Diaphragm valve Type 16
Pneumatic actuated Type AD
15～50mm

User's Manual

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

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

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

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

<WARNING/CAUTION indications>

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

<Prohibited/Forced display>

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

Table of contents

1. Our product warranty coverage

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

Applicable to

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

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

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

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

Disclaimer

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

2. Safety Instructions

Unpacking, Transportation and Storage

⚠ Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load. **The valve can be damaged, or leak.** ▶ Do not subject the product to impact by throwing, dropping or hitting.

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

Product Handling

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

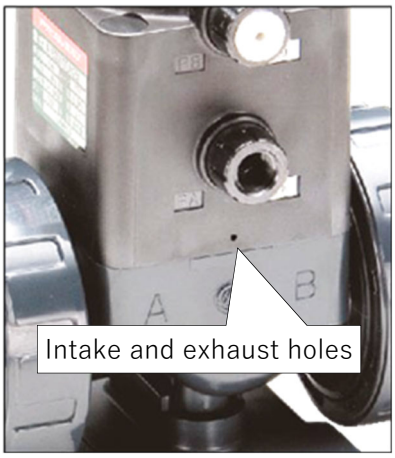
⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects. ▶ Do not use the product in places where it may be submerged. ▶ Pay attention to the atmosphere where the valve is installed. Avoid locations where the product is exposed to sea breezes, corrosive gases, chemical liquids, sea water, steam, etc. ▶ Do not subject the valve to large vibrations.
Forcing	**The valve can be damaged, or leak.** ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ Secure sufficient space for maintenance and inspection when piping. ▶ Use a valve of suitable material for the operating conditions. (Depending on the type of chemical liquid, the parts may be damaged. Contact us in advance for details.) ▶ Use the product under conditions that do not recrystallize in fluids containing crystalline substances. (The valve will not operate normally.) ▶ 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. ▶ If the cylinder is exposed to direct sunlight, glass fibers may float from the cylinder body [8]. (Be careful not to puncture or scratch glass fibers.) ▶ 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. ▶ The tightening bolts and nuts at the diaphragm (between the bonnet and body) may become loose due to changes in temperature during storage or use, and creep. After checking, tighten the bolts and nuts diagonally to the values specified in "Bonnet tightening torque. ▶ 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.

⚠ Warning

Forcing

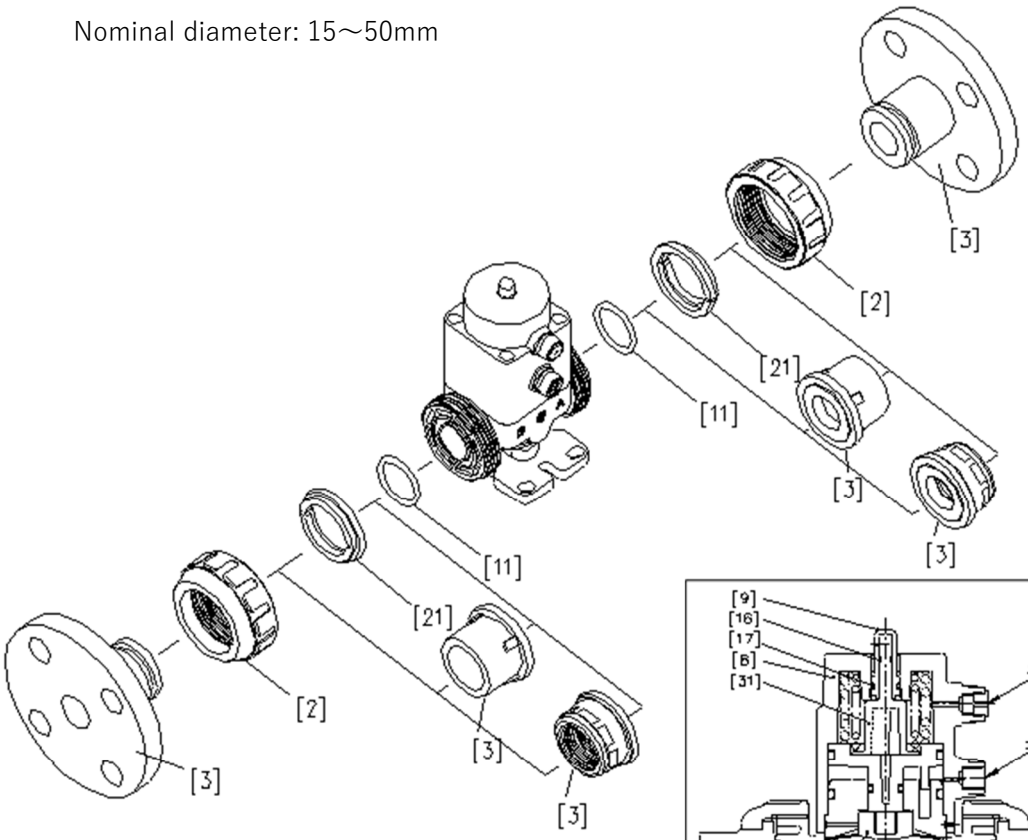
Serious injury can result.

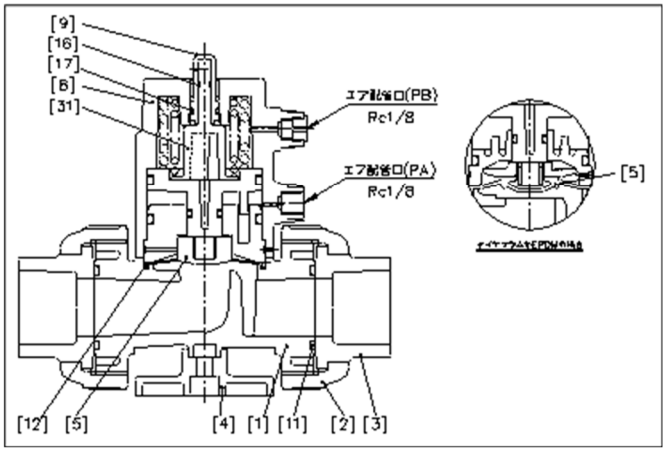
▶ Actuators for diaphragm valves are provided with holes (intake and exhaust holes) through which excess air is sucked and exhausted in order to enable vertical operation of the diaphragm.
(Below the air piping port)
Note that if the diaphragm is damaged due to operating conditions, the working fluid may spout out of the suction and exhaust holes.



3. Name of each part

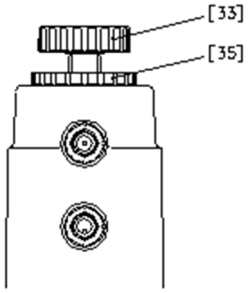
Nominal diameter: 15～50mm



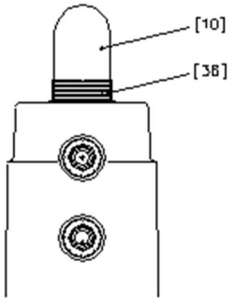


<Option>

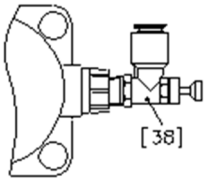
A. With full opening adjustment
15-50mm



B. Full opening adjustment/with indicator
15-25mm



C. Speed controller
15-50mm (1/2"-2")



[1]	Base machine	[5]	Diaphragm	[21]	Stop ring
[2]	Union Nut	[8]	Cylinder body	[31]	Indicator (A)
[3b]	End Connector (Flange type)	[9]	Gauge cover (A)	[33]	Travel Stop handle
[3c]	End Connector (socket type)	[10]	Gauge cover (B)	[35]	Travel Stop lock nut (A)
[3d]	End Connector (Threaded type)	[11]	O- type retaining ring (A)	[36]	Travel Stop lock nut (B)
[4]	Base	[12]	O- type retaining ring (B)	[38]	Speed controller

4. Product Specifications

Model number table

ACTUATION	TYPE	ACTUATOR TYPE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	SIZE	HIGH PURITY SERIES	OPERATION PORT DIRECTION	OPTION
A	16	* *	U	*	* *	* * *	1	*	*

ACTUATION	
A	AUTOMATIC VALVE

TYPE	
16	TYPE 16

ACTUATOR TYPE	
DF	DOUBLE ACTING
DG	AIR TO OPEN

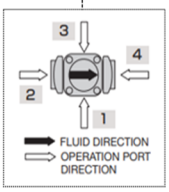
BODY MATERIAL	
U	PVC

SEAL MATERIAL	
1	PTFE/EPDM
2	PTFE/FKM
E	EPDM/EPDM

CONNECTION	
SJ	SOCKET JIS
S8	SOCKET ASTM SCH80
SD	SOCKET DIN
NJ	THREADED Rc
NA	THREADED NPT
ND	THREADED Rp
F1	FLANGED 10K
FA	FLANGED ANSI
FD	FLANGED DIN

SIZE	
015	15mm
020	20mm
025	25mm
040	40mm
050	50mm

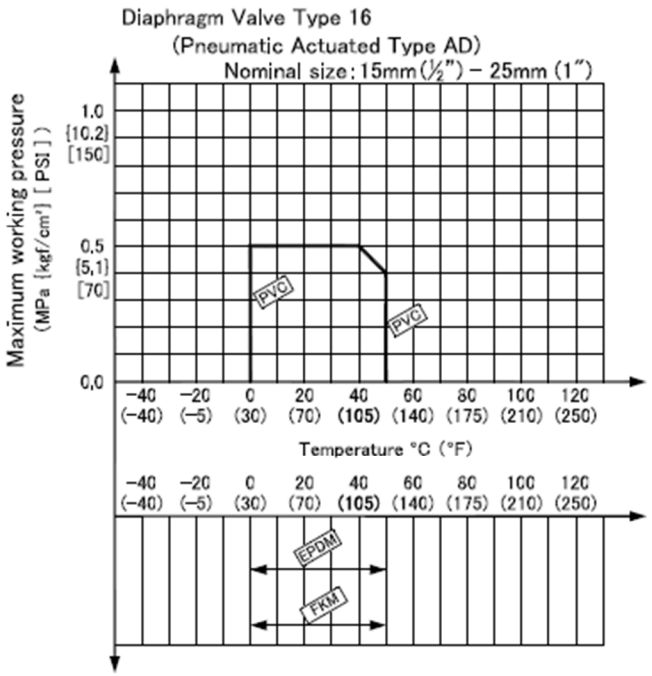
HIGH PURITY SERIES	
1	LIBRICANT FREE

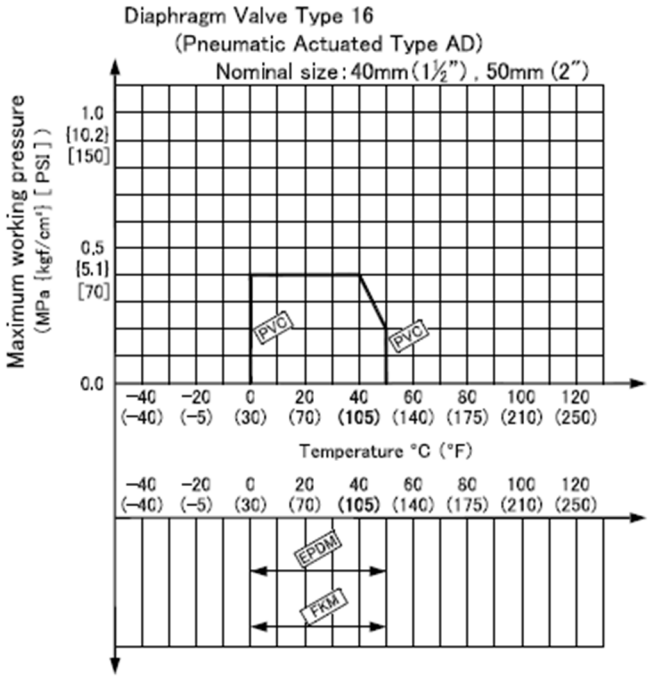


OPERATION PORT DIRECTION	
1	NONE
2	SPEED CONTROLLER
3	FULL OPENING ADJUSTMENT
4	FULL OPENING ADJUSTMENT /SPEED CONTROLLER
5 *	FULL OPENING ADJUSTMENT /INDICATOR
6 *	FULL OPENING ADJUSTMENT /INDICATOR /SPEED CONTROLLER

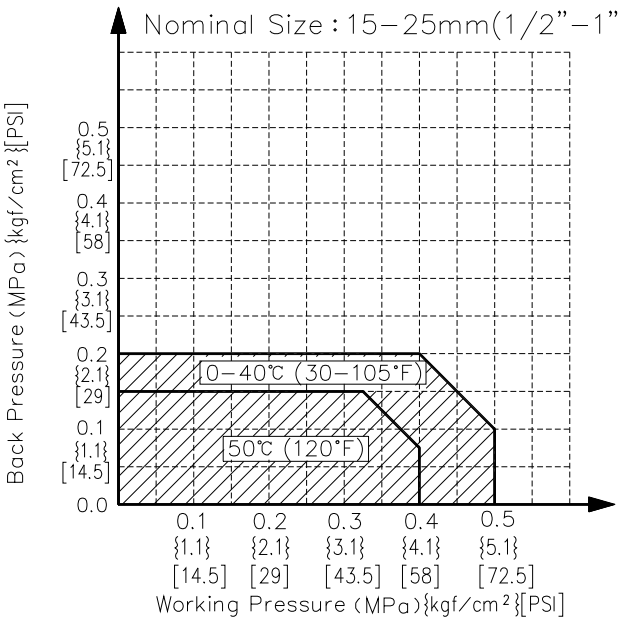
* Only applicable for sizes of 15mm to 25mm.

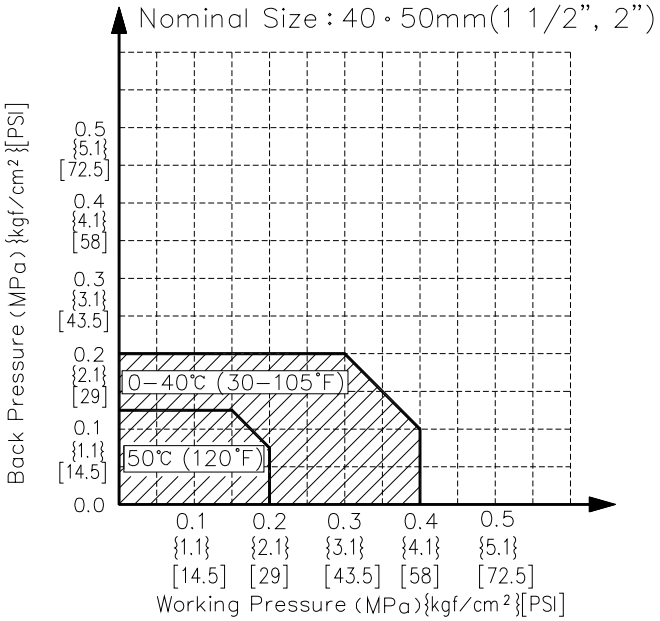
Relationship between maximum allowable pressure and temperature





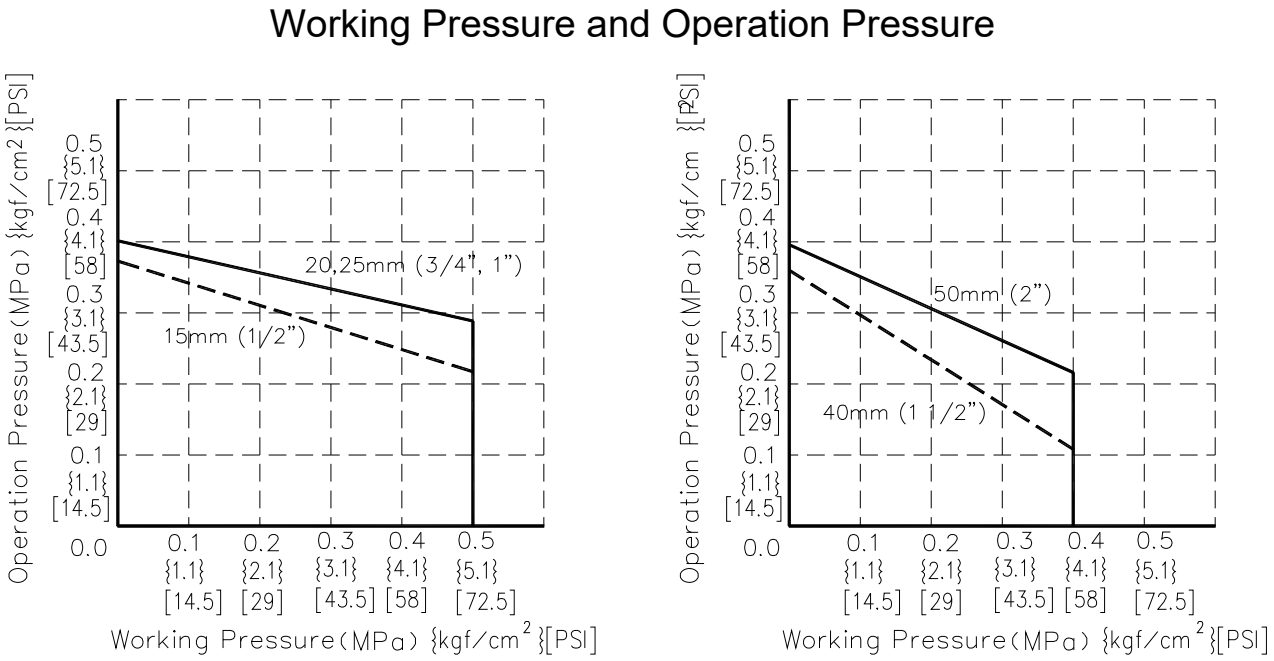
Relationship between maximum allowable pressure and back pressure



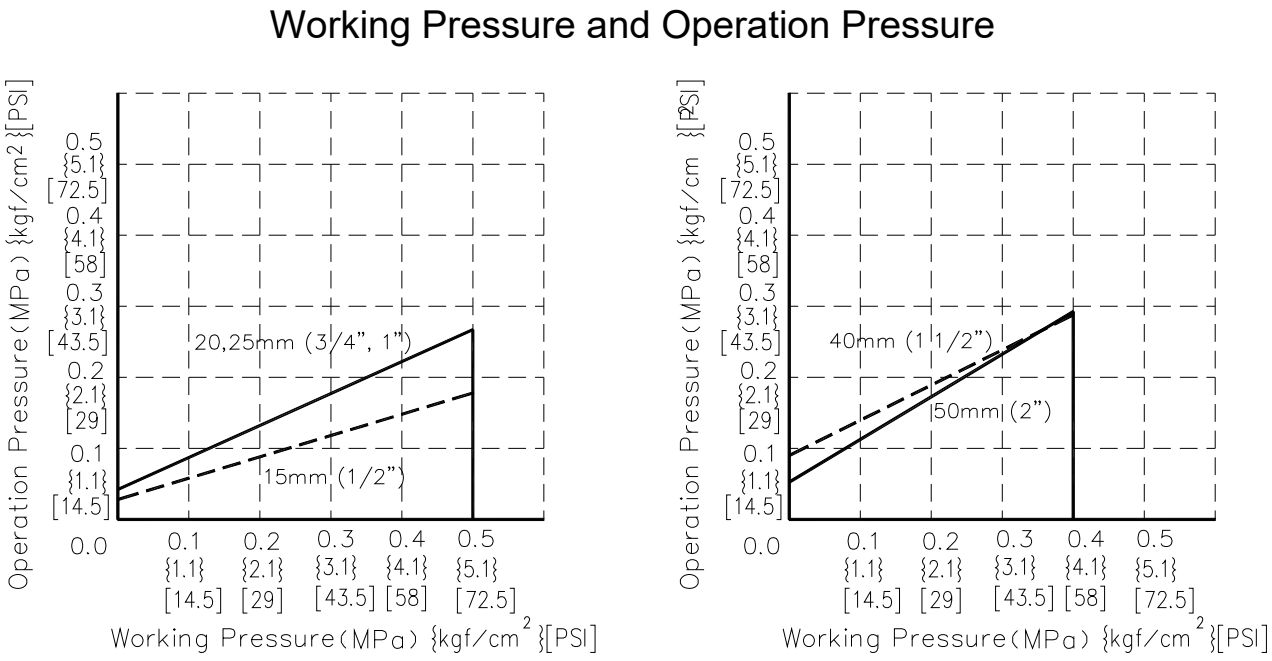


Relationship between maximum allowable pressure and operating pressure

(For Air to open)



(For double acting)



Product Specifications

Item	NOMINAL SIZE (mm)				
	15	20	25	40	50
Operation	Double acting, Air to open				
Specification fluid	Pure water and chemical liquids				
Fluid temperature	0 ～ 50°C (NOTE 1)				
Operating pressure range	0 ～ 0.5 MPa (NOTE 2)			0 ～ 0.4 MPa (NOTE 2)	
Valve seat leakage	0 cm^3/min (water pressure)				
Back pressure	0 ～ 0.2 MPa (NOTE 2)				
Ambient temperature	0 ～ 50°C				
Frequency of opening and closing	20 times/min or less			15 times/min or less	
Connection	Socket type/screw type/flange type				
Orifice size	ϕ16mm	ϕ22mm	ϕ22mm	ϕ40mm	ϕ50mm
Cv	4.8	8	9.5	26	44
Operating pressure	Reverse-Actuation 0.4 ～ 0.5MPa, Return 0.3 ～ 0.4MPa				
Operation port connection	Rc 1/8				
Mounting orientation	Unrestricted				

Note 1 : Refer to the relationship between working pressure and temperature for details.
(Note 2) Refer to the relationship between working pressure and back pressure for details.

Actuator

NOMINAL SIZE (mm)		15	20	25	40	50
Operating pressure MPa{kgf/cm^2}	Double action	0.3～0.4 {3.1～4.1}				
	Air to open	0.4～0.5 {4.1～5.1}				
Air consumption L/ times (ANR) (at 0.4MPa)	Double action	0.14	0.32	0.32	1.24	2.19
	Air to open	0.12	0.26	0.26	1.02	1.78
Air supply port size	Double action Air to open	Rc 1/8				

Option

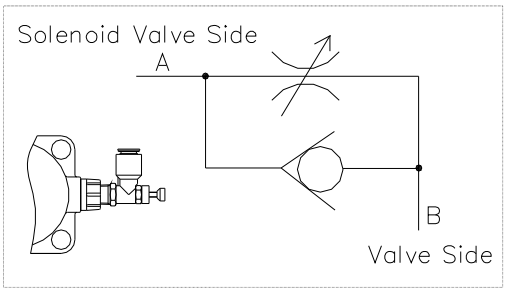
Travel Stop

The valve opening can be adjusted.

Speed controller

Adjusts the opening and closing speed of the valve.

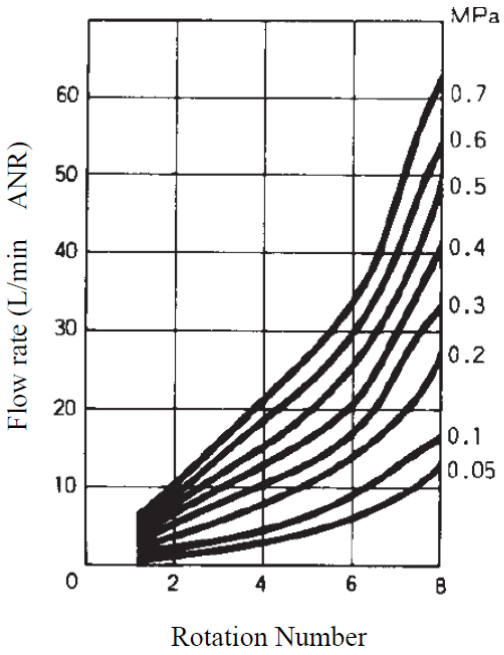
JIS Sign



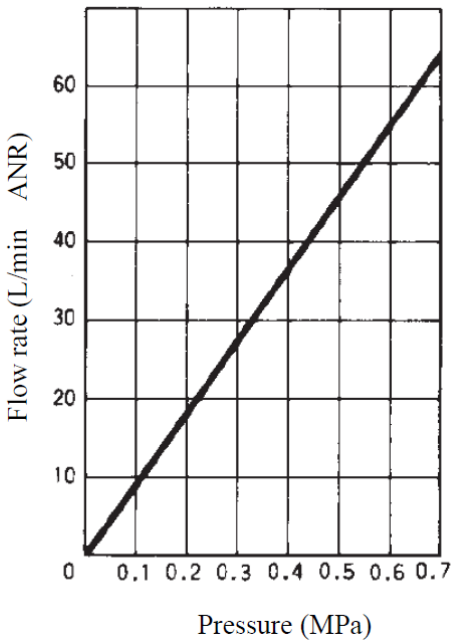
Operation	Nominal size	Caliber number	Piping port size
Double action Air to open	15～50mm	M6R-01-O	ϕ 6

<Speed Controller Flow Characteristics>

Controlled flow



Free stream



※Refer to "10. How to Adjust Options" for operation of options.

<Option combination>

NOMINAL SIZE 15～25 mm

Combinational No.	1	2	3	4	5	6
Indicator	●	●	—	—	○	○
Speed controller	—	○	—	○	—	○
Travel Stop	—	—	○	○	○	○

Nominal size 40,50mm

Combinational No.	1	2	3	4
Indicator	●	●	—	—
Speed controller	—	○	—	○
Travel Stop	—	—	○	○

● is standard equipment

5. Piping method

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not open or close the valve with dust or other foreign matter mixed in the fluid. ▶ Do not overtighten the Union Nut. ▶ Do not use a pipe wrench when tightening the Union Nut.
Forcing	**The valve can be damaged, or leak.** ▶ After installing the valve, sand or other foreign matter may remain in the pipeline. Clean the inside of the pipe before opening or closing the valve. ▶ If the stopper is loose, adjust the stopper. ▶ The Union Nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the End Connector before installation. ▶ Fix the End Connector during piping installation or disassembly and reassembly. ▶ Be sure to check that the Union Nut is fully tightened before the water flow test. ▶ Tighten the Union Nut paying attention to the shaft misalignment and face-to-face dimension. ▶ Check if the valve flow direction is correct.

Socket type

⚠ Warning	
Prohibition	**Serious injury can result.** ▶ When using adhesives, ventilate thoroughly, and prohibit the use of open flames in the surroundings. Do not inhale odors directly. ▶ If the adhesive adheres to the skin, remove it immediately. If you feel worse or feel unusual, promptly seek medical assistance and take appropriate action.

⚠ Caution	
Forcing	**The valve can be damaged, or leak.** ▶ Care should be taken in construction at low temperatures because solvent vapors are less likely to evaporate and remain. (Solvent crack may occur, resulting in damage.) After piping, remove the solvent vapor by opening both ends of the pipe and ventilating with a blower (low-pressure type) or the like. ▶ Be careful not to apply too much adhesive. (If adhesive enters the valve, it may cause malfunction or internal leakage, or it may cause harmful small cracks and damage.) ▶ Never strike the tube to insert it, as this may damage it. ▶ Use AV Cement for the adhesive. (Select an AV adhesive according to the material.) ▶ Perform the water flow test after at least 24 hours have elapsed after completion of bonding.

Preparations ▶ AV Cement ▶ Belt Wrench

[Procedure]

1) Loosen the Union Nut [2] with a belt wrench.
2) Remove Union Nut [2] and End Connector [3].
3) Thread the Union Nut [2] to the pipe side.
4) Wipe off the socket part of the End Connector [3] with a waste cloth.
5) Apply adhesive evenly to the End Connector socket and pipe socket.
Amount of adhesive used (reference)

NOMINAL SIZE (mm)	15	20	25	40	50
Amount used (g)	1.0	1.3	2.0	3.5	4.8

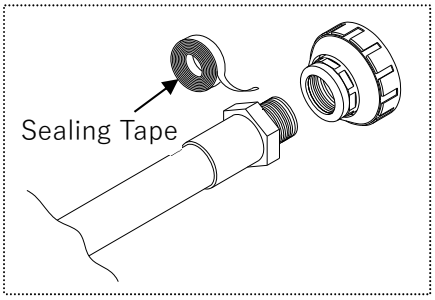
6) After applying the adhesive, quickly insert the pipe into the End Connector [3] and hold for at least 60 seconds.
7) Wipe off any excess adhesive.
8) Check that the O-ring (A) [11] is installed correctly.
9) Contact the End Connector [3] and the Union Nut [2] to the body side so that the O-ring (A) [11] does not come off.
10) Check if valve flow direction is correct.
11) Tighten the Union Nut [2] by hand until it is tight.
12) Screw the Union Nut [2] by 1/4 to 1/2 turn with a belt wrench to avoid damage.

Threaded type

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not overtighten the screws at the joints.
Forcing	**The valve can be damaged, or leak.** ▶ Make sure that the screws on the connections are plastic. (Piping with metal screws may damage the End Connector.) ▶ Use sealing tape for the threaded joints of our resin piping materials. If liquid sealant or liquid gasket is used, stress cracking (environmental stress cracking) may occur.

Preparations	▶ Sealing tape ▶ Belt wrench ▶ wrench

[Procedure]



1) Wrap sealing tape around the male thread of the fitting, leaving approximately 3mm at the end.
2) Loosen the Union Nut [2] with a belt wrench.
3) Remove Union Nut [2] and End Connector [3].
4) Lightly tighten the male thread of the fitting and the End Connector [3] by hand.
5) Screw on the End Connector [3] with a wrench 1/2 to 1 turn to prevent scratching.
6) Check that the O-ring (A) [11] is installed.
7) Contact the End Connector [3] and the Union Nut [2] to the body side so that the O-ring (A) [11] does not come off.
8) Tighten the Union Nut [2] by hand until it is tight.
9) Check if valve flow direction is correct.
10) Screw the Union Nut [2] by 1/4 to 1/2 turn with a belt wrench to avoid damage.

Flange type

Caution	
Forcing	**The valve can be damaged or leak.** ▶ Use a connection flange with a full-face seat. ▶ Check that there is no difference in mutual flange standards. ▶ Be sure to use the sealing gaskets (AV packing), bolts, nuts and washers and tighten them to the specified tightening torque. (The tightening torque will change if the gasket is not a AV gasket.)

Preparations ▶ Torque Wrench ▶ AV packing

[Procedure]

1) Set packing between flanges.

2) Insert the washer and bolt from the connecting flange side, insert the washer and nut from the valve side, and tighten temporarily by hand.

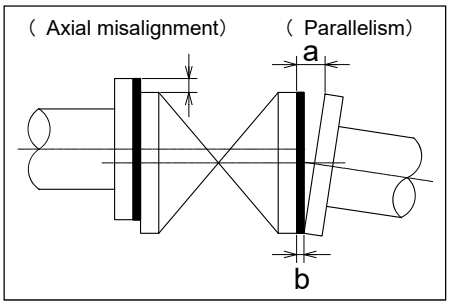
Caution

Forcing

The valve can be damaged, or leak.

▶ In the parallelism of the flange surface and axial misalignment
Dimensions should be less than the following values.

Nominal size (mm)	Shaft misalignment	Parallelism (a-b)
15～25	1.0mm	0.5mm
40、50	1.0mm	0.8mm



3) Gradually tighten the flange to the specified torque using a torque wrench diagonally (see Fig. 1).

4) Tighten the flange clockwise at least two turns with the specified torque value.

⚠Caution

Prohibition

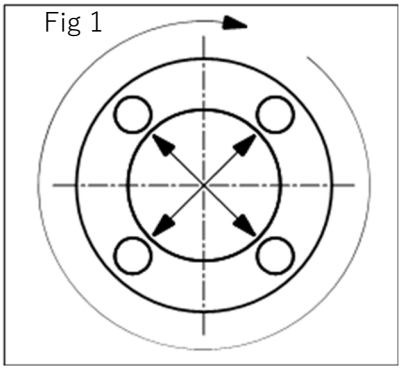
The valve can be damaged, or leak.

▶ Do not tighten more than the specified torque value.

Flange tightening torque. Unit: N·m {kgf・cm}

NOMINAL SIZE (mm)	15,20	25～40	50
PTFE coating PVDF coating	17.5 {179}	20.0 {204}	22.5 {230}
Rubber	8.0 {82}	20.0 {204}	22.5 {230}

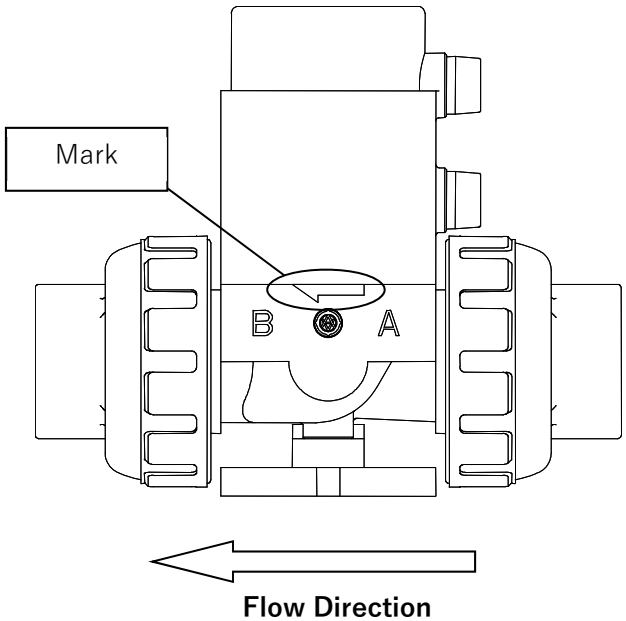
Fig 1



※If the Union Nut has been removed from the body (even if it has been loosened), attach it using the following method.

1) Check that the O-ring (A) [11] is installed.
2) Bring the End Connector [3] and the Union Nut [2] into contact with the body so that the O-ring (A) [11] does not come off.
3) Check if valve flow direction is correct.
4) Tighten the Union Nut [2] by hand until it is tight.
5) Screw the Union Nut [2] by 1/4 to 1/2 turn with a belt wrench so as not to damage it.

Flow direction of the valve



※Make sure that A is on the primary side (upstream side) and B is on the secondary side (downstream side).

6. Support installation method

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not cause the valve to vibrate significantly in the piping around the pump. ▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like.
Forcing	**The valve can be damaged, or leak.** ▶ Install a valve support.

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

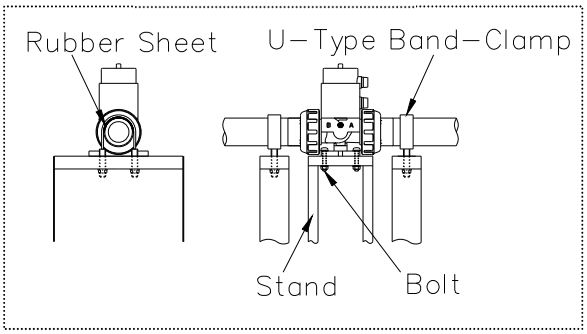
Horizontal piping

○When installing the support using the bottom stand and Base

▶ Secure the bottom stand, Base and Base provided at the bottom of the valve with bolts.
※Pay attention to the thread length (risk of damage)

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

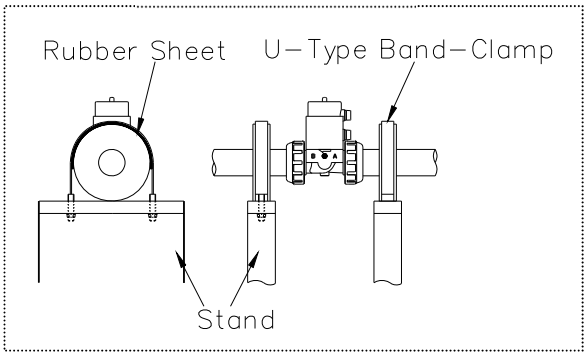
Example



○When installing a support without a bottom stand base (with a flange-shaped End Connector)

▶ Lay a rubber sheet on the flange part of the valve and secure it with the U-band.

Example

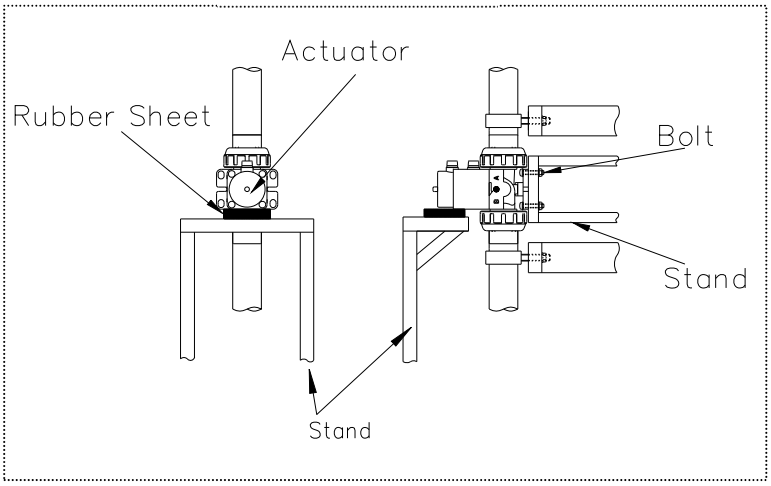


Vertical piping

▶ Secure the bottom stand, Base and Base provided at the bottom of the valve with bolts.

▶ Lay a rubber sheet on the actuator part and support it with the frame.

Example

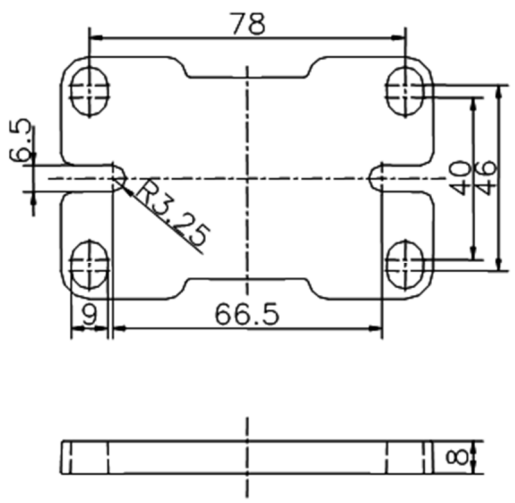


7. Mounting dimensions of Base

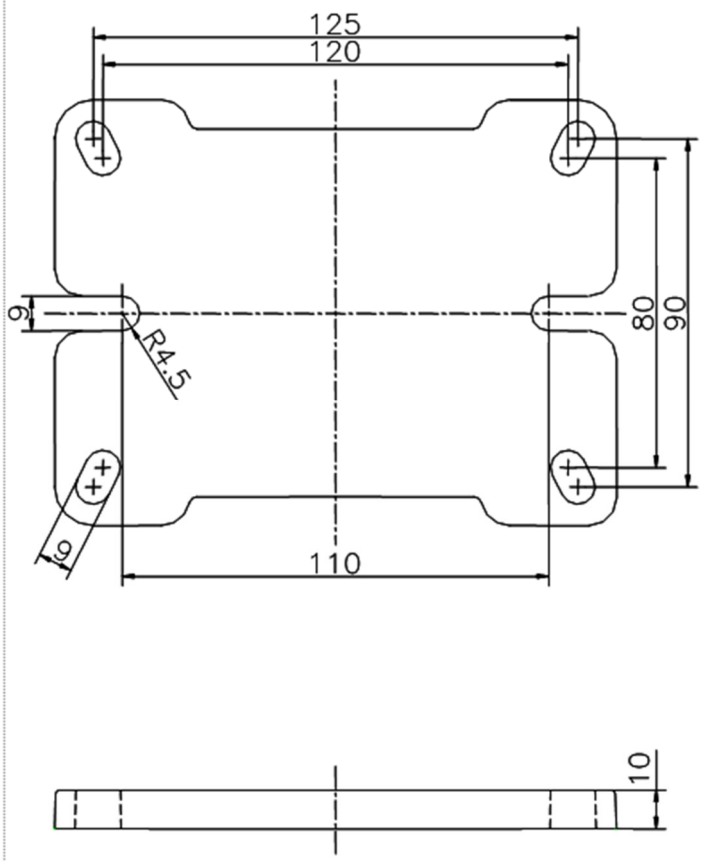
⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten the connections. ▶ Pay attention to the thread length.

<Base>

15～25mm



40・50mm

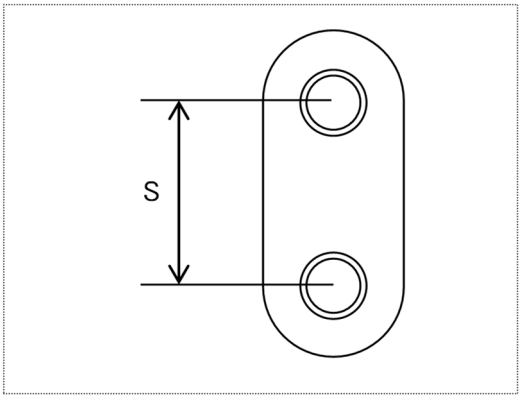


<Bottom stand>

Remove the Base before use.

Bottom stand dimensions

Nominal size (mm)	S	Thread diameter	Depth
15	20	M6	7
20	25	M6	7
25	25	M6	7
40	45	M10	10
50	45	M10	17



8. Air piping method

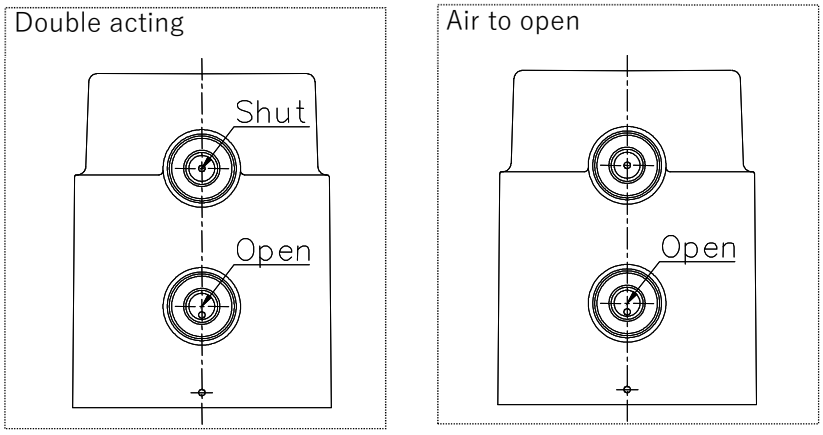
⚠Caution	
Prohibition	**Serious injury can result.** ▶ Do not remove the protective plug until just before connecting the air piping. **The valve can be damaged, or leak.** ▶ Do not over-tighten the fitting for air piping. ▶ Do not over-tighten the connections. ▶ Do not use a wrench or other tool.
Forcing	**The valve can be damaged, or leak.** ▶ Check the connection location, air piping size, and type of screws from the delivery drawing etc. of the product in question, and then connect the air piping. ▶ 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. ▶ If the product is used 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 any burrs on the threads of the pipe fittings. (This may cause galling or air leakage.) ▶ Be sure to use plastic fittings for air pipes and tighten them with a 0.4～0.6N of m. (In the case of metal fittings, the air piping port may be damaged.)

Preparations	▶ Resin-made air pipe fitting (Rc 1/8)	▶ Sealing tape

[Procedure]

1) Wrap sealing tape around the male thread of the fitting leaving the end 3mm.

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



9. Commissioning method

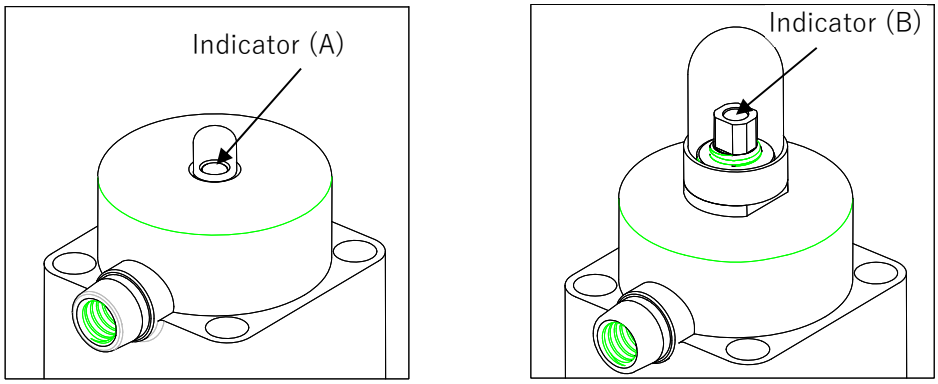
⚠Caution	
Forcing	**Doing so may cause operation to fail.** ▶ For the pressure supplied from the pressure-reducing valve with a filter, ensure the reverse-acting 0.4 ～ 0.5MPa{4.1 ～ 5.1kgf/cm^2 and return 0.3 ～ 0.4MPa {3.1 ～ 4.1kgf/cm^2.

[Procedure]

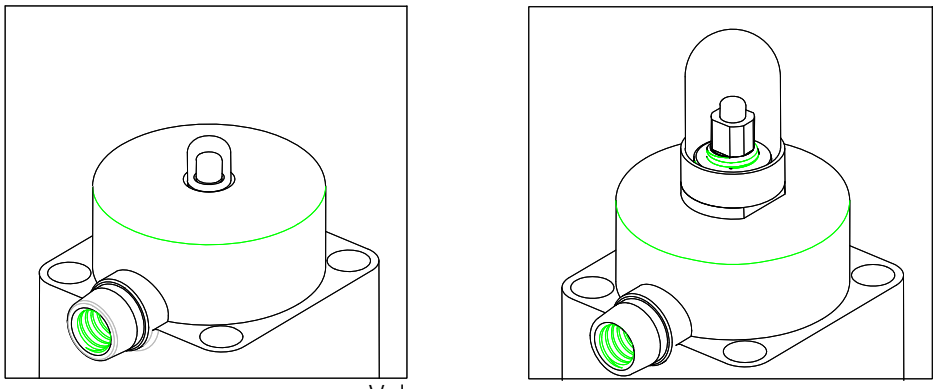
1) Supplies air to the air supply port.

2) Check that the air supply side and indicator (A) [31] or indicator (B) [32] positions are matched.

3) Stop the air supply.

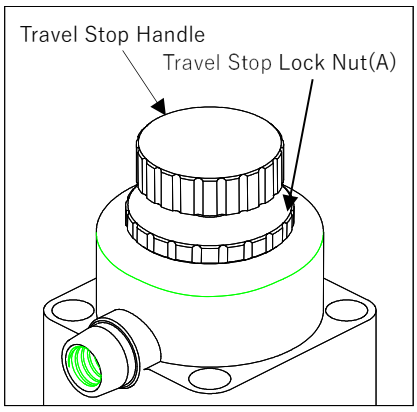


Valve closed



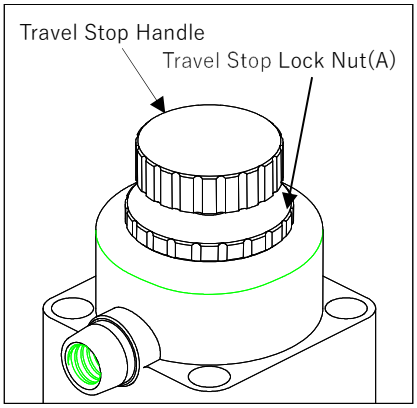
Valve open

※With Travel Stop (option) as shown in the figure below, there is no indicator. Check the opening and closing with fluid flow.



With full opening

10. How to adjust and operate options



<How to adjust the full opening degree>
※For optional combination No.3, 4

[Procedure]

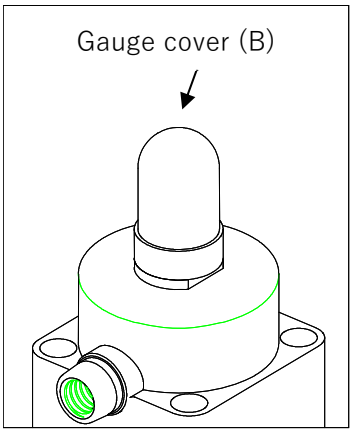
1) Fully close the valve with air.

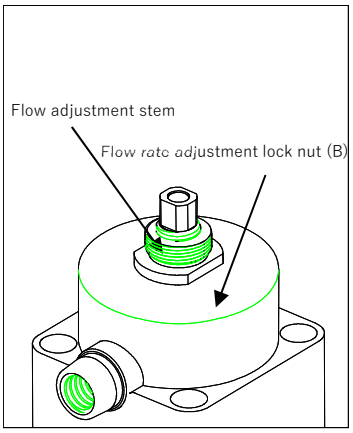
2) Loosen the flow rate adjustment lock nut (A) [35].

3) To the point where the flow rate requested by the flow rate adjustment handle [33] Threaded.

4) While holding the flow rate adjustment handle [33] with your finger, turn the flow rate adjustment lock nut (A) [35] clockwise to fix the flow rate adjustment handle firmly.
※If the mounting of the flow rate adjustment lock nut (A) [35] is weak, the flow rate adjustment handle [33] may become loose.

5) Open the valve by air operation to check the flow rate. Repeat steps 1) to 4) if the desired flow rate is not achieved.





<How to adjust the full opening degree>
※For optional combination No.5, 6

[Procedure]

1) Fully close the valve with air.

2) Remove gauge cover (B) [10].

3) Loosen the flow rate adjustment lock nut (B) [36].

4) Screw the flow adjustment stem [34] to the required flow rate.

5) Turn the flow rate adjustment lock nut (B) [36] clockwise while holding the flow rate adjustment stem [34] with your finger and fix the flow rate adjustment stem [34] firmly.
※If the mounting of the flow rate adjustment lock nut (B) [36] is weak, the flow rate adjustment stem [34] may become loose.

6) Open the valve by air operation to check the flow rate. Repeat steps 1) to 5) if the desired flow rate is not achieved.

7) Attach gauge cover (B) [10].

<Speed controller adjustment method>

	Open side	Closed side
Air to open	Not adjustable	Adjustable
Double action	Adjustable	Adjustable

※Air to open

[Procedure]

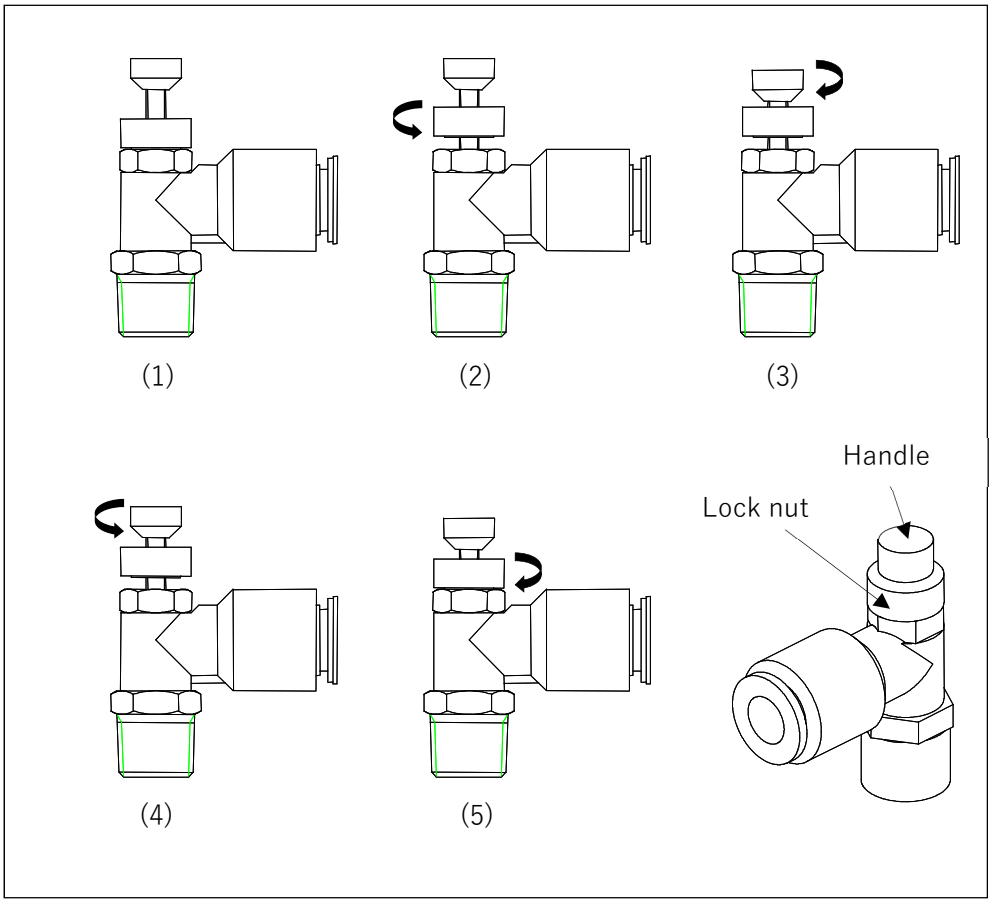
1) Turn the lock nut counterclockwise from the state of (1). (2)

2) Turn the handle clockwise until it stops. (3)

3) Supplies air to the valve.

4) Turn the handle counterclockwise little by little to set the desired opening/closing speed. (4)

5) When you reach the desired speed, hold the handle with your finger and turn the lock nut clockwise to secure the handle. (5)



※Double action

[Procedure]

1) Turn the speed controller on the open side counterclockwise from the (1) position. (2)

2) Turn the handle clockwise until it stops. (3)

3) Supplies air to the valve.

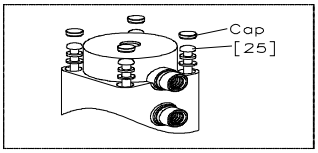
4) Turn the handle counterclockwise little by little to set the desired opening/closing speed. (4)

5) When the desired speed is reached, hold the handle with your finger and turn the lock nut clockwise to secure the handle. (5)

※Repeat steps 1) to 5) to set the closing side to the desired opening/closing speed.

11. Inspection item

⚠Caution	
Forcing	**The valve can be damaged or leak.** ▶ Perform periodic maintenance. (Leakage may occur due to changes in temperature or aging during long-term storage or shutdown, or during use.)

Check point	Check items
Actuator	① Existence of external scratches, cracks, deformation, or discoloration. ② Tighten bolts (A) [25] (if loose, retighten bolts diagonally with 15～25mm:2N · m, 32, 40mm:3N · m 50mm:10N · m of tightening torque.) ③ Abnormalities in open/close operation sounds. ④ Air leak status  ※ This actuator does not require lubrication.
Valve	① Existence of external scratches, cracks, deformation, or discoloration. ② Existence of external leakage from valves (Check that the Union Nut [2] is not loose.) ③ Presence or absence of leakage of total closure ④ Bolt (A) [25] tight (not loose)

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	[Flange type] Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and re-tighten the pipe bolts. (Ref: 5. Piping method [Flange type])
		[Socket type] Adhesive construction section	Remove the valve from the piping and retry the bonding process. (Ref: 5. Piping method [socket type])
		[Threaded type] Threaded connection	Remove the valve from the piping and screw the valve in again. (Ref: 5. Piping method [Threaded type])
		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: 5. Piping method)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve.
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.
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part.
Abnormal noise (hearing)	No abnormal noise	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator.
		Piping around the valve	Reconfirm the conditions of use (Ref: 2.Safety Instructions)
Odor (sniffing)	No odor	Valves and actuators	Remove the valve from the pipe and replace the valve or actuator.

Periodic inspection

●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Operating time (Measurement)	Error within ±1 second	Actuator opening display	Check the power supply voltage (±10%).
			Remove the valve from the pipe and replace the valve or actuator.
Vibration (palpation)	No different 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.
		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	[Flange type] For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method [Flange type])
Water-intrusion (visual inspection)	No intrusion	Inside the actuator	Replace the actuator
Intrusion of foreign objects (visual inspection)	No intrusion	Inside the actuator	Replace the actuator
Measured of the isolation resistance (Measurement)	Must be 50MΩ or more	Inside the actuator	Replace the actuator
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.
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator.

12. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
Do not open or close by air operation.	Air is not supplied	Supply air.
	The speed controller handle is turned all the way to the right.	Turn the handle to the left
	Operating pressure is low	Check operating pressure
Fluid leaks even when fully closed	The diaphragm [5] is worn	Replace the complete product.
	Scratches on diaphragm [5] or body [1]	
	Foreign matter caught in valve	
	Operating pressure is low (in case of return operation)	Check operating pressure
Fluid leaks from valve	Scratches on diaphragm [5] or body [1]	Replace the complete product.
	Foreign matter caught between diaphragm [5] and body [1]	
	Loose Union Nut [2]	Retighten the Union Nut [2]
	O-ring (A) [11] is damaged.	Replace O-ring (A) [11]
Actuator is operating but valve is not open or closed	The diaphragm [5] is damaged.	Replace the complete product.
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve.
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter.
	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: 5. 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.
	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.
	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve.
Actuator is operating but valve is not open or closed	Damaged stem	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve.
The actuator emits a bad smell, heat, or smoke.	Actuator is defective	Stop using the product immediately, remove the valve from the piping, and replace the actuator.
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.
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.

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]

Diaphragm Valve 16 Type Air Type AD Type
15～50mm

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

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