

Serial No.	H-A065-E-1
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# Diaphragm Valve Type 14 Pneumatic Actuated Type AP

## Contents



### User's Manual





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This user's guide contains very important information for the proper installation, maintenance and safe use of an ASahi AV Product. Please store this manual in an easily accessible location.

<Warning & Caution Signs>

 Warning	This symbol reminds the user to take caution due to the potential for serious injury or death.
 Caution	This symbol reminds the user to take caution due to the potential for damage to the valve if used in such a manner.

<Prohibited & Mandatory Action Signs>

	Prohibited: When operating the valve, this symbol indicates an action that should not be taken.
	Mandatory action: When operating the valve, this symbol indicates mandatory actions that must be adhered to.

## (1) Be sure to read the following warranty clauses of our product

- Always observe the specifications of and the precautions and instructions on using our product.
- We always strive to improve product quality and reliability, but cannot guarantee perfection. Therefore, should you intend to use this product with any equipment or machinery that may pose the risk of serious or even fatal injury, or property damage, ensure an appropriate safety design or take other measures with sufficient consideration given to possible problems. We shall assume no responsibility for any inconvenience stemming from any action on your part without our written consent in the form of specifications or other documented approval.
- The related technical documents, operation manuals, and other documentation prescribe precautions on selecting, constructing, installing, operating, maintaining, and servicing our products. For details, consult with our nearest distributor or agent.
- Our product warranty extends for one and a half years after the product is shipped from our factory or one year after the product is installed, whichever comes first. Any product abnormality that occurs during the warranty period or which is reported to us will be investigated immediately to identify its cause. Should our product be deemed defective, we shall assume the responsibility to repair or replace it free of charge.
- Any repair or replacement needed after the warranty period ends shall be charged to the customer.
- The warranty does not cover the following cases:
  - (1) Using our product under any condition not covered by our defined scope of warranty.
  - (2) Failure to observe our defined precautions or instructions regarding the construction, installation, handling, maintenance, or servicing of our product.
  - (3) Any inconvenience caused by any product other than ours.
  - (4) Remodeling or otherwise modifying our product by anyone other than us.
  - (5) Using any part of our product for anything other than the intended use of the product.
  - (6) Any abnormality that occurs due to a natural disaster, accident, or other incident not stemming from something inside our product.

## (2) General operating instructions



Warning

- Never attempt to disassemble an actuator. (If disassembled forcible, internal parts may jump out and this is very dangerous.)

- Do not touch the actuator when it operated.



- Using a positive-pressure gas with our plastic piping may pose a dangerous condition due to the repellent force particular to compressible fluids even when the gas is under similar pressures used for liquids. Therefore, be sure to take the necessary safety precautions such as covering the piping with protective material. For inquiries, please contact us. For conducting a leak test on newly installed piping, be sure to check for leaks under water pressure. If absolutely necessary to use a gas in testing, please consult your nearest service station beforehand.



Caution

- Do not step on or apply excessive weight on valve. (It can be damaged.)

- Keep the valve away from excessive heat or fire. (It can be damaged, or destroyed.)

- Do not use AV valves in a place where they may become submerged in water.

- Do not apply a great impact or vibration to the actuator.

(Any such practice may result in breakdown.)



- Always operate the valve within the pressure vs. temperature range.

(The valve can be damaged or deformed by operating beyond the allowable range.)

- Allow sufficient space for maintenance and inspection.

- Select a valve material that is compatible with the media. For chemical resistance information, refer to "CHEMICAL RESISTANCE ON ASAHI AV VALVE".

(Some chemicals may damage incompatible valve materials.)

- Do not use the valve in conditions where the fluid may have crystallized.

(The valve will not operate properly.)

- Keep the valve out of direct sunlight, water and dust. Use cover to shield the valve.

(The valve will not operate properly.)

- Perform periodic maintenance. (Leakage may develop due to temperature changes or periods of prolonged storage, rest, or operation.)

- The travel stop may have to be adjusted if media leakage is detected between the upstream & downstream sides of the valve.

- Bonnet bolt torque should be checked before installation, as they may become loose after long-term storage. A periodic check of the valve condition as well as bonnet & flange bolt torque should be made part of preventative maintenance program properly re-tightening the bolts as necessary. It is especially important to re-tighten all bolts during the first shutdown.

- Set valve support on the valve.

- The AV valves must be used within the specifications specifically applicable to the product.

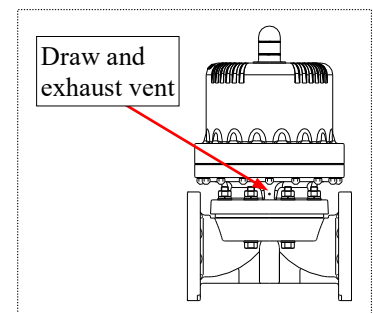


Warning

- The actuator of diaphragm valve have draw and exhaust vent.(The back side)

The fluid might spout when the diaphragm is damaged by the condition.

Perform periodic maintenance.



**(3) General instructions for transportation, unpacking and storage**

Warning

- When suspending and supporting a valve, take care and do not stand under a suspended valve.



Caution

- This valve is not designed to handle impacts of any kind. Avoid throwing or dropping the valve.

- Avoid scratching the valve with any sharp object.

- Do not over-stack cardboard shipping boxes. Excessively stacked packages may collapse.

- Avoid contact with any coal tar creosote, insecticides, vermicides or paint.

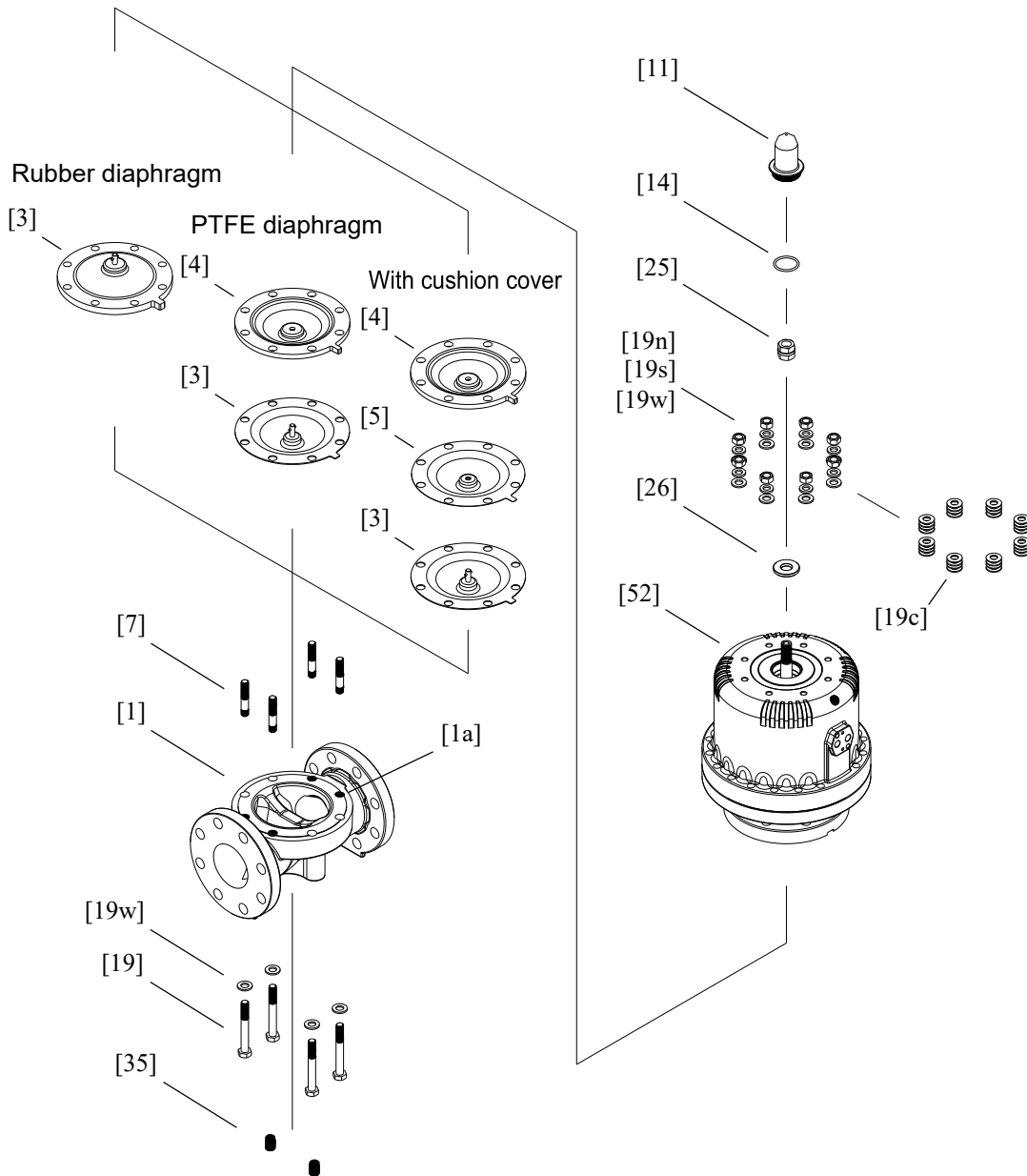
(These chemicals may cause damage to the valve.)



- Store products in their corrugated cardboard boxes. Avoid exposing products to direct sunlight, and store them indoors (at room temperature). Also avoid storing products in areas with excessive temperatures. (Corrugated cardboard packages become weaker as they become wet with water or other liquid. Take care in storage and handling.

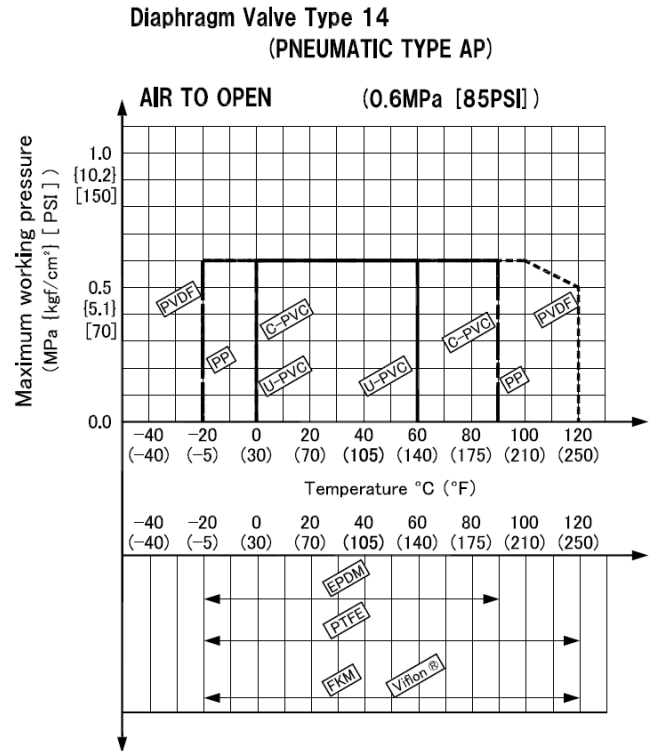
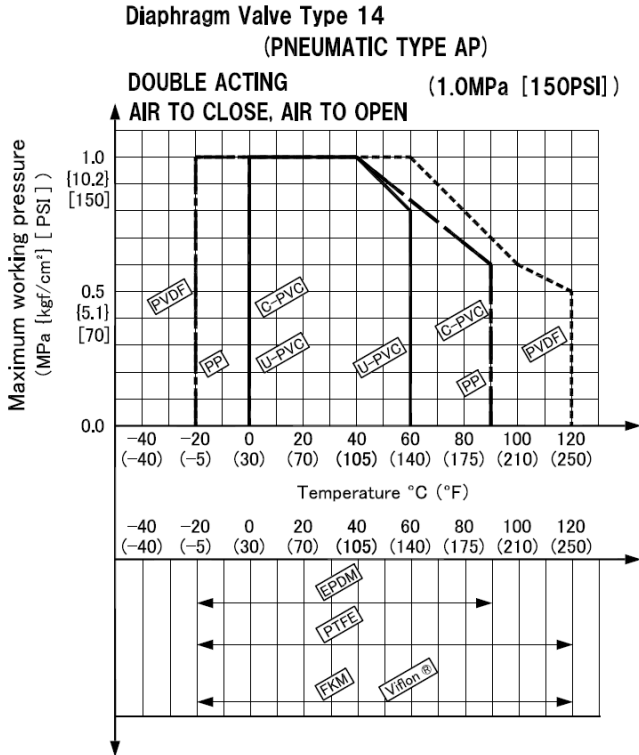
- After unpacking the products, check that they are defect-free and meet the specifications.

## (4) Name of parts



No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[11]	Gauge cover	[19w]	Washer
[1a]	Inserted nut	[14]	O-ring	[25]	Stopper
[3]	Diaphragm	[19]	Bolt	[26]	Stopper base
[4]	Cushion	[19c]	Conical spring washer	[35]	ENSAT for body
[5]	Cushion cover	[19n]	Nut	[52]	Actuator
[7]	Stud bolt	[19s]	Spring washer		

## (5) Maximum working pressure vs. temperature



## (6) Specifications of actuator

Nominal size		65mm (2½")	80mm (3")	100mm (4")
Operating pressure MPa [PSI]	Double acting Air to open Air to close	0.4-0.5 [60-75]		
Air consumption, NL[inch <sup>3</sup> ]/1 opening of closing (0.4MPa)	Double acting	22.1 [1349]	23.7 [1446]	30.4 [1855]
	Air to open (0.6MPa spec)	7.4 [452]	7.7 [470]	10.6 [647]
	Air to open (1MPa spec)	7.4 [452]	9.3 [568]	15.1 [921]
	Air to close	7.0 [427]	8.3 [506]	17.2 [1050]
Air supply orifice	Double acting Air to open Air to close	Rc 1/4		
Operating environment temperature °C[°F]	Double acting Air to open Air to close	-10~50 [15~120]		

## (7) Specifications of options

### (Specifications of Solenoid valve)

Actuation	Nom. Size	Model No.	Pipe bore	Effective cross section area mm <sup>2</sup> (inch <sup>2</sup> )	Power consumption	Additional function
Double acting Air to open Air to close	65 (2½") -100mm(4")	4N3S102K-W□ -G31193	Rc 1/4	10 (0.016) or more	AC ; 6VA DC ; 5.5W	- Bypass valve built in  - Silencer with Needle Valve attached (to be used as speed controller)

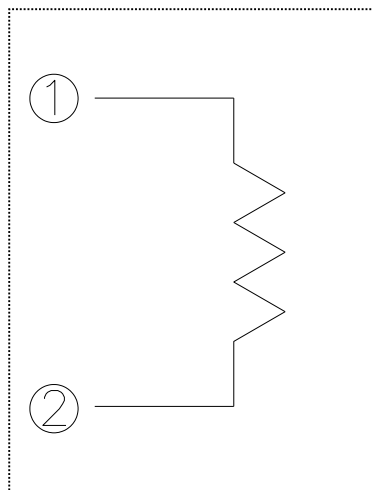
4N3S102K-W□-G31193



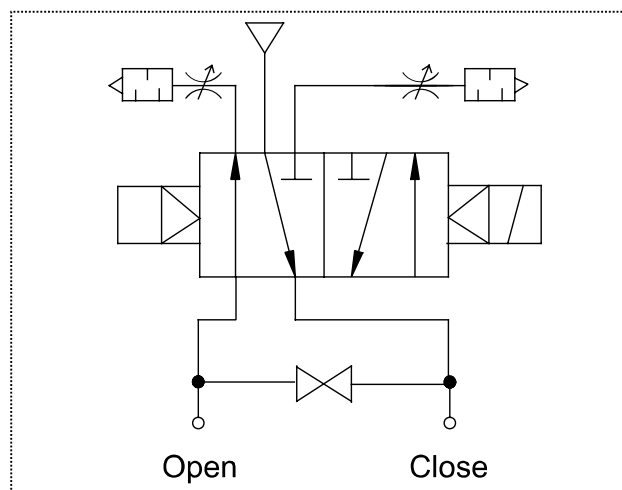
Specification	sign
AC100V 50/60Hz	1
AC110V 50/60Hz	(2)
AC200V 50/60Hz	3
AC220V 50/60Hz	(4)
DC24V	5
DC48V	(6)
DC100V	(7)
DC125V	(9)

\* ( ) is special order.

connection diagram



JIS sign



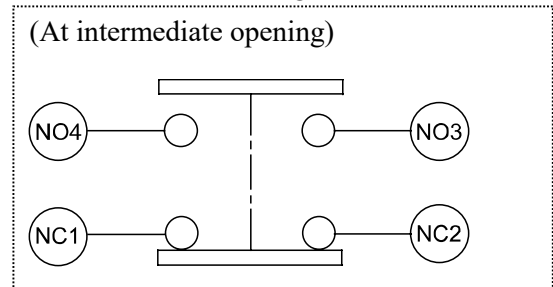
## (Specifications of limit switch)

Actuation	Nominal size	Type sign	Protection grade
Double acting Air to open Air to close	65mm-100mm (2½" - 4")	1LS1-J	IP67 (IEC529)

### Limit switch rating

Rate voltage (V)	Resistive load (A)	Inductive load (A)
AC125	10	6
AC250	10	6
DC125	0.8	0.2
DC250	0.4	0.1

### connection diagram



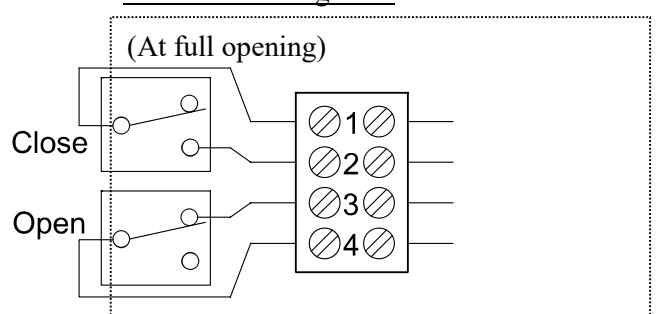
## (Specifications of limit switch box)

Actuation	Nominal size	Type sign	Protection grade
Double acting Air to open Air to close	65mm-100mm (2½" - 4")	HPCR4MVAZ50	IP65 (IEC529)

### Limit switch rating

Rate voltage (V)	Resistive load (A)
AC250	5.0

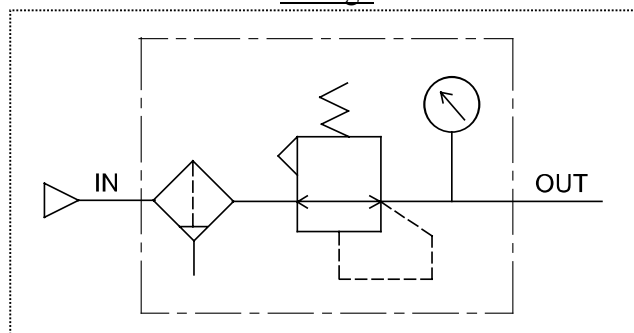
### connection diagram



## (Specification of filter regulator)

Actuation	Nom. Size	Type sign	Pipe bore	Element degree of filtration
Double acting Air to open Air to close	65mm-100mm (2½" - 4")	ARU2-02-8A-G	Rc 1/4	5 μm

### JIS sign

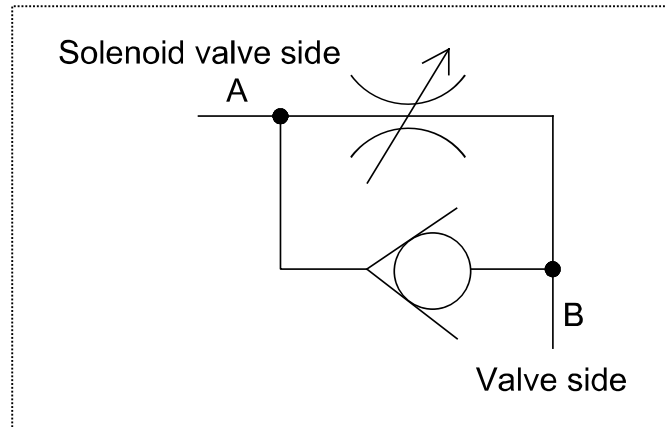




## (Specification of speed controller)

Actuation	Nom. Size	Type sign	Pipe bore	Effective cross section area mm <sup>2</sup> (inch <sup>2</sup> )		Needle No. of revolution
				Free flow	Control flow	
Double acting Air to open Air to close	65mm-100mm (2½" - 4")	SC7-08A	Rc 1/4	11 (0.017)	8.3 (0.013)	8 turns

JIS sign



**(8) Installation procedure**

**Flanged type** (Material : PVC, C-PVC, PP, PVDF)

- Warning** - When suspending and supporting a valve, take care and do not stand under a suspended valve.  
 - Be sure to conduct a safety check on all hand and power tools to be used before beginning work.  
 - Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)
- Caution** - When installing a pipe support by means of a U-band or something similar, take care not to over-tighten. (Excessive force may damage the pipe.)  
 - When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.  
 - Use flat faced flanges for connection to AV Valves.  
 - Ensure that the mating flanges are of the same standards.  
 - Be sure to use sealing gaskets (AV Gasket), bolts, nuts, and washers and tighten them to specified torques. (When a non-AV gasket is used, a different tightening torque instruction should be followed.)

**Necessary items**

- Torque wrench
- Spanner wrench
- AV gasket
- Bolt, Nut, Washer (For many flanges specification)

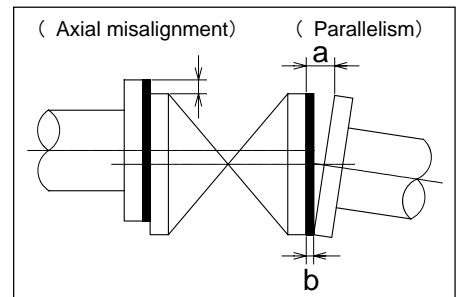
**Procedure**

- 1) Set the AV gasket between the flanges.
- 2) Insert washers and bolts from the pipe side, insert washers and nuts from the valve side, then temporarily tighten by hand.

- Caution** - The parallelism and axial misalignment of the flange surface should be under the values shown in the following table to prevent damage the valve.  
 (A failure to observe them can cause destruction due to stress application to the pipe.)

Unit : mm (inch)

Nom. Size	Axial misalignment	Parallelism (a-b)
65mm, 80mm (2½" - 3")	1.0 (0.04)	0.8 (0.03)
100mm (4")	1.0 (0.04)	1.0 (0.04)

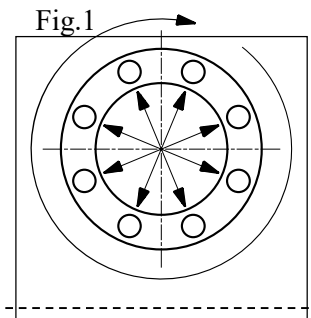


- 3) Tighten the bolts and nuts gradually with a torque wrench to the specified torque level in a diagonal manner. (Refer to Fig.1.)
- 4) Tighten it more than 2 turns clockwise with specified torque. (Refer to Fig.1)


- Caution** - Do not tighten at the specified torque or more.  
 (The valve can be damaged or leak.)

Unit : N·m [lb·inch]

Specified torque value	Unit : N·m [lb·inch]	
Nom. Size	65mm (2½")	80mm - 100mm (3" - 4")
PTFE·PVDF coated	22.5 [200]	30.0 [266]
Rubber	22.5 [200]	30.0 [266]



## (9) Support setting procedure

**Caution**  -- Do not subject the valve to pump vibrations. (The valve may be damaged.)

**!** - Set valve support on the valve.  
 - When installing a pipe support by means of a U- type clamp or something similar, take care not to fasten it too much. (Excessive tension may damage it.)

**Necessary items**

- Spanner wrench
- U-type clamp (with bolt)
- Rubber sheet

### Level plumber

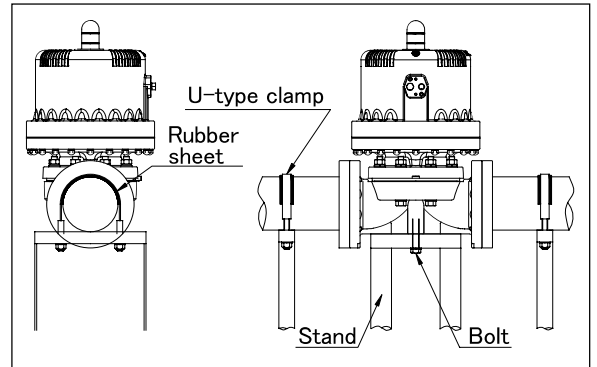
○ Using metal insert (Ensat) & U-type clamp

Fix the installation jig (under the valve) and stand with bolts.

Spread the rubber sheet on the pipe and secure pipe with U-type clamp.

Screw size of “Ensat”

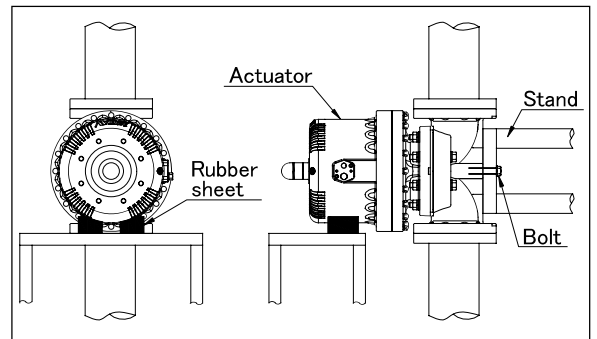
Nom. Size	65mm (2½”)	80mm - 100mm (3” - 4”)
Screw size	M8	M12



### Perpendicular plumber

Fix the installation jig (under the valve) and stand with bolts.

Spread the rubber sheet on the pipe and secure pipe with U-type clamp.



## (10) Air piping procedure

### <1> For a standard type and an attached speed controller type



Caution

- Do not remove a dust-proof cap provided to piping port before piping work starts.
- Avoid excessive tightening. (The threaded area of a pipe can be damaged.)
- Check the connection locations, air pipe sizes, and screw types with the approved drawings and other documents for the product. Then lay the air piping.
- The operating fluid must be clean air filtered through a pertinent air filter.
- If the actuator is used in an environment below 5°C temperature, its operating fluid must be free from the water and moisture contained in it because of possible problems due to the freeze.
- Steel pipes must always be of the plated.
- Before installing an actuator in pipeline, flash the inside of pipeline completely.
- Do not apply a sealant excessively lest it fall off in the pipeline when an actuator is piped.
- Threaded area of a pipe must be free from the sharp edges and burr.

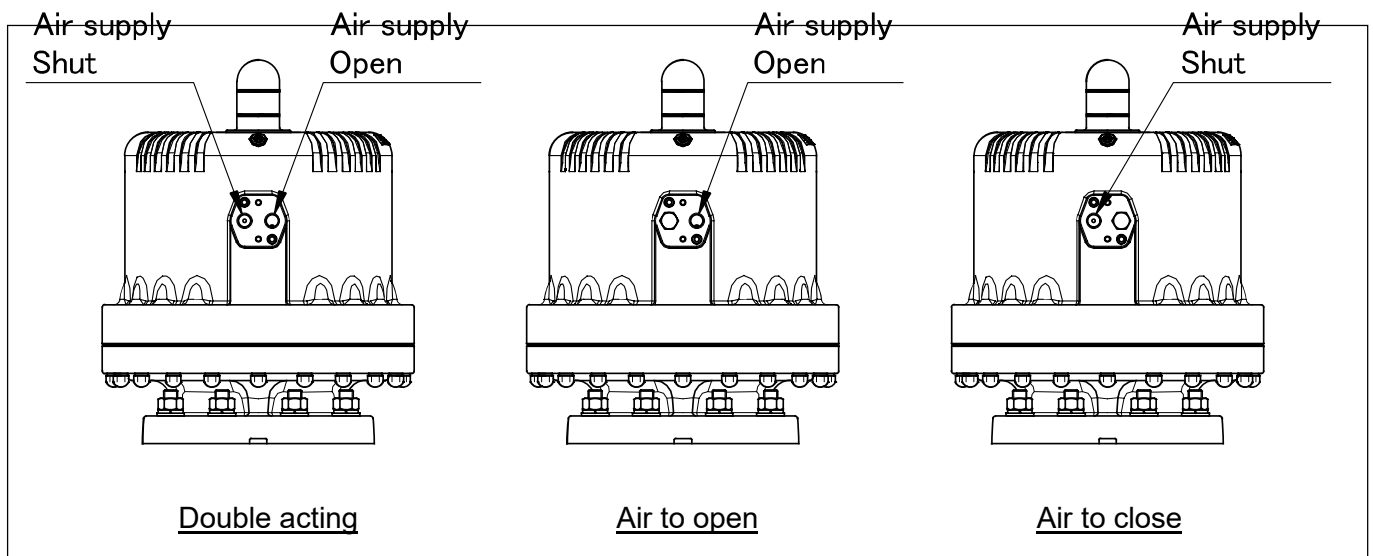
#### Necessary items

- Spanner wrench
- Sealing tape
- Steel pipe or tube for piping
- Joint for steel pipe or tube

#### Procedure

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

\* For the speed controller, the piping procedure is the same.



## <2> For a solenoid valve and filter regulator



Caution

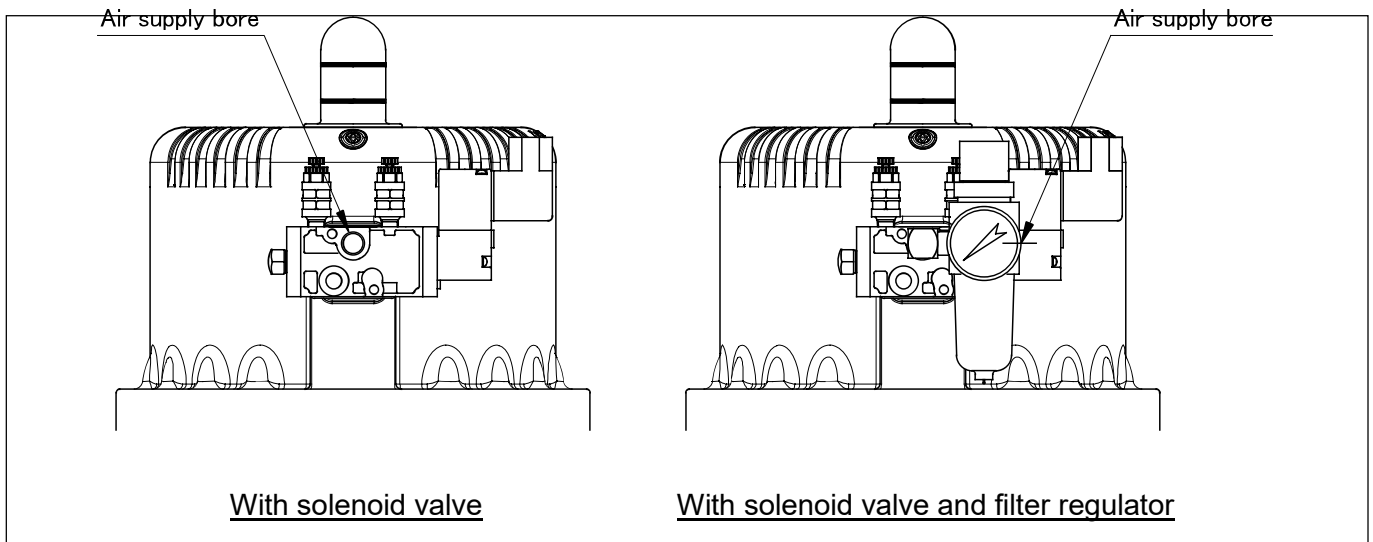
- Do not remove a dust-proof cap provided to piping port before piping work starts.
- Avoid excessive tightening for joint. (The threaded area of a pipe can be damaged.)
- Do not apply a sealant excessively lest it fall off in the pipeline when an actuator is piped.
- ! - Steel pipes must always be of the plated.
- Before installing an actuator in pipeline, flash the inside of pipeline completely.
- Threaded area of a pipe must be free from the sharp edges and burr.
- Speed controller for solenoid valve adjusts and fasten a lock nut by open ended spanners.
- Open the drain periodically in order to exhaust the deposit.
- The equipment must be used at a pressure below the maximum operating pressure specified for the product.

### Necessary items

- Spanner wrench
- Sealing tape
- Steel pipe or tube for piping
- Joint for steel pipe or tube




### Procedure

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



## (11) Connection of limit switch procedure

<1> For a type of limit switch is "1LS1-J"

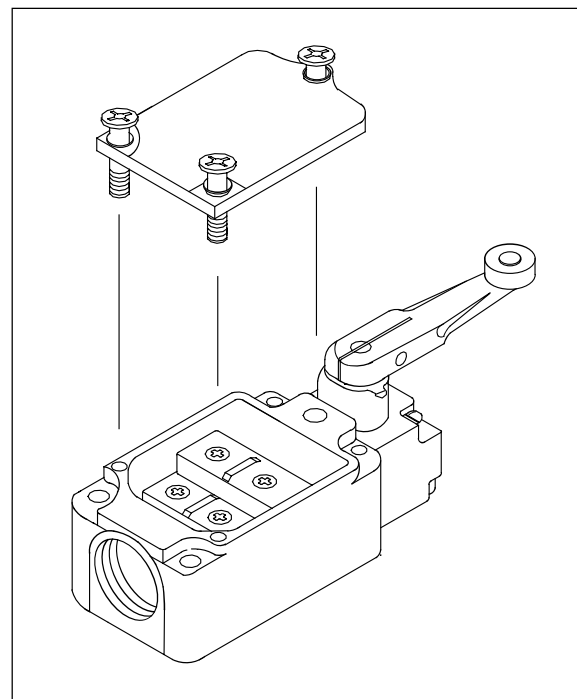
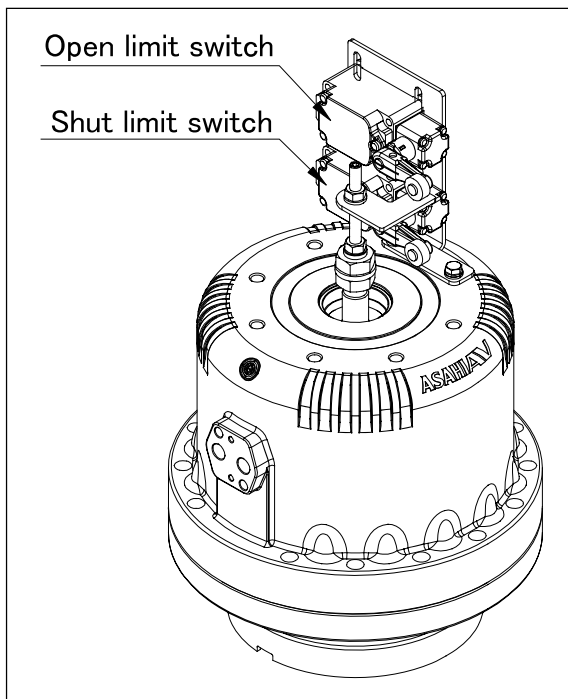
-  **Warning** - Shut down the power on the equipment before connecting wires. (There are risks of electrical shock depending on the level of operating voltage.)
-  **Caution** - Be sure that the terminal cover and body cover are put on during the operation.
-  - If you use the limit switch at 1mA-100mA or 5-30V, consult near Asahi dealer.

### Necessary items




- Crimp-style terminal
- Terminal crimping tool
- Phillips head screw driver
- Wire stripper
- connector (G1/2)

### Procedure

- 1) Loosen the three screws used to attach the limit switch cover with a Phillips head screwdriver and remove cover from the limit switch. (The screw is made so that it will not detach from the cover.)
- 2) Pull and remove protective cap, made of resin, from the cover.
- 3) Draw a cable through the connector.
- 4) Strip cable with a wire stripper.
- 5) Install a crimp-style terminal on the lead wire with a terminal crimping tool.
- 6) Connect terminal screw with a Phillips head screwdriver according to the internal circuit diagram shown in page 7.
- \* Tighten the screws. (If not, electric leaks or shocks may occur.)
- 7) Tighten the above three screws with a Phillips head screwdriver to install cover on the limit switch.
- 8) Tighten the cable by connector.



**<2> For a limit switch box**

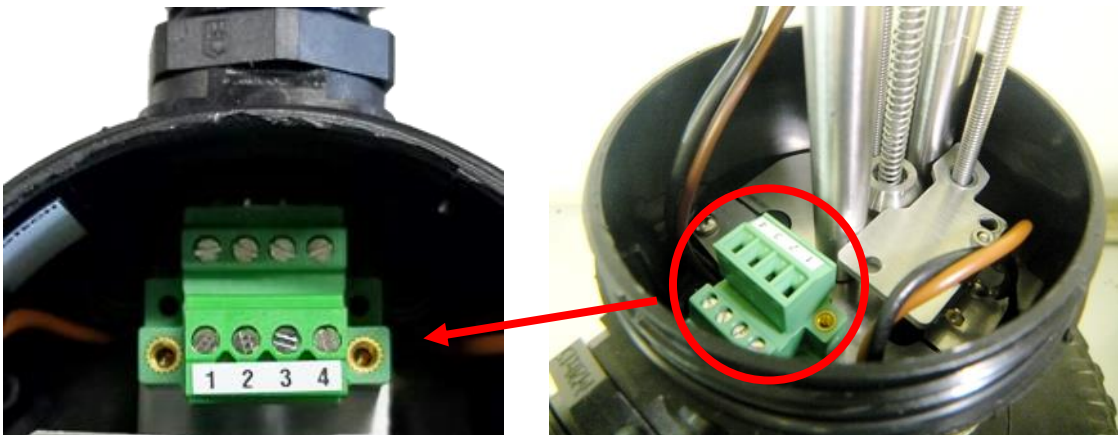
-  - Shut down the power on the equipment before connecting wires. (There are risks of electrical shock depending on the level of operating voltage.)
- Warning**
-  - Be sure that the terminal cover and body cover are put on during the operation.
- Caution**
-  - If you use the limit switch at 1mA-100mA or 5-30V, consult near Asahi dealer.

**Necessary items**

- Precision screw driver (Flathead)
- Wire stripper
- Electric works knife

**Procedure**

- 1) Loosen by hand of the limit switch cover and remove.
- 2) Remove the cap of the cable connector.
- 3) Draw a cable through the cap and body of the cable connector.
- 4) Strip cable with a wire stripper.
- 5) Connect terminal screw with a precision screwdriver according to the internal circuit diagram shown in page 7.
- 6) Tighten the cap of the cable connector.
- 7) Set the limit switch cover.



## (12) Connection of solenoid valve procedure



Caution

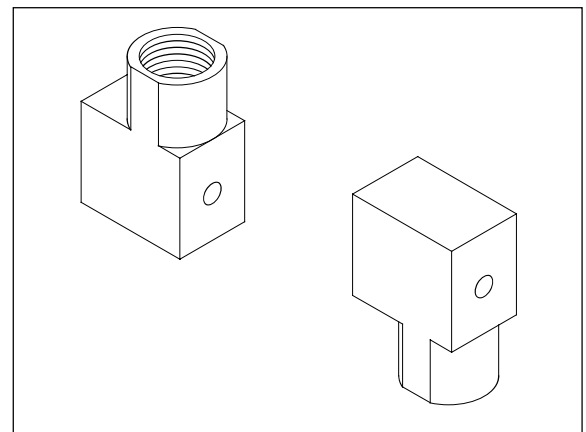
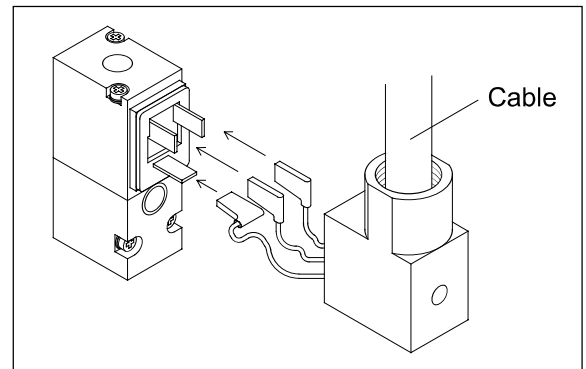
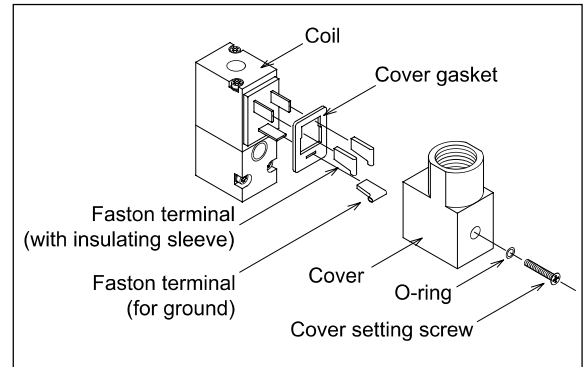
- Shut down the power on the equipment before connecting or disconnecting wires.  
(There are risks of electrical shock depending on the level of operating voltage.)
- Check the solenoid voltage and supply voltage.

### Necessary items

- Phillips head screw driver
- Terminal crimping tool
- Connector (G1/2)
- Wire stripper

### Procedure

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





## (13) Operating procedure



Caution

- When AV valve is equipped with a solenoid valve, do not leave solenoid valve terminal cover off. (Contact with the terminal will cause an electric shock.)
- Don't supply air during manual operation. (When air is supplied during the manual operation, you may be injured.)



- Check that the supply pressure of the pressure reducing valve with a filter is 0.4MPa [60psi] or more. (AV valve may not function.)

### Procedure

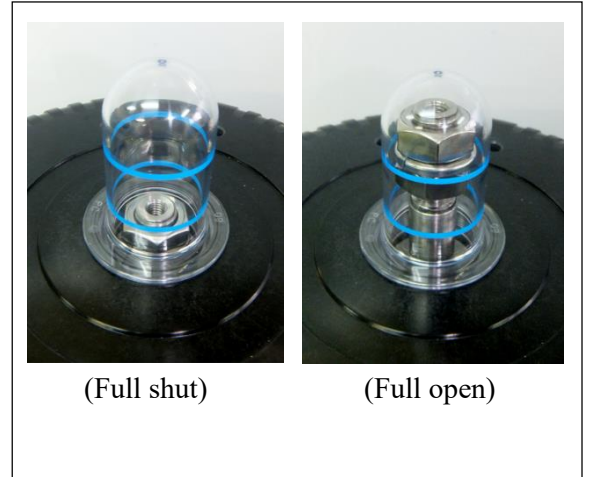
- 1) Supply air to the air supply opening.
- 2) Check that the air supplying side and the stopper [25] position are matching.
- 3) Stop supplying air.

<For the solenoid valve >

### Procedure

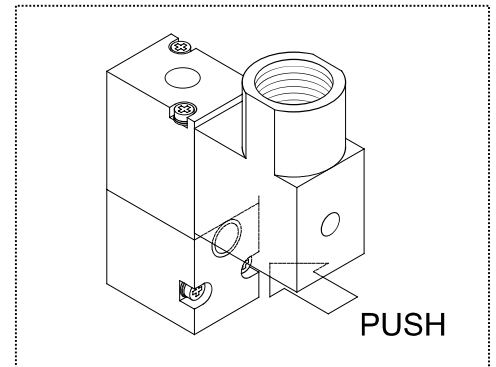
- 1) Supply the air to the solenoid valve.
- 2) Push the button with a finger, and confirm the action mode shown in the following table.
- 3) Apply regular rated voltage to the solenoid valve, and confirm the action mode shown in the following table.
- 4) Turn off the solenoid valve.

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



(Full shut)

(Full open)



## (14) Adjustment of opening / closing speed procedure

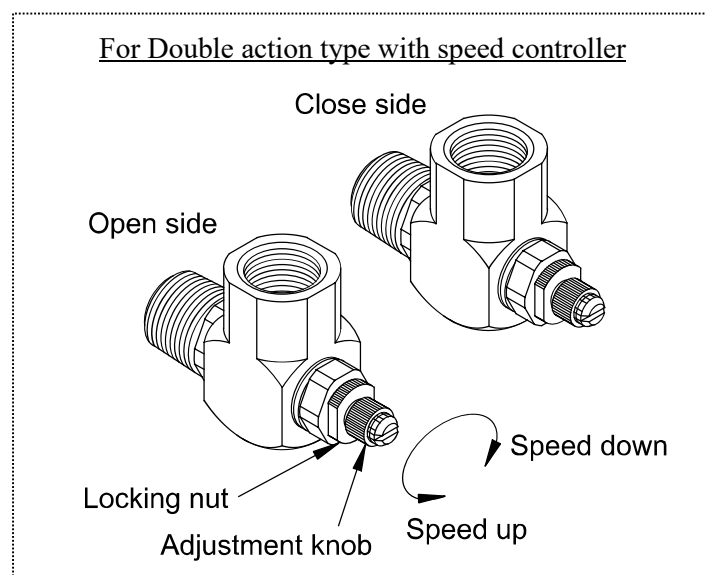
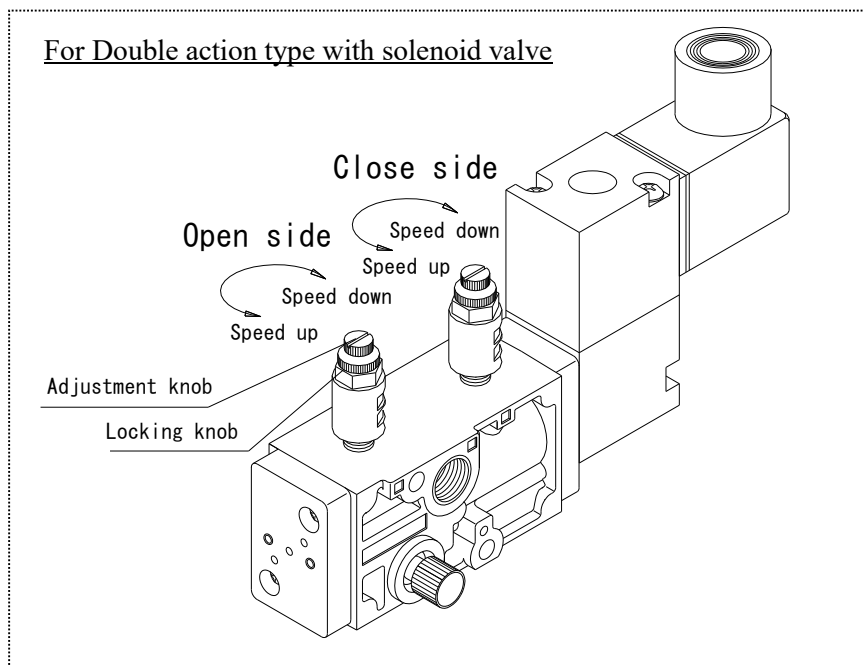
○ Double action type

Necessary items

- Spanner wrench

### Procedure

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



- Single action type

Necessary items

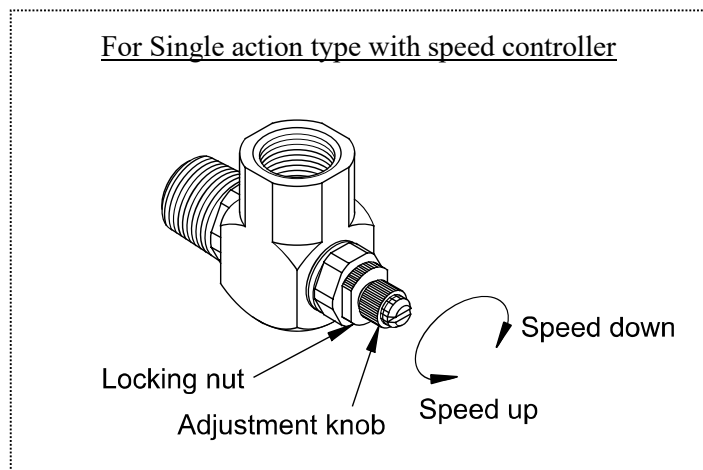
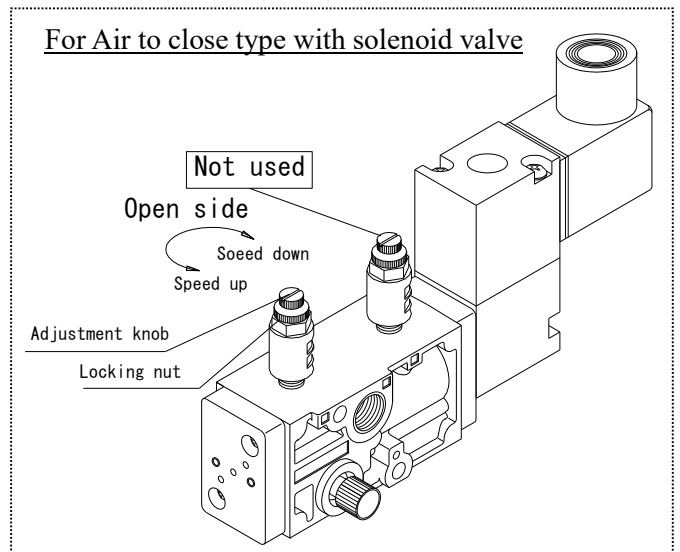
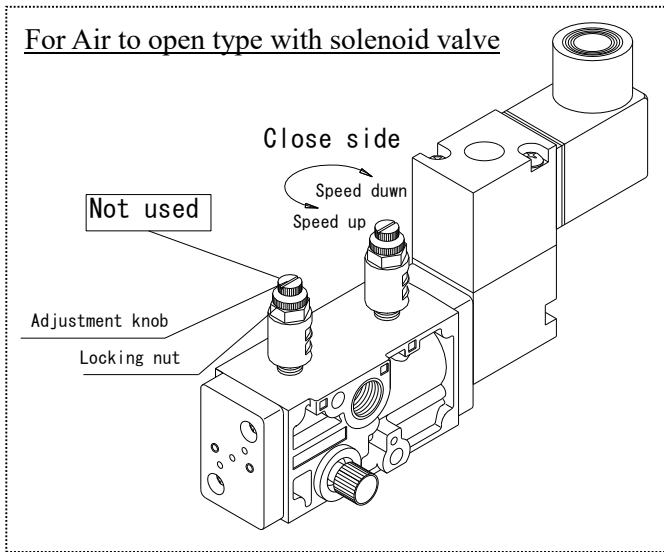
- Spanner wrench

The actuation type changes the speed-adjustable direction.


Single action	Opening speed	Closing speed
Air to open type	Not adjustable	Adjustable
Air to close type	Adjustable	Not adjustable

Procedure


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



## (15) Adjustment procedure for stopper

 - Do not touch the actuator when it operated.

**Warning**

 - If a stopper is loose, adjust it.

**Caution** - Tighten the stoppers securely. (Too weak a torque on a stopper may cause it to loosen.)

### Necessary items

- Spanner wrench
- Protective Gloves
- Goggles

### Procedure (Double acting type and Air to close type)

#### 1. Remove the stopper

- 1) Turn counterclockwise to remove the gauge cover.
- 2) Fully open valve by controlling the volume of air.
- 3) The lower nut with spanner wrench to lock, and use spanner wrench to loosen upper lock nut.
- 4) Remove stopper [25] from stem.

#### 2. Adjustment of stopper

- 1) Fully close valve at the operation pressure shown in the following table.

Nominal size		operating pressure (MPa [psi])	
		Double acting	Air to close
65mm	(2½")	0.2 [29]	0.3 [45]
80mm	(3")	0.3 [45]	0.4 [60]
100mm	(4")	0.4 [60]	0.35 [50]

- 2) By hand screw in until the lower nut comes into contact with the bolt.
- 3) Fully open valve by controlling the volume of air.
- 4) Tighten the stoppers securely. (Too weak a torque on a stopper may cause it to loosen.)

#### 3. Inspection

- 1) Completely close valve by controlling the volume of air and check for leakage.
- 2) If there is leakage, loosen lower part nut 1/4-turns, and repeat this.
- 3) Turn clockwise to attach the gauge cover.
- 4) Valve option equipped with limit switch or positioner can adjust by same method. Turn off the power source of positioner.

### Procedure (Air to open type)

#### 1. Remove the stopper

- 1) Turn counterclockwise to remove the gauge cover.
- 2) Fully open valve by controlling the volume of air.
- 3) Fix lower part nut with spanner wrench and use spanner wrench to loosen upper part nut.
- 4) Remove stopper [25] from stem.



#### 2. Adjustment of stopper

- 1) Fully close valve by controlling the volume of air.
- 2) By hand screw in until the lower nut comes into contact with the bolt.
- 3) Fully open valve by controlling the volume of air.
- 4) Tighten the stoppers securely. (Too weak a torque on a stopper may cause it to loosen.)

#### 3. Inspection

- 1) Completely close valve by controlling the volume of air and check for leakage.
- 2) If there is leakage, loosen lower part nut 1/4-turns, and repeat this.
- 3) Turn clockwise to attach the gauge cover.
- 4) Valve option equipped with limit switch or positioner can adjust by same method. Turn off the power source of positioner.

## (16) Disassembling method for replacing parts

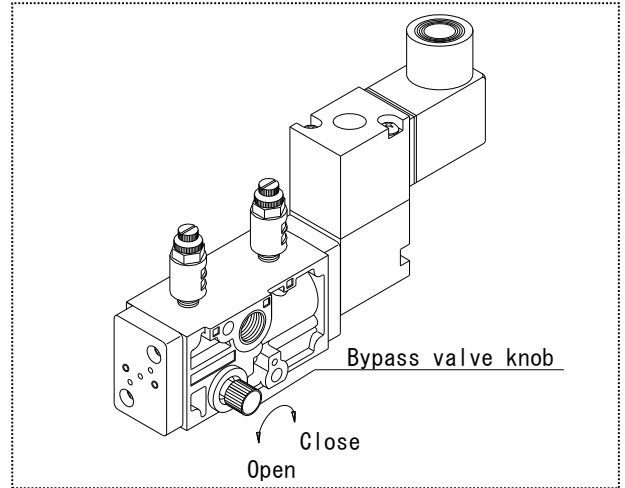
- Warning**  - Never attempt to disassemble an actuator.  
 (If disassembled forcible, internal parts may jump out and this is very dangerous.)  
 - Do not touch the actuator when it operated.
- Caution**  - Be sure to conduct a safety check on all hand and power tools to be used before beginning work.  
 - Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty.  
 (You may be injured.)  
 - Do not change or replace valve parts under line pressure.

### Necessary items

- Spanner wrench
- Protective gloves
- Safety goggles

### Procedure (Disassemble)

- 1) Completely discharge fluid from line.
- 2) Close main valve for air and open bypass valve to discharge air from the actuator.
- 3) Remove air line. (Incase of air to open type, do not remove the air line.)
- 4) Use spanner wrench to loosen bolt and nut [19] with a spanner wrench between the body and the actuator.
- 5) Remove actuator [52] from body.
- 6) Remove diaphragm [3] by turning it quarter turn.
- 7) Remove air line.



(Assembly)

### Procedure

Assembly by using reverse procedures on steps 7) to 1).  
 (As to the body tightening torque, refer to Table 1.)

(Table 1) Body tightening torque value

Unit : Nm [lb·inch]

Nominal size	65mm (2½")	80mm (3")	100mm (4")
Diaphragm material			
Rubber	13.0 [115]	18.0 [159]	35.0 [310]
PTFE	15.0 [133]	20.0 [177]	40.0 [354]

## (17) Inspection items



- Perform periodic maintenance. (Leakage may develop due to temperature changes or over periods of prolonged storage, rest or operation.)

- Periodically inspect and maintain the AV valve in accordance with the plant schedule.



Portion to be inspected	Inspection item
Actuator	1) Existence of scratches, cracks, deformation, and discoloring. 2) Tightening condition of respective threaded portions. (Loose or not) 3) Existence of abnormality in opening and closing operating sounds. 4) Existence of air leak  * It is unnecessary to supply oil to this actuator.
Valve	1) Existence of scratches, cracks, deformation, and discoloring. 2) Existence of leakage from the valve to the outside. 3) Existence of leakage when the fully closed. 4) Tightening condition of bolt and nut [19] (loose or not) .

## (18) Troubleshooting

Problem	Cause	Treatment
The valve does not operate by air operations	The power source of the control panel is Turned off.	Turn on the power source.
	The solenoid valve is disconnected.	Check the connection again. (Refer to page 6,15)
	Air is not supplied to the solenoid valve.	Supply air to solenoid valve.
	The supply voltage to the solenoid valve is wrong.	Check voltage with a tester and set specified voltage.
	The voltage to the solenoid valve is low.	
	The bypass valve opens.	Close bypass valve by turning the bypass valve knob in a clockwise direction.
	The speed controller's knob is fully turned in a clockwise direction.	Turn speed controller's knob in a counterclockwise direction. (Refer to pages 17 and 18.)
	The operation pressure is low.	Check the operating pressure.

Problem	Cause	Treatment
Fluid leaks from the valve even when the valve is closed fully.	The diaphragm is worn.	Replace the diaphragm with a new one.(Refer to pages 20)
	The diaphragm or the body is scratched.	Replace scratched parts with new one. (Refer to pages 20)
	Foreign matter is in the valve.	Disassemble valve to remove foreign matter. (Refer to pages 20)
	The operating pressure is low.	Check the operating pressure.
	Insufficient stopper adjustment.	Adjust the stopper. (Refer to pages 19)
Fluid leaks from the valve.	The bolt between the body and actuator is loose.	Tighten up the bolt to the specified torque.(Refer to page 20)
	The diaphragm or the body is scratched.	Replace scratched parts with new one. (Refer to pages 20)
	There is foreign matter between the diaphragm and the body.	Disassemble valve to remove foreign matter. (Refer to pages 20)
The actuator operates, but the valve does not open or close.	The diaphragm or the joint metal fitting is broken.	Replace broken parts. (Refer to pages 20)

**(19) Handling of residual and waste materials**

  - Make sure to consult a waste treatment dealer for recommendations on the proper disposal of plastic valves. (Poisonous gas is generated when the valve is burned improperly.)

Diaphragm Valve Type 14  
Pneumatic Actuated Type AP

**ASAHI YUKIZAI CORPORATION**

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