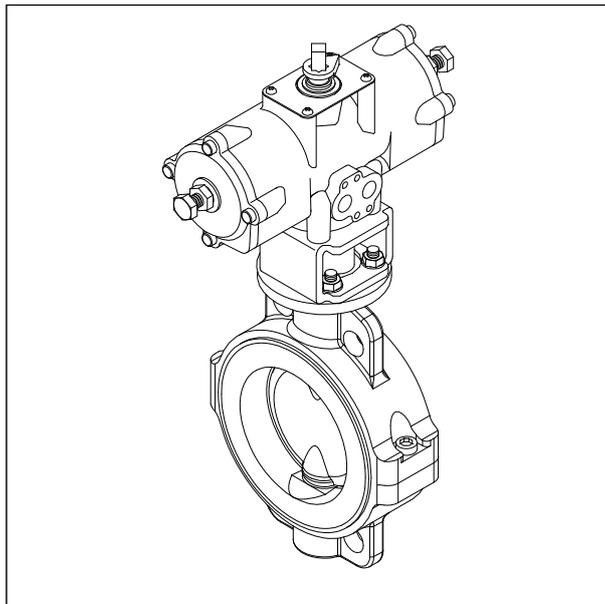


Butterfly Valve Type 55 50~250mm

Butterfly Valve Type 55IS 50~400mm

Pneumatic Actuated Type TA

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	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.

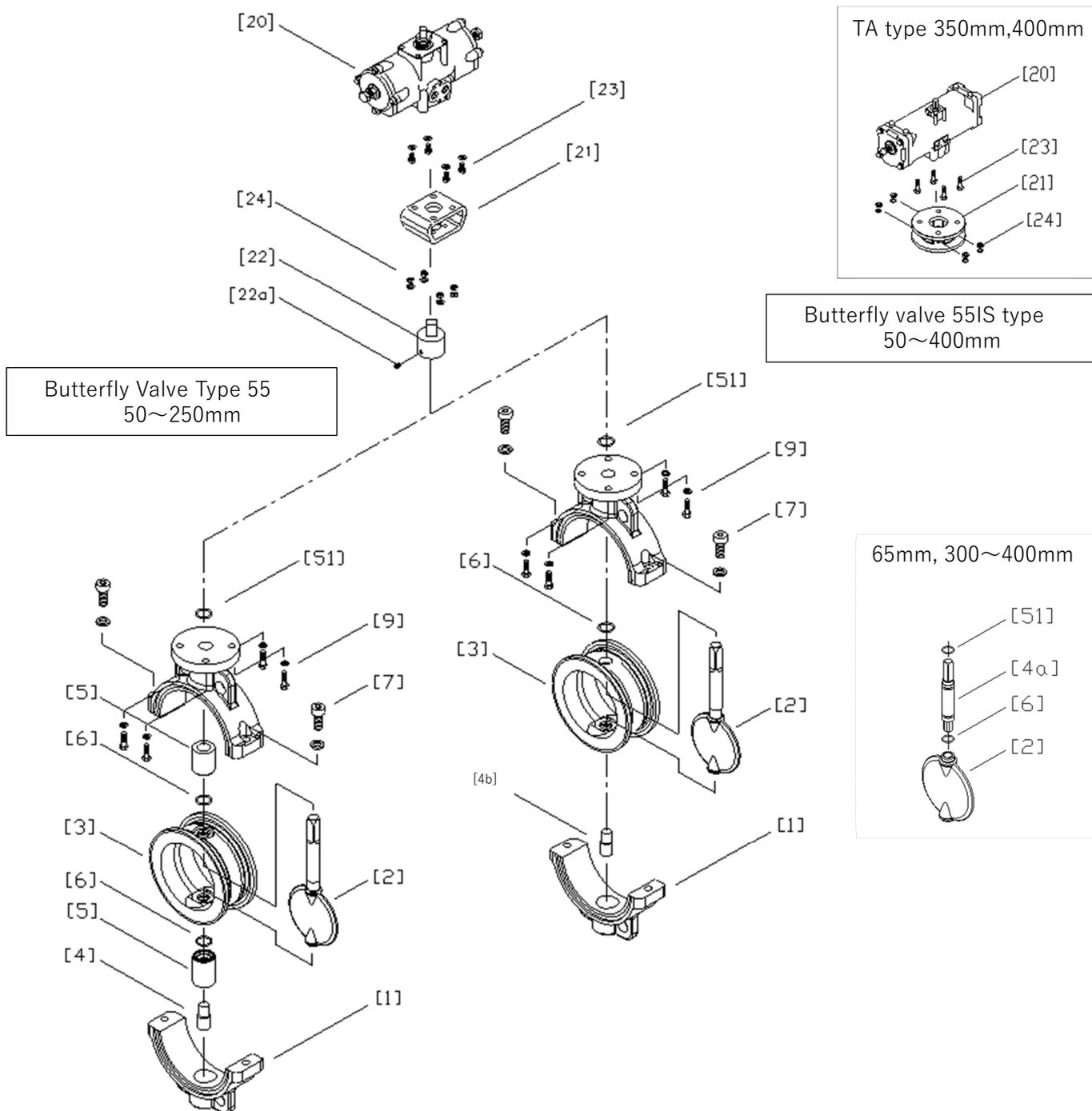
 Caution	
 Prohibition	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc. ▶ Do not hang the handle when transporting the valve.
 Forcing	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ 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	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Do not disassemble the actuator.
 Forcing	<p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ 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	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects.
 Forcing	<p>There is a danger of injury.</p> <ul style="list-style-type: none"> ▶ Secure sufficient space for maintenance and inspection when piping. <p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ 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	[5]	Bush	[22]	Joint
[2]	Disc	[6]	O-ring (A)	[22a]	Set screw (B)
[3]	Seat	[7]	Bolt (A)	[23]	Bolt (D)
[4a]	Stem (A)	[20]	Actuator	[24]	Bolts and nuts
[4b]	Stem (B)	[21]	Stand	[51]	O-ring (B)

The Stand is PPG for Size 50~150mm and SUS304 for 200 and 250mm.

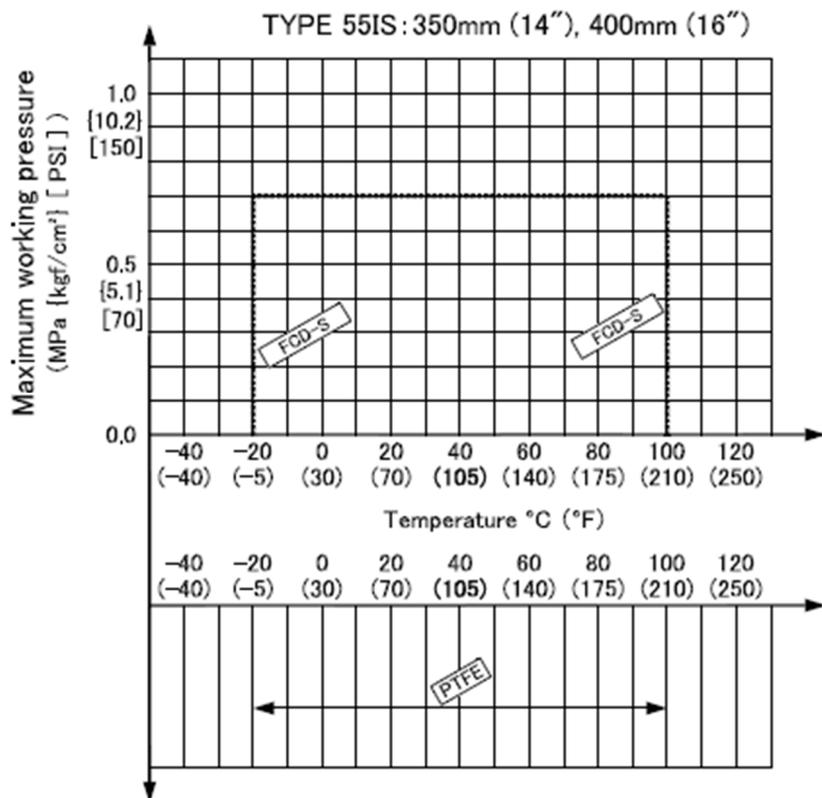
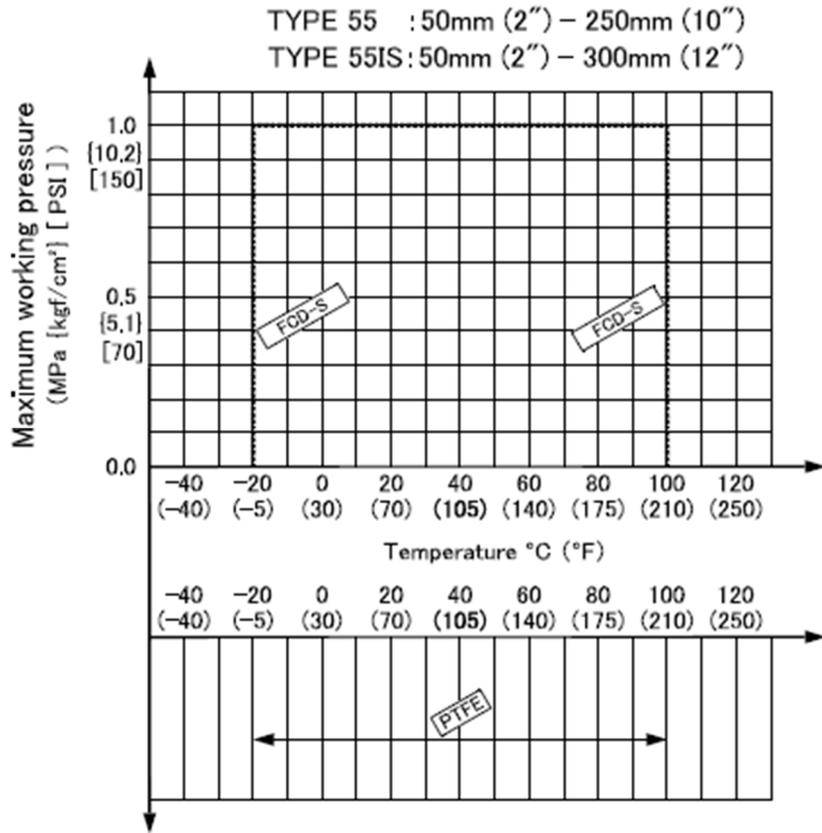
4. Product Specifications

Model number table

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	55	K	*	S	T	W	*	* * *
A AUTOMATIC	55 TYPE 55	K TYPE TA	F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE	S FCD-S	T PTFE	W WAFER	J JIS 10K 5 JIS 5K D DIN A ANSI	050 50mm 080 80mm 100 100mm 125 125mm 150 150mm 200 200mm 250 250mm

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	5S	K	*	S	T	W	*	* * *
A AUTOMATIC	5S TYPE 55IS	K TYPE TA	F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE	S FCD-S	T PTFE	W WAFER	J JIS 10K D DIN A ANSI	050 50mm 080 80mm 100 100mm 125 125mm 150 150mm 200 200mm 250 250mm 300 300mm 350 350mm 400 400mm

Relationship between maximum allowable pressure and temperature



Actuator
Specifications List

◇Butterfly valve type 55

Operation	Size (mm)	Actuator Model	Angle adjustment range	Operating pressure range MPa{kgf/cm ² }	Air consumption NI/ open/close (0.4MPa)	Air supply port size
Double action	50	TA2A-050D	±5°	0.4~0.7 {4.1~7.1}	0.9	Rc 1/4
	80	TA2A-063D	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	100	TA2A-080D	±5°	0.4~0.7 {4.1~7.1}	3.2	Rc 1/4
	125	TA2A-080D	±5°	0.4~0.7 {4.1~7.1}	3.2	Rc 1/4
	150	TA2A-100D	±5°	0.4~0.7 {4.1~7.1}	6.6	Rc 1/4
	200	TA2A-125D	±5°	0.4~0.7 {4.1~7.1}	13.3	Rc 1/4
	250	TA2A-160D	±5°	0.4~0.7 {4.1~7.1}	27.1	Rc 1/4
Air to open / Air to close	50	TA2A-050R	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	80	TA2A-063R	±5°	0.4~0.7 {4.1~7.1}	3.3	Rc 1/4
	100	TA2A-080R	±5°	0.4~0.7 {4.1~7.1}	6.1	Rc 1/4
	125	TA2A-080R	±5°	0.4~0.7 {4.1~7.1}	6.1	Rc 1/4
	150	TA2A-100R2	±5°	0.4~0.7 {4.1~7.1}	12.8	Rc 1/4
	200	TA2A-125R2	±5°	0.4~0.7 {4.1~7.1}	21.6	Rc 1/4
	250	TA2A-160R2	±5°	0.4~0.7 {4.1~7.1}	42.7	Rc 1/4

◇Butterfly valve 55IS type

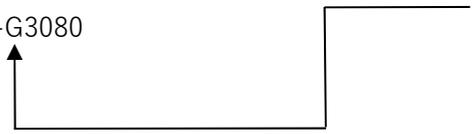
Operation	Size (mm)	Actuator Model	Angle adjustment range	Operating pressure range MPa{kgf/cm ² }	Air consumption NI/ open/close (0.4MPa)	Air supply port size
Double action	50	TA2A-050D	±5°	0.4~0.7 {4.1~7.1}	0.9	Rc 1/4
	65	TA2A-063D	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	80	TA2A-063D	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	100	TA2A-080D	±5°	0.4~0.7 {4.1~7.1}	3.2	Rc 1/4
	125	TA2A-100D	±5°	0.4~0.7 {4.1~7.1}	6.6	Rc 1/4
	150	TA2A-100D	±5°	0.4~0.7 {4.1~7.1}	6.6	Rc 1/4
	200	TA2A-125D	±5°	0.4~0.7 {4.1~7.1}	13.3	Rc 1/4
	250,300	TA2A-160D	±5°	0.4~0.7 {4.1~7.1}	27.1	Rc 1/4
	350,400	TA-200D	±5°	0.4~0.7 {4.1~7.1}	56.8	Rc 3/8
Air to open / Air to close	50	TA2A-050R	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	65	TA2A-063D	±5°	0.4~0.7 {4.1~7.1}	1.7	Rc 1/4
	80	TA2A-063R	±5°	0.4~0.7 {4.1~7.1}	3.3	Rc 1/4
	100	TA2A-080R	±5°	0.4~0.7 {4.1~7.1}	6.1	Rc 1/4
	125	TA2A-100R2	±5°	0.4~0.7 {4.1~7.1}	12.8	Rc 1/4
	150	TA2A-100R2	±5°	0.4~0.7 {4.1~7.1}	12.8	Rc 1/4
	200	TA2A-125R2	±5°	0.4~0.7 {4.1~7.1}	21.6	Rc 1/4
	250,300	TA2A-160R2	±5°	0.4~0.7 {4.1~7.1}	42.7	Rc 1/4
	350,400	TA-200R	±5°	0.4~0.7 {4.1~7.1}	68.4	Rc 3/8

5. Optional specifications

Solenoid valve

Operation	Size (mm)	Model code	Piping port size	Effective area	Power consumption
Double action Air to open Air to close	50~300 (55,55IS type)	4N3S102K-W□-G31193	Rc 1/4	10mm ² or higher	AC ; 6VA DC ; 5.5W
Double action Air to open Air to close	350、400 (55IS type)	453S403C-W□-G30800	Rc 3/8	40mm ² or higher	AC ; 6VA DC ; 5W

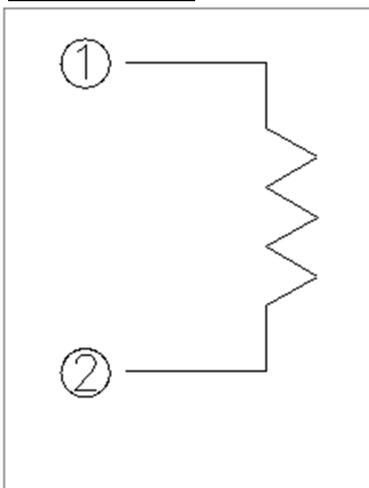
50~300 4N3S102K-W□-G31193
350、400 453S403C-W□-G3080



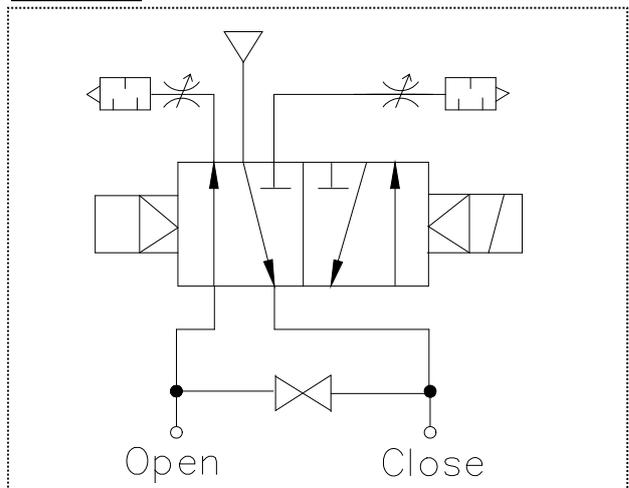
Rated voltage	Text entry
100VAC 50/60Hz	1
110VAC 50/60Hz	(2)
200VAC 50/60Hz	3
220VAC 50/60Hz	(4)
24VDC	5
48VDC	(6)
100VDC	(7)
125VDC	(9)

※ The letters marked with () are special items.

Wiring diagram



JIS symbol



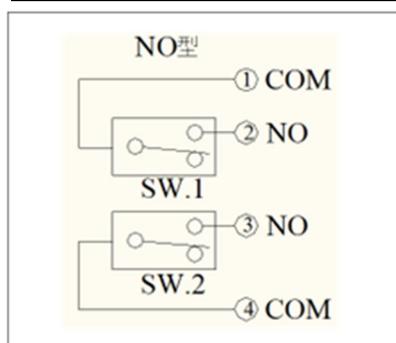
Limit switch

Operation	Size (mm)	Model code	Protection grade	Limit switch model
Double action Air to open Air to close	50~80	SB2-11	IP 65 equivalent	V-112-1C24 (Made of OMRON)
	100~150	SB2-16		
	200~300	SB2-22		
	350~400	TA-200-SB	IP 55 equivalent	

Limit switch rating

Rated voltage (V)	Resistance load (A)	Induction load (A)
AC125	11	7
AC250	11	7
DC125	0.5	0.1
DC250	0.25	0.04

Internal circuit diagram (at intermediate position)

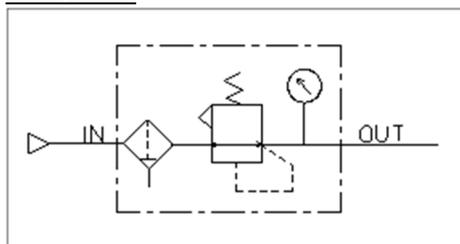


SW.1: Contact closes when valve is closed (Double action · Air to open)
 Contact closes when valve is opened (Air to close)
 SW.2: Contact closes when valve is opened (Double · Air to open)
 Contact closes when valve is closed (Air to close)

Filter-regulator

Operation	Size (mm)	Model code	Piping port size	Element filtration rating
Double action Air to open	50~300 (55,55IS type)	ARU2-02-8A-G	Rc 1/4	5 μm
Air to close	350、400 (55IS type)	ARU3A-03-10A	Rc 3/8	40 μm

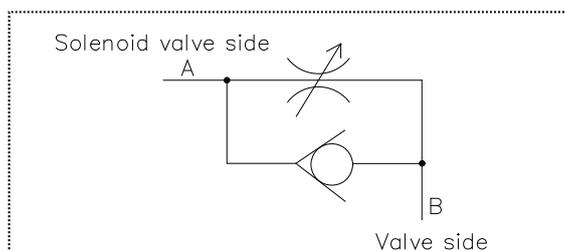
JIS symbol



Speed controller

Operation	Size (mm)	Model code	Piping port size	Effective area(mm ²)		Flow adjustment needle revolution
				Free flow	Control flow	
Double action Air to open	50~300 (55,55IS type)	SC7-08A	Rc 1/4	11	8.3	8 rotations
Air to close	350、400 (55IS type)	SC7-10A	Rc 3/8	16	14	

JIS symbol



6. Piping method

 Warning	
 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.
 Forcing	<p>There is a danger of injury.</p> <ul style="list-style-type: none"> ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details.

⚠ Caution

🚫 Prohibition

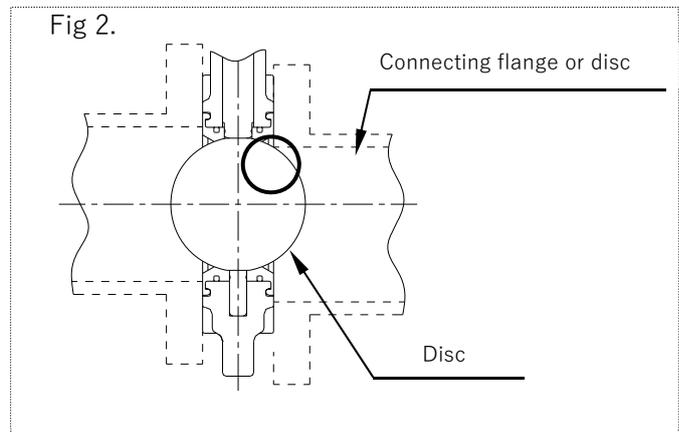
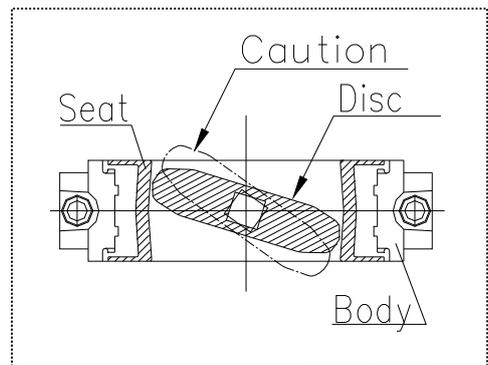
The valve can be damaged, or leak.

- ▶ When installing piping, gaskets are basically not required. However, when connecting to a resin flange that is prone to dents, scratches, or warping, use gaskets to ensure stable sealing performance.
- ▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like.
- ▶ 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

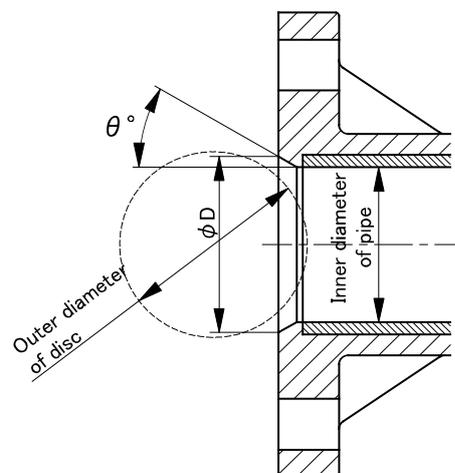
The valve can be damaged, or leak.

- ▶ 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.)
- ▶ Be careful when transporting or installing the disc in the condition of "CAUTION OF DAMAGE" shown in the figure, as there is a risk of damaging the sealing surface of the disc. (The disc may be damaged, resulting in improper sealing.)
- ▶ If the inner diameter of the connection (flange/pipe) is small, chamfer the inside of the connection to avoid contact between the valve disk and the inner surface of the connection.



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

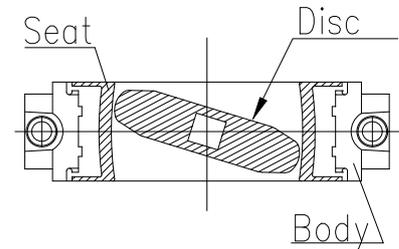
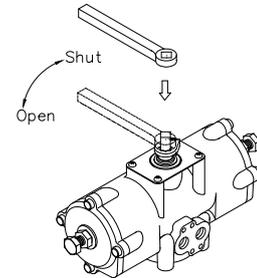
Size (mm)	Bore diameter D (mm)		Chamfer angle θ°
	Type 55	55IS type	Type 55 and 55IS Common
50 (2)	47	42	40
65 (2½)	-	54	40
80 (3)	71	74	30
100 (4)	92	94	30
125 (5)	119	121	25
150 (6)	143	149	25
200 (8)	182	186	15
250 (10)	237	241	15
300 (12)	-	293	15
350 (14)	-	322	15
400 (16)	-	372	15



- ▶ Torque Wrench
- ▶ Lever-handle for TA (sold separately) or wrench
- ▶ Through bolts, nuts, and washers (see dimensions on page 19)
- ▶ AV packing (if required)

[Procedure]

- 1) For actuator actuation and return movement:
Slightly open the disc [2] with TA lever handle (optional) or wrench.
- 2) Set the valve between the connecting flanges.
- 3) Temporarily set by hand with through bolts, nuts, and washers for connection.
- 4) Gradually tighten to the specified torque value diagonally (see Fig. 1) with a torque wrench.



Specified torque. Unit: N•m {kgf•cm}

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

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

⚠ Caution

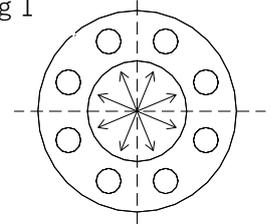


Forcing

The valve can be damaged, or leak.

- ▶ Tighten the bolts and nuts of the connection flange diagonally to the specified torque.
- ▶ The bolt hole position provided in the Size 80mm of the butterfly valve 55IS type is a hole for JIS10K · DIN.

Fig 1



Dimensions of Through Bolt (Bolt A)

▼JIS10K

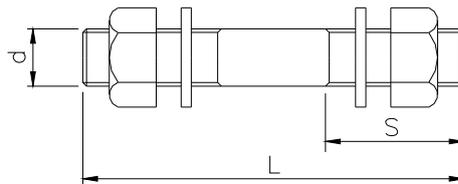
Size	Bolt A				Quantity		
	D	Type 55		55IS type		Bolt A	Nut and washer
L(mm)		S(mm)	L(mm)	S(mm)			
50 (2")	M16	130	35	130	35	4	8
65 (2 1/2")		—	—	135			
80 (3")		140	35	140			
100 (4")		145					
125 (5")	M20	165	40	155	40	8	16
150 (6")		180		160			
200 (8")		195		165			
250 (10")	M22	215	45	180	45	12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

▼JIS5K

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

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

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



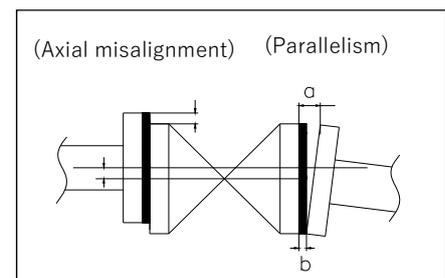
⚠ Caution

! Forcing

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



7. Support installation method

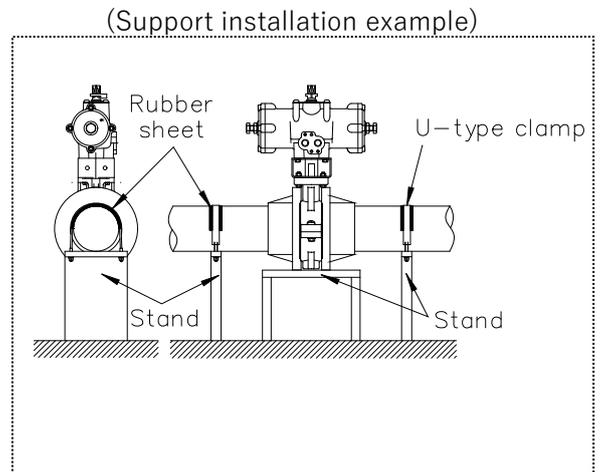
 Caution	
 Prohibition	<p>The valve can be damaged, or leak.</p> <p>▶ Do not cause large vibrations to the valve by the piping around the pump.</p>
 Forcing	<p>The valve can be damaged, or leak.</p> <p>▶ Install a valve support. (Excessive force is applied to the valve body and piping, which may cause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

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

Horizontal piping

Place the frame under the valve.

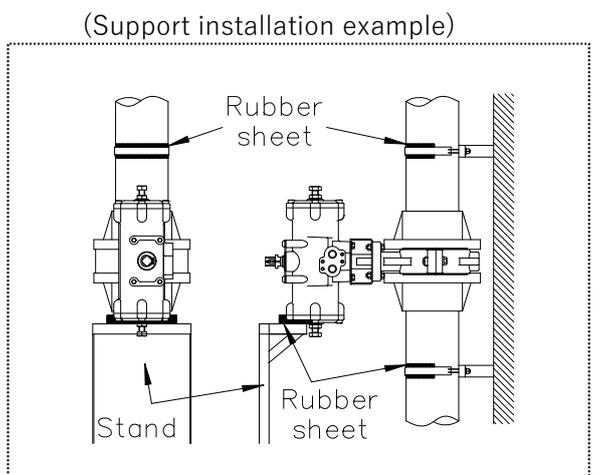
Lay a rubber sheet on the top of the pipe and secure it with the U-band.



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.



8. Air piping method

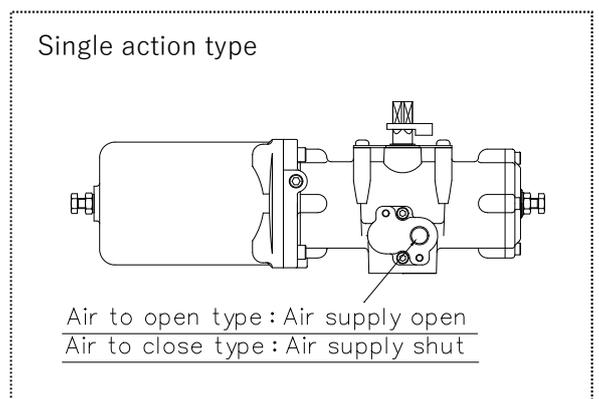
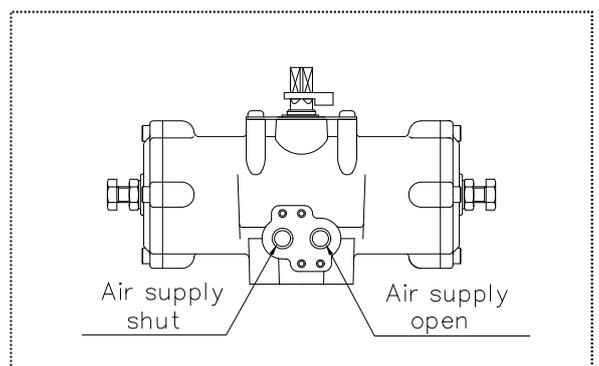
Without option or with speed controller

 Caution	
 Prohibition	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not remove the protective plug until just before connecting the air piping. ▶ Do not over-tighten the Joint for air piping.
 Forcing	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ 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 Joints. (This may cause galling 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 copper or tube tubes for air piping.
 ※Picture shows no speed controller but the piping procedure is the same.
 It is.



With solenoid valve and filter regulator

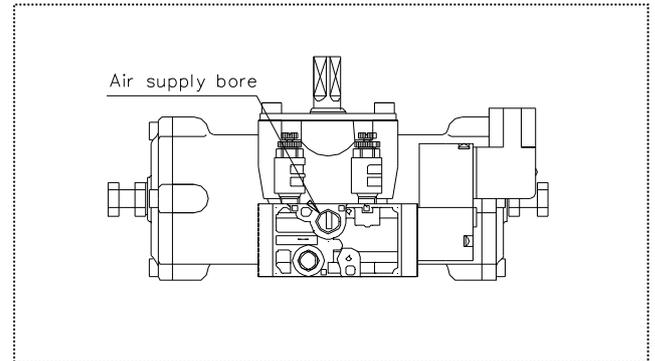
 Caution	
 Prohibition	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not remove the protective plug until just before connecting the air piping. ▶ Do not over-tighten the Joint for air piping.
 Forcing	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ 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 Joints. (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	▶ Copper or tube for air piping
	▶ Copper or tube Joints
	▶ Sealing tape (other than sealing tape may leak)
	▶ Wrench

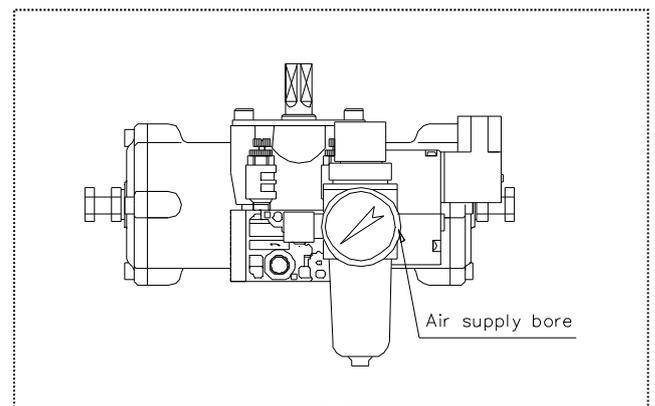
[Procedure]

- 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. 1 and Fig. 2) with a Joint.
- 3) Screw the Joint in one turn with a wrench.
- 4) Install copper or tube tubes for air piping.

(Fig. 1) With solenoid valve



(Fig. 2) Pressure regulator with solenoid valve and filter



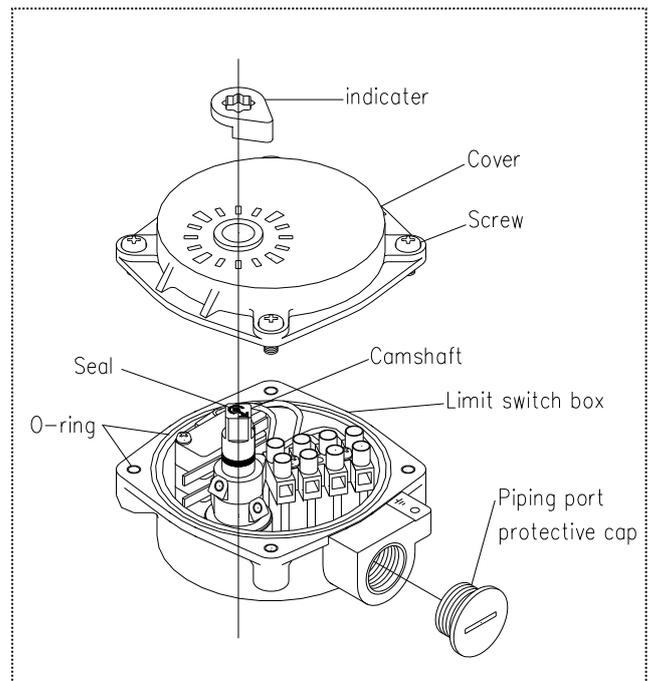
9. Limit switch wiring method

 Caution	
 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Do not connect or separate lines to the limit switch in the power supply status. (electric shock or sudden start of the machine) <p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ Do not leave or use with the cover open. (Water or dust may penetrate and cause operation failure.)
 Forcing	<p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ 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. ▶ Securely attach the cover. (Rainwater, etc. may enter the product and cause malfunction.)

- 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 **【5. Optional specifications Limit switch】**.
- 7) Tighten the connector to secure the cable.
- 8) After attaching the lid, tighten the four screws alternately and evenly with a Phillips screwdriver.
- 9) Insert the pointer so that the direction of the seal arrow on the camshaft head matches the direction of the pointer.



10. Solenoid valve connection method

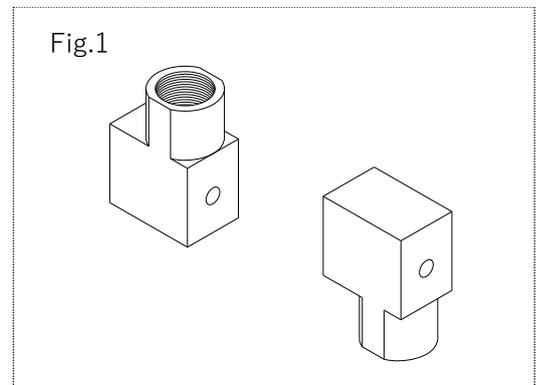
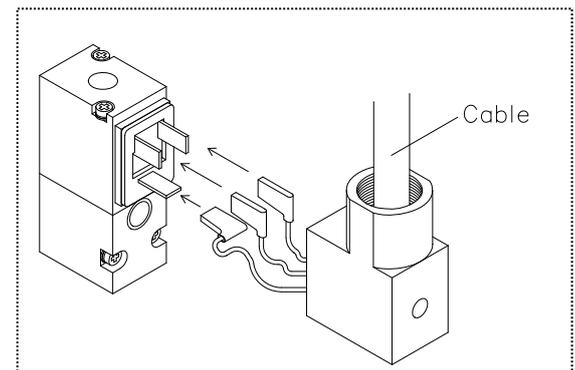
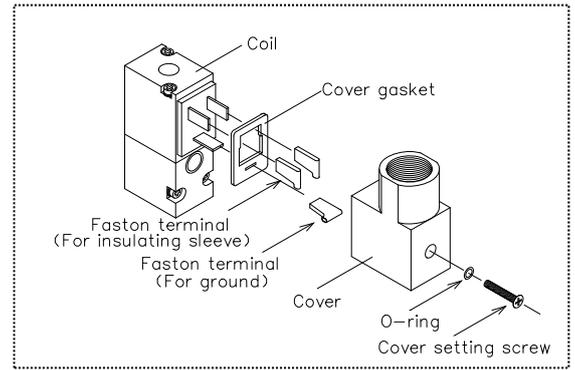
 **Caution**

 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ 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	<p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ 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.

<p>Preparations</p>	<ul style="list-style-type: none"> ▶ 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.
 (There is a risk of electric leakage or electric shock.)
- 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.1)]
- 9) Tighten the cable with the connector.



11. Commissioning method

Manual operation

⚠ 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 TA type lever-handle (optional item) or wrench to rotate further from the fully open/closed position. (It will malfunction.)

▶ In the case of double acting

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

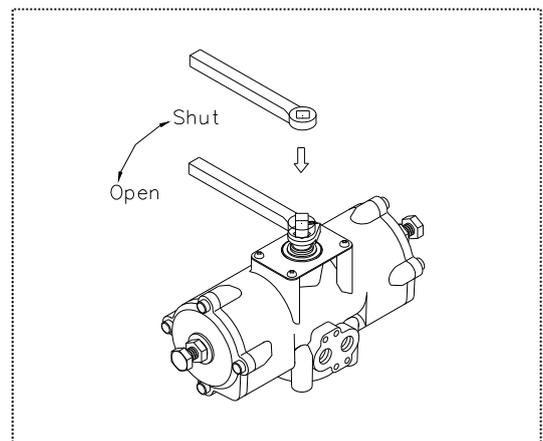
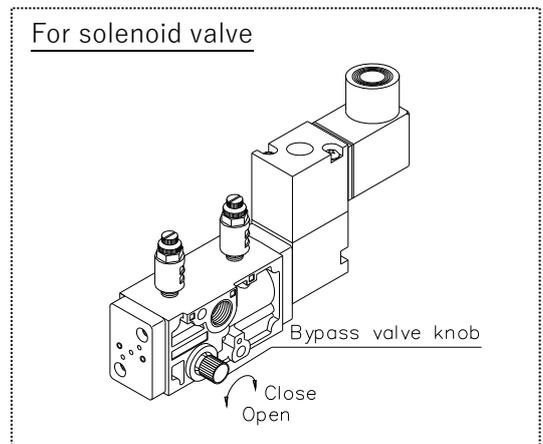
※For models with a solenoid valve, turn the knob of the bypass valve counterclockwise. (Opening and closing operations are not possible)

- 1) While Joint the lever handle for TA type (optional item) or the spanner to the upper output shaft of the actuator and looking at the valve travel indicator Fully open and close 1 to 2 times.

Rotate Right (Clockwise) ➡ Closing direction
 Left Rotation (Counterturn) ➡ Open direction

- 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)



Manual operation

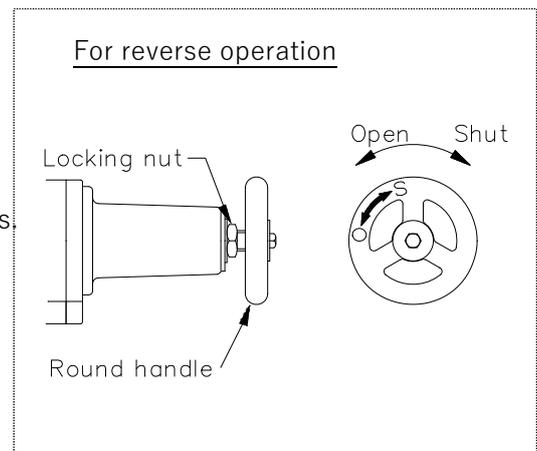
⚠ Warning	
⊘ Prohibition	<p>Serious injury can result.</p> <p>▶ Do not supply air during manual operation. (Risk of injury)</p>

▶ Single acting

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.



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

Handle revolutions

Size (mm)	50	65、 80	100、 125	150	200	250、 300	350、 400
Handle revolutions (Rotate)	About 24	About 25	About 27	About 28	About 36	Approx. 38	About 40

- 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



Prohibition

Serious injury can result.

- ▶ Check that the spanner for manual operation is not mated with the upper output shaft of the actuator. (The wrench may be touched and cause injury.)

Caution



Forcing

The valve can be damaged or leak.

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

[Procedure]

- 1) Supplies air to the air piping port._
- 2) Check that the air supply side and the display position match.
※The position of the pointer when fully closed may not reach the position shown in the figure slightly due to the tightening interference of the disc [2].
- 3) Stop the air supply.

(With solenoid valve)

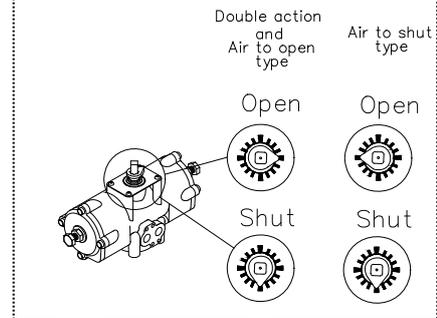
[Procedure]

- 1) Supplies air to the solenoid valve.
- 2) Confirm the operation shown in the table below by pressing the push button (Fig. 1) below the solenoid valve terminal cover with your finger.
- 3) Confirm that the solenoid valve operates as shown in the table below by energizing or de-energizing.
- 4) Turn off the power to the solenoid valve.

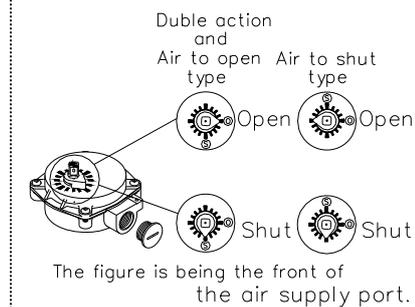
Push button	Power supply	Recovery/Air to open	Air to close
Press	Energizing	Valve fully open	Valve fully closed
Do not press	De-energizing	Valve fully closed	Valve fully open

TA type

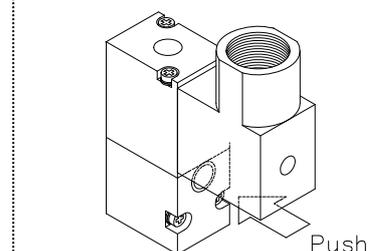
(Standard)



[Limit switch With box]



(Fig 1)



How to adjust open/close speed

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.)

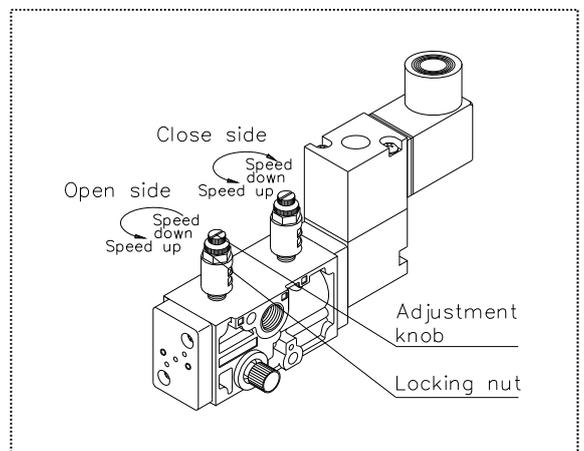
- ▶ In the case of double acting

Preparations	▶ Wrench
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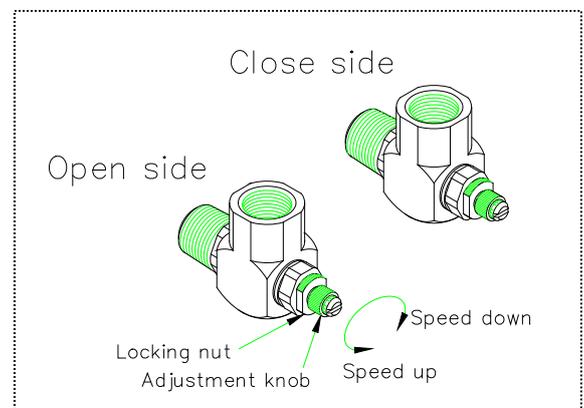
[Procedure]

- 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



For models with speed controller



How to adjust open/close speed

⚠ Caution	
⊘ Prohibition	<p>Doing so may damage the solenoid valve.</p> <p>▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. (Do not tighten the lock nut with excessive force.)</p>

▶ Single acting

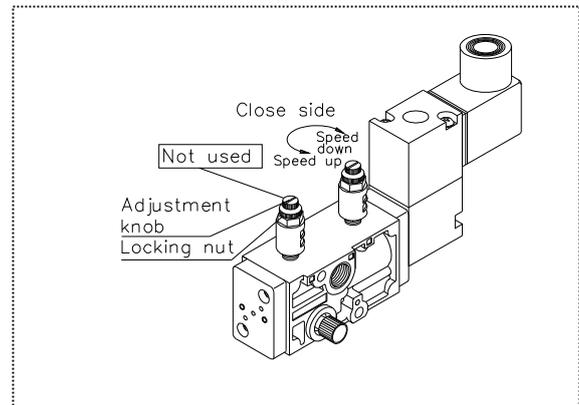
Preparations	▶ Wrench
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Actuation type	Speed at which it opened	Speed at which it closes
Air to open	Cannot adjust	Can be adjusted
Air to close	Can be adjusted	Cannot adjust

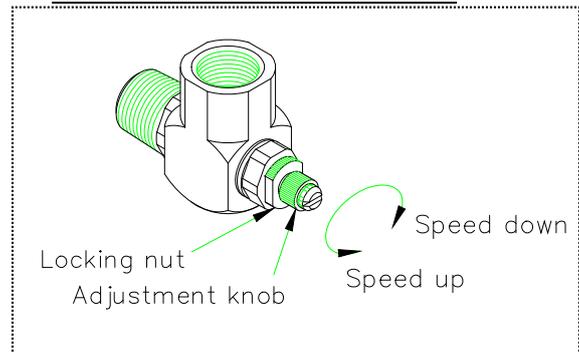
[Procedure]

- 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



For models with speed controller



12. Disassembly method

 Warning	
 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Wear appropriate protective equipment for the work details when installing piping. (Risk of injury) <p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ 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.

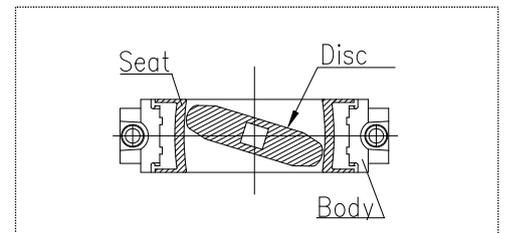
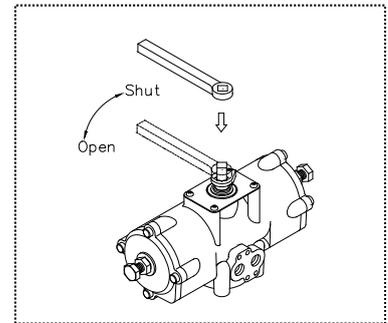
 Caution	
 Forcing	<p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Completely drain the fluid in the piping when replacing the valve. If the fluid does not escape, reduce the fluid pressure to zero.

- ▶ Spanner ▶ Allen key ▶ Plastic hammer
- Preparations ▶ Flat-head screwdriver ▶ Protective gloves ▶ Protective glasses
- ▶ Lever-handle for TA type (sold separately) or wrench ▶ AV packing (if required)

<Disassembly>

[Procedure]

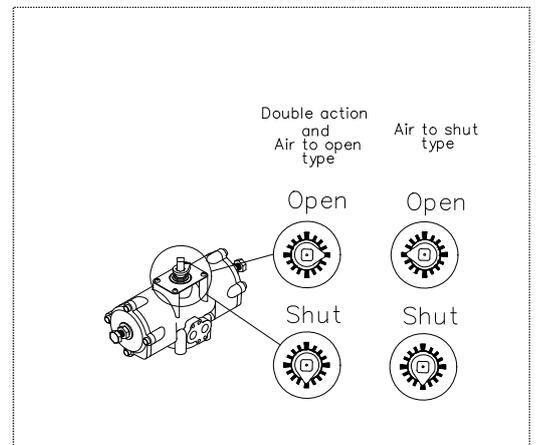
- 1) Completely drain the fluid in the piping.
- 2) Fully close the valve by air or manual operation.
- 3) Close the air source valve and open the bypass valve to exhaust the air in the actuator [20].
- 4) Slightly open the valve with the lever handle for TA type (optional item) or wrench.
- 5) Loosen and remove the connecting bolts and nuts.
- 6) Remove the valve from the piping.
- 7) Loosen the set screw [22a].
- 8) Loosen bolts and nuts [24] and remove body [1] and actuator [20] and Stand [21].
 ※At this point, the Stand [21] is fixed to the actuator [20].



<Assembly>

[Procedure]

- 1) Assembly work is carried out in the reverse order from the disassembly procedure on page 31, 8).
- 2) Check whether the opening of the disc [2] and the value indicated by the valve gauge are correct.
- 3) Check the operation by air operation (see page 27).
 ※As shown on page 32 if the valve travel and the valve gauge are misaligned
 「13. Adjust according to "How to adjust the stopper".



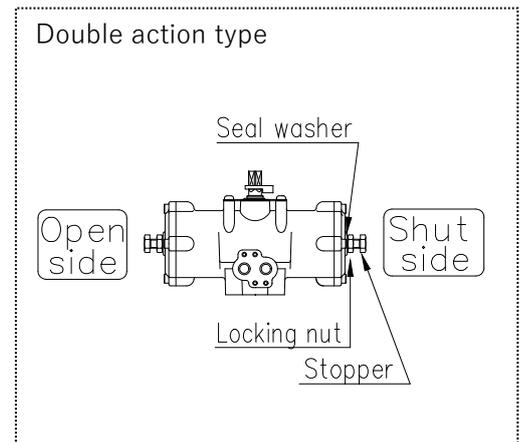
13. How to adjust the stopper

 Warning	
 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Do not supply air during adjustment. (Risk of injury)
 Forcing	<p>The valve can be damaged or leak.</p> <ul style="list-style-type: none"> ▶ Be sure to lock the stopper with the lock nut after adjustment. (Do not use excessive force to tighten.)

Preparations : ▶ Wrench

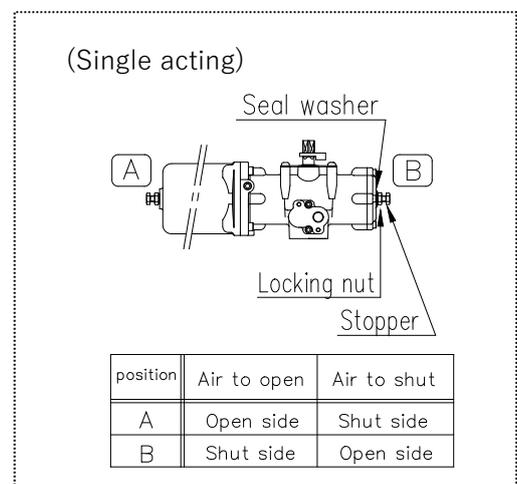
[Procedure]

- 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.



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

- 4) Rotate the stopper with a spanner or hex wrench in the direction you want to adjust.
- 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 27).
To adjust again, repeat steps 1) to 4).



14. Inspection item

 **Caution**

 Forcing	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Maintenance should be performed every 3 to 6 months as a guide in order to keep the watch in normal condition and use it for a long time. Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work. ▶ If any trouble is found, take the appropriate action referring to "15. Cause of malfunction and remedy"
--	---

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and retighten the pipe bolts. (Ref: 6. Piping method)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 12. Disassembly method)
Internal leakage (visual and measurement)	No leakage	Leakage to secondary side when valve is fully closed	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. Disassembly method)
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. (Ref: 12. Disassembly method)
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)
		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
Open/close operation time (Measurement)	Error within ± 1 second	Actuator opening display	Check the power supply voltage ($\pm 10\%$). (Ref: Actuator nameplate)
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)
Vibration (palpation)	No difference from other parts	Valves and actuators	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)
			Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)

Periodic inspection
●Guideline of the inspection cycle: 6 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Operability of manual handle (touch)	Rotates smoothly	Manual operation unit	Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)
Looseness of bolts (visual and palpation)	No Loose	For Stand + valve	Retighten the mounting bolts
		For Stand + actuator	Retighten the mounting bolts
		For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 6. Piping method)
Water-intrusion ※1) (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 12. Disassembly method)
Intrusion ※1) of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator (Ref: 12. Disassembly method)
Measured ※1) of the isolation resistance (Measurement)	Must be 50 MΩ or more	Inside the actuator	Replace the actuator (Ref: 12. Disassembly method)
Corrosion Or rust ※1) (visual inspection)	No corrosion or rust	Appearance of the product and in the actuator	Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator. (Ref: 12. Disassembly method)

15. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
The lever handle (wrench) for manual override does not turn (cannot turn)	The valve is already fully open (or fully closed).	Turn the hand wheel in the reverse direction. (Ref. 11. Commissioning method)
	Air is supplied to the actuator.	Tighten 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: 6. Piping method)
	Torque is increasing due to piping stress	Remove the valve from the piping and remove the piping stress. (Ref: 6. Piping method)
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Ref: 4. Product Specifications)

Failure phenomenon	Possible cause	Measures and measures
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 connection condition again. (Ref: 10. Solenoid valve connection method)
	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 to obtain the correct voltage.
	The bypass valve is open.	Close the bypass valve by turning the knob clockwise. (Ref. 11. Commissioning method)
	The speed controller adjustment knob is turned all the way to the right.	Turn the bypass valve knob counterclockwise. (Ref. 11. Commissioning method)
	Foreign matter caught in valve	Remove the valve from the piping and remove 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 the effect of fluid (temperature, components, pressure)	Check the operating conditions. (Ref: 4. Product Specifications)	

Failure phenomenon	Possible cause	Measures and measures
With fluid even when fully closed Leak	Sheet is worn	Replace valve (Ref: 12. Disassembly method)
	Scratches on disc, sheet or body	Replace valve (Ref: 12. Disassembly method)
	Foreign matter caught in valve	Open and close it several times to allow foreign matter to flow out. (Ref: 11. Commissioning method)
	Tightening, over-tightening or loosening of connecting bolts	Retighten (Ref: 6. Piping method)
Actuator is operating, but valve is not open or closed	Damaged stem or Joint	Replace valve (Ref: 12. Disassembly method)
	The mating surfaces of the stem and disc are damaged.	Replace valve (Ref: 12. Disassembly method)
The handle does not turn (cannot turn) during manual operation.	The valve is already fully open (or fully closed).	Rotate the hex wrench in the reverse direction (Ref: 11. Commissioning method)
	The power remains supplied in the opposite direction of the handle operation direction.	Turning the power off and then manually operating
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 12. Disassembly method)
	Piping stress is applied to the valve.	Remove the piping stress
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use (Ref: 2. Safety Instructions)

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: 12. Disassembly method)
	Seat or disc is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 12. Disassembly method)
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. (Ref: 12. Disassembly method)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 12. Disassembly method)
	Piping stress is applied to the valve.	Remove the piping stress
Actuator is operating but valve is not open or closed	Damaged stem, ball, or Joint	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 12. Disassembly method)
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. Disassembly method)
Valve is corroded or deformed	The watch is exposed to water, chemical liquids, or other liquids.	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 12. Disassembly method)

16. Disposal method of residual materials and waste materials

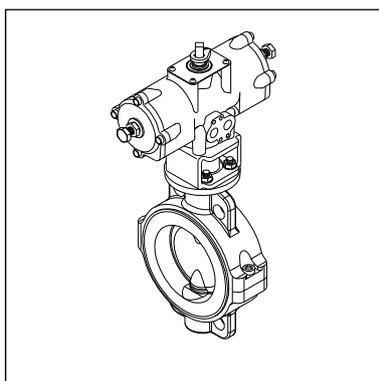
 Warning	
 Forcing	<p>When burnt, toxic gas is generated.</p> <ul style="list-style-type: none"> ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

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

[User's manual]

Butterfly valve Type 55/55IS
Pneumatic actuated Type TA



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

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

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