3-Way ball valve Type23
Pneumatic Actuated Type TA
15～100mm

User's Manual

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

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

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

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

<WARNING/CAUTION indications>

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

<Prohibited/Forced display>

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

Table of contents

1. Our product warranty coverage

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

Applicable to

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

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

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

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

Disclaimer

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

2. Safety Instructions

Unpacking, Transportation and Storage

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

⚠ Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc.
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. ▶ This valve is structurally dead space. Vaporizing fluids such as hydrogen hydroxide (H_2O_2) and soda hypochlorite (NaClO) may vaporize in the dead space and cause an abnormal pressure rise inside the valve. Be very careful. (Gas with abnormal pressure increase due to vaporization is a compressible fluid. Therefore, if a valve should break, fragments will scatter explosively, which is very dangerous.) ▶ 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.

▶ Secure sufficient space for maintenance and inspection when piping.

The valve can be damaged, or leak.

▶ 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.

▶ 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.

▶ Perform maintenance periodically by referring to "11. 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 the valve is used at an intermediate position, the mark of the ball opening will remain on the seat (PTFE), and sealing performance may temporarily deteriorate when the valve is fully closed. Therefore, it is recommended to use the valve fully open or closed.

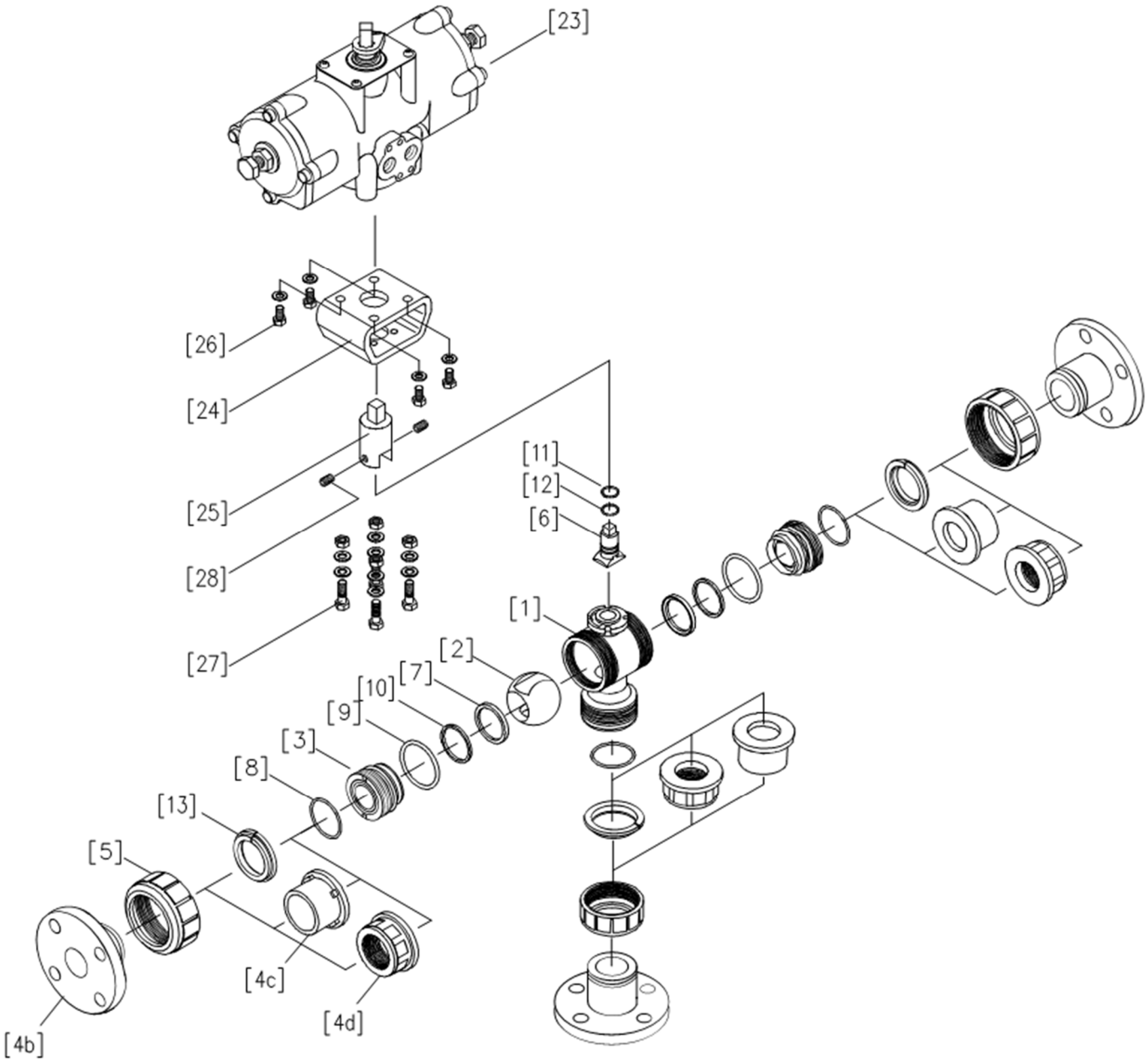
▶ If you notice an unusual odor, heat, or smoke, immediately turn off the power supply. If any abnormality is found, be sure to consult your dealer or us for inspection.

▶ 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 deducted 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



[1]	Body	[6]	Stem	[13]	Stop ring
[2]	Ball	[7]	Seat	[23]	Actuator
[3]	Carrier	[8]	O-ring (A)	[24]	Stand
[4b]	End connector (Flanged end)	[9]	O-ring (B)	[25]	Joint
[4c]	End connector (Socket end)	[10]	Cushion	[26]	Bolt (A)
[4d]	End connector (Threaded end)	[11]	O-ring (D)	[27]	Bolt/nut (B)
[5]	Union nut	[12]	O-ring (E)	[28]	Screw (B)

4. Product Specifications

Model number table

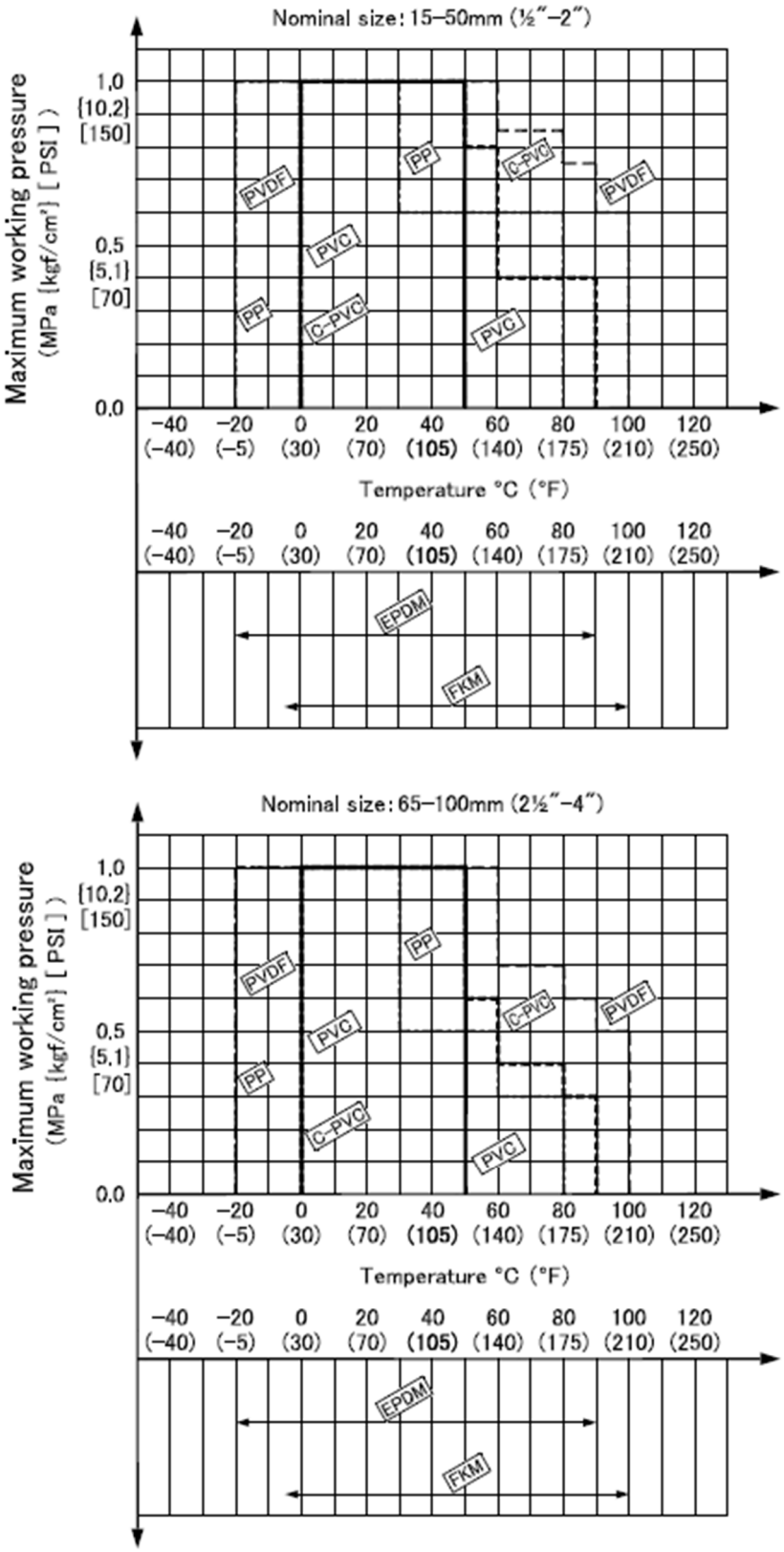
ACTUATION	TYPE	OPERATING SYSTEM	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES /SPACE HEATER
A	23	K	*	*	*	*	*	* * *	*

A AUTOMATIC	23 TYPE 23	K TYPE TA	F DOUBLE ACTING	U PVC	E EPDM	S SOCKET	J JIS	015 15mm	BLANK NO LUBRICANT NO SPACE HEATER
			G AIR TO OPEN	C C-PVC	V FKM	N THREADED	D DIN	020 20mm	1 LUBRICANT FREE NO SPACE HEATER
			S AIR TO CLOSE	P PP		P SPIGOT	1 JIS 10K	025 25mm	0C NO LUBRICANT WITH SPACE HEATER
				F PVDF		F FLANGED	5 JIS 5K	032 32mm	1C LUBRICANT FREE WITH SPACE HEATER
							A ANSI	040 40mm	
								050 50mm	
								065 65mm	
								080 80mm	
								100 100mm	

NOTE

- JIS standard Socket end of the body material PVDF is not manufactured.
- JIS standard Socket end 32mm with PP body material is not manufactured.
- Connecting method Spigot type is only DIN standard and body material C-PVC is not manufactured.

Relationship between maximum allowable pressure and temperature



Actuator

Specifications List

Operation	Size (mm)	Actuator model	Angle adjustment Range	Operating pressure range MPa {kgf/cm^2}	Air consumption NL/ open/close (0.4MPa)	Air supply port size
Double action	15～25	TA2A-0402D	Angle cannot be adjusted.	0.4～0.7 {4.1～7.1}	0.5	Rc 1/8
	32～50	TA2A-050D	±5°	0.4～0.7 {4.1～7.1}	0.9	Rc 1/4
	65, 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
Air to open Air to close	15～25	TA2A-0402R	Angle cannot be adjusted.	0.4～0.7 {4.1～7.1}	0.8	Rc 1/4
	32～50	TA2A-050R	±5°	0.4～0.7 {4.1～7.1}	1.7	Rc 1/4
	65, 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

5. Optional specifications

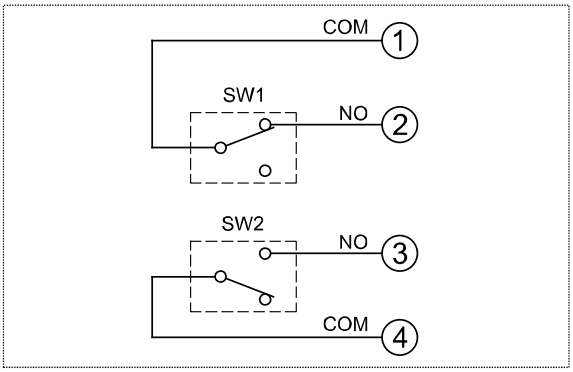
Limit switch

Operation	Size (mm)	Model code	Protection grade	Limit switch model
Double action Air to open Air to close	15～25	SB2-09	IP 65 equivalent	V-112-1C24 (Made of OMRON)
	32～50	SB2-11		
	65～100	SB2-16		

Limit switch rating

Rated voltage	Resistance load (A)	Induction load (A)
125VAC	11	7
250VAC	11	7
125VDC	0.5	0.1
250VDC	0.25	0.04

Internal Circuit Diagram (SW1 is ON)



SW.1 : Contact ①-② is ON when valve right opens (Double action / Air to open)
Contact ①-② is ON when valve is left open (Air to close)
SW2 : Contact point ③-④ is ON when valve is left open (Double action / Air to open)
Contacts ③-④ are ON when valve right opens (Air to close)
※With air piping port facing front

Solenoid valve

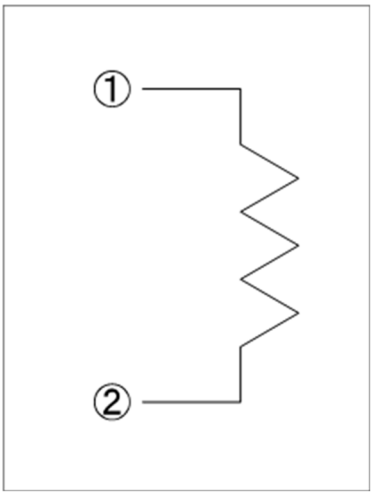
Operation	Size (mm)	Model code	Piping port size	Effective area	Power consumption	Additional functions
Double action Air to open Air to close	15～100	4N3S102K-W□-G31193	Rc 1/4	10mm^2 or higher	AC ; 6VA DC ; 5.5W	・Built-in bypass valve ・Installation of silencer with throttle valve (used as speed controller)

4N3S102K-W□-G31193

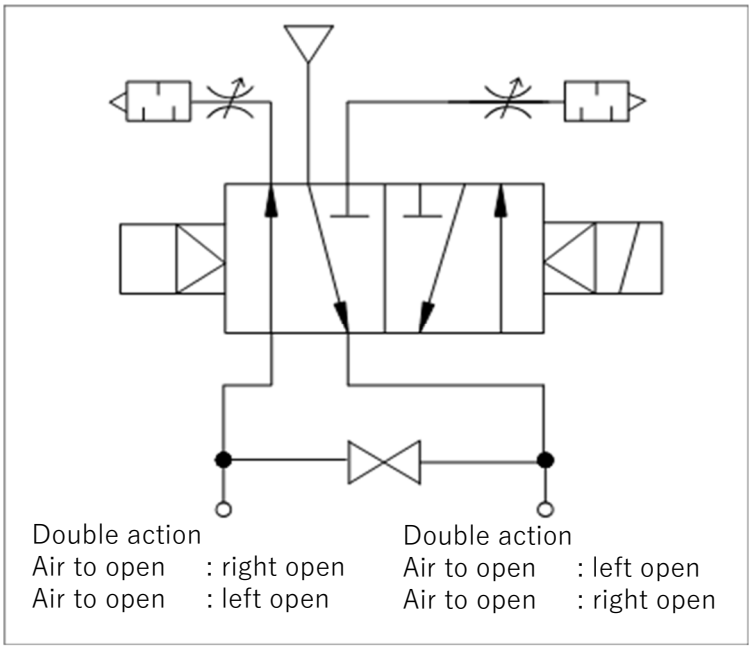
Rated current	Text entry
100VAC 50/60Hz	1
110VAC 50/60Hz	(2)
200VAC 50/60Hz	3
220VAC 50/60Hz	(4)
24VDC	5
48VDC	(6)
100VDC	(7)
125VDC	(8)
110VDC	(9)

※ () Appended text is a special item.

Wiring diagram



JIS symbol



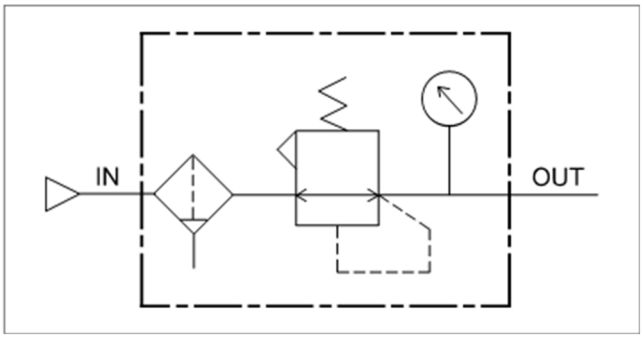
Double action
Air to open : right open
Air to open : left open

Double action
Air to open : left open
Air to open : right open

Filter-regulator

Operation	Size (mm)	Model code	Piping port size	Element filtration rating
Double action Air to open Air to shut	15～100	ARU2-02-8A-G	Rc 1/4	5 μm

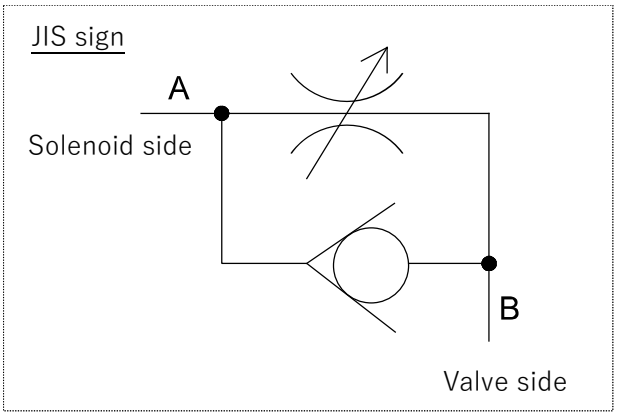
JIS symbol



Speed controller

Operation	Size (mm)	Model code	Piping port size	Effective area(mm²)		Flow adjustment needle revolution
				Free flow	Control flow	
Double action	15～25	SC7-06A	Rc 1/8	3.8	5.5	8 rotations
Air to open Air to close		SC7-08A	Rc 1/4	11	8.3	
Double action Air to open Air to close	32～100					

JIS sign



6. Piping method

Flanged end

⚠ 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 overtighten the Union nut. ▶ Do not use a pipe wrench to tighten the Union nut. ▶ 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 End connector during piping work or disassembly and reassembly. ▶ When attaching the valve to the end of the pipe, be sure to attach the Union nut and End connector on the secondary side (downstream side). ▶ 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 Gasket) 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 Gasket, 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 ▶ Belt Wrench ▶ Spanner or Ophthalmic Wrench ▶ Pipe head bolts/nuts, washers ▶ AV Gasket ▶ cloth

[Procedure]

1) Clean mutual flange surfaces with a waste cloth.
2) Set AV Gasket between the flanges.
3) Insert the washer and bolt from the connecting flange side, insert the washer and nut from the valve side, and tighten temporarily by hand.
4) Set the axis misalignment and parallelism of the flange surface below the values shown in Table 6-1, "Axis misalignment and parallelism." (See Fig. 6-1.)
5) Using a torque wrench, gradually tighten the screws diagonally until they reach the specified torque value in Table 6-2. (See Fig. 6-2.)
6) Tighten it more than two turns clockwise with "Table 6-2 Flange Tightening Torque Specified Values". (See Fig. 6-2.)
7) When it is necessary to loosen or remove the Union nut for construction reasons, follow the procedure below to tighten the Union nut.
7-1) Make sure that the O-ring (A) is installed in the body correctly.
7-2) Bring the End connector and Union nut into contact with the body side so that the O-ring (A) does not come off.
7-3) Tighten the Union nut by hand until it is tight.
7-4) Screw in the Union nut by 1/4 to 1/2 turn with a belt wrench to prevent damage to the Union nut.

Fig. 6-1

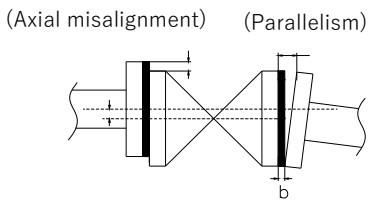


Fig. 6-2

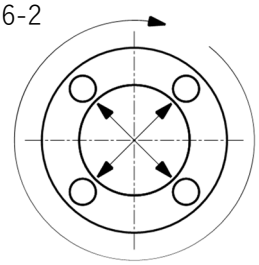


Table 6-1
Axis misalignment and parallelism

Size	Shaft misalignment	Parallelism (a-b)
15mm	1.0 mm	0.5 mm
20mm		
25mm		
32mm		
40mm	1.0 mm	0.8 mm
50mm		
65mm		
80mm		
100mm	1.0 mm	1.0 mm

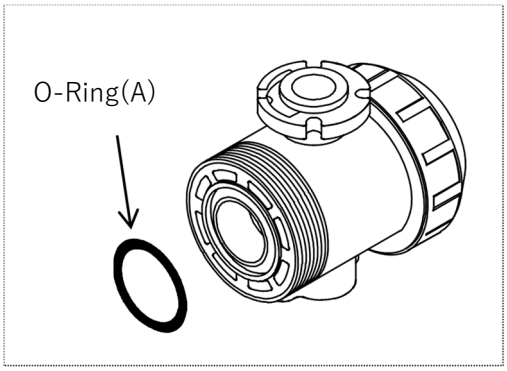
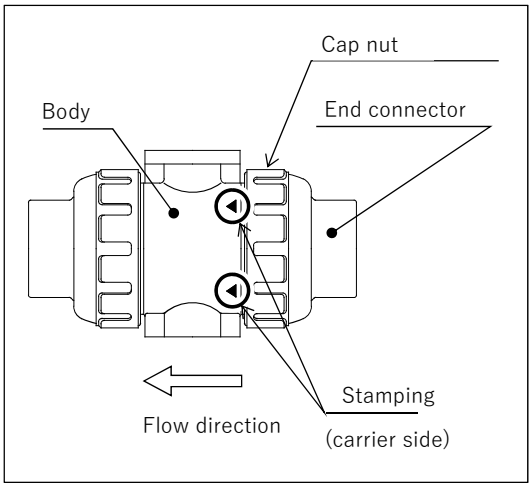


Table 6-2 Flange tightening torque

Size	PTFE coating	PVDF coating	Rubber
15mm	17.5 N-m	17.5 N-m	8.0 N-m
20mm			
25mm	20.0 N-m	20.0 N-m	20.0 N-m
32mm			
40mm			
50mm	22.5 N-m	22.5 N-m	22.5 N-m
65mm			
80mm	30.0 N-m	30.0 N-m	30.0 N-m
100mm			

Threaded end

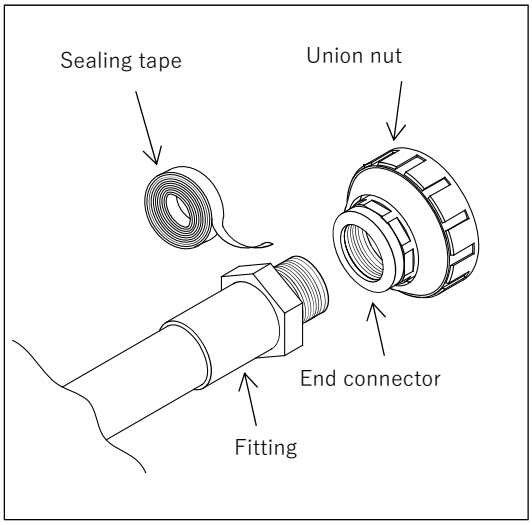
Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.

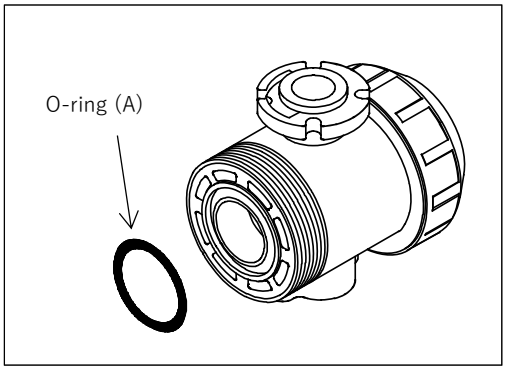
Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not overtighten the screws at the joints. ▶ Do not overtighten the Union nut. ▶ Do not use a pipe wrench to tighten the Union nut.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. **The valve can be damaged, or leak.** ▶ The Union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the End connector before installation. ▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve. ▶ Fix the End connector during piping work or disassembly and reassembly. ▶ When attaching the valve to the end of the pipe, be sure to attach the Union nut and End connector on the secondary side (downstream side). ▶ When connecting to metal piping, do not apply piping stress to the valve. ▶ Make sure that the screws at the joints are made of resin. ▶ Use sealing tape for the sealing material of the screw-in part. If liquid sealant or liquid gasket is used, stress cracking (environmental stress cracking) may occur.
-	**Safe use.** ▶ When installing the valve at the end of the pipe, pay attention to the flow direction. (Check ▲ mark on the body of the Carrier side. The Carrier part of the secondary side (downstream side) is integrated with the body, so if it is installed at the end of the pipe, it will be safer to use.) 

Preparations ▶ Sealing tape ▶ Belt Wrench ▶ Spanner or an eyeglass wrench

[Procedure]

1) Wrap sealing tape around the male thread of the Joint, leaving approximately 3mm at the end.
2) Loosen the Union nut by hand.
3) Remove the Union nut and End connector from the body.
4) Tighten the male thread of the Joint and the End connector until tight.
5) Screw in with a wrench or a motor wrench 1/2 to 1 turn to prevent damage to the End connector.
6) Check that the O-ring (A) is correctly installed in the body.
7) Bring the End connector and Union nut into contact with the body side so that the O-ring (A) does not come off.
8) Tighten the Union nut by hand until it is tight.
9) Screw in the Union nut by 1/4 to 1/2 turn with a belt wrench to prevent damage to the nut.





Socket end (adhesive)

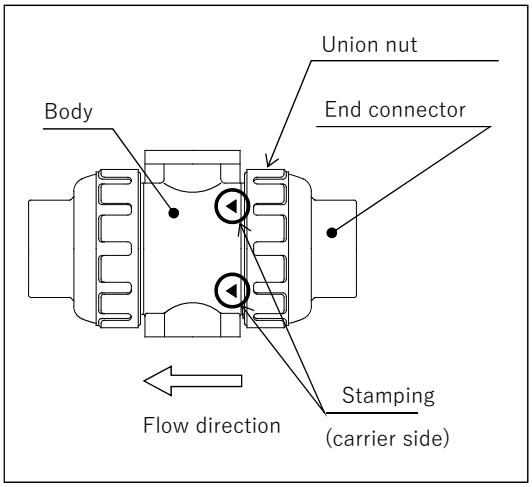
⚠Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load. **Fire or an explosion can result.** ▶ Ensure adequate ventilation when using adhesives and do not use open flames around them.

⚠Caution	
Prohibition	**There is a danger of injury.** ▶ The adhesive contains volatile solvents, so do not inhale odors directly. **The valve can be damaged, or leak.** ▶ Do not apply too much adhesive. Excessive adhesive will flow into the valve. ▶ Do not strike the pipe when inserting it into the End connector. ▶ Do not overtighten the Union nut. ▶ Do not use a pipe wrench to tighten the Union nut.
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. ▶ If the adhesive adheres to the skin, remove it immediately. ▶ If you feel worse or feel unusual when using the adhesive, promptly seek a doctor's diagnosis and take appropriate action. **The valve can be damaged, or leak.** ▶ The Union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the End connector before installation. ▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve. ▶ Fix the End connector during piping work or disassembly and reassembly. ▶ When attaching the valve to the end of the pipe, be sure to attach the Union nut and End connector on the secondary side (downstream side). ▶ Be careful when constructing under low temperature, as solvent vapor is less likely to evaporate and tends to remain. ▶ After piping, open both ends of the pipe and use a blower (low-pressure type) to ventilate to remove the solvent vapor. ▶ Use "AV Cement" depending on the material. ▶ Perform the water flow test after 24 hours or more have elapsed after completion of bonding.

⚠Caution

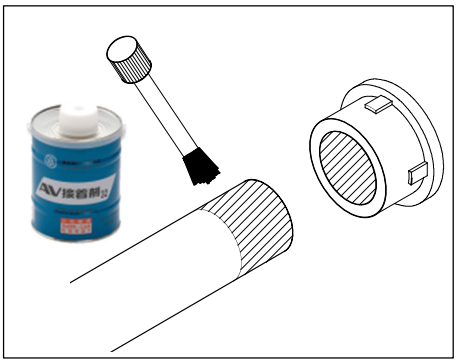
Safe use.

▶ When installing the valve at the end of the pipe, pay attention to the flow direction. (Check ▲ mark on the body of the Carrier side. The Carrier part of the secondary side (downstream side) is integrated with the body, so if it is installed at the end of the pipe, it will be safer to use.)



Preparations ▶ AV Cement ▶ Belt Wrench ▶ Waste cloth

[Procedure]



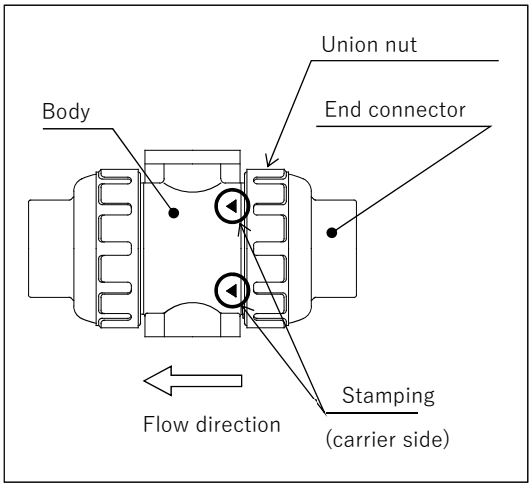
1) Loosen the Union nut by hand.
2) Remove the Union nut and End connector from the body.
3) Pass the Union nut to the pipe side.
4) Wipe off the insertion part of the pipe and the socket part of the End connector with a waste cloth.
5) Apply adhesive evenly in the order of the socket part of the End connector and the pipe insertion part referring to "Table 6-3 Adhesive Consumption (Reference)".
6) After applying the adhesive, quickly insert the pipe into the End connector and hold it as is for at least 60 seconds.
7) Wipe off any excess adhesive with a waste cloth.
8) Check that the O-ring (A) is correctly installed in the body.
9) Bring the End connector into contact with the body so that the O-ring (A) does not come off.
10) Tighten the Union nut by hand until it is tight.
11) Screw in the Union nut by 1/4 to 1/2 turn with a belt wrench to prevent damage to the nut.

Table 6-3
Usage of adhesives (reference)

Size	Volume used
15mm	1.0 g
20mm	1.3 g
25mm	2.0 g
32mm	2.4 g
40mm	3.5 g
50mm	4.8 g
65mm	6.9 g
80mm	9.0 g
100mm	13.0 g

Socket end, Spigot end (Fusing)

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 overtighten the Union nut. ▶ Do not use a pipe wrench to tighten the Union nut.
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.** ▶ The Union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the End connector before installation. ▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve. ▶ Fix the End connector during piping work or disassembly and reassembly. ▶ When attaching the valve to the end of the pipe, be sure to attach the Union nut and End connector on the secondary side (downstream side).
-	**Safe use.** ▶ When installing the valve at the end of the pipe, pay attention to the flow direction. (Check ▲ mark on the body of the Carrier side. The Carrier part of the secondary side (downstream side) is integrated with the body, so if it is installed at the end of the pipe, it will be safer to use.) 

Preparations	▶ Belt Wrench ▶ Fusing machine ▶ User's manual of the fusing machine

[Procedure]

1) Loosen the Union nut by hand.
2) Remove the Union nut and End connector from the body.
3) Pass the Union nut to the pipe side.
4) From here, please refer to the User's manual of the welding machine for welding.
5) Check that the O-ring (A) is correctly installed in the body.
6) Bring the End connector into contact with the body so that the O-ring (A) does not come off.
7) Tighten the Union nut by hand until it is tight.
8) Screw in the Union nut by 1/4 to 1/2 turn with a belt wrench to prevent damage to the nut.

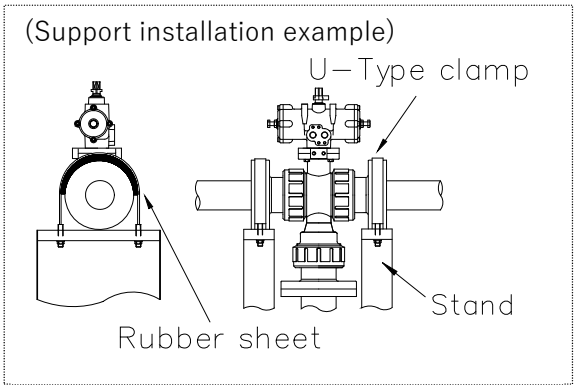
Support of the product

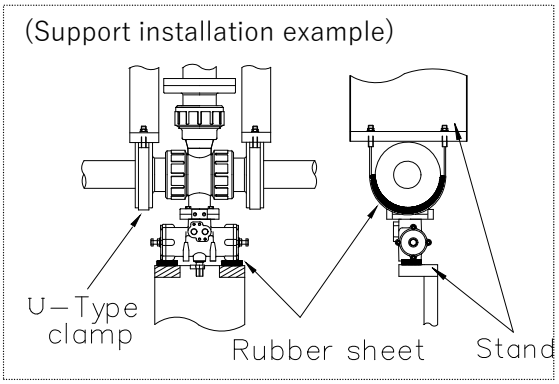
⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc. ▶ When installing a valve in the piping around the pump, do not cause large vibrations in the valve.
Forcing	**There is a danger of injury.** ▶ Be sure to perform safety inspections 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. ▶ The Union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the End connector before installation. (There is a risk of external leakage.) ▶ Fix the End connector during piping installation or disassembly and reassembly. ▶ Be sure to attach the Union nut and End connector 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. ▶ Make sure that the screws at the joints are made of resin. ▶ Use sealing tape for the thread joints of our resin piping materials. ▶ When installing the valve at the end of the pipe, pay attention to the flow direction. (The Carrier body is marked with ◂ and should be checked. On the secondary side (downstream side), the Carrier part is integrated with the main body. Attaching the Carrier part to the end of the pipe. Matching and safer use) ▶ Install it vertically when screwing in the Ensat. ▶ For detailed handling of the special tool for installation of the entertainment, refer to the User's manual of the entertainment manufacturer separately.

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

Horizontal piping

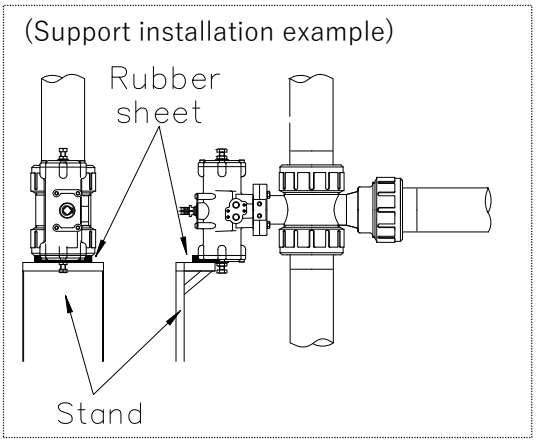
1) Lay a rubber sheet on the pipe and secure it with the U-band.
2) If the actuator is on the underside, place a rubber sheet on the actuator and install the frame.





Vertical piping

1) Place a rubber sheet on the actuator and install the frame.
2) Lay a rubber sheet on the pipe and secure it with the U-band.



7. Air piping method

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. **The valve can be damaged, or leak.** ▶ 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

[Procedure]

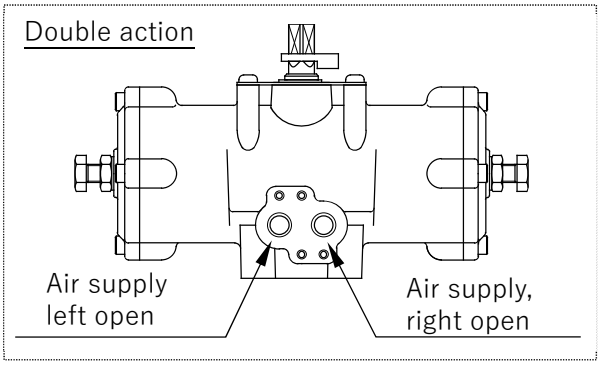
1) Wrap sealing tape around the male thread of the Joint, leaving approximately 3mm at the end.

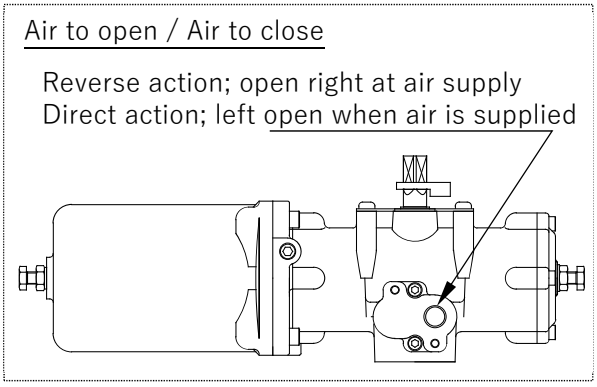
2) Tighten the Joint to the piping port of the actuator with a Joint.

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

4) Install copper or tube tubes for air piping.

※Although the picture shows no speed controller, the piping procedure is the same for those with speed controller.





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	**The valve can be damaged, or leak.** ▶ 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.) ▶ 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 filter regulator. ▶ Set the secondary side pressure of the filter regulator to a setting that meets the equipment specifications. (It may cause malfunction or failure.)

Preparations	▶ Copper or tube for air piping ▶ Copper or tube Joints ▶ Sealing tape ▶ Wrench

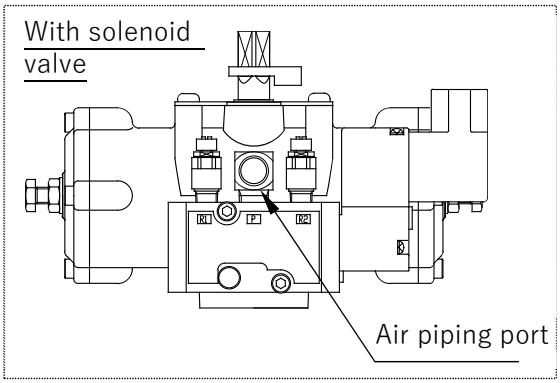
[Procedure]

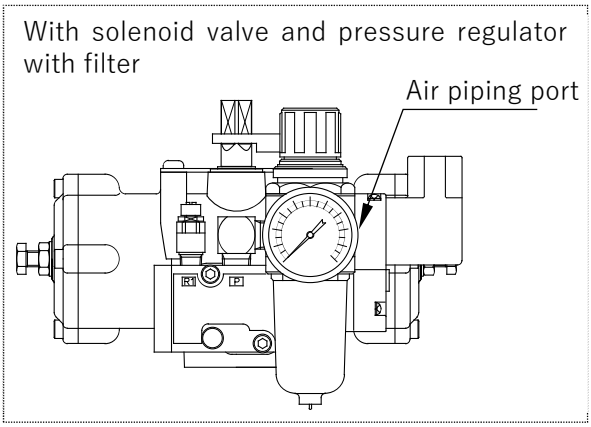
1) Wrap sealing tape around the male thread of the Joint, leaving approximately 3mm at the end.

2) Tighten the Joint to the air piping port.

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

4) Install copper or tube tubes for air piping.





8. Wiring method

Limit switch

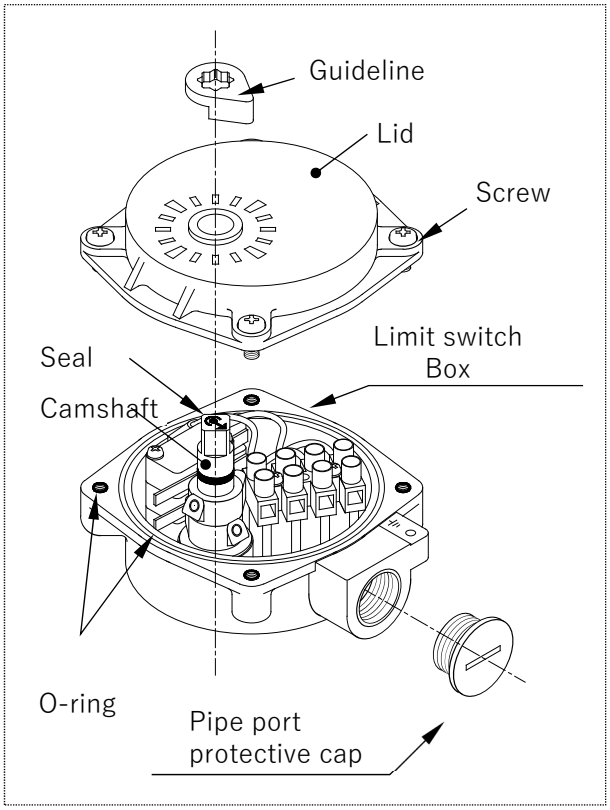
⚠ Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not perform wiring while the power is on.

⚠ 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 of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise failure or malfunction of the machine can result.** ▶ Connect the wires using solderless terminals with insulation covering so that they do not come into contact with the cover or housing. (If the crimp terminal comes into contact with the cover, the cover may not close and may cause a ground fault.) ▶ Contact CKD when using a 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 securing the lid with a Phillips screwdriver to remove it.
※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 flat-blade screwdriver according to the internal circuit diagram on page 13.
7) Tighten the connector to secure the cable.
8) After attaching the lid, tighten the screws (4 locations) alternately and evenly with a Phillips screwdriver.
※Do not forget the O-ring when attaching the lid. (There is a risk of electric leakage or electric shock.)
9) Insert the pointer so that the direction of the seal arrow on the camshaft head matches the direction of the pointer.



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 of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. **Otherwise, the machine may malfunction.** ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment.

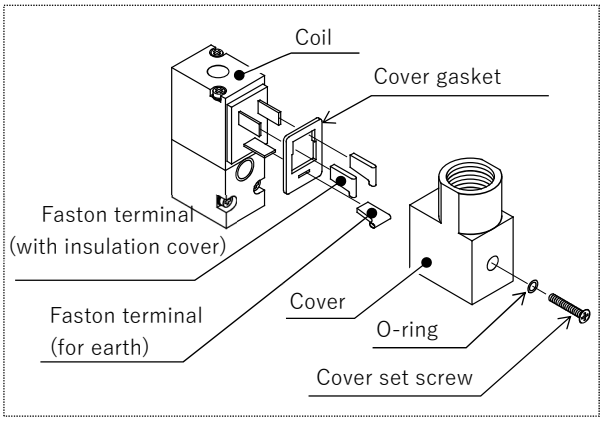
Preparations	▶ Phillips screwdriver	▶ Terminal crimping tool
	▶ Connector (G1/2)	▶ Wire stripper

[Procedure]

1) Loosen the cover setscrew with a Phillips screwdriver and remove the cover.

⚠Caution	
Forcing	**Failure to do so may result in an electric leakage or electric shock.** ▶ Do not lose the O-ring.

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



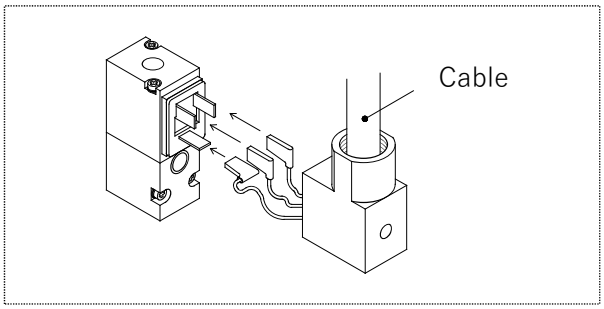
3) Pass the cables in the order of the connector and cover.

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

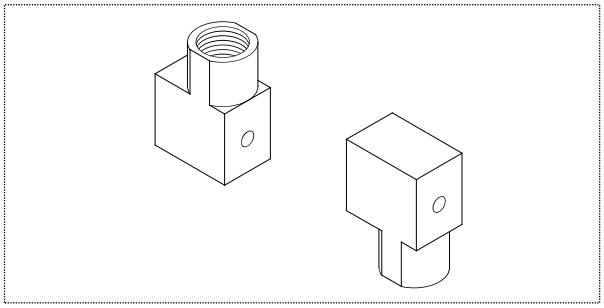
5) Pass the lead wire through the insulation cover.

6) Attach the Faston terminal to the lead wire with a terminal crimping tool.

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 lead-out port at either top or bottom.



9) Tighten the cable with the connector.

9. Commissioning method

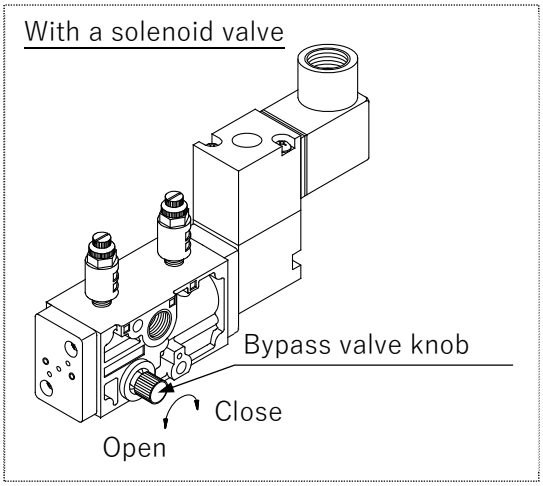
Manual Operation <Double action>

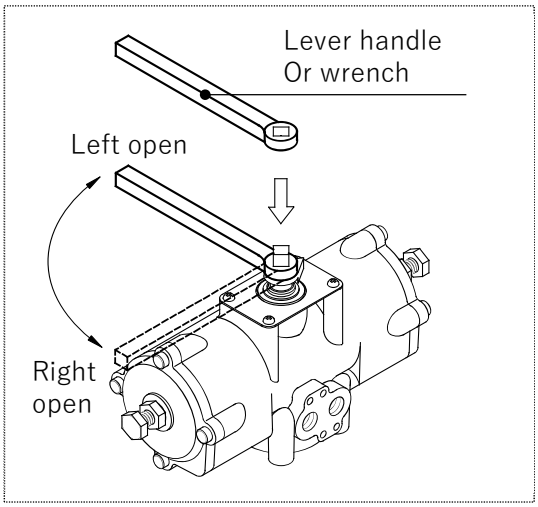
⚠Warning	
Prohibition	**Serious injury can result.** ▶ Do not supply air during manual operation.

⚠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.

[Procedure]

1) Close the main valve of the operation air and turn off the power of the solenoid valve.
2) Turn the knob of the bypass valve counterclockwise to exhaust the air in the actuator.
3) Fit TA handle or wrench to the upper output shaft of the actuator and operate it while looking at the valve travel indicator.
   Clockwise; left open direction
   Counterclockwise; right opening direction
4) Return to the condition prior to manual override (right or left open) and remove the lever handle for TA or the wrench from the upper output shaft of the actuator.
5) Close the bypass valve by turning the knob of the bypass valve clockwise.
6) Open the main valve of the operation air to supply air to the solenoid valve.



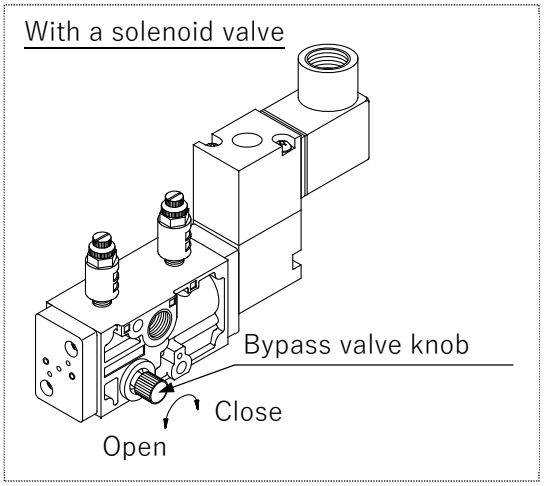


Manual operation <Single acting>

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

Preparations ▶ Dedicated manual handle unit (optional installation) ▶ Wrench

Size	Manual override (optional)
15～25mm	Not possible
32～100mm	Possible



[Procedure]

1) Close the main valve of the operation air and turn off the power of the solenoid valve.
2) Turn the knob of the bypass valve counterclockwise to exhaust the air in the actuator.
3) Loosen the lock nut (small) with a wrench.

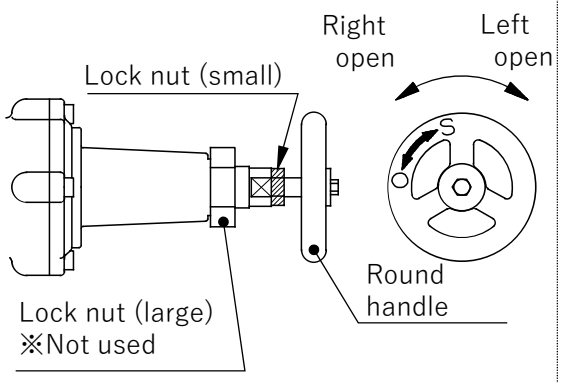
Caution	
Prohibition	**The stopper may change position and leak.** ▶ The lock nut (large) is for adjusting the right-open and left-open stoppers. Do not loosen it.

4) Turn the round handle while observing the opening finger gauge.

Round handle rotation direction	Air to open	Air to close
Clockwise	Left open direction	Right opening direction
Counterclockwise	Right opening direction	Left open direction

Size	15～50mm	65～100mm
Handle revolutions	About 24 revolutions	About 27 revolutions

For reverse operation



5) Return to the condition before manual operation (right or left open) and tighten the lock nut (small) with a wrench.

6) Close the bypass valve by turning the knob of the bypass valve clockwise.

7) Open the main valve of the operation air to supply air to the solenoid valve.

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.

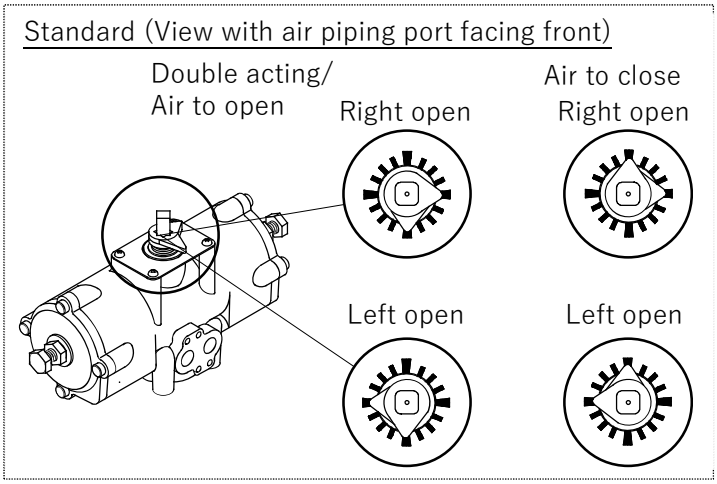
Caution	
Prohibition	**Otherwise, the valve may be damaged, or inoperative.** ▶ Use the product within the indicated product specifications.

[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 display status.)

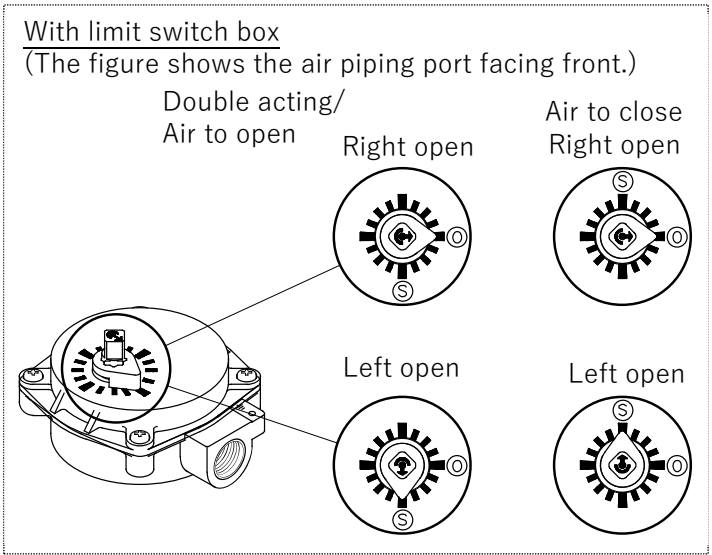
3) Stop the air supply.



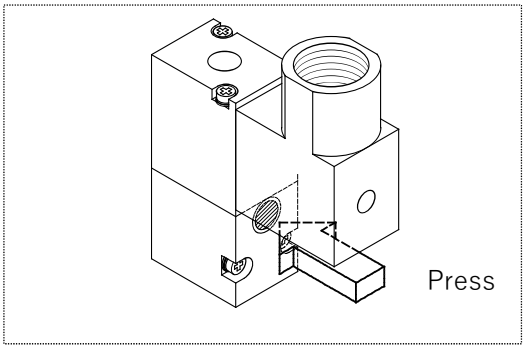
<For models with solenoid valve>

[Procedure]

1) Supplies air to the solenoid valve.
2) Check that the operation shown in the table below is achieved by pressing the pushbutton below the solenoid valve terminal cover with your finger.
3) Confirm that the operation shown in the table below is achieved by energizing or de-energizing the solenoid valve.
4) Turn off the power to the solenoid valve.



Push button	Power supply	Double action Air to open	Air to close
Press	Energizing	Right open	Left open
Do not press	De-energizing	Left open	Right open



Adjusting the Opening/Closing Speed <Double action>

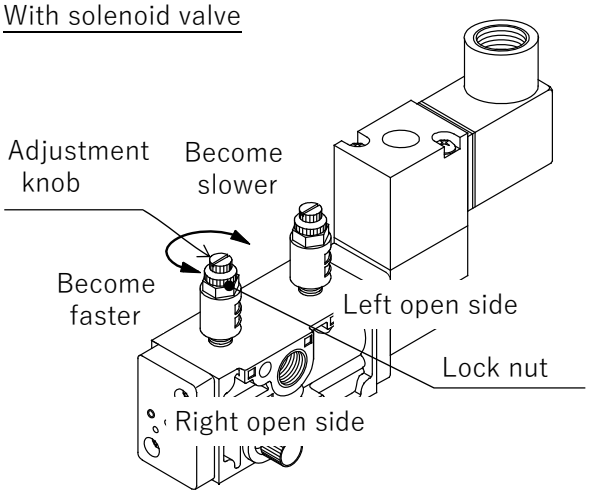
⚠Caution	
Prohibition	**Otherwise damage to the solenoid valve or malfunction can result.** ▶ Be sure to lock the adjustment knob of the solenoid valve after adjustment. (Do not tighten the lock nut with excessive force.)

Preparations ▶ Wrench

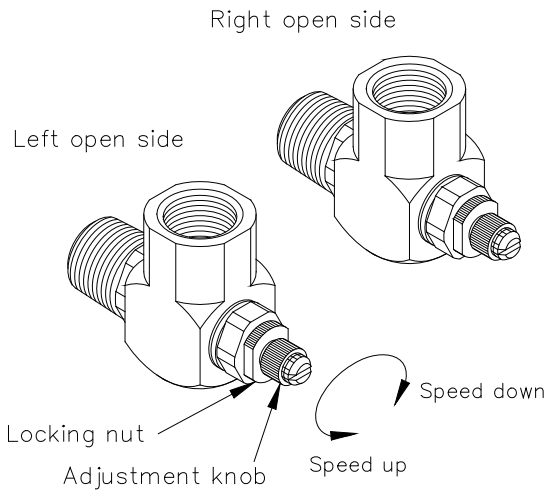
[Procedure]

1) Supplies air to the solenoid valve.
2) Hold the adjustment knob of both left-open and right-open speed controllers with your fingers, and turn the lock nut counterclockwise with a spanner to release the adjustment knob.
3) Open left and right Turn both adjustment knobs clockwise until they do not turn.
4) Energize the solenoid valve to open the valve to the right.
5) Turn the adjustment knob of the right open side speed controller counterclockwise little by little.
6) Turn off the power to the solenoid valve and open the valve to the left.
7) Turn the adjustment knob of the left open side speed controller counterclockwise little by little.
8) Repeat steps 4) to 7) to set the opening/closing speed to the desired one.
9) Hold the adjustment knob of both left-open and right-open speed controllers with your fingers, and turn the lock nut clockwise with a spanner to secure the adjustment knob.

With solenoid valve



With speed controller



Opening/Closing Speed Adjustment Method <Single Action>

⚠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.)

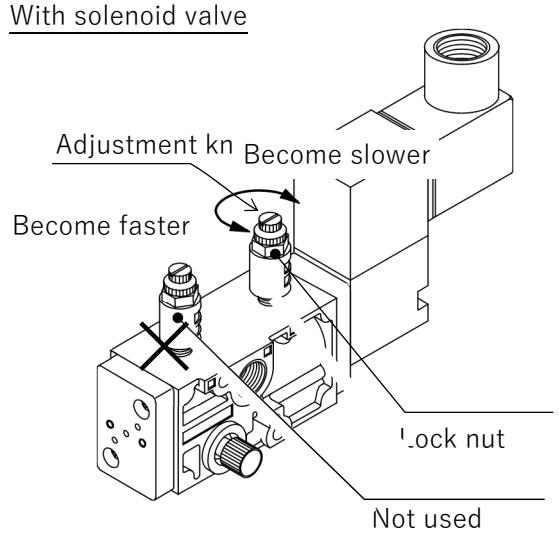
The direction in which the speed can be adjusted differs depending on the operating model.

Actuation type	Speed at which the right opens	Speed of opening to the left
Air to open type	Not adjustable	Can be adjusted
Air to close type	Can be adjusted	Not adjustable

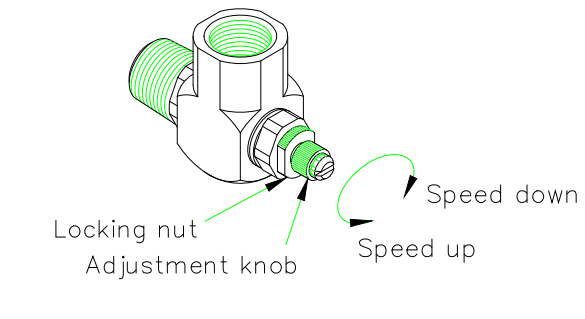
[Procedure]

1) Supplies air to the solenoid valve.
2) While holding the speed controller adjustment knob with your finger, turn the lock nut counterclockwise with a spanner to release the adjustment knob.
3) Turn the adjustment knob clockwise until it no longer turns.
4) Energize the solenoid valve to open the valve to the right for air to open and open the valve to the left for air to close.
5) Turn the speed controller adjustment knob counterclockwise little by little.
6) Turn off the power to the solenoid valve. Open left for air to open and open right for air to close.
7) Repeat steps 4) to 6) to set the opening/closing speed to the desired one.
8) While holding the speed controller adjustment knob with your finger, secure the adjustment knob by turning the lock nut clockwise with a spanner.

With solenoid valve



With speed controller



How to adjust the surface pressure of the ball and seat

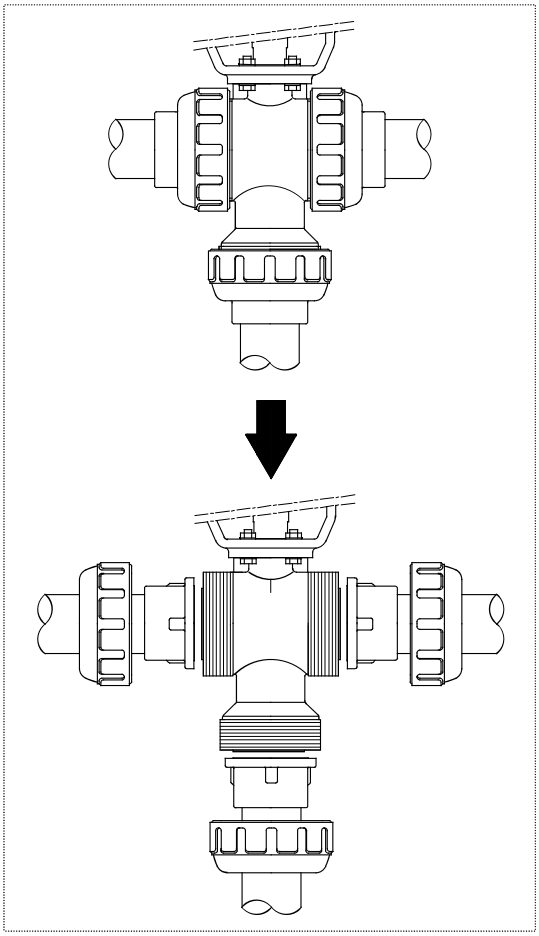
If internal leakage (seat leakage) occurs when the valve is fully closed, tightening the Carrier may improve seat leakage.
If tightening the Carrier does not improve the seat leakage, replace the valve according to section 10 "Disassembly/Assembly Method for Replacement of Parts".

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not overtighten the Carrier. ▶ Do not overtighten the Union nut. ▶ Do not use a pipe wrench to tighten the Union nut.
Forcing	**There is a danger of injury.** ▶ A little fluid remains in the valve. Wear protective gloves and eye protection.

Preparations	▶ Belt wrench ▶ wrench ▶ handle (hand wheel for manual override sold separately) ▶ Protective gloves and goggles

<**Surface pressure adjustment**>

[**Procedure**]



1) Zero the pressure in the piping to completely drain the fluid.

2) Turn off the power of the solenoid valve. The double action and air to open are set to left open, and the air to close is set to right open.

3) Loosen the three Union nuts with a belt wrench.

4) Remove the valve from the piping.

5) Record the position of the ball [2] as viewed from AV marking on the body [1] and the orientation of the actuator. (important when assembling)

6) Loosen and remove the screws (B) [27] between the mounting bracket [24] and the body [1], and remove the mounting bracket [24] and the actuator [23].

7) Remove the O-ring (A) [8] on the Carrier.

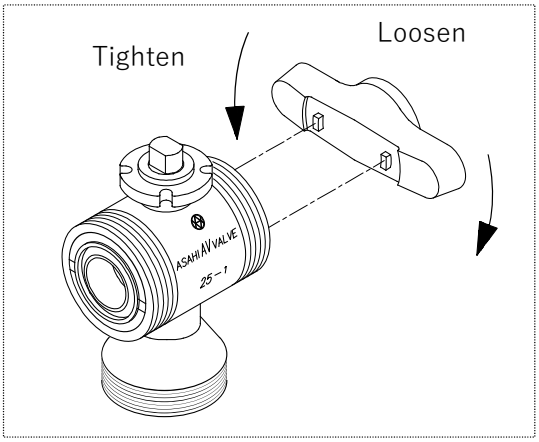
8) The convex part of the upper part of the manual handle is fitted into the concave part of the Carrier on the right opening side for the air to open and the left opening side for the air to close, and the surface pressure is adjusted by rotating the Carrier.

9) Attach the manual override to the stem and turn the hand wheel 180° . The double action and air to open are set to the right open position and the forward operation is set to the left open position.

10) Remove the manual handle from the valve.

11) The convex part of the upper part of the handle for manual operation is fitted into the concave part of the Carrier on the left opening side for the air to open and the right opening side for the air to close, and the surface pressure is adjusted by rotating the Carrier.

12) Attach the manual handle to the stem and check that manual operation can be smoothly performed.



<**Assembly**>

[**Procedure**]

1) Follow the steps from step 7) in <Surface pressure adjustment> in the reverse order.

10. How to disassemble/assemble parts for replacement

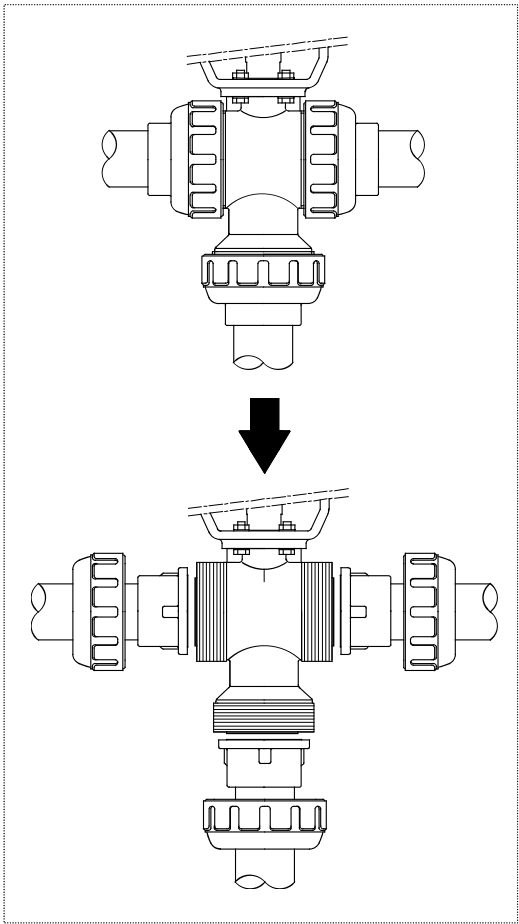
If internal leakage (seat leakage) or external leakage occurs when the valve is fully closed, the leakage may be improved by replacing the parts.
If the leak does not improve after replacing the parts, remove and replace the valve according to this item.

⚠Warning	
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.

⚠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. ▶ Do not over tighten the Union nut. ▶ Do not use a pipe wrench when tightening the Union nut.
Forcing	**Damage may occur.** ▶ Fix the End connector during piping installation or disassembly and reassembly. ▶ Be sure to confirm that the Union nut is fully tightened before the water flow test. ▶ Tighten the Union nut paying attention to the shaft center misalignment and face-to-face dimension. ▶ When connecting a resin valve to metal piping, be careful not to apply piping stress to the resin valve.

Preparations	▶ Belt Wrench ▶ Hex Wrench ▶ Spanner ▶ Protective Gloves ▶ Protective spectacle ▶ handle (manual override handle sold separately)

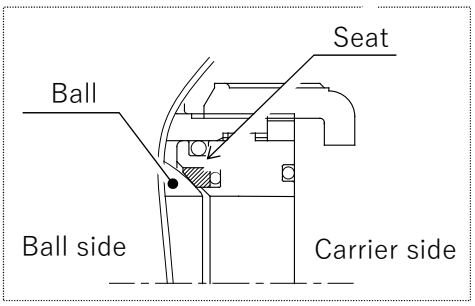
<**Disassembly**>
[**Procedure**]

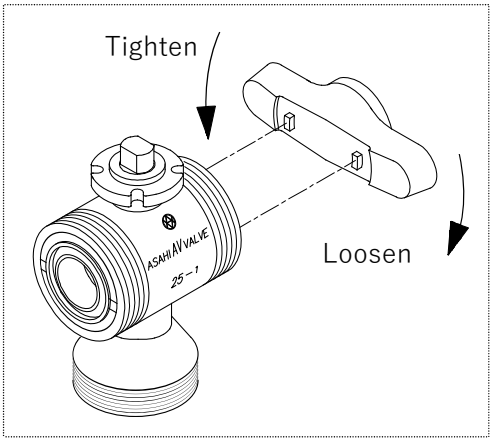


1) Zero the pressure in the piping to completely drain the fluid.
2) Turn off the power of the solenoid valve. The double action and air to open are set to left open, and the air to close is set to right open.
3) Loosen the three Union nuts with a belt wrench.
4) Remove the valve from the piping.
5) Record the position of the ball [2] as viewed from AV marking on the body [1] and the orientation of the actuator. (important when assembling)
6) Loosen and remove the screws (B) [27] between the mounting bracket [24] and the body [1], and remove the mounting bracket [24] and the actuator [23].
7) Remove the O-ring (A) [8] on the Carrier.
8) Mate the convex part on the upper part of the hand handle with the concave part of the Carrier.
9) Turn the hand handle counterclockwise to remove the Carrier.
10) Remove the seat, O-ring (B) and O-ring (C) (65mm or more) from the Carrier to prevent scratching.
11) Push out the ball by hand.
12) Push the stem from the top flange side to the body side.
13) Remove the O-rings (D) and (E) from the stem, taking care not to damage them.

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

1) Assemble in reverse order from step 13) of <**Disassembly**>.
※ When attaching the seat, check the front and back sides of the seat before attaching it.





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 malfunction and remedy**."

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	[Flanged end] 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: 6. Piping method [Flanged end])
		[Socket end] Adhesive construction section	Remove the valve from the piping and retry the bonding process. (Ref: 6. Piping method [Socket end])
		[Threaded end] Threaded connection	Remove the valve from the piping and screw the valve in again. (Ref: 6. Piping method [Threaded end])
		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)
		Union nut portion of the valve	① Retighten the Union nut ② Remove the valve from the piping, check the O-ring and sealing surface, and replace the defective part. (Ref: 6. Piping method)
		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)

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
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
Looseness of bolts (visual and palpation)	No Loose	For Stand + valve	Retighten the mounting bolts with the following torque. Size 15～32mm:5 N-m :6 N-m :8 N-m :10 N-m
		For Stand + actuator	Retighten the mounting bolts with the following torque. Size 15～100mm:8 N-m
		[Flanged end] For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 6. Piping method [Flanged end])
Corrosion Or rust (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: 10.How to disassemble/assemble for parts replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator. (Ref. 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.

Failure phenomenon	Possible cause	Measures and measures
During manual operation, the lever handle (wrench) does not turn (cannot turn).	The valve is already fully open (or fully closed).	Rotate the lever handle (spanner) in the reverse direction. (Ref: 9. 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: 9. 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 (Ref: 2. Safety Instructions)
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)
	The Carrier is loose.	Remove the valve from the pipe and tighten the Carrier to adjust the surface pressure. (Ref. 9. Test run method)
	Sheet or ball 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
Fluid leaks from valve (external leak)	Union nut is loose	Retighten the Union nut (Ref: 6. Piping method)
	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, ball, 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)

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: 9. 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: 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)

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 10.How to disassemble/assemble for parts replacement)
	The Carrier is loose.	Remove the valve from the pipe and tighten the Carrier to adjust the surface pressure. (Ref: 9. Test run method)
	Sheet or ball 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

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks from valve (external leak)	Union nut is loose	Retighten the Union nut (Ref.: 6. Piping method)
	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, ball, 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]

3-way ball valve Type 23 Pneumatic actuated Type TA
15～100mm

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

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