 (2 1/2")		—	—	135			
80 (3")		140	35			8	16
100 (4")		145		140			
125 (5")	M20	165	40	155	40		
150 (6")		180		160			
200 (8")		195		165		12	24
250 (10")	M22	215		180	45		
300 (12")		—	—	190		16	32
350 (14")		—	—	210			
400 (16")	M24	—	—	230	50		

▼JIS5K

Size	D	Bolt A				Quantity	
		Type 55		55IS type			
mm (inch)		L(mm)	S(mm)	L(mm)	S(mm)	Bolt A	Nut and washer
50 (2")	M12	110	30	110	30	4	8
65 (2 1/2")	M16	—	—	120			
80 (3")		125	40				
100 (4")		135		130	40	8	16
125 (5")		140		135			
150 (6")		155		135			
200 (8")	M20	195	45	165			
250 (10")		210		—	—	12	24

Note 1: The above figures are the dimensions when using AVTS flange.

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



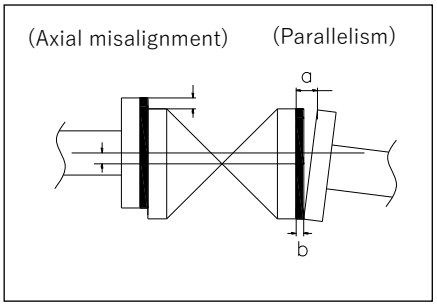
⚠Caution

Forcing

Damage may occur.

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

Size (mm)	Shaft misalignment	Parallelism (a-b)
50～80	1.0mm	0.8mm
100～150	1.0mm	1.0mm
200～400	1.5mm	1.0mm



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.)

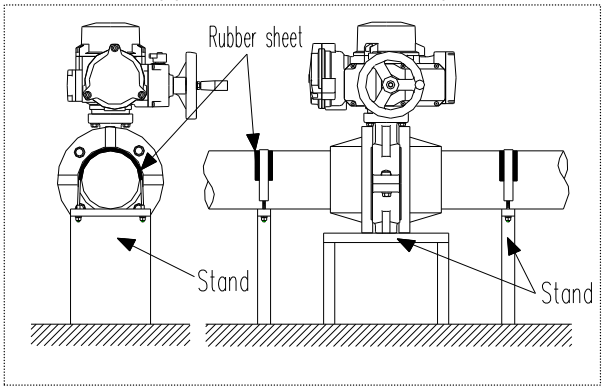
Preparations	▶ Spanner ▶ U-band (with bolt) ▶ Rubber seat

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.

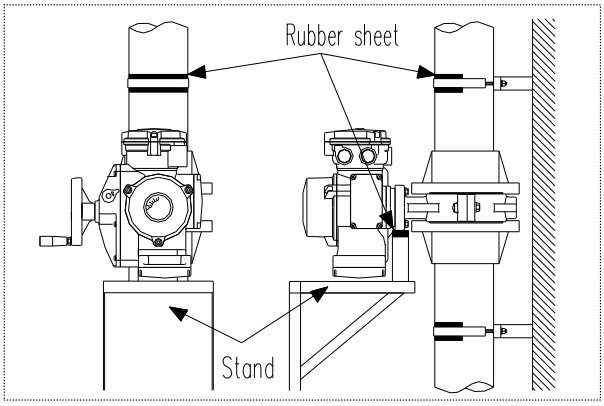
(Support installation example)



Vertical piping

Lay a rubber sheet on the connecting part of the actuator and the body, and fix it with the frame.
Wrap the rubber sheet around the pipe and secure it with the U-band.

(Support installation example)



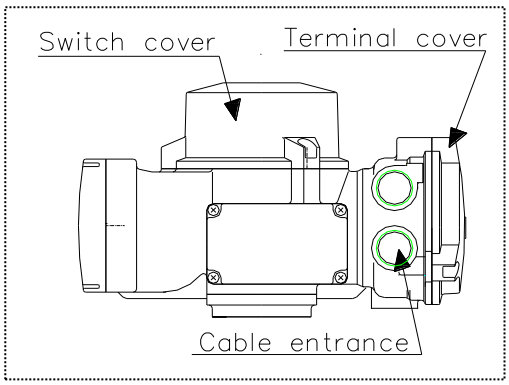
7. Electrical Wiring

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	**Poor grounding may cause electric shock or fire due to electric leakage.** ▶ Be sure to connect the ground wire. **Failure to do so may result in electric shock or damage to the equipment.** ▶ Keep hands free of moisture and oil when adjusting or checking. **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).

Caution	
Prohibition	**The valve can be damaged or leak.** ▶ 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 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.) ▶ Check the voltage on the power supply and nameplate before use. Improper voltage may cause damage or malfunction of the equipment.

Preparations	▶ Phillips screwdriver ▶ Wire Stripper ▶ Hex Wrench ▶ Crimp Terminal ▶ Connector ▶ Terminal Crimp Tool ▶ Wrench

[Procedure]



1) Loosen the screws holding the terminal cover with an Allen key (6mm) and remove the cover.
2) Remove the lead entry plug with a spanner.
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 according to 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 bolts securing the terminal cover (actuator cover) with a hex wrench (spanner) to attach the cover.
10) Attach the ground.

8. Commissioning method

⚠ Warning	
Prohibition	**Serious injury can result.** **Failure to do so may result in electric shock or damage to the equipment** ▶ 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. **Poor grounding may cause electric shock or fire due to electric leakage.** ▶ Be sure to connect the ground wire. **Otherwise, you may get caught in your hand or arm.** ▶ Never touch the moving parts during operation.
Forcing	**Failure to do so may result in electric shock or damage to the equipment.** ▶ Keep hands free of moisture and oil when adjusting or checking.

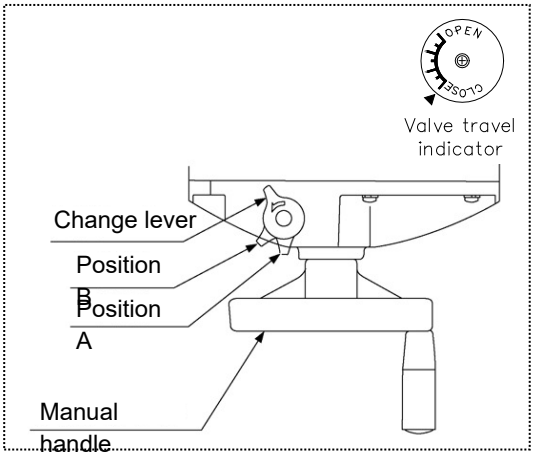
⚠Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Perform manual operation after confirming that the actuator is not operated by the motor. ▶ Do not connect multiple (two or more) motorized valves in series. In addition, open/close switches (or relay contacts) should be provided for each 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 defect when performing wiring work. ▶ 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.) ▶ 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

⚠Caution	
Forcing	**Serious injury can result.** ▶ Turn off the power. (If the power is turned on during manual operation, you may be injured.)

[Procedure]

Actuator model: SRJ



1) Turning the changeover lever in the direction of the arrow (until the A state shown in the right figure) disconnects the motor and enters the manual state.
   ※The changeover lever is an auto return.
   (If the switchover lever stops in the state shown in Fig. B on the right, the crests of the internal clutch are aligned. Do not turn it forcibly. Operate the switchover lever while turning the handle either left or right.)
2) Turn the manual handle while watching the valve travel meter.
   ▶ Rotate clockwise → Close direction
   ▶ Counterclockwise rotation → Open direction

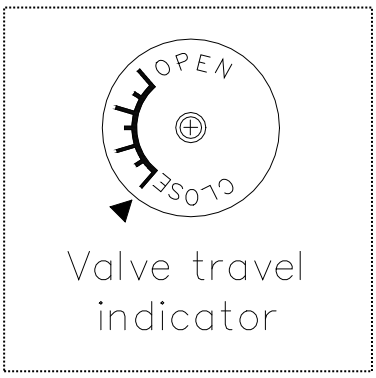
※Opening and closing operations with the manual handle must be performed by hand.
※Do not forcibly turn the manual handle further from the fully open "O" and fully closed "S" positions. (It will malfunction.)

Electric operation

⚠Caution	
Prohibition	**Serious injury can result.** ▶ 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 or close the external selector switch to check that the displayed direction of the valve matches the operating direction.
   If they do not match, check the wiring diagram (see page 12) and perform the operation from 1) again.
3) Fully open "O" or fully closed "S" to turn off the power.



9. Disassembly method

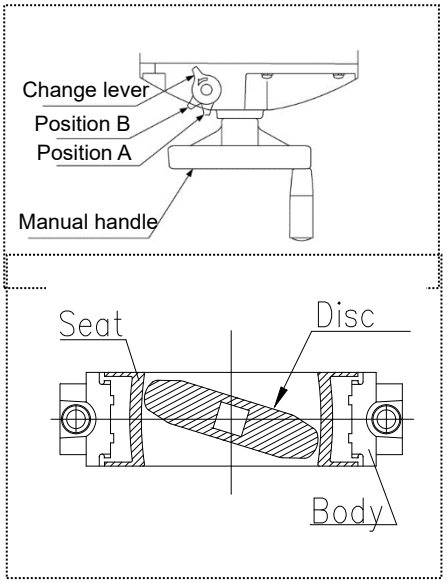
⚠Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not connect or separate lines when the power is on. Also, do not touch any other parts on the board or the terminal block wiring part. (risk of electric shock or damage to equipment)
Forcing	**There is a danger 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.

⚠Caution	
Prohibition	**The valve can be damaged or leak.** ▶ 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. ▶ 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.
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	▶ Spanner ▶ Allen key ▶ Plastic hammer ▶ Flat head screwdriver ▶ Protective gloves ▶ protective goggles ▶ AV gaskets (if required)

<**Disassembly**>

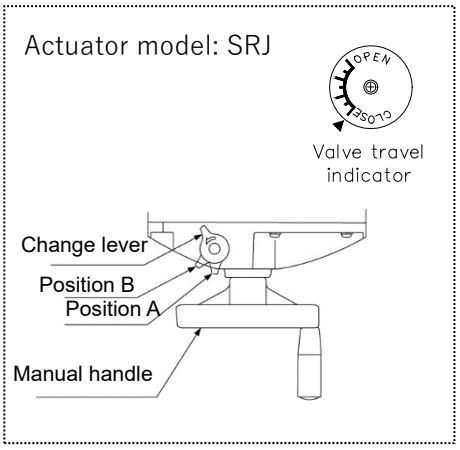
[**Procedure**]



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 and remove the connecting bolts and nuts.
6) Remove the valve from the piping.
7) Loosen bolt (D) [23] (bolt (E) [24]) and remove actuator [20] from body [1].
8) Loosen the bolts (A) [7] connecting the upper body [1] and the lower body [1] with an Allen wrench.

<**Assembly**>

[**Procedure**]



1) Assembly work is carried out in the reverse order from the disassembly procedure on 8).
2) Check whether the opening of the disc [2] and the value indicated by the valve gauge are consistent.
3) Check the operation with an electric operation (see page 00).

※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. (Refer to page 00.)

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)

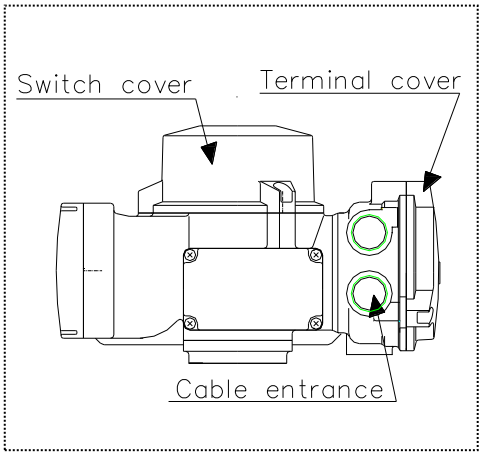
Caution	
Prohibition	**The valve can be damaged or leak.** ▶ Do not leave or use with the cover open. (Water or dust may penetrate and cause operation failure.)
Forcing	**The valve can be damaged or leak.** ▶ Contact CKD when using the limit switch in a 1mA～100mA, 5V～30V.

Preparations	▶ Hex key ▶ wrench ▶ (-) screwdriver

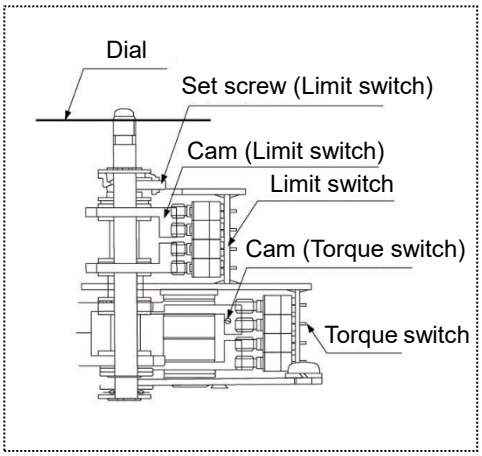
●Adjustment is not necessary as it is set at the factory. If the adjustment is necessary, follow the procedure below.

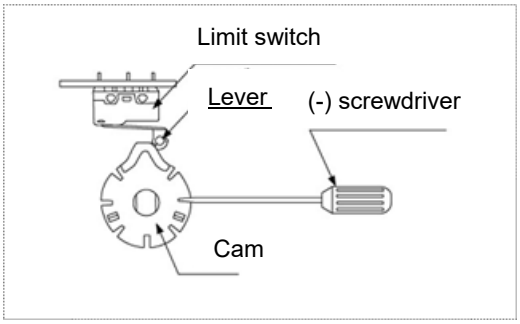
●The limit switch is for the upper two stages (RLS) for clockwise rotation and the lower two stages (LLS) for counterclockwise rotation. Each of the two micro switches operates with an integral cam. The lamp circuitry (RLS2, LLS2) operates a little faster.

[Procedure]



1) Turn off the power.
2) Completely drain the fluid in the piping.
3) Loosen and remove the switch cover with an Allen key (6mm).
4) Perform manual operation to the opening to be adjusted (fully open or fully closed).
5) Loosen the setscrew holding the cam for limit switch with a hex key (1.5mm). (Loosen the hex wrench while pressing it.)
6) Slowly move the cam in the direction you want to adjust with the (-) screwdriver.
7) Confirm that the limit switch has been operated in two stages with a click and a click.
8) The cam is tightened by the disk spring and fixed by frictional force. A rotation-stop washer is inserted between the two cams. Turning one cam does not cause the other cam to turn.
9) After setting the cam, slowly tighten the set screw for the cam with an Allen wrench.
10) Make sure that the position you want to adjust is set manually. If not, repeat steps 4) to 9).
11) Replace the switch cover and tighten it with an Allen wrench.
12) Fully open and closed with electric operation.
13) Confirm that the opening is pointing to fully open "O" or fully closed "S."





※If the gauge is misaligned, loosen the switch cover with an Allen wrench to remove it, loosen the gauge with a Phillips screwdriver to point at "O" or "S" fully open, and then perform 10), 11, 12).

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. Piping method)
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 9. Disassembly method)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 9. Disassembly method)
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. Disassembly method)
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. (Ref: 9. Disassembly method)
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)
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 9. Disassembly method)
		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. Disassembly method)

※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
Open/close operation time (Measurement)	Error within ±1 second	Actuator opening display	Check the power supply voltage (±10%).
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 9. Disassembly method)
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. Disassembly method)
		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. Disassembly method)
Looseness of bolts (visual and palpation)	No Loose	For Standing base + valve	Retighten the Standing bolts with the following torque.
		For Standing base + actuator	Retighten the Standing bolts with the following torque.
		For fixing the actuator cover	Retighten the screws with the following torque
		Terminal block	Retighten the screws with the following torques
		[Flange type] 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: 9. Disassembly method)
Intrusion ※1) of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 9. Disassembly method)
Measured ※1) of the isolation resistance (Measurement)	Must be 50 MΩ or more	Inside the actuator	Replace the actuator (Ref: 9. Disassembly method)
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. Disassembly method)
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. Disassembly method)

※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
	The power remains supplied in the opposite direction of the handle operation direction.	Turn off the power
	Foreign matter caught in valve	Remove the valve from the piping and remove any foreign matter.
	Torque is increasing due to piping stress	Remove the valve from the piping and 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.
	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 again. (Ref: 4. Product Specifications)
	The power is turned on at the same time.	
Fluid leaks even when fully closed	Sheet is worn	Replace the valve.
	Scratches on disc, sheet or body	Replace the valve.
	Foreign matter caught in valve	Open and close several times to allow foreign matter to flow out
	Tightening, over-tightening or loosening of connecting bolts	Retighten
	Incorrect adjustment of limit switch	Adjust the limit switch normally. (Ref: 10. How to adjust limit switch)
	Low voltage	Check the voltage
	O-ring fold surface (or fixed surface) is damaged or worn.	Replace valve

Failure phenomenon	Possible cause	Measures and measures
Actuator is operating, but valve is not open or closed	Damaged stem or Joint	Replace valve
	The mating surfaces of the stem and disc are damaged.	Replace valve
An error signal is output.	The switching micro switch is defective.	Replace the switching micro switch
	The cam of the open/close micro switch and the cam of the double micro switch are too close	Adjust to normal angle

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: 8. 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: 9. Disassembly method)
	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)
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. Disassembly method)
	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. Disassembly method)

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 (Refer: 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. Disassembly method)
	Water or foreign matter has entered the actuator causing a short circuit.	Stop using the product immediately and replace the actuator. (Ref: 9. Disassembly method)
	The actuator does not move due to external corrosion of the actuator.	Stop using the product immediately and replace the actuator. (REF.: 9. Disassembly method
	The insulation resistance of the actuator has dropped.	Stop operation immediately, check the insulation resistance, and replace the actuator. (Ref: 9. Disassembly method)
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 9. Disassembly method)
	Sheet or ball is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 9. Disassembly method)
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. (Ref: 9. Disassembly method)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 9. Disassembly method)
	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: 9. Disassembly method)
	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: 9. Disassembly method)
	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 9. Disassembly method)
Actuator is operating but valve is not open or closed	Damaged stem, or Joint	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 9. Disassembly method)
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. Disassembly method)
	Wrong connection to the terminal block	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 9. Disassembly method)
	An overcurrent is flowing to the actuator	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 9. Disassembly method)
	The actuator is affected by lightning.	Stop using the product immediately, remove the valve from the piping, and replace the actuator. (Ref: 9. Disassembly method)

Failure phenomenon	Possible cause	Measures and measures
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. Disassembly method)
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. Disassembly method)

13. Disposal method of residual materials and waste materials

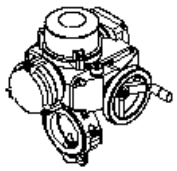
⚠Warning	
Forcing	**When burnt, toxic gas is generated.** ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

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

[User's manual]

Butterfly valve Type 55/55IS Electric actuated Type S
55 type: 50～250mm, 55IS type: 50～400mm



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

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