

Butterfly valve Type 75/56D/75D Pneumatic Actuated Type TW 400~600mm

User's Manual



Thank you for choosing our product.

This User's manual contains important information for safe use of our product, so please be sure to read it before handling the product.

After reading this manual, please be sure to keep it in a place where the user can see it at any time.

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

This User's manual is written on the assumption that the person who handles our products has a basic knowledge of our products, electrical equipment, machinery, control, etc., and it contains technical terms depending on the handling contents.

Please read this manual carefully and fully understand the contents and observe the safety precautions for proper use.

In this manual, the warning, caution, prohibition, and enforcement are categorized together with the symbol to inform the situation and scale of human injury or property damage.

Failure to observe this precaution may result in unexpected failure or damage. Be sure to observe this precaution.

<WARNING/CAUTION indications>

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

<Prohibited/Forced display>

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

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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.

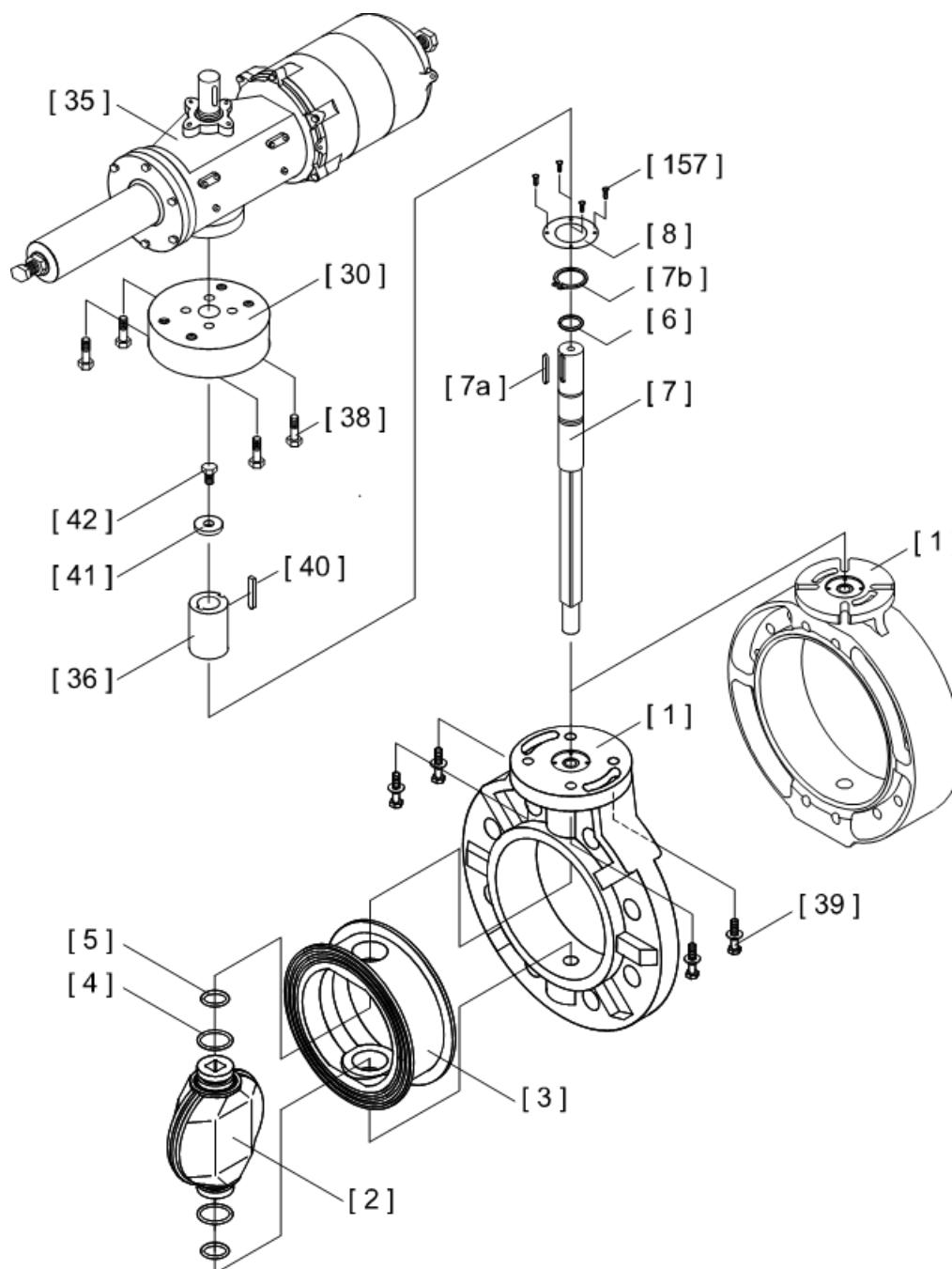
 Caution	
 Prohibition	The valve can be damaged, or leak. ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc.
 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.
 Forcing	The valve can be damaged, or leak. ▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately. ▶ When conducting a pipe leak test after completion of piping construction, be sure to check with water pressure. Contact us in advance if you are unavoidable to test with a gas. ▶ 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.

 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.
 Forcing	There is a danger of injury. ▶ Allow sufficient space for maintenance and inspection. The valve can be damaged, or leak. ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ Use a valve of suitable material for the operating conditions. (Depending on the type of chemical liquid, the parts may be damaged. Contact us in advance for details.) ▶ Use fluids containing crystalline material under conditions that do not recrystallize. ▶ Avoid any place where the valve is constantly exposed to splashes of water and dust, or direct sunlight, or protect the valve with a cover or the like to cover the entire area. ▶ [14. 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. ▶ It is recommended to cover the entire valve with a protective plastic bag when it is used outdoors or in a badly atmospheric environment. (Rust may cause operation failure.) ▶ When using at an ambient temperature of 5°C or less, remove moisture from the operation air to prevent freezing. ▶ Use clean, dehumidified and dust-free air. However, consult with CKD when using high dry air with a dew point of -40°C or less.

3. Name of each part



[1]	Body	[7a]	Key (A)	[39]	Bolt (K)
[2]	Disc	[7b]	Snap ring	[40]	Key (B)
[3]	Seat	[8]	Stem holder (A)	[41]	Washer (B)
[4]	O-ring (A)	[30]	Stand	[42]	Bolt (F)
[5]	O-ring (B)	[35]	Actuator	[157]	Screw (F)
[6]	O-ring (C)	[36]	Stem Bush		
[7]	Stem	[38]	Bolt (E)		

4. Product Specifications

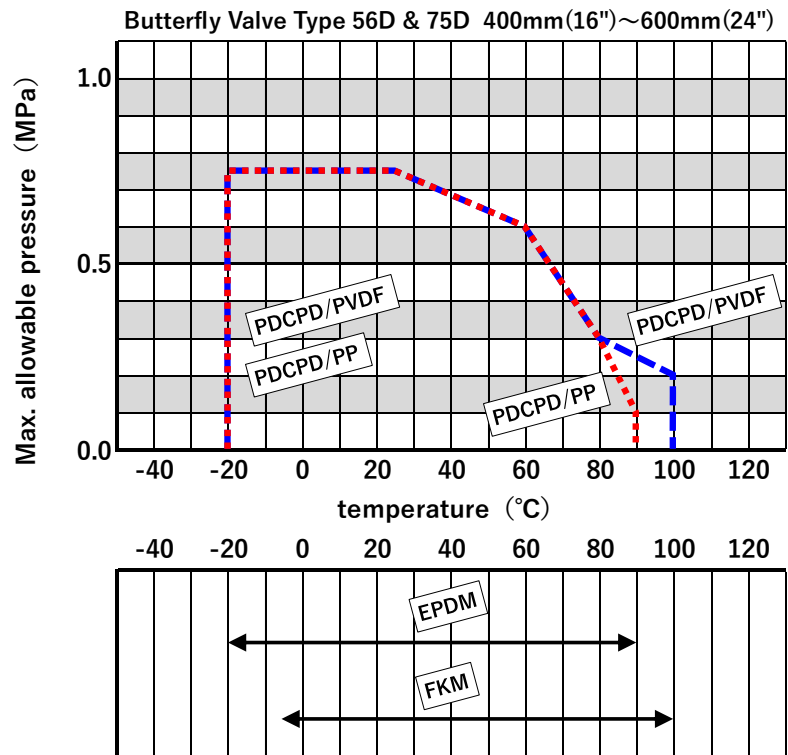
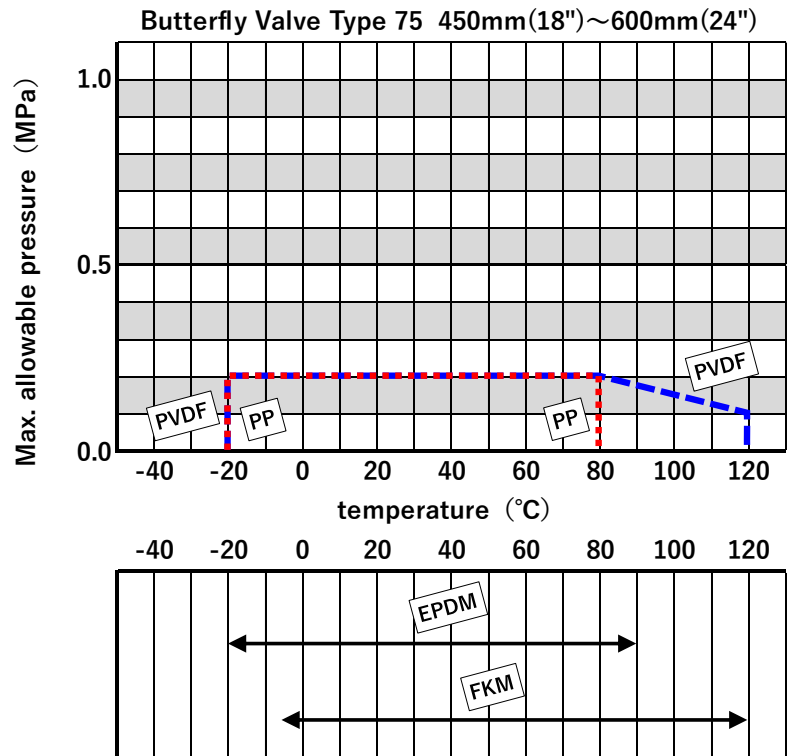
Model number table

Actuation	Type	Actuator type	Action	Body material	Seal material	Connection	Standard	Size	Disc for 56D & 75D
A	* *	K	F	*	*	W	*	* * *	0 Q
A Automatic	56 Type 56D 75 Type 75, 75D	K Type TW	F Double acting	P PP F PVDF D PDCPD	E EPDM V FKM	W Wafer	1 JIS 10K D DIN A ANSI	400 400mm 450 450mm 500 500mm 600 600mm	0Q disc: PVDF *Use this when the disc material for Type 56D and 75D is PVDF.

Note: *The nominal size for Type 56D is 400 mm, while the nominal size for Type 75 and 75D ranges from 450 mm to 600 mm.

*PDCPD is not available as a body material for Type 75.

Relationship between maximum allowable pressure and temperature



Actuator

Actuation	Actuator Type	Angle adjustment range	Operating pressure	Air consumption NL/open/close (0.4MPa)	Air supply bore
Double Acting	TW-250D	$\pm 5^{\circ}$	0.4MPa	99	Rc 3/8

5. Standard option specifications

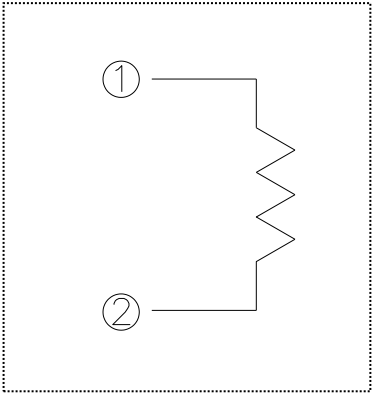
Solenoid valve

Model code	Air supply port size	Effective orifice area	Power consumption	Additional functions
453S403C-W□	Rc 3/8	40mm ² or more	AC; 6VA DC; 5.5W	- Built-in bypass valve - Installation of silencer with throttle valve (sused as speed controller)

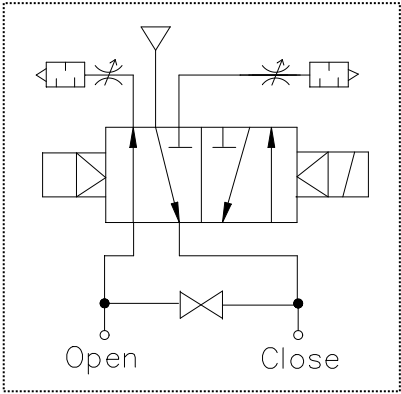
453S403C-W□	Specification	sign
	100VAC 50/60Hz	1
	110VAC 50/60Hz	(2)
	200VAC 50/60Hz	3
	220VAC 50/60Hz	(4)
	24VDC	5
	48VDC	(6)
	100VDC	(7)
	125VDC	(9)

* The letters marked with () are special items.

Wiring diagram



JIS symbol



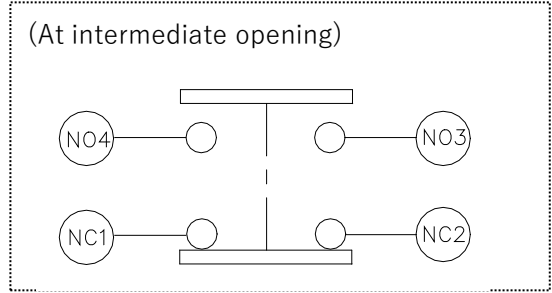
Limit switch

Model	Protection grade
1LS1-J	IP67

Limit switch rating

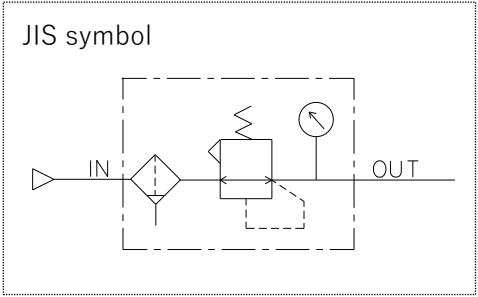
Rated voltage	Resistance load (A)	Induction load (A)
125V AC	10	6
250V AC	10	6
125V DC	0.8	0.2
250V DC	0.4	0.1

Connection diagram



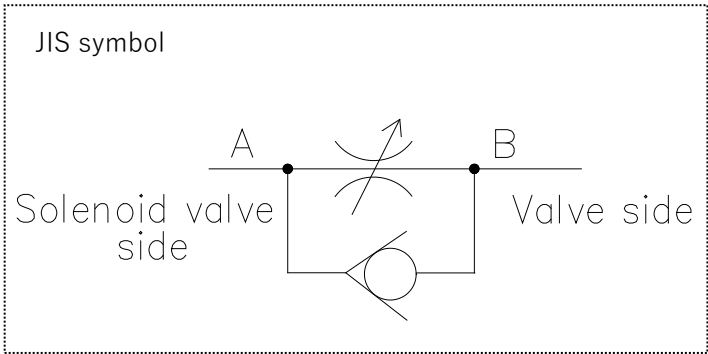
Filter regulator

Model	Air supply port size	Element filtration rating
ARU3A-03-10A	Rc 3/8	40 μ m



Speed controller

Model	Air supply port size	Effective orifice area (mm ²)		Flow adjustment needle revolution
		Free flow	Control flow	
SC6-04-10A	Rc 3/8	38	32	20 rotations

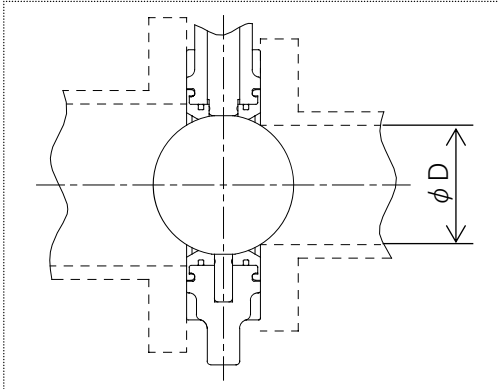


6. Piping method

Warning

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

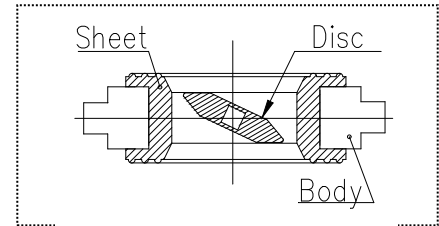
Caution

 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, etc. ▶ 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.)										
 Forcing	The valve can be damaged, or leak. ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Use a connection flange with a full-face seat. ▶ Check that the flange standards of each other are correct. ▶ When installing piping, do not install it in the fully closed state. (The disc may bite into the seat, causing the operation torque to become heavy and the open/close operation may become impossible.) ▶ The internal diameter of the connecting part should be equal to or greater than the following value. <table border="1" data-bbox="379 1657 801 1966"> <thead> <tr> <th>Size (mm)</th><th>Diameter D (mm)</th></tr> </thead> <tbody> <tr> <td>400</td><td>370</td></tr> <tr> <td>450</td><td>422</td></tr> <tr> <td>500</td><td>472</td></tr> <tr> <td>600</td><td>572</td></tr> </tbody> </table> 	Size (mm)	Diameter D (mm)	400	370	450	422	500	472	600	572
Size (mm)	Diameter D (mm)										
400	370										
450	422										
500	472										
600	572										

Preparations	▶ Torque wrench	▶ Bolt, Nut, Washer
	▶ Spanner wrench	

[Procedure]

- 1) Leave the valve slightly opened by spanner wrench.
* Don't turn the disc beyond the seat.
(Otherwise, the disc may be damaged.)
- 2) Set the valve between the coupled the flange.
- 3) Insert washers and bolts from the pipe side, insert washers and nuts from the valve side, then temporarily tighten them by hand.
- 4) Using a torque wrench, tighten the bolts and nuts gradually to the specified torque in a diagonal manner. (Refer to fig.1.)
* Avoid excessive tightening. (The valve can be damaged.)
- 5) The Tighten it more than 2 turns clockwise with specified torque. (Refer to fig.1.)



⚠ Caution



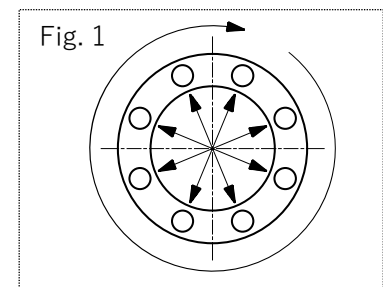
Forcing

The valve can be damaged, or leak.

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

Specified torque value Unit : N-m {kgf-cm}

Size	400mm, 450mm	500mm, 600mm
Torque value	80.0 {816}	100.0 {1020}



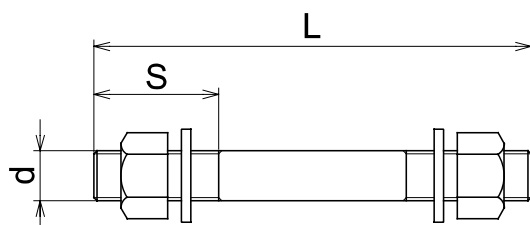
Through bolt (bolt A) and screw-in bolt (bolt B) dimensions

JIS10K (Body Material : PP、PVDF、PDCPD)

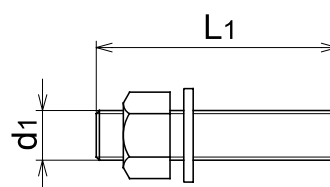
Size		Bolt A			Bolt B		Quantity		
(mm)	(inch)	d	L (mm)	S (mm)	d1	L1 (mm)	Bolt A	Bolt B	Nut & Washer
400	16"	M24	290	60	M24	120	14	4	32
450	18"	M24	310	65	M24	120	16	8	40
500	20"	M24	320	65	M24	120	16	8	40
600	24"	M30	350	75	M30	140	20	8	48

Note 1. The bolt lengths specified apply when using JIS B 2220 "Steel Pipe Flanges" (Nominal Pressure 10K, Standard Type).

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



Bolt A



Bolt B

⚠ Caution

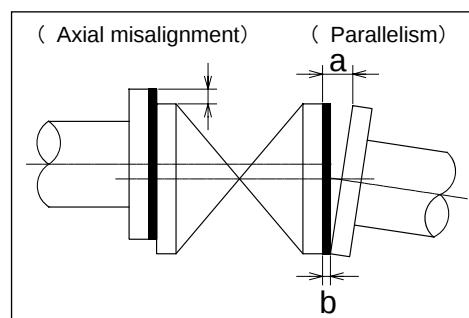


Forcing

The valve can be damaged, or leak.

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

Size (mm)	Axial Misalignment	Parallelism (a-b)
400~600	1.5mm	1.0mm



7. Support installation method

Caution

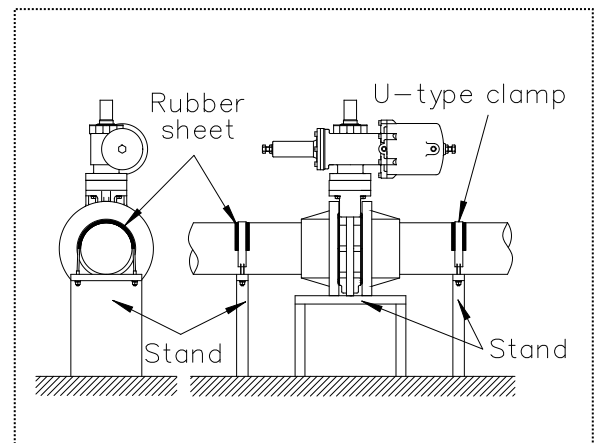
 Prohibition	Otherwise, the valve may be damaged or malfunction. ▶ Do not cause large vibrations to the valve by the piping around the pump. (This may cause malfunction or damage.)
 Forcing	The valve may be damaged. ▶ Install a valve support. (Excessive force is applied to the valve body and piping, which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

Preparations	▶ Spanner wrench ▶ U-type clamp (with bolt) ▶ Rubber sheet
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Level installation

[Procedure]

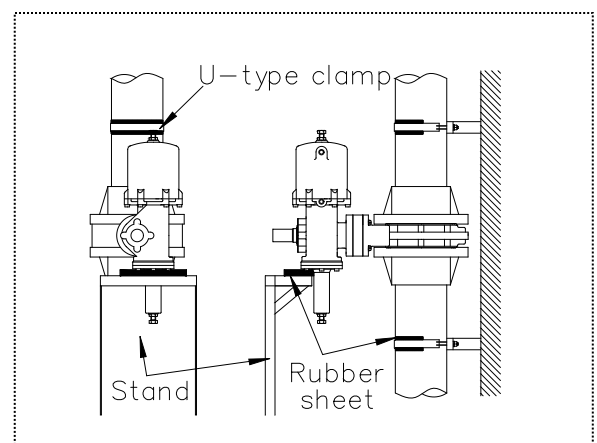
- 1) Set the stand under the valve.
- 2) Spread the rubber sheet on the pipe and secure pipe with U-type clamp.



Perpendicular installation

[Procedure]

- 1) Spread the rubber sheet under the actuator.
- 2) Spread the rubber sheet on the pipe and secure pipe with U-type clamp.



8. Air piping method

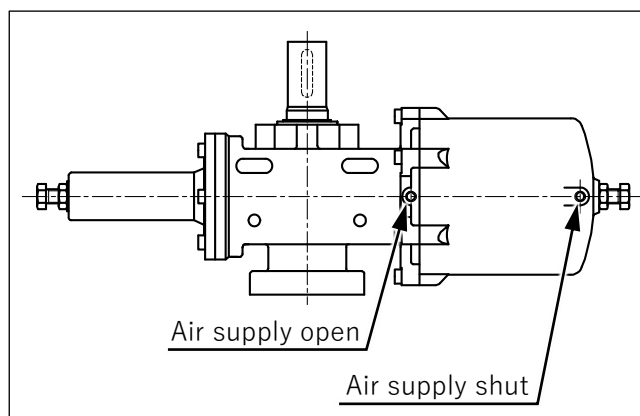
For a standard type and an attached speed controller type

 Caution	
 Prohibition	The valve can be damaged, or leak. ▶ Do not remove the protective plug until just before connecting the air piping. ▶ Do not over-tighten the fitting for air piping.
 Forcing	Otherwise damage or malfunction can result. ▶ Check the connection location, air piping size, and screw type from the approval drawing of the product, and then connect the air piping. ▶ Use clean, dehumidified and dust-free air. Consult with CKD when using high dry air with a dew point of -40°C or less. ▶ When using at an ambient temperature of 5°C or less, remove moisture from the operation air to prevent freezing. ▶ When using steel pipes for air piping, use the inner surface of the pipe treated with anti-rust treatment. ▶ Flush the inside of the air piping thoroughly before connecting the air piping. ▶ When connecting the air piping, be careful that foreign matter, such as sealant, does not enter the piping. ▶ Be sure to remove burrs on the threads of the pipe fittings. (This may cause scoring or air leakage.)

Preparations	▶ Steel pipe or tube for piping ▶ Joint for steel pipe or tube ▶ Seal tape (If seal tape isn't used, leakage may be caused)	▶ Spanner wrench
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[Procedure]

- 1) Wind a seal tape onto the male screw of the joint with a blank about 3mm (about 2 threads) left at the end.
- 2) Screw the joint in the piping female screw of the actuator by hand to the full.
- 3) Screw the joint one turn with a spanner wrench.
* Avoid excessive tightening. (The valve can be damaged.)
- 4) Mount a steel pipe or a tube.
* The diagrams left are without speed controllers, however, air piping procedure is the same way as above.



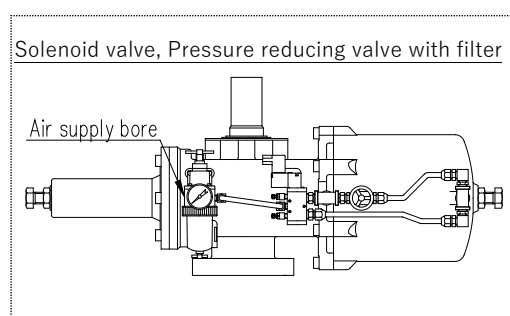
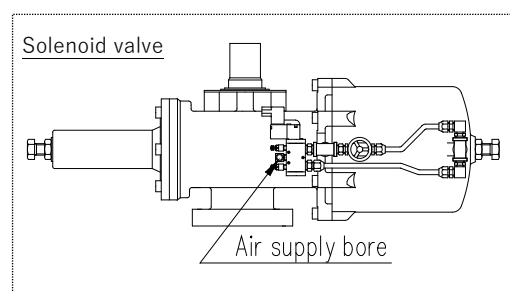
For a pressure reducing valve with a solenoid valve and a filter regulator.

 Caution	
 Prohibition	The valve can be damaged, or leak. ▶ Do not remove the protective plug until just before connecting the air piping. ▶ Do not over-tighten the fitting for air piping.
 Forcing	Otherwise damage or malfunction can result. ▶ When using steel pipes for air piping, use the inner surface of the pipe treated with anti-rust treatment. ▶ Flush the inside of the air piping thoroughly before connecting the air piping. ▶ When connecting the air piping, be careful that foreign matter, such as sealant, does not enter the piping. ▶ Be sure to remove burrs on the threads of the pipe fittings. (This may cause gargling or air leakage.) ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. ▶ Regularly drain the drain from the pressure regulator with filter. ▶ Set the secondary pressure of the regulator with filter according to the equipment specifications. (Otherwise, malfunction or failure may result.)

Preparations	▶ Steel pipe or tube for piping ▶ Joint for steel pipe or tube ▶ Seal tape (If seal tape isn't used, leakage may be caused)	▶ Spanner wrench
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[Procedure]

- 1) Wind a seal tape onto the male screw of the joint with a blank about 3mm (about 2 threads) left at the end.
 - 2) Screw the joint in the piping female screw of the actuator by hand to the full.
 - 3) Screw the joint one turn with a spanner wrench.
- *Avoid excessive tightening. (The valve can be damaged.)
- 4) Mount a steel pipe or a tube.



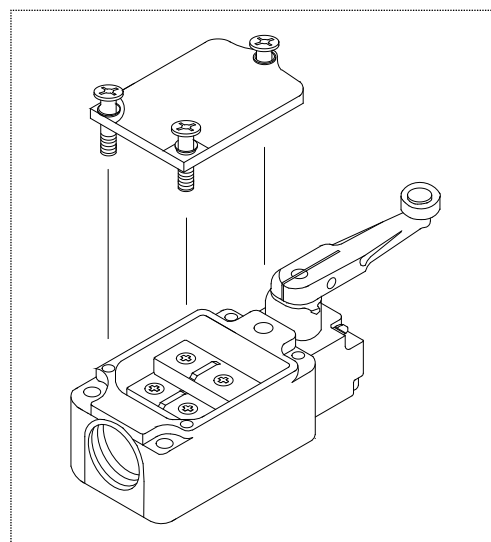
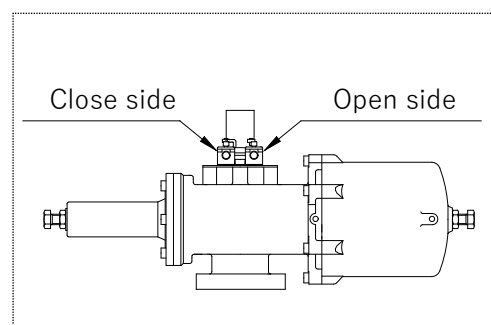
9. Connection of limit switch procedure

 Caution	
 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) 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	Otherwise failure or malfunction of the machine can result. ▶ Connect the wires using solderless terminals with insulation covering so that they do not come into contact with the cover or housing. (If the crimp terminal comes into contact with the cover, the cover may not be tightened or a ground fault may occur.) ▶ Contact CKD when using the limit switch in a 1mA~100mA, 5~30V. If rainwater gets into the watch, it may break down. ▶ Securely attach the cover.

Preparations	▶ Phillips head screwdriver ▶ Terminal crimping tool ▶ Connector (G1/2) ▶ Wire stripper ▶ Crimp-style terminal
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[Procedure]

- 1) Loosen the three screws used to attach the limit switch cover with a Phillips head screwdriver and remove cover from the limit switch. (The screw is made so that it will not detach from the cover.)
 - 2) Pull and remove protective cap, made of resin, from the cover.
 - 3) Draw a cable through the connector.
 - 4) Strip cable with a wire stripper.
 - 5) Connect terminal screw with a Phillips head screwdriver according to the internal circuit diagram.
- * Tighten up the screws.



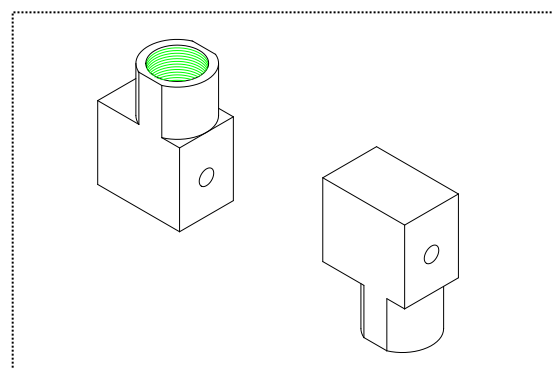
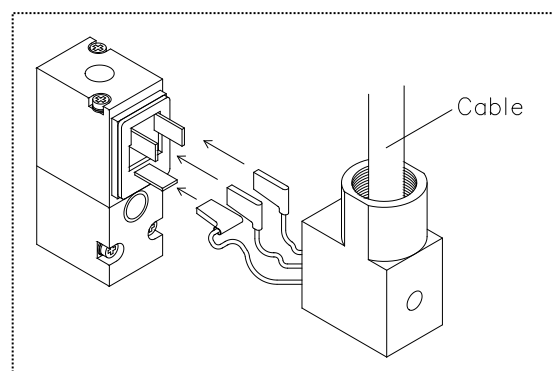
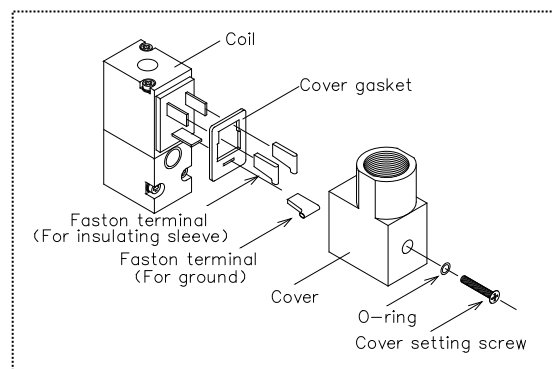
10. Connection of solenoid valve procedure

 Caution	
 Prohibition	Serious injury can result. ▶ Do not connect or separate lines to the solenoid valves in the power supply status. Doing so may result in electric shock or sudden machine start.
 Forcing	The valve can be damaged or leak. ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. ▶ Confirm that the power supply voltage indicated on the solenoid valve matches the voltage to be wired.

Preparations	▶ Terminal crimping tool ▶ Phillips head screwdriver ▶ Connector (G1/2) ▶ Wire stripper
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[Procedure]

- 1) Loosen the cover setting screw with Phillips head screwdriver, and remove the cover.
 - * Don't loose O-ring. (Short circuit may occur.)
- 2) Remove the Faston terminal inserted into coil side and the insulating sleeve.
 - * Insulating sleeve isn't attached in Faston terminal.
- 3) Draw the cable through the connector to the cover.
- 4) Strip the cable with wire stripper.
- 5) Draw the lead wire through the cover.
- 6) Install the Faston terminal on the lead wire with a terminal-crimping tool.
- 7) Insert the Faston terminal into the coil side, and fit the cover.
- 8) Tighten the cover setting screws to fix it.
 - (The cover can be set with the wire extraction opening turned upward or downward.)
- 9) Tighten the cable by connector.



11. Operating procedure

Manual Operating (Optional)

Warning



Prohibition

Serious injury can result.

- ▶ Do not supply air during manual operation. (Risk of injury)

Caution



Prohibition

The valve can be damaged or leak.

- ▶ Do not force the handle to rotate further from the fully opened or closed position. (It will malfunction.)

Preparations

- ▶ Padlock

[Procedure]

* In case of solenoid valve mounted, open the bypass valve to make atmospheric pressure in the actuator.

1) Open the padlock and release the chain.

2) Turn the handle full open or full close.

Right turn (clock wise) → Shut direction

Left turn (counter clock wise) → Open direction

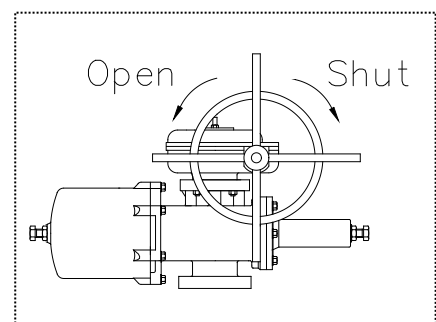
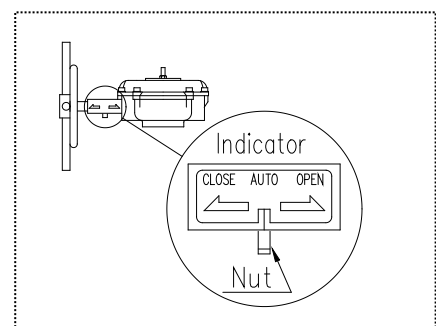
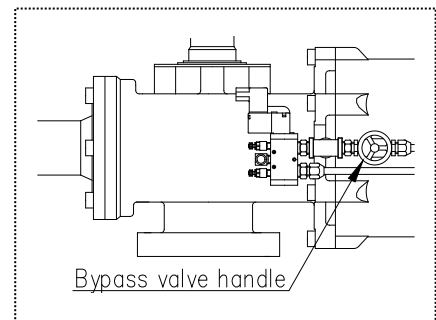
Number of hand wheel rotation is about 13 turns.

* There are about 13 idle turns between full open and full shut.

3) Turn the handle to adjust the nut to "AUTO" of the indicator.

4) Lead the chain through the handle and the gear case and tighten up with the pad lock.

* In case of solenoid valve mounted, turn the bypass valve right.
(If not, the air leaks.)



Automatic (Air) Operating Procedure

Caution



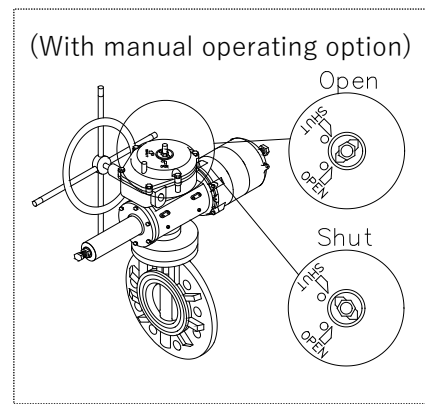
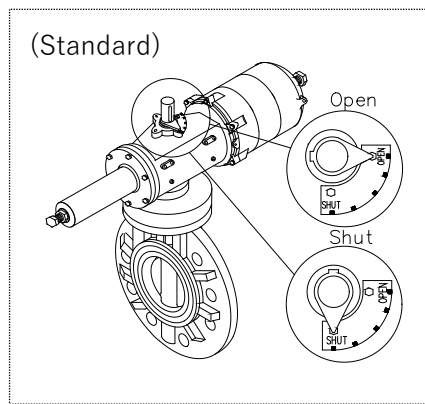
Forcing

The valve can be damaged or leak.

- ▶ Always use the product within the indicated product specifications.
(May not operate)

[Procedure]

- 1) Supply the air to the actuator.
- 2) Check to ensure that the valve indicating direction and the operating direction agree with each other.
- 3) Stop air supply.

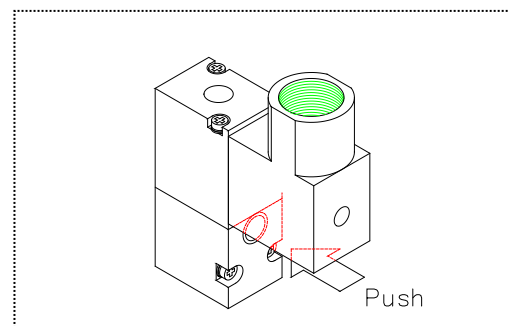


〈For the solenoid valve〉

[Procedure]

- 1) Supply the air to the solenoid valve.
- 2) Push the button with a finger, and confirm the action mode shown in the following table.
- 3) Apply regular rated voltage to the solenoid valve, and confirm the action mode shown in the following table.
- 4) Turn off the solenoid valve.

Push button	Current	Double action
Pushed	On	Open
Not pushed	Off	Shut



Adjustment of opening / closing speed procedure
 Caution

Prohibition

Doing so may damage the solenoid valve.

- ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment.
(Do not tighten the lock nut with excessive force.)

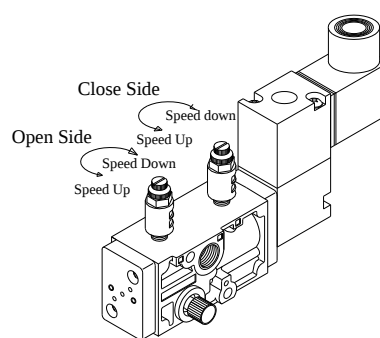
 ○ **Double action type**
Preparations

- ▶ Spanner wrench

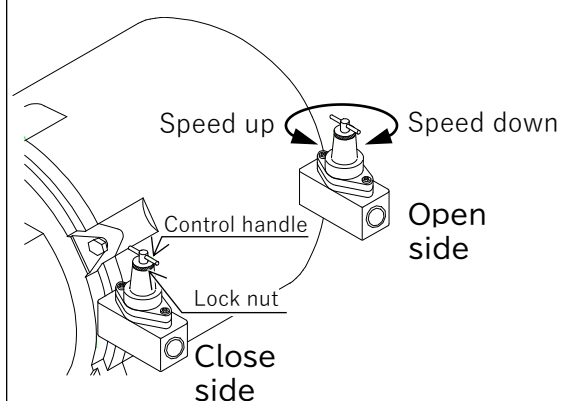
[Procedure]

- 1) Release the adjustment knob of the solenoid valve by turning the locking nut left.
- 2) Turn right the adjustment knob of the solenoid valve fully.
* Avoid excessive tightening.
(The speed controller can be damaged.)
- 3) Supply the air to the solenoid valve.
- 4) Apply regular rated voltage to solenoid valve, and turn the open side adjustment knob of the speed controller left little by little.
- 5) Turn off the solenoid valve, and turn left the close side adjustment knob little by little.
- 6) Repeat item 4), 5) to adjust the opening / closing speed required.
- 7) When the adjustment is finished, fix the adjustment knob by turning locking nuts right.
* Avoid excessive tightening.
(The speed controller can be damaged.)

If a solenoid valve is attached



If a speed controllers is attached



12. How to disassemble/assemble for parts replacement

 Warning	
 Prohibition	Serious injury can result. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details. (Risk of injury) 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.

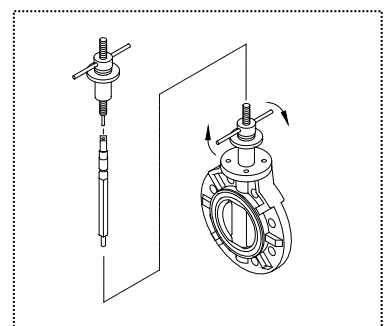
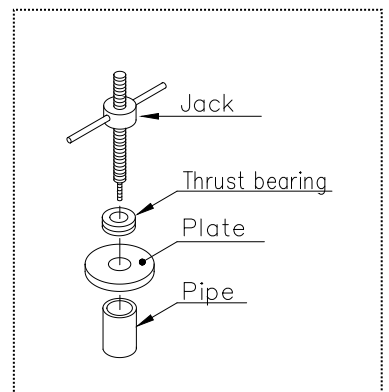
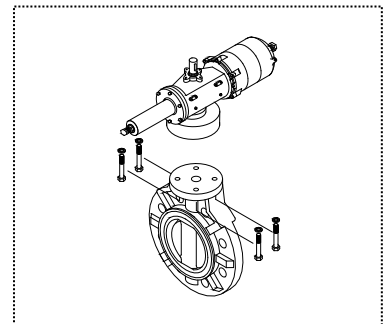
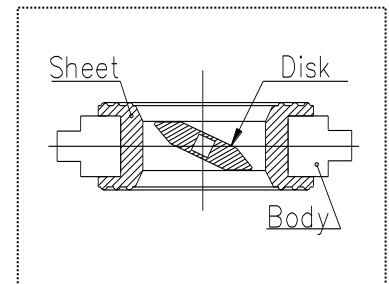
 Caution	
 Forcing	The valve can be damaged or leak. ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve.

Preparations	▶ Jack	▶ Pipe	▶ Plate	▶ Pliers
	▶ Thrust bearing	▶ Allen wrench	▶ Protective gloves	▶ Safety goggles

<Disassembly>

[Procedure]

- 1) Completely discharge fluid from pipes.
- 2) Fully close the valve by the automatic operation or manual operation.
- 3) Stop the air supply, and open the bypass valve to exhaust the air in actuator.
- 4) Remove the air piping.
- 5) Leave the valve slightly opened by using the lever handle (option).
- 6) Loosen and remove the connecting bolt-nut.
- 7) Remove the valve from the pipe.
- 8) Loosen the bolt (K) [39], and remove the body [1] and the actuator [35].
* The stand [30] is fixed to the actuator [35] by the bolt (E) [38].
- 9) Loosen screw (F) [157] with a Phillips screwdriver and remove the stem holder (A)[8].
- 10) Attach the jack, the thrust bearing, plate and the pipe to the valve, and thrust the jack into the stem [7].
- 11) Turn the handle of jack to pull out the stem [7].
- 12) Remove the stem [7] from the jack.
- 13) Remove the O-ring (C) [6].
- 14) Make the disc [2] fully open.
- 15) Remove the disc [2] from the seat [3].
- 16) Remove the O-ring (A) [4] and the O-ring (B) [5].

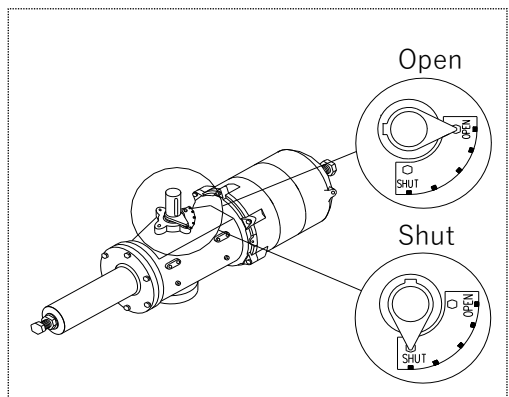
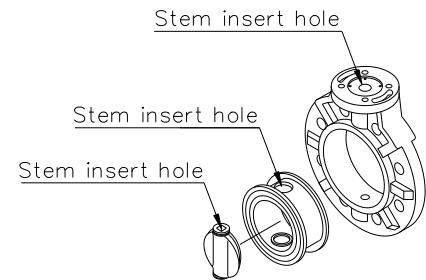


<Assembly>

[Procedure]

- 1) Before starting assembly, silicone grease (equivalent to Toray Silicone HVG) should be spread on the disc O-ring (A) [4], (B) [5] and stem O-ring (C) [6].
- 2) The procedure of the assembly is the almost reverse of its disassembly.
However, to insert seat [3] with the disc [2] into the body [1], set the disc [2] with half-opened position. Press outer rim of seat [3] into inside of the body [1], keeping stem holes straight. (Make sure that stem holes of the seat [3] are in alignment with the stem holes of the body [1].)
- 3) Make sure that the disc [2] fits seat [3] well.
- 4) Check to ensure that travel indicator shows correct position of fully open or close.
- 5) Fully open or close the valve by air operation.

*In case that the travel indicator shows incorrect position of fully open or close, adjust it according to “13 Stopper adjustment procedure”.



13. Stopper adjustment procedure

⚠ Warning

Prohibition	Serious injury can result. ▶ Do not supply air during adjustment. (Risk of injury)
Forcing	The valve can be damaged or leak. ▶ Be sure to lock the stopper with the lock nut after adjustment. (Do not use excessive force to tighten.)

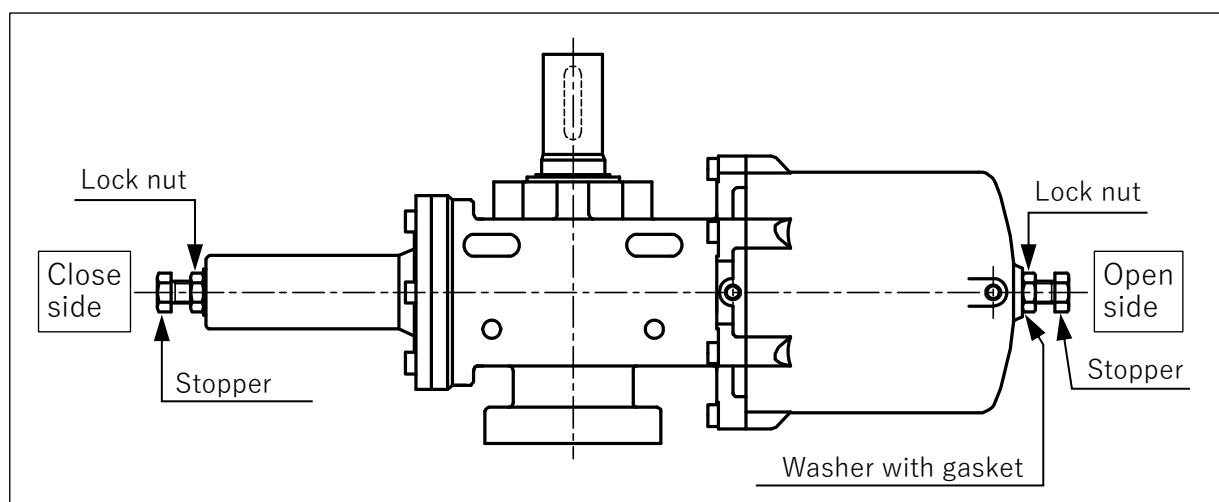
Preparations	▶ Spanner wrench
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[Procedure]

- 1) Close the air source valve and open the bypass valve to exhaust the air in the actuator.
- 2) Fix the stopper on the side to be adjusted (fully open or closed) with a spanner, and loosen the lock nut with a spanner.
 * Do not damage the washer with gasket. (Otherwise, air leakage may occur.)
- 3) Rotate the stopper with a spanner in the direction you want to adjust.

Direction	Clock wise	Counter clock wise
Open side	Smaller	Larger
Close side	Larger	Smaller

- 4) Rotate the stopper with a spanner in the direction you want to adjust.
 ※Do not over tighten. (The washer with gasket may be damaged and air leakage may occur.)
- 5) Close the bypass valve, open the air source valve, and check if the valve is at the position you want to adjust using air (see page 22). To adjust again, repeat 1) 2) 3) 4).



14. 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 valve 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 "15. Cause of malfunction and remedy".
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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 retighten the pipe bolts. (Ref: 6. Piping method)
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)
		Surface of the entire valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. 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: 12. 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: 12. How to disassemble/assemble for parts replacement)
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Safety Instructions)

Periodic inspection

►Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment 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 piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)

►Guideline for the inspection cycle: 6 months

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
Operability of manual handle (touch)	Rotates smoothly	Manual operation unit	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)
Looseness of bolts (visual and palpation)	No Loose	For mounting base + valve	Retighten the mounting bolts
		For mounting base + actuator	Retighten the mounting bolts
		For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 6. Piping method)
Water-intrusion (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 12. How to disassemble/assemble for parts replacement)
Intrusion of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 12. How to disassemble/assemble for parts replacement)
Corrosion Or rust (visual inspection)	No corrosion or rust	Appearance of the product and in the actuator	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. How to disassemble/assemble for parts replacement)

15. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
The manual handle does not turn (cannot be turned)	The valve is already fully open (or fully closed).	Manually rotate in the opposite direction (Ref. 11. Operating procedure)
	Air is supplied to the actuator.	Close the air source valve and open the bypass valve.
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref. 12. How to disassemble/assemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Ref: 2. Safety Instructions)
Do not open or close by air operation.	The solenoid valve is turned off.	Turn on the power.
	Connection to the solenoid valve is disconnected.	Check the wiring condition again (Ref: 9. Connection of limit switch procedure)
	Air is not supplied	Supply air.
	The power voltage of the solenoid valve is different.	Check the voltage with a tester and set the correct voltage.
	Solenoid valve voltage is low.	Check the voltage with a tester and set the correct voltage.
	The bypass valve is open.	Close the bypass valve by turning the knob clockwise.

Cause of malfunction and remedy (continued)

Failure phenomenon	Possible cause	Measures and measures
Do not open or close by air operation.	The speed controller adjustment knob is turned all the way to the right.	Turn the speed controller knob to the left. (Ref. 11. Operating procedure)
	Foreign matter caught in valve	Remove the valve from the piping and remove any foreign matter. (Ref: 6. Piping method)
	Valve torque is increasing due to piping stress.	Remove the valve from the piping and remove the piping stress. (Ref: 6. Piping method)
	Torque is increasing due to effects of fluid (temperature, components, pressure)	Check the operating conditions. (Ref: 4. Product Specifications)
Fluid leaks even when fully closed (internal leak)	Seat is worn	Replace seat (Ref. 12. How to disassemble/assemble for parts replacement)
	Scratches on disc, seat or body	Replace applicable parts (Ref. 12. How to disassemble/assemble for parts replacement)
	Foreign matter caught in valve	Open and close several times to allow foreign matter to flow out (Ref: 11. Operating procedure)
	Tightening, over-tightening or loosening of connecting bolts	Retighten (Ref: 6. Piping method)
Fluid leaks from valve	O-ring is damaged or worn.	Replace the O-ring (Ref. 12. How to disassemble/assemble for parts replacement)
	O-ring protrudes from the groove.	Replace the O-ring (Ref. 12. How to disassemble/assemble for parts replacement)
	O-ring fold surface (or fixed surface) is damaged or worn.	Replace applicable parts (Ref. 12. How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem or fitting	Replace stem or fitting (Ref. 12. How to disassemble/assemble for parts replacement)
	The mating surfaces of the stem and disc are damaged.	Replace applicable parts (Ref. 12. How to disassemble/assemble for parts replacement)

Cause of malfunction and remedy (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 4. Product Specifications)
	Seat or disc is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 12. How to disassemble/assemble for parts replacement)
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. (Ref: 12. How to disassemble/assemble for parts replacement)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 12. How to disassemble/assemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress.

Cause of malfunction and 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: 12. 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: 12. 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: 12. How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem, disc, or fitting	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 12. 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: 12. 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: 12. How to disassemble/assemble for parts replacement)

16. Disposal method of residual materials and waste materials

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

Inquiries

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

[User's Manual]

Butterfly valve Type 75/56D/75D Pneumatic Actuated Type TW
400~600mm



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July 2026