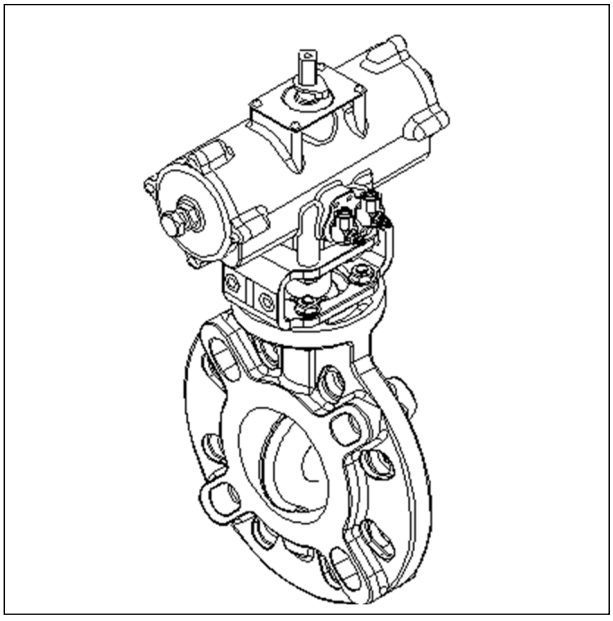
Rotary damper
Pneumatic Actuated Type TA
40～600mm

User's Manual



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

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

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

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

<WARNING/CAUTION indications>

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

<Prohibited/Forced display>

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

Table of contents

1. Our product warranty coverage

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

Applicable to

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

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

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

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

Disclaimer

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

2. Safety Instructions

Unpacking, Transportation and Storage

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

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

Product Handling

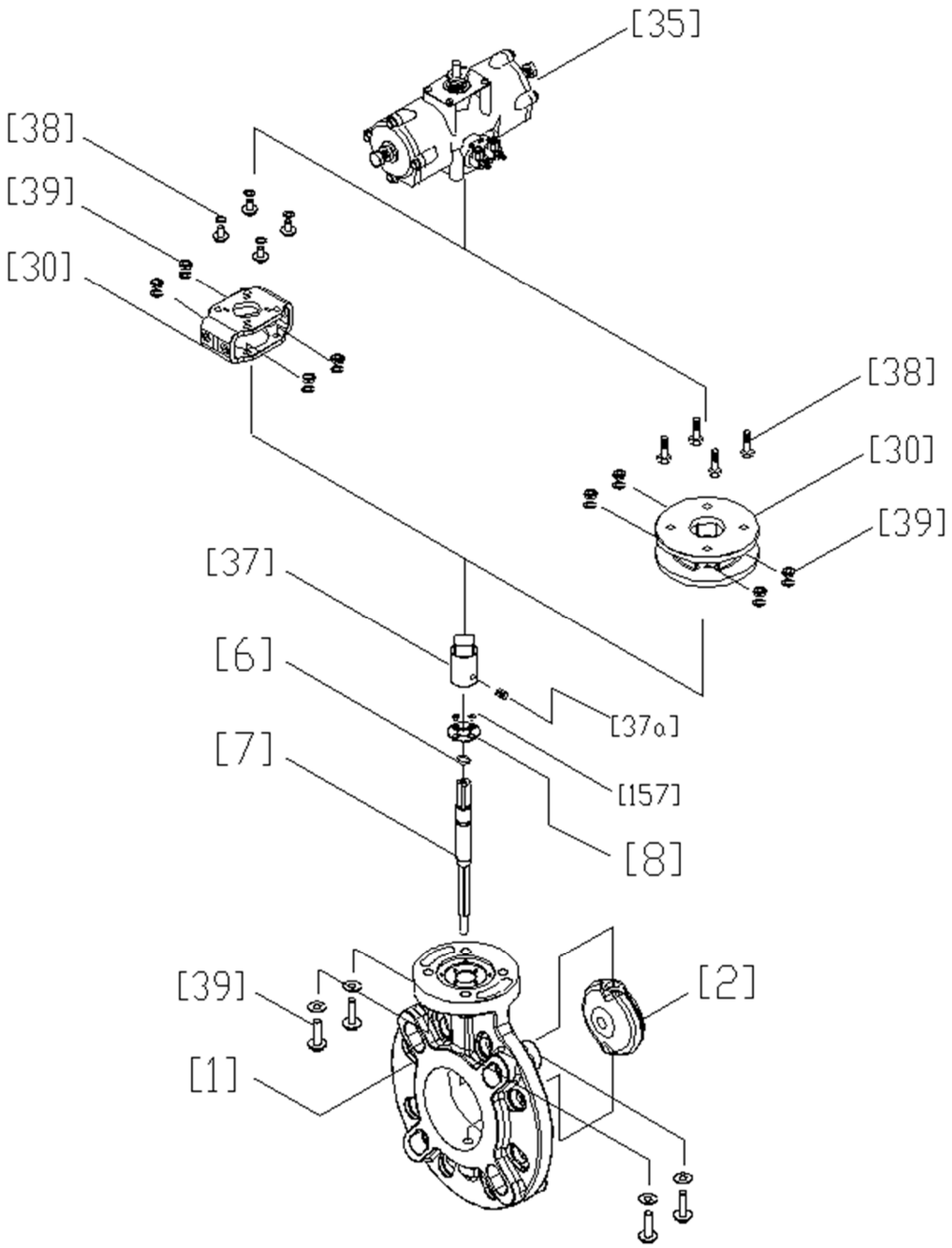
⚠ Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator. ▶ Do not touch moving parts during operation with hands, feet or tools.
Forcing	**There is a danger of injury.** ▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately. ▶ When conducting a pipe leak test after completion of piping construction, be sure to check with water pressure. Contact us in advance if you are unavoidable to test with a gas.

⚠ Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects. ▶ Do not use the product in places where it may be submerged. ▶ Do not subject the valve to large vibrations.

⚠Caution	
Forcing	**There is a danger of injury.** ▶ Use the supplied handle or a tool specified by the manufacturer for manual operation. ▶ When performing manual operation, make sure that the actuator is not operated by the motor. ▶ Secure sufficient space for maintenance and inspection when piping. **The valve can be damaged, or leak.** ▶ Check the voltage on the power supply and nameplate before use. ▶ Pay attention to the atmosphere where the valve is installed. Avoid locations where the product is exposed to sea breezes, corrosive gases, chemical liquids, sea water, steam, etc. ▶ 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. ▶「12. 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. ▶ If internal leakage occurs when the valve is fully closed, adjust the stopper. ▶ When installing a valve, provide an appropriate valve support so that excessive force is not applied to the valve and piping. ▶ Always use the product within the indicated product specifications. ▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. If any abnormality is found, be sure to consult your dealer or us for inspection. ▶ Keep the ambient temperature of the installation location within-10 to 50° C. ▶ Avoid locations with volatile gases or poor atmospheres. Provide a cover, etc., to cover the entire area. ▶ Use clean, dehumidified and dedusted operating air. However, please consult with us in advance when using high dry air with a dew point of-40° C or less.

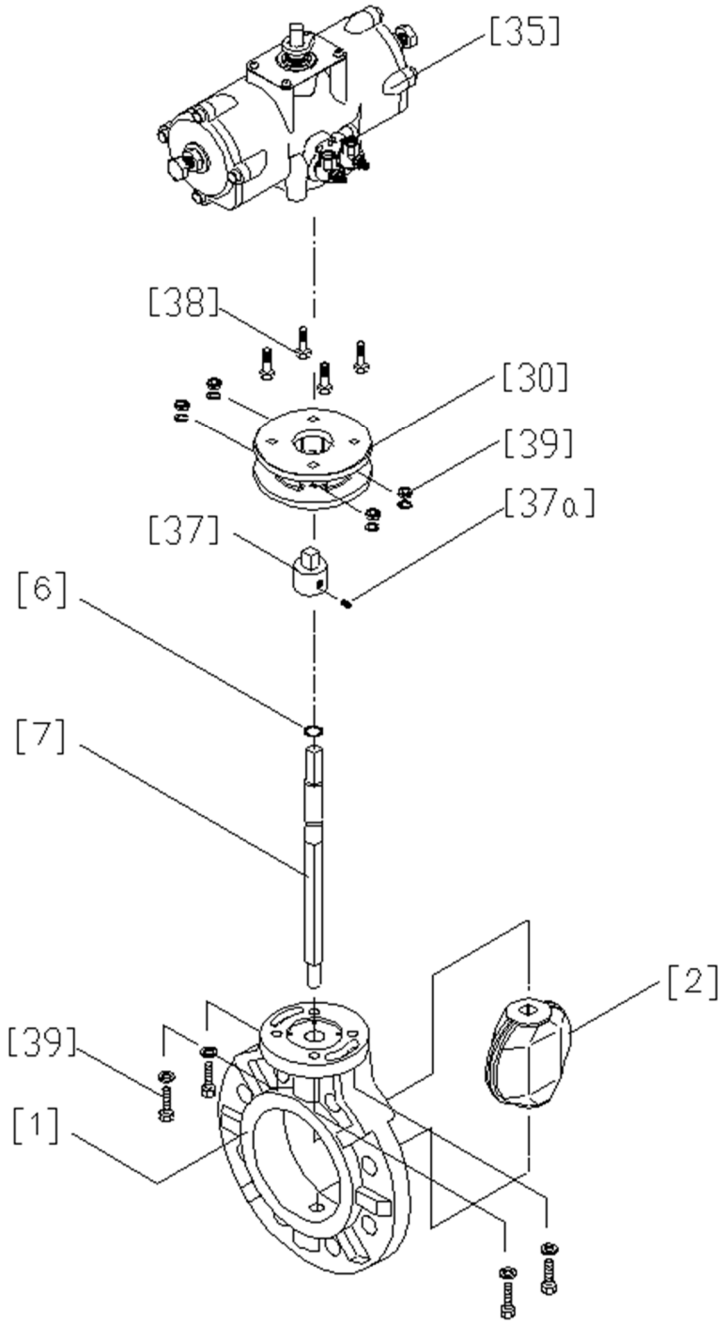
3. Name of each part

40mm～350mm (Body material: PVC, PP)
※The Size 450mm～600mm is slightly different.



[1]	Body	[8]	Stem Holder (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)

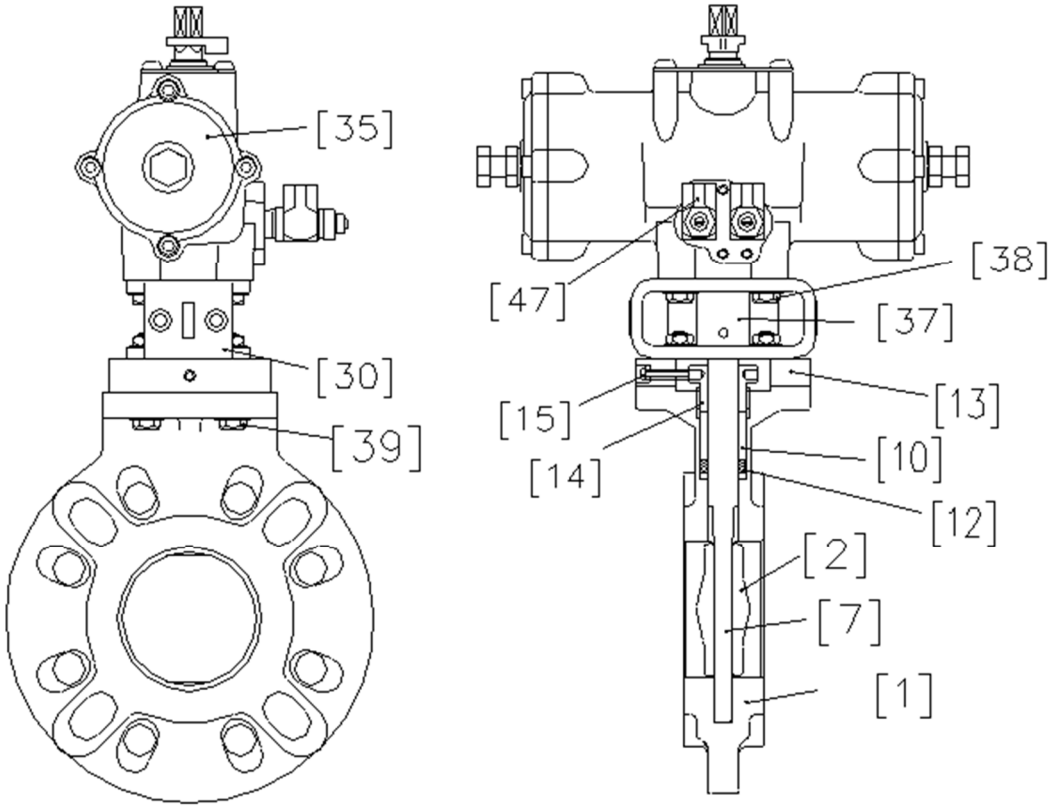
400～600mm (Body material: PP)
※The Size 450mm～600mm is slightly different.



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

40～600mm (Body material: PVDF)

※The Size 450mm～600mm is slightly different.



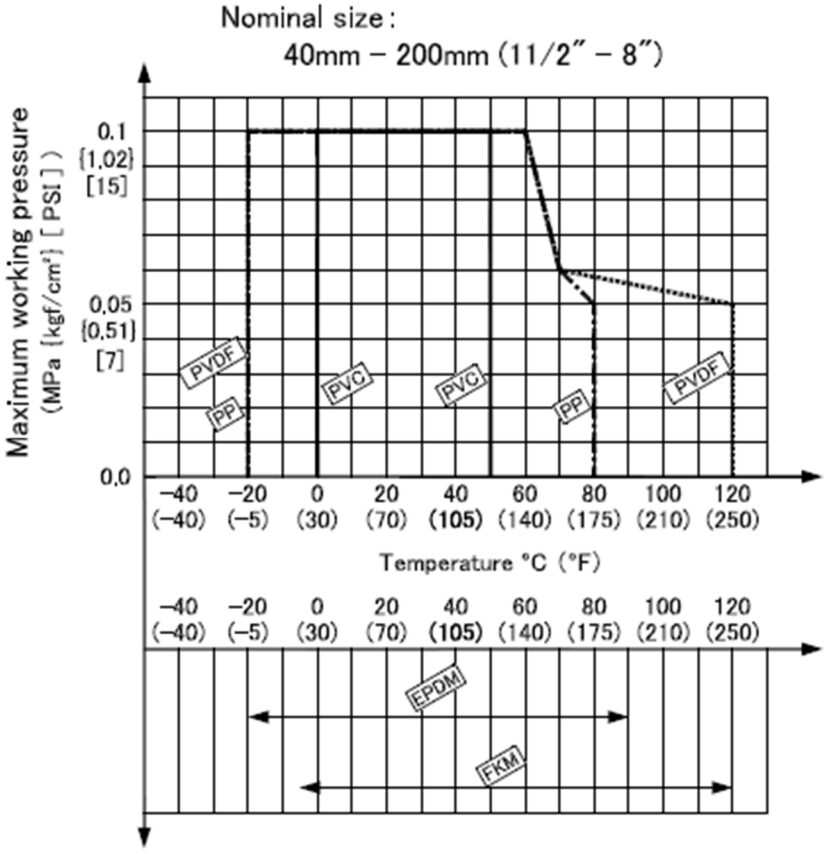
[1]	Body	[13]	Spacer (A)	[37]	Joint (A)
[2]	Disc	[14]	Ground	[38]	Bolt (E)
[7]	Stem	[15]	Screw (A)	[39]	Bolt/nut (A)
[10]	Bush (A)	[30]	Stand	[47]	Speed controller
[12]	V packing	[35]	Actuator		

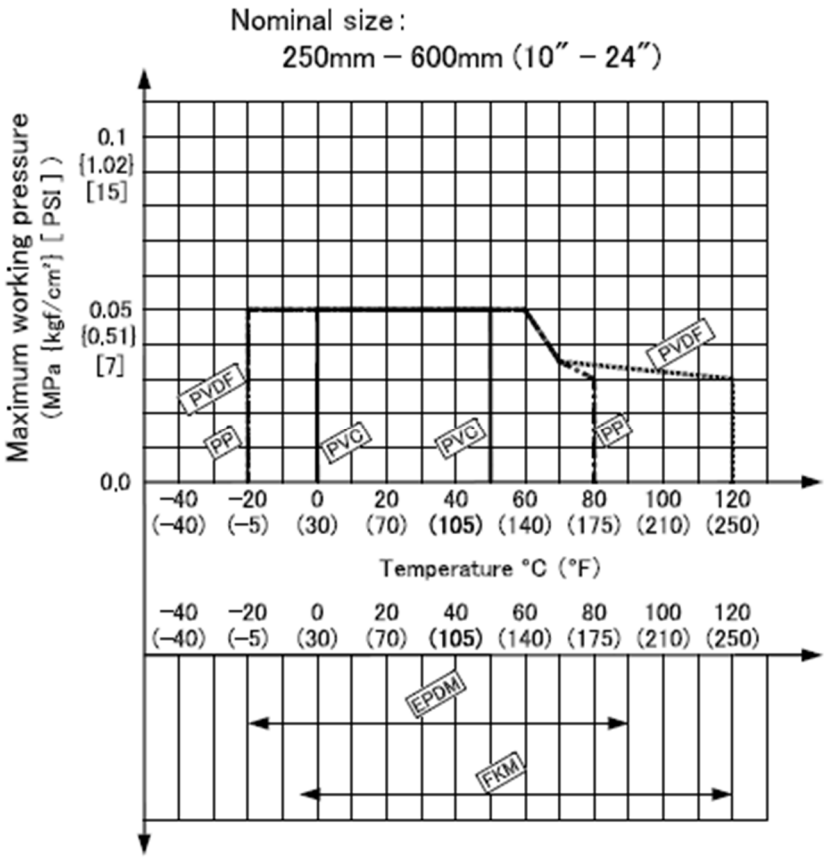
4. Product Specifications

Model number table

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	* *	K	*	*	*	W	*	* * *
A AUTOMATIC VALVE	D7 TYPE 57 D6 TYPE 56 DP TYPE 75	K TYPE TA	F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE	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 450 450mm 500 500mm 600 600mm

Relationship between maximum allowable pressure and temperature





Actuator

Specifications List

Operation	Size (mm)	Actuator model	Angle adjustment range	Operating pressure Range MPa{kgf/cm²}	Air consumption N/open/close *l* (0.4MPa)	Air supply port Size
Double acting	40～100	TA2A-050D	±5°	0.4～0.7 {4.1～7.1}	0.9	Rc 1/4
	125 150	TA2A-080D	±5°	0.4～0.7 {4.1～7.1}	3.2	Rc 1/4
	200～300	TA2A-100D	±5°	0.4～0.7 {4.1～7.1}	6.6	Rc 1/4
	350	TA2A-125D	±5°	0.4～0.7 {4.1～7.1}	13.3	Rc 1/4
	400～600	TA2A-160D	±5°	0.4～0.7 {4.1～7.1}	27.1	Rc 1/4
Air to open/ Air to close	40～100	TA2A-050R	±5°	0.4～0.7 {4.1～7.1}	1.7	Rc 1/4
	125 150	TA2A-080R	±5°	0.4～0.7 {4.1～7.1}	6.1	Rc 1/4
	200～300	TA2A-100R2	±5°	0.4～0.7 {4.1～7.1}	12.8	Rc 1/4
	350	TA2A-125R2	±5°	0.4～0.7 {4.1～7.1}	21.6	Rc 1/4
	400～600	TA2A-160R2	±5°	0.4～0.7 {4.1～7.1}	42.7	Rc 1/4

Standard option

Solenoid valve

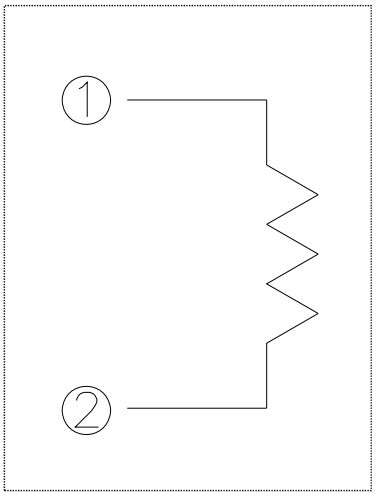
Operation	Size (mm)	Model code	Piping port Size	Effective area	Power consumption	Additional functions
Double acting Air to open/ Air to close	40～600	4N3S102K-W□-G31193	Rc 1/4	10mm^2 or higher	AC ; 6VA DC ; 5.5W	○Built-in bypass valve ○Installation of silencer with throttle valve (used as speed controller)

4N3S102K-W□-G31193
453S403C-W□-G30800

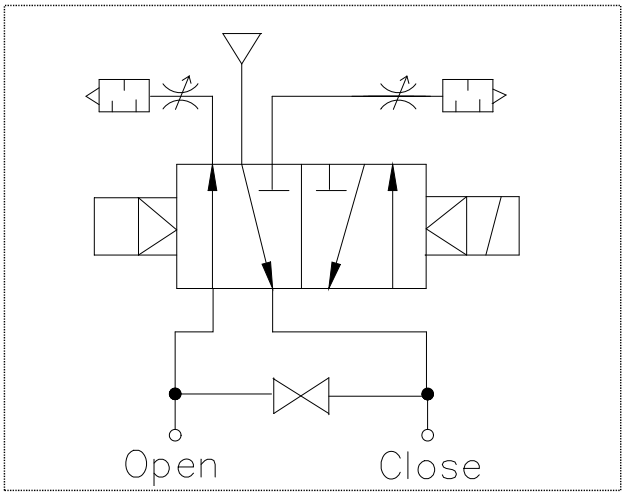
Rated voltage	Text entry
100VAC 50/60Hz	1
110VAC 50/60Hz	(2)
200VAC 50/60Hz	3
220VAC 50/60Hz	(4)
24VDC	5
48VDC	(6)
100VDC	(7)
125VDC	(9)

※ The letters marked with () are special items.

Wiring diagram



JIS symbol



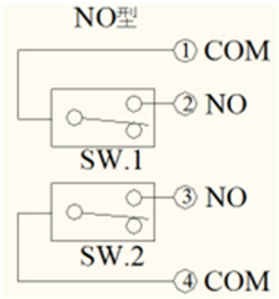
Limit switch

Operation	Size (mm)	Model code	Protection grade	Limit switch model
Double acting Air to open Air to close	40～100	SB2-11	IP 65 equivalent	V-112-1C24 (Made of OMRON)
	125～300	SB2-16		
	350～600	SB2-22		

Rated Internal Circuit Diagram of Limit Switch (Intermediate Opening)

Rated voltage (V)	Resistance load (A)	Induction load (A)
125AC	11	7
250AC	11	7
125DC	0.5	0.1
250DC	0.25	0.04

NOMINAL Size 40 mm～300 mm

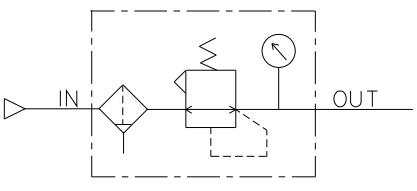


SW.1: Contact closes when valve is closed
(Double action / Air to open)
Contact closes when valve is opened
(Air to close)
SW2: Contact closes when valve is opened
(Double action / Air to open)
Contact closes when valve is closed
(Air to close)

Filter-regulator

Operation	Size (mm)	Model code	Piping port Size	Element filtration rating
Double acting Air to open Air to close	40～600	ARU2-02-8A-G	Rc 1/4	5 μm

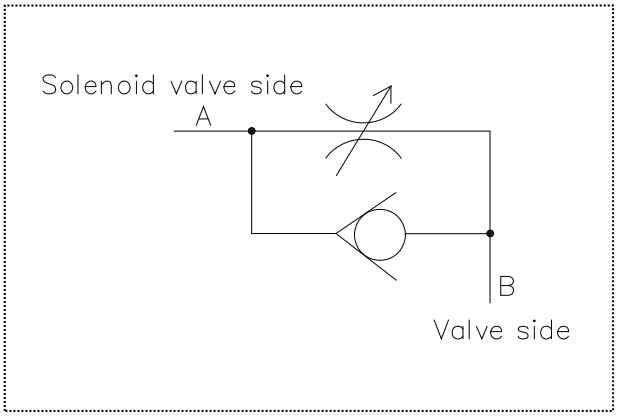
JIS symbol



Speed controller

Operation	Size (mm)	Model code	Piping port Size	Effective area(mm^2)		Flow adjustment needle revolution
				Free flow	Control flow	
Double acting Air to open Air to close	40～600	SC7-08A	Rc 1/4	11	8.3	8 rotations

JIS symbol



5. Piping method

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

Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not tighten the bolts and nuts for piping to the specified torque values in Table 6-2.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. **The valve can be damaged, or leak.** ▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve. ▶ Fix the body cap during piping work or disassembly and reassembly. ▶ When connecting to metal piping, do not apply piping stress to the valve. ▶ Use a connection flange with a full-face seat. ▶ Check that there is no difference in mutual flange standards. ▶ Be sure to use sealing gaskets (AV packing) between the flanges, and tighten the pipe bolts/nuts to the specified torque values in Table 6-2 "Flange tightening torque values." (When other than AV packing, the tightening torque value will change.) ▶ The misalignment and parallelism of the flange surface should be less than the values given in "Table 6-1 Axis misalignment and parallelism". ▶ Tighten the bolts and nuts for piping diagonally to the specified torque values in Table 6-2.

Preparations	▶ Torque Wrench ▶ Through bolts, nuts, and washers (see dimensions on page 20) ▶ Lever-handle for TA (sold separately) or wrench ▶ AV packing or gasket

[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.
   (For 400～600mm with JIS 10K connecting standards, screw-in screws are also used.)
4) Gradually tighten to the specified torque value diagonally (see Fig. 1) with a torque wrench.

Table6-2 Flange Tightening Specified Torque **Units: N•m {kgf・cm}**

Size	40mm	50、65 mm	80、100 mm	125、150 mm
Torque value	20.0{204}	22.5{230}	30.0{306}	40.0{408}

Size	200、250 mm	300、350	400、450	500、600
Torque value	55.0{561}	60.0{612}	80.0{816}	100.0{1020}

※Up to 40～350mm, the specified torque value when AV packing is used. However, the value above 400mm is for reference only.

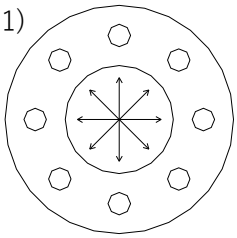
⚠Caution

Forcing

The valve can be damaged, or leak.

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

(Fig 1)



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

▼JIS10K

Size		Bolt A			Bolt B				Quantity		
Mm	Inch	D	L(mm)	S(mm)	d 1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	11/2	M16	115	40	-	-	-	-	4	-	8
50	2		125								
65	21/2		135	45					8		16
80	3		135								
100	4		145								
125	5	M20	165	50							
150	6		175	55					12		24
200	8		195								
250	10	M22	225	60					16		32
300	12		245								
350	14		255	65							
400	16	M24	290	80	M24	110	60	35	14	4	32
450	18		305						16	8	40
500	20		315			115					
600	24	M30	350	70	M30	130	70	40	20		48

Note 1. The above figures are for Size 40 to 350 mm using AVTS flanges and for Size 400 to 600 mm using JIS B2220 "steel pipe flanges" with nominal pressure 10k of the same Size.

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

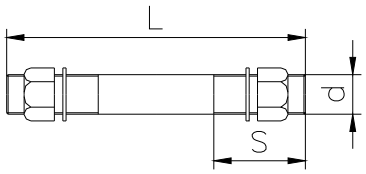
▼JIS5K

Size		Bolt A			Bolt B				Quantity		
Mm	Inch	D	L(mm)	S(mm)	d 1	L1(mm)	S1(mm)	S2(mm)	Bolt A	Bolt B	Nut and washer
40	11/2	M12	100	30	-	-	-	-	4	-	8
50	2		105								
65	21/2		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		245	60							
400	16	M22	270	55					16	-	32
450	18		280								
500	20		290						20	-	40
600	24	M24	320	60							

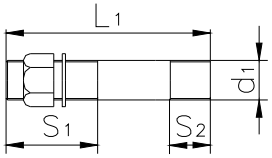
Note 1. The values above are AVTS flanges for Size 40～350mm and JISB2220 "Steel tube furan" for Size 400～600mm.
Dimensions of bolts when the nominal pressure 5K is used.

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

Bolt A



Bolt B



⚠Caution

Forcing

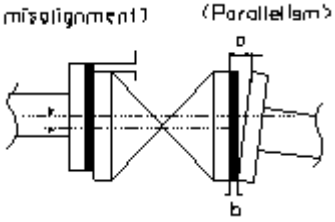
Otherwise, stress may be applied to the piping, resulting in damage.

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

Table 6-1 Axis misalignment and parallelism

Size (mm)	Shaft misalignment	Parallelism (a-b)
40～80	1.0mm	0.8mm
100～150	1.0mm	1.0mm
200～600	1.5mm	1.0mm

(Fig 2)



How to install support

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc. ▶ When installing a valve in the piping around the pump, do not cause large vibrations in the valve.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. **The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc. ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Be sure to attach the cap nut and body cap on the secondary side (downstream side) when attaching to the end of the piping line. ▶ When connecting a resin valve to metal piping, make sure that no piping stress is applied to the resin valve.

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

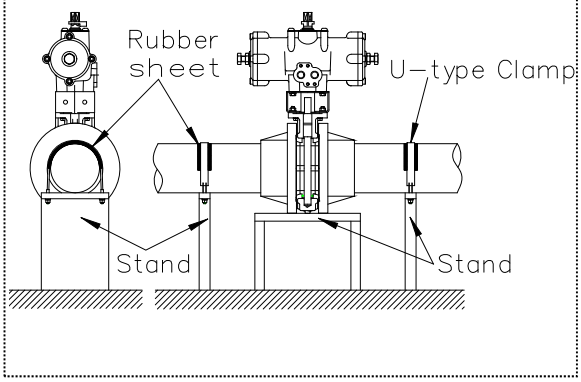
Horizontal piping

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)

(Fig 3)



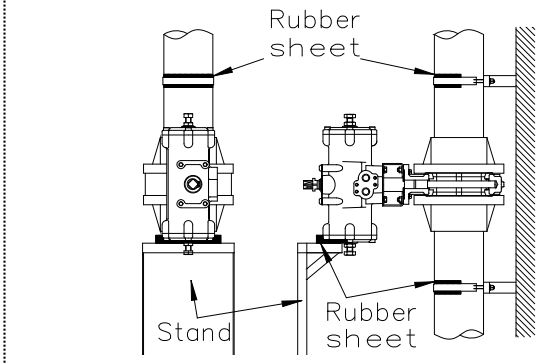
Vertical piping

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

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

(Support installation example)

(Fig 4)



6. Air piping method

<1> Without option or with speed controller

Warning	
Prohibition	**There is a danger of injury.** ▶ Do not remove the protective plug until just before connecting the air piping.

Caution	
Prohibition	**Damage may occur.** ▶ Do not over-tighten the Joint for air piping.
Forcing	**There is a danger of injury.** ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise damage or malfunction can result.** ▶ Confirm the connection location, air piping Size, and screw type from the approval delivery drawing etc. 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 copper piping for air piping, use one with rust-proof treatment on the inner surface of the pipe. ▶ 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 from the pipe Joints/threads. (This may cause gargle or air leakage.)

Preparations	▶ Copper or tube for air piping ▶ wrench ▶ Copper or tube Joints ▶ Sealing tape (other than sealing tape may leak)

[Procedure]

1) Wrap sealing tape around the male thread of the Joint, leaving approximately 3mm at the end.

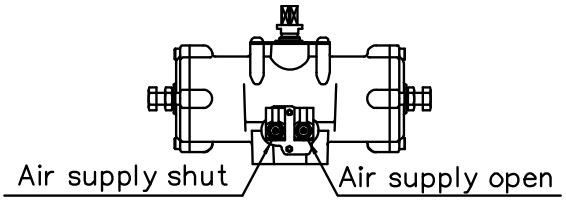
2) Tighten the Joint to the piping port of the actuator.

3) Screw the Joint in one turn with a wrench.

4) Install the steel or tube for air piping.

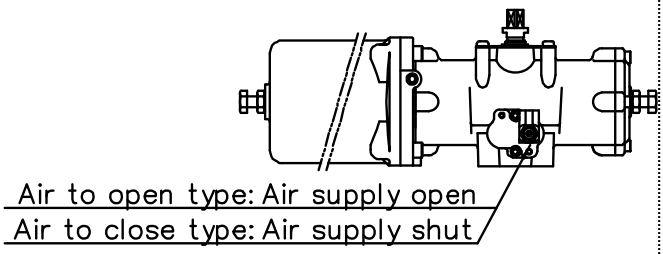
(Fig 5)

Double action



(Fig 6)

Direct action, reverse action



<2> **With solenoid valve and filter regulator**

Warning	
Prohibition	**There is a danger of injury.** ▶ Do not remove the protective plug until just before connecting the air piping.

Caution	
Prohibition	**Damage may occur.** ▶ Do not over-tighten the Joint for air piping.
Forcing	**There is a danger of injury.** ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise damage or malfunction can result.** ▶ When using copper piping for air piping, use one with rust-proof treatment on the inner surface of the pipe. ▶ 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 from the pipe Joints/threads. (This may cause gargle or air leakage.) ▶ Do not over-tighten the Joint for air piping. ▶ 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 to a setting that meets the equipment specifications. (Otherwise, malfunction or failure may result.)

Preparations	▶ Copper or tube for air piping ▶ Copper or tube Joints ▶ Sealing tape (other than sealing tape may leak) ▶ Wrench

[Procedure]

1) Wrap sealing tape around the male thread of the Joint, leaving approximately 3mm at the end.

2) Tighten the Joint to the air piping port (see Fig. 7 and 8) with a Joint.

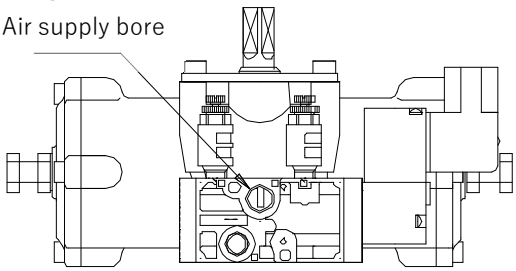
3) Screw the Joint in one turn with a wrench.

4) Install the steel or tube for air piping.

5)

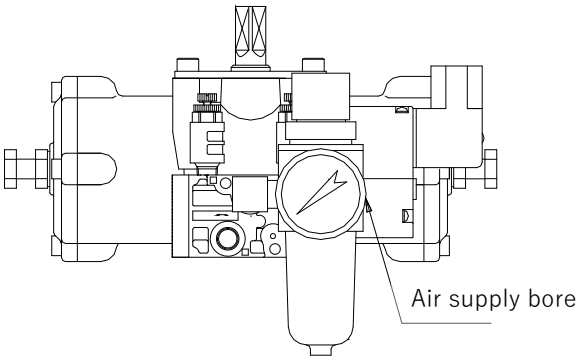
With solenoid valve

((Fig 7)



Pressure regulator with solenoid valve and filter

(Fig 8)



7. Wiring method

Limit switch

Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not perform wiring while the power is on.

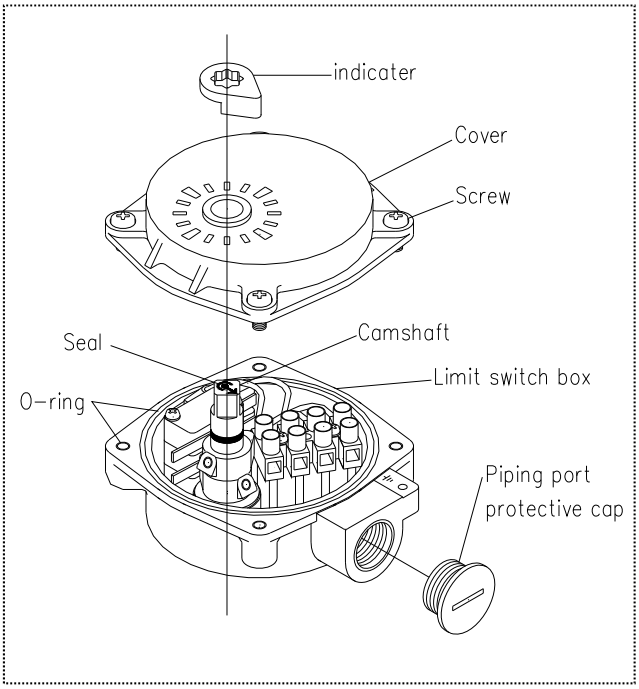
Caution	
Prohibition	**Otherwise failure or malfunction of the machine can result.** ▶ If the product is installed outdoors or in a location where there is a possibility of rainwater or moisture intrusion, make sure that rainwater, etc. does not enter through the wiring port.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections beforehand for the machine tools to be used. ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise damage or malfunction 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 close and may cause a ground fault.) ▶ Contact CKD when using the limit switch in a 1mA～100mA, 5V～30V.

Preparations	▶ Phillips screwdriver ▶ Connector (G1/2) ▶ Flat-blade screwdriver ▶ Wire stripper

[Procedure]

1) Remove the pointer by hand.
2) Loosen the four screws holding the lid with a Phillips screwdriver and remove them.
   ※Do not lose the O-ring.
3) Turn the pipe port protection cap counterclockwise to remove it.
4) Pass the cable through the connector.
5) Peel off the outer skin of the cable with a wire stripper.
6) Wire the terminal screw with a flathead screwdriver according to the internal circuit diagram on page 16.
   ※Tighten the screws securely.
7) Tighten the connector to secure the cable.
8) After attaching the lid, tighten the four screws alternately and evenly with a Phillips screwdriver.
   ※Do not forget the O-ring when attaching the lid.
9) Insert the pointer so that the direction of the seal arrow on the camshaft head matches the direction of the pointer.

(Fig 9)



Solenoid valve

⚠ Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not connect or separate lines to the solenoid valves while the power is on. ▶ Do not perform any work with wet hands or tools.

⚠ Caution	
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections beforehand for the machine tools to be used. ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise damage or malfunction can result.** ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment.

Preparations	▶ Phillips screwdriver ▶ Terminal crimping tool ▶ Connector (G1/2) ▶ Wire stripper

[Procedure]

1) Loosen the cover setscrew with a Phillips screwdriver and remove the cover.
※Do not lose the O-ring.

2) Pull out the Faston terminal and the insulation cover inserted in the coil side terminal.
※The grounding terminal is not provided with an insulating sleeve.

3) Pass the cables in the order of the connector and cover.

4) Peel off the outer skin of the cable with a wire stripper.

5) Pass the lead wire through the insulation cover.

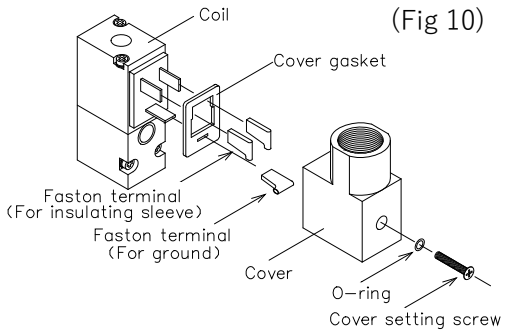
6) Use a terminal crimping tool to attach the Faston terminal to the lead wire.

7) Insert the Faston terminal into the coil side terminal and put the insulation cover on.

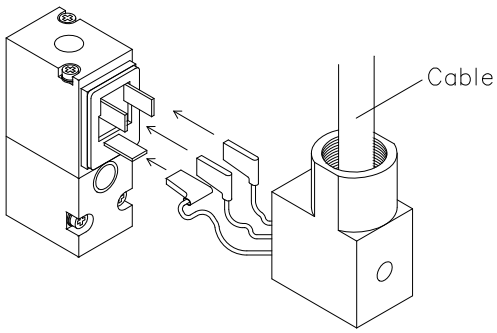
8) Attach the cover by tightening the cover set screw with a Phillips screwdriver.
[The cover can be attached with the wiring outlet facing up or down.(Fig. 12)]

9) Tighten the cable with the connector.

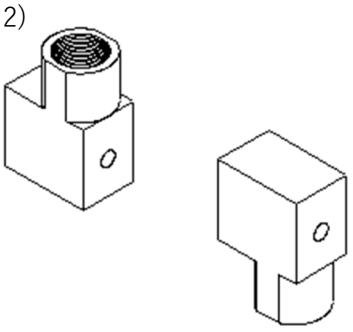
(Fig 10)



(Fig 11)



(Fig 12)



8. Commissioning method

Manual Operation <Double acting>

Warning	
Prohibition	**Serious injury can result.** ▶ Do not supply air during manual operation.

Caution	
Prohibition	**You may be electrocuted or injured.** ▶ For models with solenoid valves, do not leave the solenoid valve terminal cover removed. ▶ Keep hands free of moisture and oil during operation.
Forcing	**Doing so may damage the machine.** ▶ Do not turn the manual override further than necessary from the fully open/closed positions.

Preparations ▶ Lever-handle for TA (sold separately) or wrench

[Procedure]

※For models with a solenoid valve, turn the knob of the bypass valve.

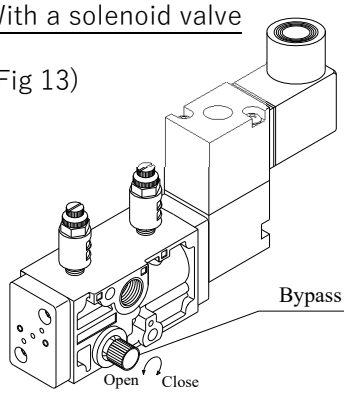
1) 1)Engage TA type lever handle (optional) or wrench with the upper output shaft of the actuator, and fully open ⇔ fully close 1 to 2 times while looking at the valve travel finger.

Rotate Right (Clockwise) ⇨ Closing direction

Left Rotation (Counterturn) ⇨ Open direction

With a solenoid valve

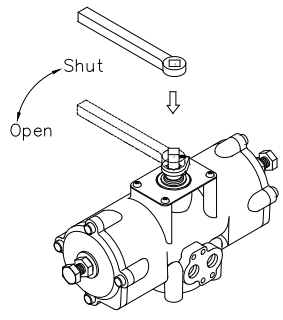
(Fig 13)



2) Fully open or closed to remove TA type lever-handle (sold separately) or wrench from the upper output shaft of the actuator.

※For models with a solenoid valve, turn the knob of the bypass valve clockwise. (Air leaks)

(Fig 14)



Manual operation <Single acting (air to open / air to close)>

⚠Warning	
Prohibition	**Serious injury can result.** ▶ Do not supply air during manual operation.

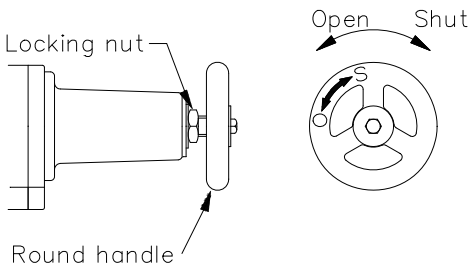
Preparations ▶ Wrench

[Procedure]

1) Loosen the lock nut with a spanner to remove it.

2) Turn the manual operation round handle while looking at the opening finger meter to fully open ⇔ fully close 1 to 2 times.

For air to open (Fig 15)



Round handle rotation direction	Air to open type	Air to close type
Rotate Right (Clockwise)	Closing direction	Open direction
Left Rotation (Counterturn)	Open direction	Closing direction

Handle revolutions

Size (mm)	40～100	125、150	200～300	350	400～600
Handle revolutions (Rotate)	About 24	About 27	About 28	About 36	About 38

3) Turn the round handle for manual operation clockwise until it is fully opened and fully closed.

4) Tighten the lock nut with a spanner.

Air Operation

⚠Warning	
Forcing	**Serious injury can result.** ▶ Check that the spanner for manual operation is not mated with the upper output shaft of the actuator.

⚠Caution	
Prohibition	**Otherwise, the valve may be damaged, or inoperative.** ▶ Use the product within the indicated product specifications.

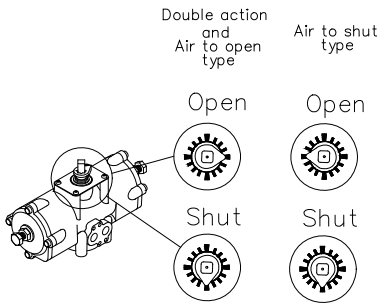
[**Procedure**]

1) Supplies air to the air piping port.

2) Check that the air supply side and the display position match.
(Refer to the figure below for the status of display depending on each model and specification.)

3) Stop the air supply.

(Standard) (Fig 16)



<**For models with solenoid valve**>
[**Procedure**]

1) Supplies air to the solenoid valve.

2) Confirm the operation shown in the table below by pressing the push button (Fig. 18) below the solenoid valve terminal cover with your finger.

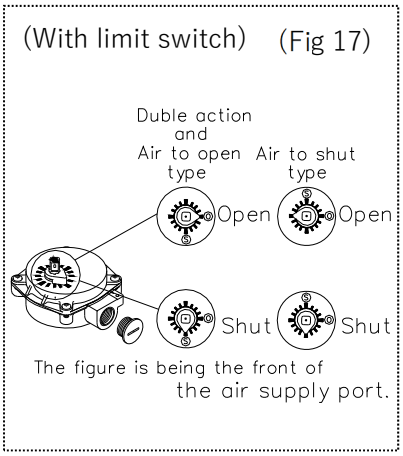
3) Turn off the solenoid valve.

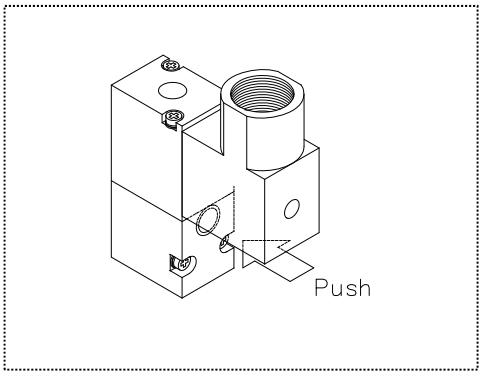
Push button	Current	Double action	Single action	
			Air to open	Air to close
Pushed	On	Open		Shut
Not pushed	Off	Shut		Open

The figure shows the electrical wiring

(Limit Switch With box)

(With limit switch) (Fig 17)





Adjusting the Opening/Closing Speed <Double acting>

⚠Caution	
Prohibition	**Otherwise damage to the solenoid valve or malfunction can result.** ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. (Do not tighten the lock nut with excessive force.)

Preparations ▶ Wrench

[Procedure]

1) While holding the speed controller adjustment knob of both open and close with your fingers, rotate the lock nut counterclockwise with a spanner to release the adjustment knob.

2) Turn the adjustment knob clockwise until it does not turn.

3) Supplies air to the solenoid valve.

4) Energize the solenoid valve and turn the adjusting knob of the open-side speed controller counterclockwise little by little.

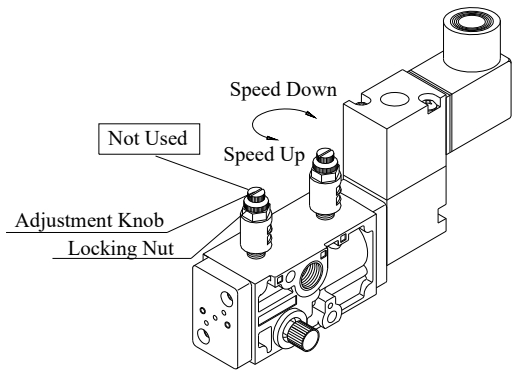
5) Turn off the solenoid valve side and turn the adjusting knob of the closed side speed controller counterclockwise little by little.

6) Repeat steps 4) and 5) to set the desired opening/closing speed.

7) When the desired speed is achieved, hold the adjustment knob with your finger and rotate the lock nut clockwise with the spanner to secure the adjustment knob.

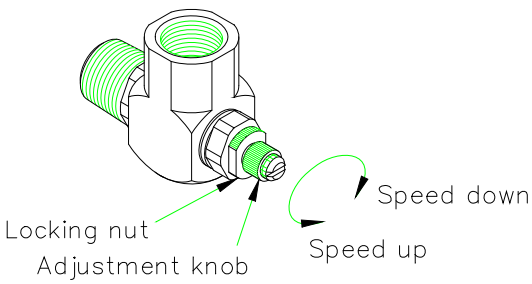
With a solenoid valve

(Fig 19)



With speed controller (standard)

(Fig 20)



Opening/Closing Speed Adjustment Method <Single acting (air to open / air to close>

⚠Caution	
Prohibition	**Otherwise damage to the solenoid valve or malfunction can result.** ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. (Do not tighten the lock nut with excessive force.)

Preparations ▶ Wrench

Actuation type	Speed at which it opened	Speed at which it closes
Air to open type	Cannot adjust	Can be adjusted
Air to close type	Can be adjusted	Cannot adjust

[Procedure]

1) While holding the speed controller adjustment knob of both open and close with your fingers, rotate the lock nut counterclockwise with a spanner to release the adjustment knob.

2) Turn the adjustment knob clockwise until it does not turn.

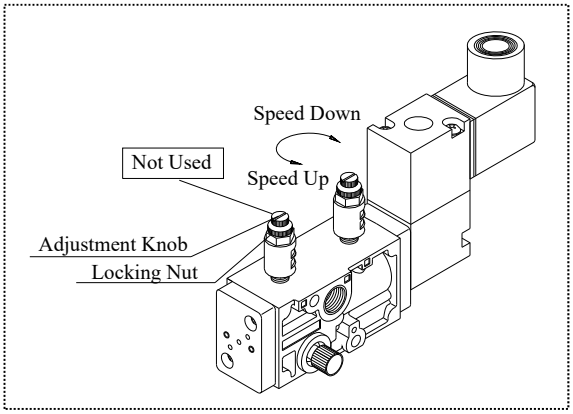
3) Supplies air to the solenoid valve.

4) After energizing the solenoid valve, turn off the power, and turn the speed controller adjustment knob counterclockwise little by little to match the desired opening/closing speed.

5) When the desired speed is achieved, hold the adjustment knob with your finger and rotate the lock nut clockwise with the spanner to secure the adjustment knob.

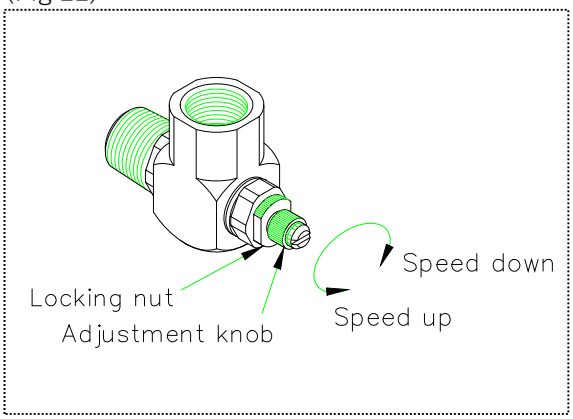
With a solenoid valve

(Fig 21)



With speed controller (standard)

(Fig 22)



9. How to adjust the stopper

Warning	
Prohibition	**There is a danger of injury.** ▶ Do not supply air during adjustment.
Forcing	**The valve can be damaged or leak.** ▶ Be sure to lock the stopper after adjustment. (Do not use excessive force to tighten.)

Preparations ▶ Wrench

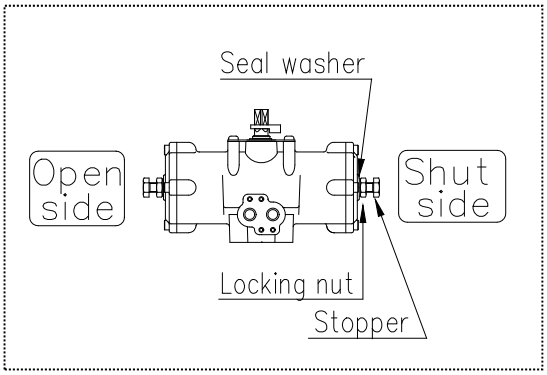
[Procedure]

1) Close the air source valve and open the bypass valve to exhaust the air in the actuator.

2) Attach and hold a spanner or hex wrench to the stopper of the opening to be adjusted (fully open or closed), and slowly loosen the lock nut with the spanner.
※Do not damage the washer with gasket.
(Otherwise, air leakage may occur.)

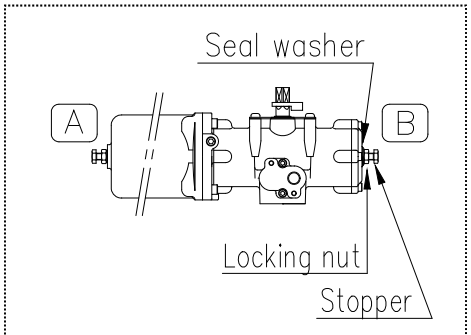
3) Rotate the stopper with a spanner or hex wrench in the direction you want to adjust.

(Double acting) (Fig 30)



Direction to adjust	Rotate clockwise (clockwise)	Rotate Left (counterclockwise)
Open side	Decrease the opening	Increase the opening
Closed side	Increase the opening	Decrease the opening

(Air to open/Air to close) (Fig 31)



position	Air to open	Air to shut
A	Open side	Shut side
B	Shut side	Open side

4) Rotate the stopper with a spanner or hex wrench 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 34).
If not, repeat steps 1) 2) 3) 4).

10. How to disassemble/assemble parts for replacement

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

⚠Warning	
Prohibition	**Serious injury can result.** ▶ Do not disassemble the actuator.
Forcing	**Serious injury can result.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details.

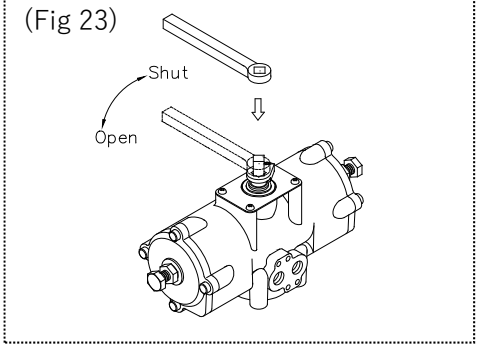
⚠Caution	
Prohibition	**Damage may occur.** ▶ When replacing the valve or replacing parts, completely drain the fluid from the piping to reduce the fluid pressure to zero.

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

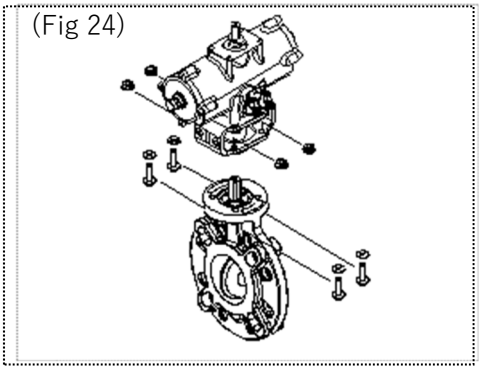
<**Disassembly**>
[**Procedure**]

1) Completely drain the fluid in the piping.
2) Fully close the valve by air or manual operation.
3) Slightly open the valve using the manual lever handle.
4) Tighten the air source valve and open the bypass valve to exhaust air from the actuator.
5) Disconnect air piping.
6) Loosen the connecting bolts and nuts with a spanner and remove the valve.
7) Loosen the screw (C) [37a] with a hex key.
8) Remove bolts and nuts (A) [39], and remove actuator [35] and mount [30] from body [1].
(For 40～350mm, use a Phillips screwdriver to take the stem retainer [8].)
9) Remove stem [7] with pliers or hand for Size 40mm～100mm.
For the Size 125mm～600mm, 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 stem [7] from jack.
11) Remove the O-ring (C) [6].

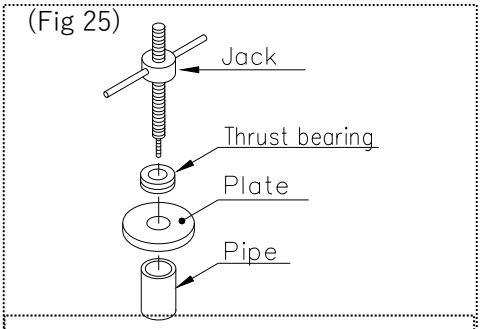
(Fig 23)



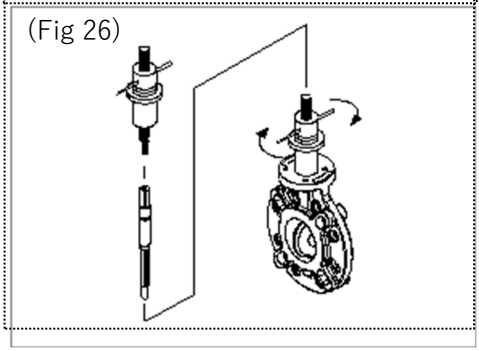
(Fig 24)



(Fig 25)



(Fig 26)

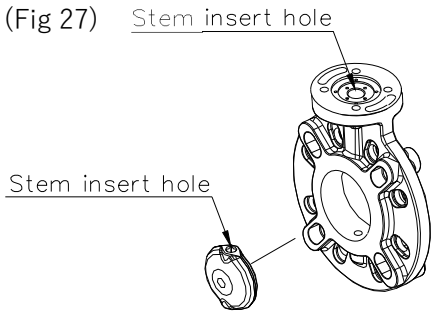


<Assembly>
[Procedure]

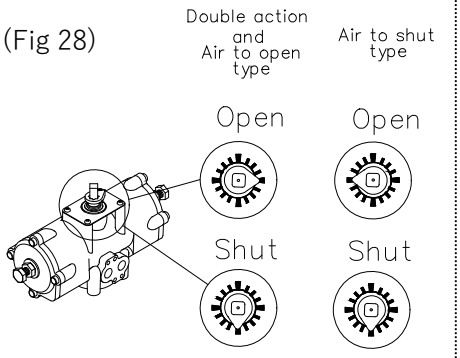
1) Apply silicone grease to the O-rings (C) [6] before assembly.
2) Assemble the parts in the reverse order from 11) of disassembly on page 40.
3) Check whether the opening of the disc [2] and the value indicated by the valve gauge are correct.
4) Check the operation with air (see page 35).

※If the valve travel is misaligned with the valve travel gauge,
By adjusting according to "10. How to adjust the stopper" on page 38
Please do it.

(Fig 27)



(Fig 28)



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. **There is a danger of injury.** ▶ 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 trouble 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: 10. How to disassemble/assemble for parts replacement)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 10. 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: 10. 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: 10. How to disassemble/assemble for parts replacement)
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 10. 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	Remedy for malfunctions
Vibration (palpation)	No difference from other parts	Valves and actuators	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 10. How to disassemble/assemble for parts replacement)
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)

Periodic inspection

●Guideline of the inspection cycle: 6 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Operability of manual handle (touch)	Rotates smoothly	Manual operation unit	Remove the valve from the pipe and replace the valve or actuator. (Ref: 10. 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
		[Flnaged end] For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator. (Ref: 10. How to disassemble/assemble for parts replacement)

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)
	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: 10. 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.	Air is not supplied	Supply air.
	The solenoid valve voltage is different.	Check the voltage with a tester to obtain the correct voltage. (Ref: 4. Product specifications)
	Solenoid valve voltage is low	
	The bypass valve is open.	Close the bypass valve by turning the knob clockwise.
	The speed controller adjustment knob is turned all the way to the right.	Turn the knob to the left (Ref: 8. Commissioning method)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove any foreign matter. (Ref: 10. How to disassemble/assemble for parts replacement)
	Valve torque is increasing due to piping stress.	Remove the piping stress. (Ref: 4. Product Specifications)
	The torque of the valve increases due to the effect of the fluid (temperature, component, pressure).	Check the operating conditions again.

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Do not open or close by air operation.	Piping stress is applied to the valve.	Remove the piping stress
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Refer: 2. Safety Instructions)
	The actuator does not move due to external corrosion of the actuator.	Stop using the product immediately and replace the actuator. (Ref: 10. How to disassemble/assemble for parts replacement)
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 10. How to disassemble/assemble for parts replacement)
	Seat or disc is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 10. 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: 10. 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: 10. How to disassemble/assemble for parts replacement)
	Piping stress is applied to the valve.	Remove the piping stress (Ref: 10. How to disassemble/assemble for parts replacement)

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
	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: 10. 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: 10. 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: 10. How to disassemble/assemble for parts replacement)
Actuator is operating but valve is not open or closed	Damaged stem, disc, or Joint	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 10. 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: 10. 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: 10. How to disassemble/assemble for parts replacement)

13. Disposal method of residual materials and waste materials

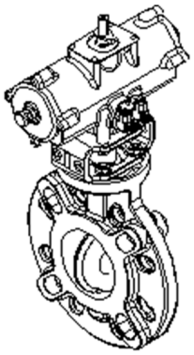
⚠Warning	
Forcing	**When burnt, toxic gas is generated.** ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

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

[User's manual]

Rotary damper Pneumatic actuated Type TA
40～600mm



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

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