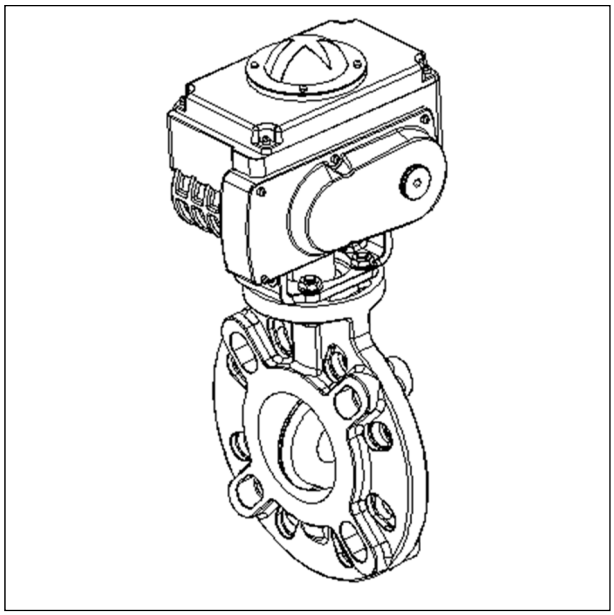
Rotary damper
Electric Actuated Type T
40～400mm

User's Manual



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

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

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

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

<WARNING/CAUTION indications>

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

<Prohibited/Forced display>

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

Table of contents

1. Our product warranty coverage

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

Applicable to

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

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

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

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

Disclaimer

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

2. Safety Instructions

Unpacking, Transportation and Storage

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

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

Product Handling

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

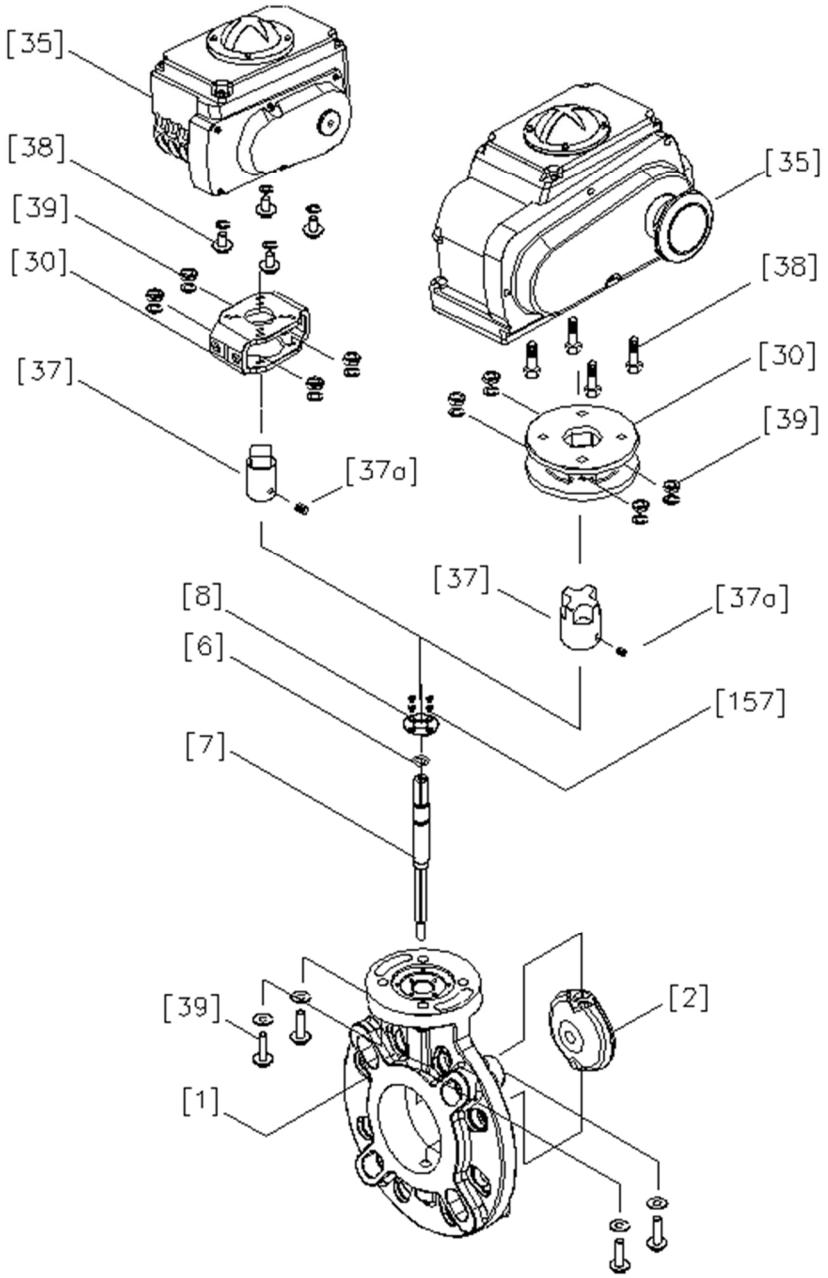
⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects. ▶ Do not use the product in places where it may be submerged. ▶ Pay attention to the atmosphere where the valve is installed. Avoid locations where the product is exposed to sea breezes, corrosive gases, chemical liquids, sea water, steam, etc. ▶ Do not subject the valve to large vibrations. ▶ The surface temperature of the actuator may rise during operation. This is due to the heat generated by the internal equipment and is not a malfunction, but use above the allowable temperature may cause a malfunction.
Forcing	**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.) ▶ 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.) ▶ 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 or a tool specified by the manufacturer 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-5 to 55° C.

3. Name of each part

40 mm～400 mm / Body material: PVC, PP

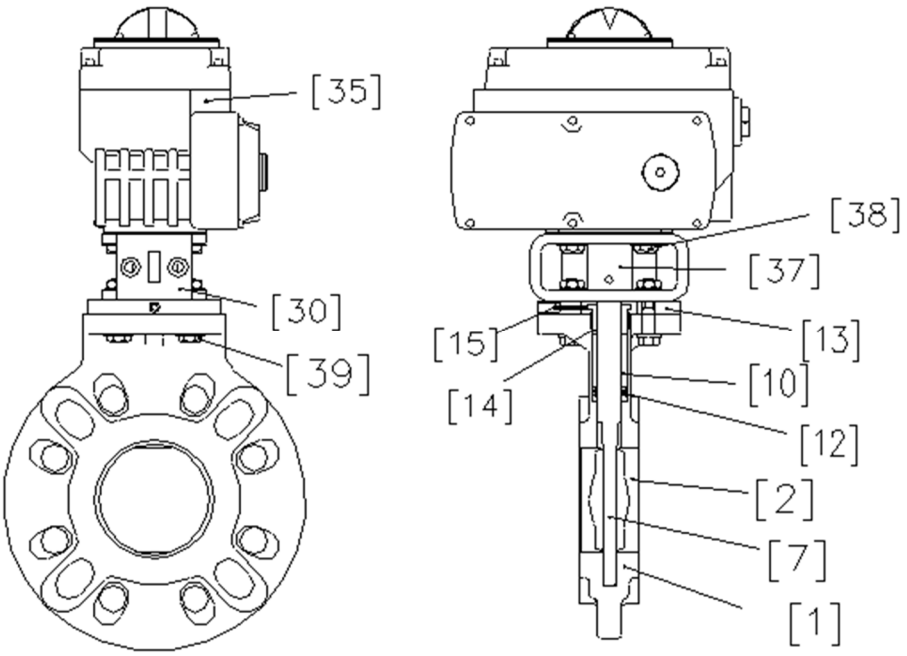
(T-0)

(T-2、T-3)



[1]	Body	[8]	Stem retainer (A)	[37a]	Screw (C)
[2]	Disc	[30]	Stand	[38]	Bolt (E)
[6]	O-ring (C)	[35]	Actuator	[39]	Bolt/nut (A)
[7]	Stem	[37]	Joint	[157]	Set screw (F)

40mm～400mm / Body material: PVDF



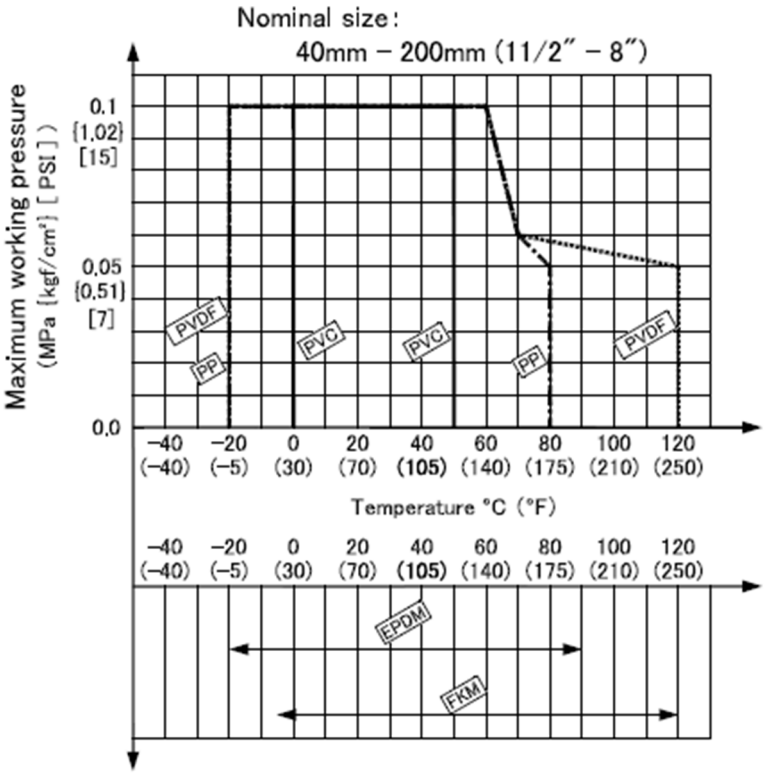
[1]	Body	[13]	Spacer (A)	[37]	Joint (A)
[2]	Disc	[14]	Ground	[38]	Bolt (E)
[7]	Stem	[15]	Screw (A)	[39]	Bolt/nut (A)
[10]	Bush (A)	[30]	Stand		
[12]	V packing	[35]	Actuator		

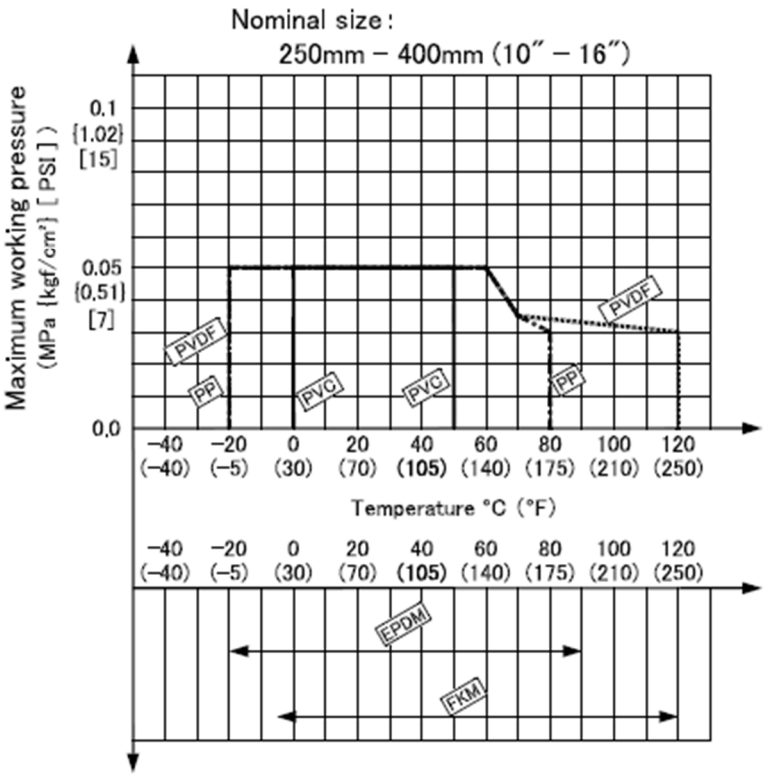
4. Product Specifications

Model number table

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	* *	T	*	*	*	W	*	* * *
A AUTOMATIC VALVE	D7 TYPE 57 D6 TYPE 56	T TYPE T	1 Single-phase 100V 2 Single-phase 200V	U PVC P PP F PVDF	E EPDM V FKM T PTFE	W WAFER	1 JIS 10K 5 JIS 5K D DIN A ANSI	040 40mm 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





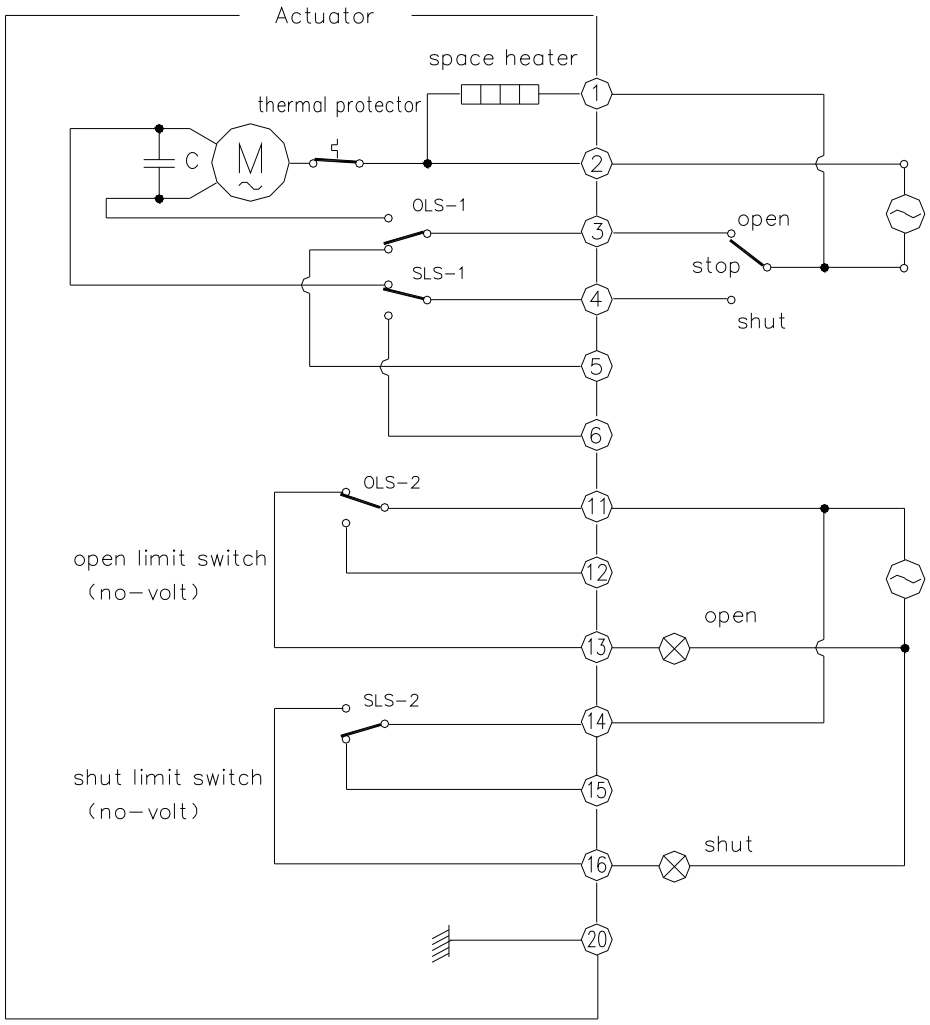
Actuator

Specifications List

Applicable Nominal size (mm)			40～150	200～350	400
Actuator model			T-0	T-2	T-3
Open/close time (sec)		50Hz	25		55
		60Hz	20		50
Degree of protection			JIS C 0920 protection class 5 jet-proof (equivalent to IP65)		
Motor start current (A) 50/60Hz	100VAC	*100V	1.2/1.2	2.4/2.4	5.1/4.8
	110VAC		1.4/1.4	2.5/2.5	6.1/6.6
	200VAC	*200V	0.5/0.5	1.1/1.1	2.6/2.4
	220VAC		0.7/0.7	1.2/1.2	3.1/3.0
	220VAC	*220V	—	1.1/1.0	2.3/2.3
	240VAC	*240V	—	0.9/0.9	2.1/2.2
Motor rated current (A) 50/60Hz	100VAC	*100V	0.50/0.50	0.90/1.20	1.60/1.70
	110VAC		0.60/0.60	1.00/1.20	1.70/1.80
	200VAC	*200V	0.25/0.25	0.50/0.80	0.80/1.00
	220VAC		0.30/0.30	0.60/0.80	0.90/1.00
	220VAC	*220V	—	0.50/0.50	0.70/0.80
	240VAC	*240V	—	0.50/0.60	0.60/0.60
Manual operation handle revolution (0 to 90 degrees)			6.7	16.5	
Cable connector Nominal size			G1/2 (PF1/2) Two locations		
Motor rated output (W)			8	30	90
Motor insulation type			Class E		
Motor rated time (min)			30		
Limit switch capacity			250VAC 10A		
Space heater rated output (W)			8		

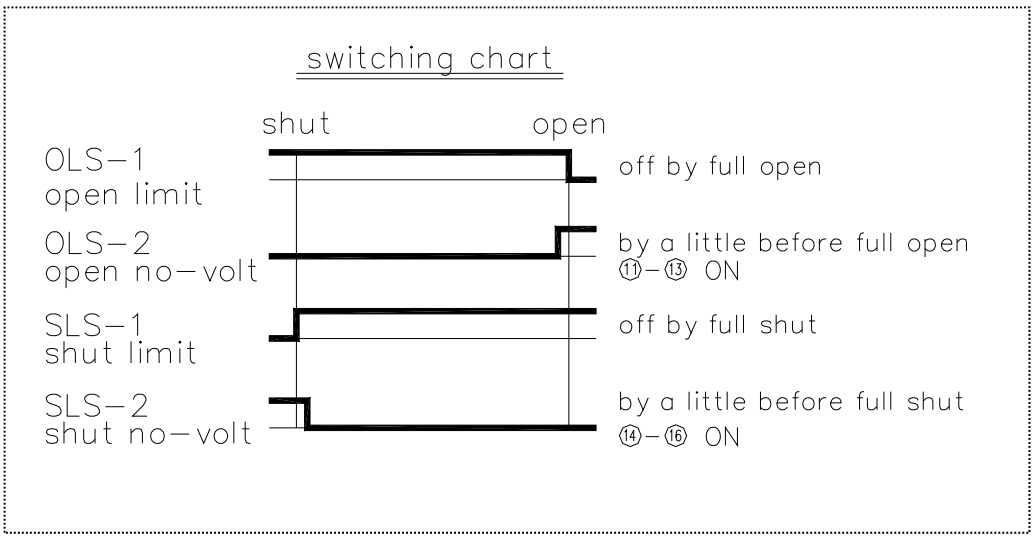
*: Motor voltage

Wiring Diagram



Electric source (single-phase)	frequency
☐100VAC ☐110VAC ☐200VAC ☐220VAC	☐50Hz ☐60Hz

Switching chart



About parallel wiring

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

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

Fig 4-1

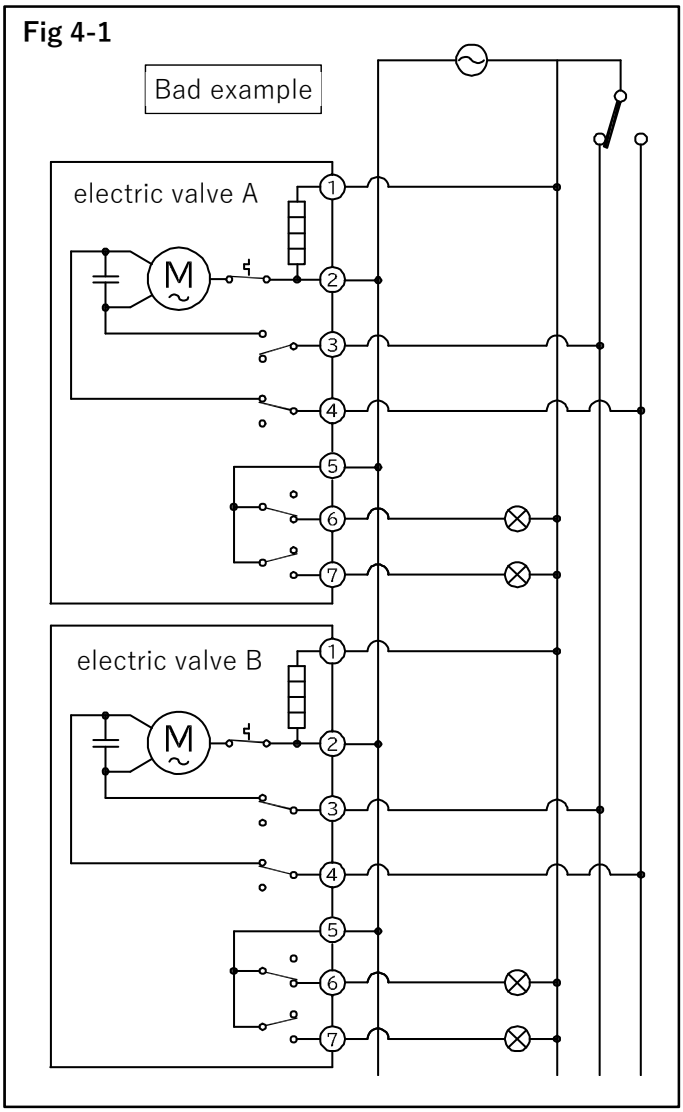
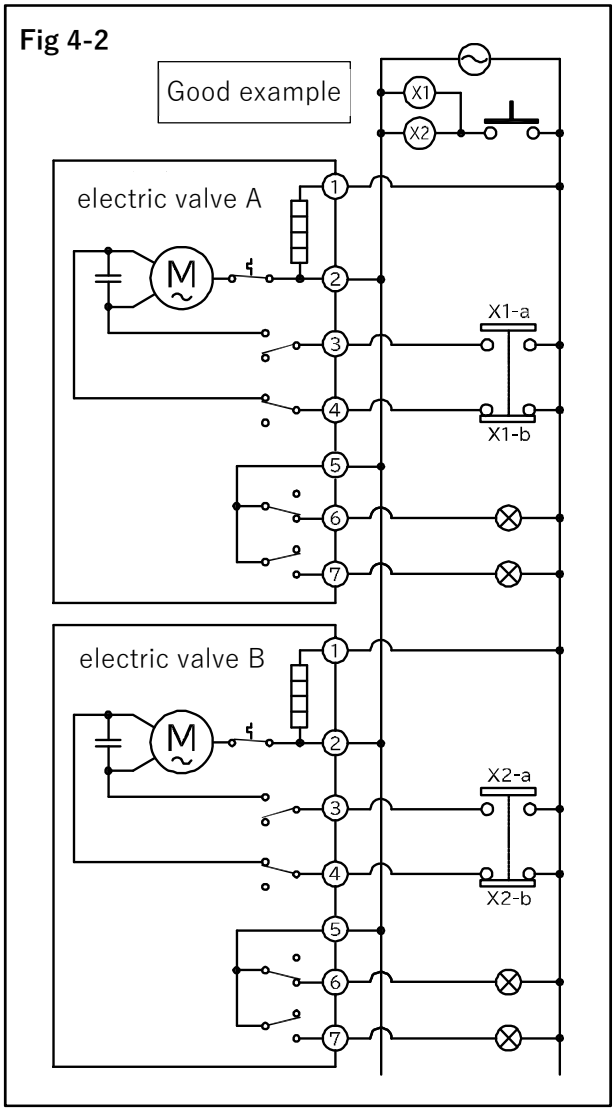


Fig 4-2



Standard option

Option name	Objectives and specifications	Remarks
Space heater	・Control of condensation inside the actuator ・Possible to retrofit	Standard equipment
Potentiometer	・Outputs the opening of the valve as a resistance value ・Select from 135 Ω or 500 Ω	
Intermediate limit switch	・Detects the intermediate position (one for each opening/closing) ・Without switching voltage limit switch	
Servo unit (Power Positioner)	・Operates in proportion to 4～20mADC input signal	
Speed controller	・Delay of opening and closing time is possible	
Manual handle	・Valve can be opened and closed during power loss	Standard equipment

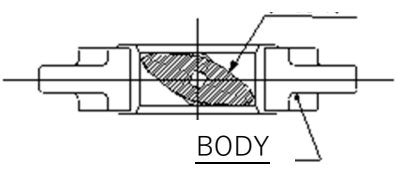
Contact us for combinations of the above options and other special options.

5. Piping method

Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load. ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.
Forcing	**Serious injury can result.** ▶ Wear appropriate protective equipment according to the type of work being performed.

Caution	
Prohibition	**The valve can be damaged, or leak..** ▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like. ▶ To avoid damaging the sealing surface of the disc, do not throw the product or hit it against other objects. ▶ Even after installing the valve, do not open or close the valve when sand or other foreign matter has entered the pipeline.
Forcing	**The valve can be damaged, or leak..** ▶ When piping, if the disc is fully opened, confirm that it does not hit the connection flange or the corner of the inner diameter of the connection pipe, and then fit it correctly. (Refer to Fig. 1.) ▶ 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. ▶ Keep the ambient temperature of the installation site within the range of-10° C to 50° C. ▶ The surface temperature of the actuator may rise during operation. This is due to the heat generated by the internal equipment, and it is not a malfunction. Use of the product beyond the allowable range may cause a malfunction.
	The valve can be damaged or leak. ▶ Do not damage the sealing surface of the disc when installing the product.

Fig 1



⚠Caution

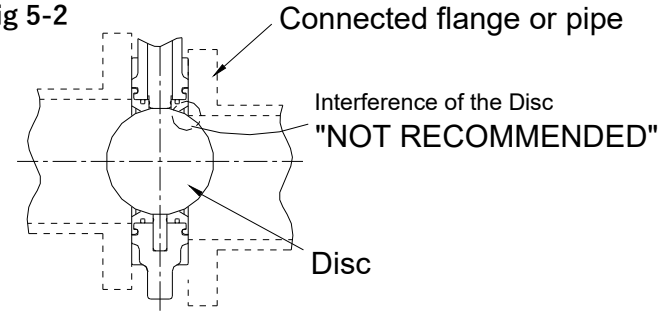
Forcing

The valve can be damaged or leak.

▶ 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.

DN (mm)	Bore diameterD (mm)
40	30
50	44
65	67
80	71
100	90
125	115
150	136
200	179
250	234
300	284
350	336
400	370

Fig 5-2



Preparations	▶ Torque wrench ▶ wrench ▶ manual override ※ ▶ Through-bolt/nut/washer (see dimensions on page 20) ▶ AV packing or gasket

※Manual handle

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

T-2,T-3 is equipped with a round hand wheel in the actuator.

[Procedure]

1) Turn valve fully closed.

2) Install a AV seal between the valve/flange.

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.

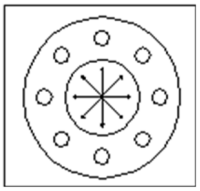
⚠Caution

Forcing

The valve can be damaged, or leak..

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

(Fig 1)



Specified torque. Unit: N•m {kgf・cm}

Nominal size	40mm	50mm 65mm	80mm 100mm	125mm 150mm	200mm 250mm	300mm 350mm	400mm
Torque value	20.0 {204}	22.5 {230}	30.0 {306}	40.0 {408}	55.0 {561}	60.0 {612}	80.0 {816}

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

▼JIS10K

Nominal size		Bolt A			Quantity		
Mm	Inch	D	L(mm)	S(mm)	Bolt A	Bolt B	Nut and washer
40	1 1/2	M16	115	40	4	-	8
50	2		125				
65	2 1/2		135	45			
80	3		135		8		16
100	4		145				
125	5	M20	165	50			
150	6		175	55			
200	8		195		12		24
250	10	M22	225	60			
300	12		245		16		32
350	14		255	65			
400	16	M24	290	60	14	4	

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).

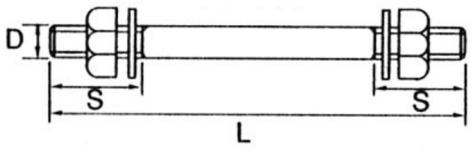
▼JIS5K

Nominal size		Bolt A			Quantity		
Mm	Inch	D	L(mm)	S(mm)	Bolt A	Bolt B	Nut and washer
40	1 1/2	M12	100	30	4	--	8
50	2		105				
65	2 1/2		110				
80	3	M16	120	35			
100	4		130	40	8	-	16
125	5		140				
150	6		150				
200	8	M20	195	55			
250	10		225		12	-	24
300	12		240				
350	14		255	65			
400	16	M22	260	55	16	-	32

Note 1. The above values are the bolted dimensions when using a AVTS flange.

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

Bolt A



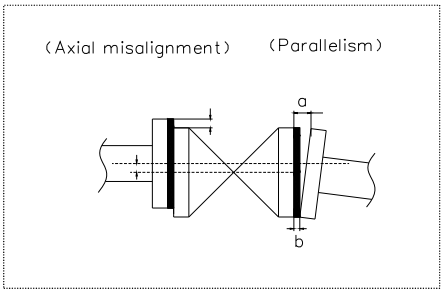
⚠Caution

Forcing

The valve can be damaged, or leak.

▶ Flange surface parallelism and shaft misalignment should be less than the values shown in the table below.
(The piping may be damaged due to stress applied to it.)

Nominal size (mm)	Shaft misalignment	Parallelism (a-b)
40～80	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.)

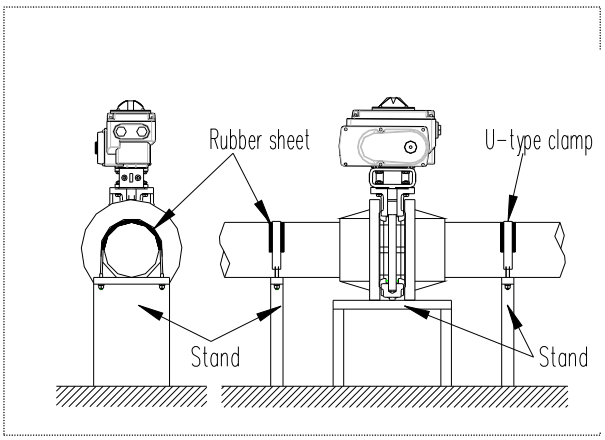
Preparations ▶ Wrench ▶ U-band (with bolt) ▶ Rubber sheet

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)

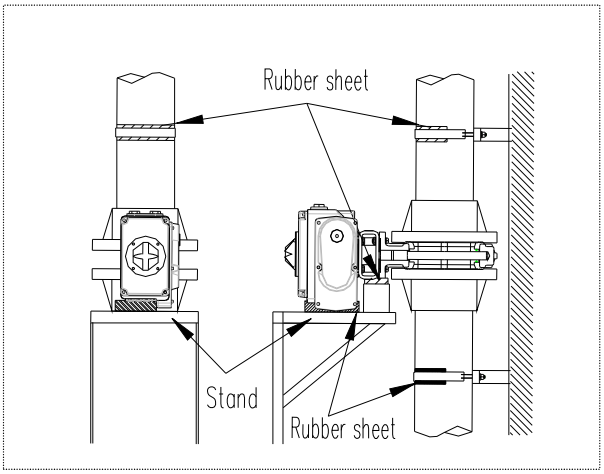


Vertical piping

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

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

(Support installation example)



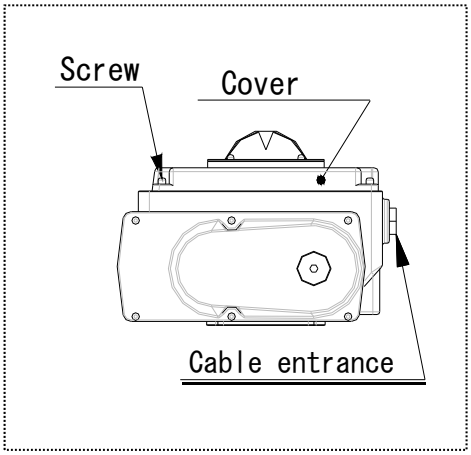
7. Electrical Wiring

Warning	
Prohibition	**Otherwise malfunction 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	**Otherwise malfunction 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	**Otherwise malfunction can result.** ▶ 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	**Otherwise malfunction can result.** ▶ 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 ▶ Crimp Contact ▶ Terminal Crimp Tool

[Procedure]



1) Loosen the four screws holding the actuator cover with a Phillips screwdriver and remove.
   ※ Cover mounting screws other than the top cover are provided with sealing material. Be careful not to allow the screwdriver to idle when removing it. The cross-recessed screw may be damaged.
2) Remove the protective equipment from the lead entry.
3) Attach the connector to the lead entry and pass the cable through.
4) Peel off the outer skin of the cable with a wire stripper.
5) Use a terminal crimping tool to attach the crimping terminal to the lead wire.
6) Wire the terminal block with a Phillips screwdriver according to wiring.
   ※Be sure to connect the ground wire. Failure to observe this warning may cause an electric shock. (Refer to wiring.)
   Tighten the screws securely. (There is a risk of electric leakage or electric shock.)
7) Tighten the four screws holding the actuator cover with a Phillips screwdriver to attach the cover.

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	**Otherwise malfunction can result.** ▶ 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.) ▶ 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.)

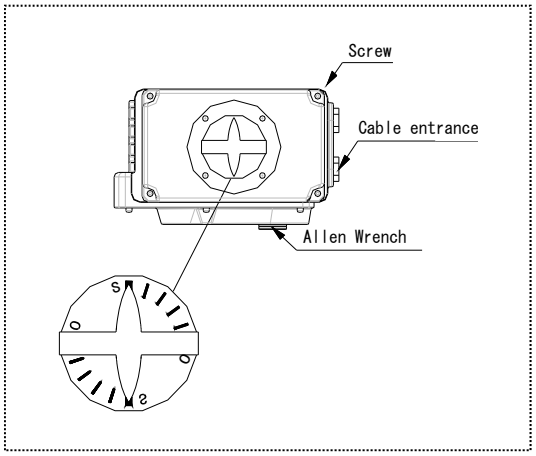
Manual operation method

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

[Procedure]

[For T-0]

1) Remove the manual override lever on the back of the main unit.
(Hex Wrench)



2) Seal cap hexagon socket on the front of the main unit (black: resin)
Insert the manual override lever and remove it.

3) Insert the manual override lever into the hexagon socket and turn it while looking at the opening meter.

Clockwise: Close Direction
Counterclockwise: Open direction

4) After operation, remove the manual override lever, insert the seal cap while confirming that the O-ring is attached, and fix it.

[For T-2, T-3]

1) The manual handle can be turned left or right while pulling it all the way to the front. Releasing the hand will automatically recover the unit.

2) Turn the manual handle while watching the valve travel meter.
Clockwise: Close Direction
Counterclockwise: Open direction

※If the manual override lever and hand wheel are turned too far, the stopper bolt or other parts may be damaged. Do not operate the actuator beyond the full-open/close position, referring to the position indication.

Electric operation method

⚠Caution	
Prohibition	**Serious injury can result.** ▶ Do not leave the actuator cover open. (If the terminal is touched, an electric shock will occur.) ▶ Do not perform manual operation during electric operation. (Risk of injury)

[**Procedure**]

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

9. How to disassemble/assemble for parts replacement

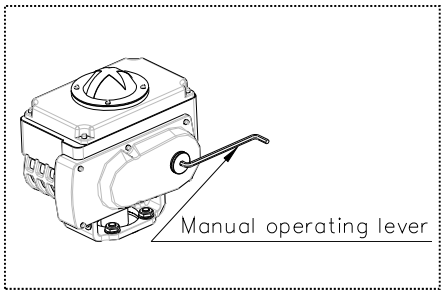
Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not connect or separate lines when the power is on. Also, do not touch any other parts on the board or the terminal block wiring part. (risk of electric shock or damage to equipment)
Forcing	**Serious injury can result.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. ▶ 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 instruction 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.)

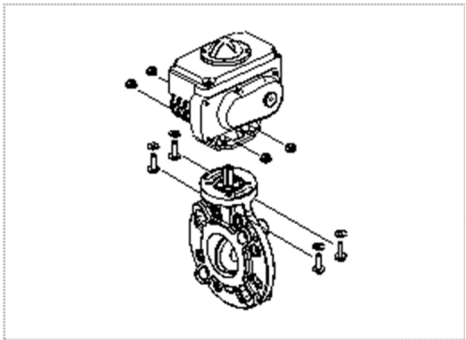
Preparations	▶ Jack ▶ Pipe ▶ Plate ▶ Pliers ▶ Hex Key ▶ Thrust bearing ▶ Phillips screwdriver ▶ protective gloves ▶ Protective goggles

<**Disassembly**>

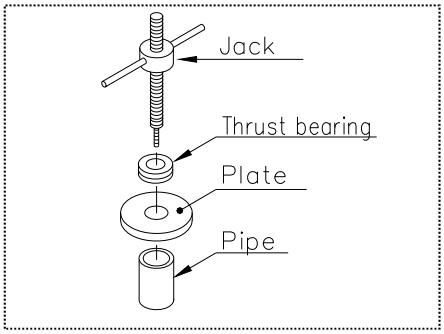
[**Procedure**]



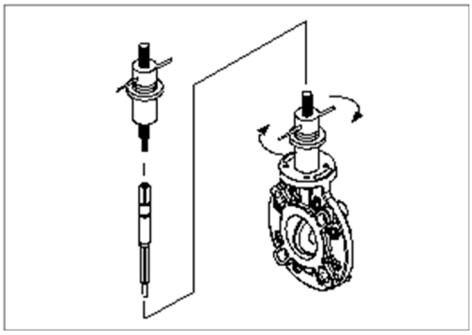
1) Completely drain the fluid in the piping.
2) Fully close the valve by motor or manual operation. (Refer to "**8. Commissioning method**".)
3) Turn off the power.
4) Slightly open the valve using the manual handle.
5) Loosen the connecting bolts and nuts with a spanner and remove the valve.
6) Loosen the screw (C) [37a] with a hex key.
7) Remove bolts and nuts (A) [39], and remove actuator [35] and mount [30] from body [1].
Use a Phillips screwdriver to remove the stem retainer [8].
※At this point the mounting [30] is secured to the actuator [35]
It is.



8) Remove stem [7] with pliers or hand for Nominal size 40mm～100mm.
9) For the Nominal size 125mm～400mm, attach the jack, thrust bearing, plate and pipe to the valve. Screw the jack shaft into the stem [7], and turn the handle of the jack to remove the stem [7].



10) Remove the O-ring (C) [6].
11) Put the disc [2] in the fully open state.
12) Remove disc [2] from body [1].



<**Assembly**>

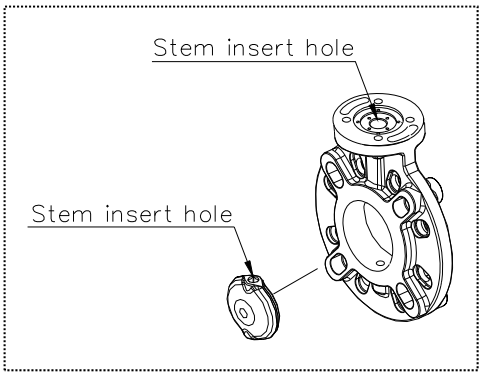
[**Procedure**]

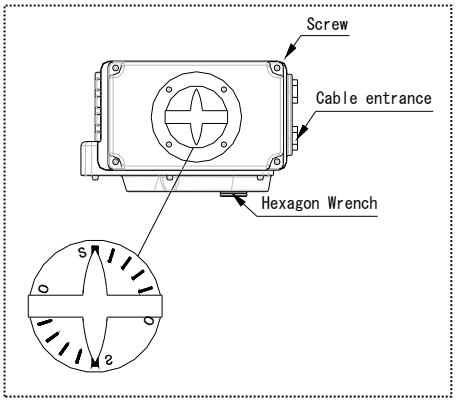
1) Apply silicone grease to the O-rings (C) [6] before assembly.

2) To assemble the parts, follow the procedure in reverse order from 12) in Disassembly on page 29.

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

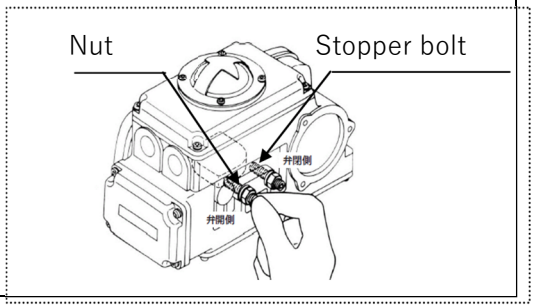
4) Check the operation with an electric operation.
(Refer to "**8. Commissioning method**".).
※ Turn off the power if the position gauge deviates from the position gauge.
Remove the actuator cover with a wrench and adjust the opening.





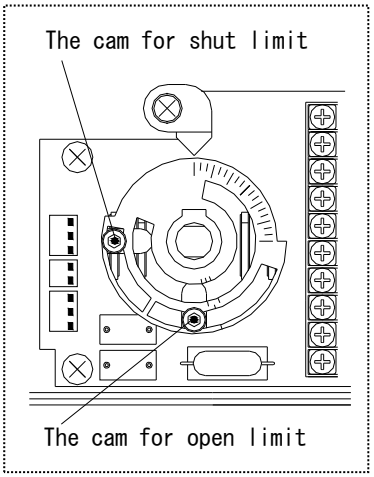
10. How to adjust the limit switch

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	**Otherwise malfunction can result.** ▶ Do not leave or use with the cover open. (Water or dust may penetrate and cause operation failure.)
Forcing	**Otherwise malfunction can result.** ▶ Contact CKD when using the limit switch in a 1mA～100mA, 5V～30V. ▶ When adjusting the open/close limit switch, be sure to loosen the stopper bolt fixing nut and then loosen the stopper bolt 4 to 5 turns. (The open/close limit switch has been adjusted before shipment, so there is no need for adjustment.) 

Preparations	▶ Hex key (3mm)	▶ Phillips screwdriver

[Procedure]



1) Turn off the power to the actuator and completely drain the fluid from the piping.

2) Loosen and remove the screws on the actuator cover with a Phillips screwdriver, and then pull the indicator upward.

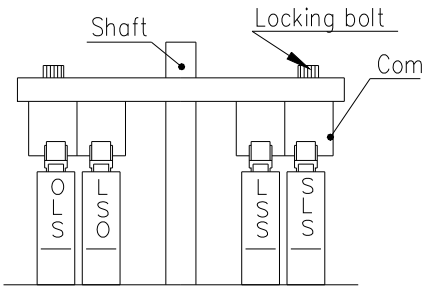
3) Manual operation is performed to the opening (fully open or fully closed) to be adjusted by the manual handle.
(Refer to "**8. Commissioning method**".)

4) Loosen the set screw of the cam for the limit switch you want to adjust with a hex wrench.

5) Move the cam by hand in the direction you want to adjust. Check that the limit switch has operated.

6) While lightly supporting the cam by hand, tighten the set screw with an Allen wrench. The position where these limit switches are kicked is the stop position for fully open and fully closed, and the opening of 2% to 3% before is the respective signal output position.

7) Move the stopper bolt in the closing direction by hand after moving the limit cam to the position where the limit switch kicks in the closing side by manual operation. (Refer to "**8. Commissioning method**".) Tighten the nut with the stopper bolt 1/4 to 1/2 turn loosened from the position where the rotation is stopped.
In the same way, manually move the limit cam to the position where the limit switch kicks in the opening direction, and then adjust the opening direction stopper bolt in the same way as in the closing direction. Check that the opening is the one that you want to adjust manually. If the adjustment is insufficient, repeat 3, 4, 5, 6).



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

8) Install the actuator cover and tighten it with a Phillips screwdriver.

9) Fully open and closed with electric operation. (Refer to "**8. Commissioning method**") Confirm that the opening is pointing to fully open "O" or fully closed "S."

11. Inspection item

⚠Caution	
Forcing	**Fluid may leak from the valve or the actuator may fail.** ▶ Maintenance should be performed every 3 to 6 months as a guide in order to keep the watch in normal condition and use it for a long time. Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. **You may be electrocuted or injured.** ▶ Turn off the power before removing the actuator cover. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work. ▶ If any trouble is found, take the appropriate action referring to "**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. 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)
Misalignment of operating position (visual inspection)	No deviation	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. How to disassemble/assemble for parts replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Product Handling of 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
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 different from other parts	Valves and actuators	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Product Handling of 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. Product Handling of Safety instructions)

●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 Stand + valve	Retighten the mounting bolts
		For Stand + actuator	Retighten the mounting bolts
		For fixing the actuator cover	Retighten the screws
		Terminal block	Retighten the screws
		For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. 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 50MΩ 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

⚠Caution	
Forcing	**You may be electrocuted or injured.** ▶ If any malfunction is found, immediately stop using the product and take appropriate action. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work. ▶ Turn off the power before removing the actuator cover.

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
The Allen key does not turn (does not turn) during manual operation.	The valve is already fully open (or fully closed).	Rotate the hex wrench in the reverse direction (Ref.: 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. How to disassemble/assemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Ref: 2. Product Handling of 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: 4. Wiring diagram of product specifications)
	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: 4. Wiring diagram of product specifications)
	The power supply voltage is different.	Check the voltage with a tester to obtain the correct voltage.
	Power supply voltage is low.	Check the voltage with a tester to obtain the correct voltage.
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 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. Product Handling of 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)

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. How to disassemble/assemble for parts replacement)
	Scratches or wear are found on the sliding or fixing surfaces of the O-ring.	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 9. How to disassemble/assemble for parts replacement)
	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 9. How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem, ball, or Joint	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.

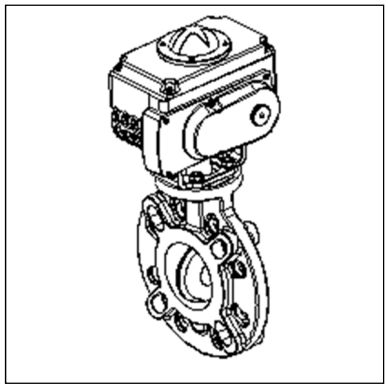
Inquiries

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

[User's Manual]

Rotary damper Electric actuated Type T
40～400mm

ASAHI YUKIZAI



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

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