Rotary Damper
Pneumatic Type AR
40～400mm

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.

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 product with protective materials. If you have any questions, please contact us. ▶ 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. ▶ Do not flow fluid containing slurry. **Doing so may cause the actuator to stop moving.** ▶ Do not remove the protective plug until the air piping is connected.
Forcing	**There is a risk of injury or damage to the valve.** ▶ Make sure that the operation air in the actuator is completely exhausted when performing a double-acting manual operation. ▶ Secure sufficient space for maintenance and inspection when piping. **Doing so may cause the actuator to stop moving.** ▶ Prevent foreign matter, water droplets, oil, etc. from entering the actuator through the air piping or air intake or exhaust holes. Be especially careful in areas where there is a possibility of snow accumulation, as snow melting water may enter. ▶ When installing the product in a place where the ambient temperature may be 5°C or less, remove moisture from the operation air to prevent freezing. ▶ When installing the product in a location with a low-temperature environment, provide a cover to cover the whole area to prevent the actuator from freezing, and periodically check the operation status. ▶ Use clean, dehumidified and dedusted operating air. However, consult with CKD when using high-dry air with a dew point of-40°C or less.

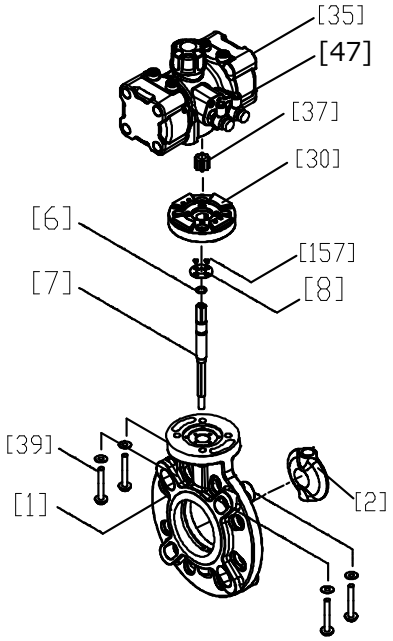
Product Handling (continued)

⚠Caution	
Forcing	**The valve can be damaged, or leak.** ▶ Confirm that the operation air is within the allowable range 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 and the ambient temperature within the allowable range. ▶ 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 installing the valve in places where it is constantly exposed to splashes of water or dust, direct sunlight, or in places with volatile gases or poor atmospheres, or protect the valve with a cover or the like to cover the entire area. ▶ Perform maintenance on a regular basis referring to "**10. Inspection items**." Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ When installing a valve, provide an appropriate valve support so that excessive force is not applied to the valve and piping. ▶ Always use the product within the range of the indicated product specifications.

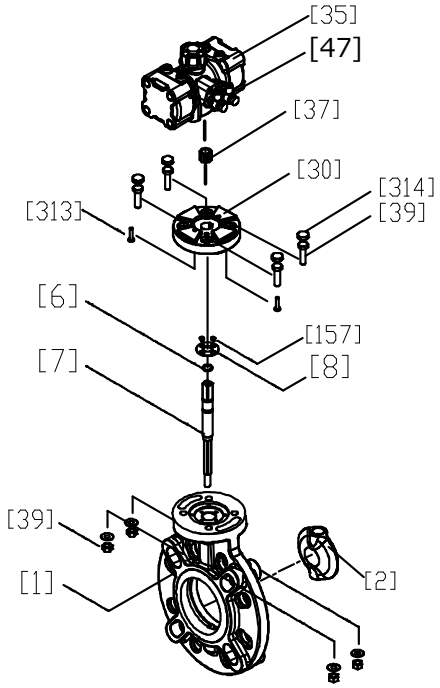
3. Name of each part

Body material: U-PVC, PP

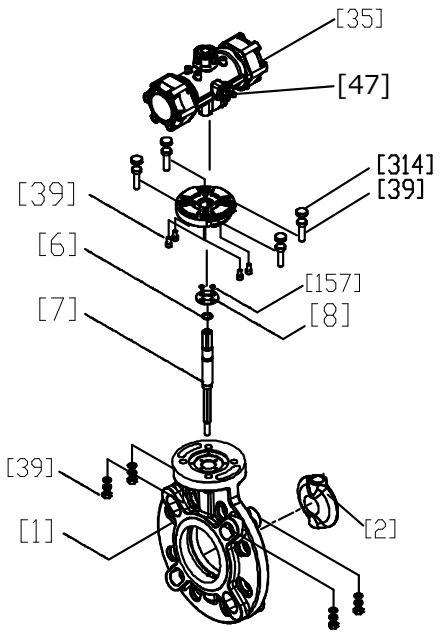
When the connection dimensions of the valve and actuator are the same.



When the connection dimensions of the valve and actuator are different.



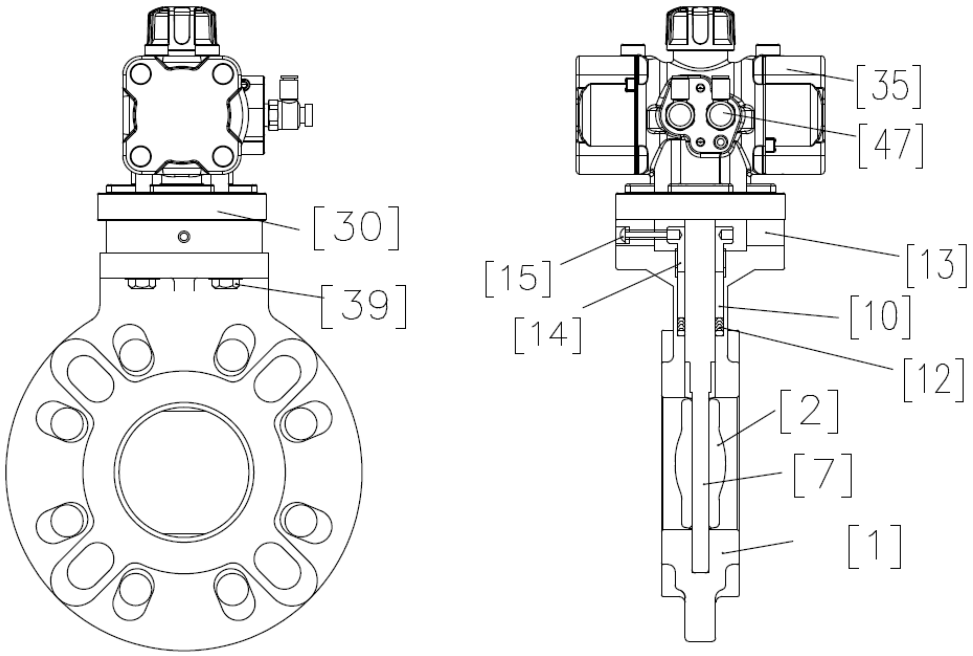
F05-F07



F07-F10

[1]	Body	[8]	Stem retainer (A)	[47]	Speed controller
[2]	Disc	[30]	Mounting base	[313]	Tapping screw
[3]	Seat	[35]	Actuator	[314]	Rubber cap
[6]	O-ring (C)	[37]	Adapter		
[7]	Stem	[39]	Bolt/nut (A)		

Body material: PVDF



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

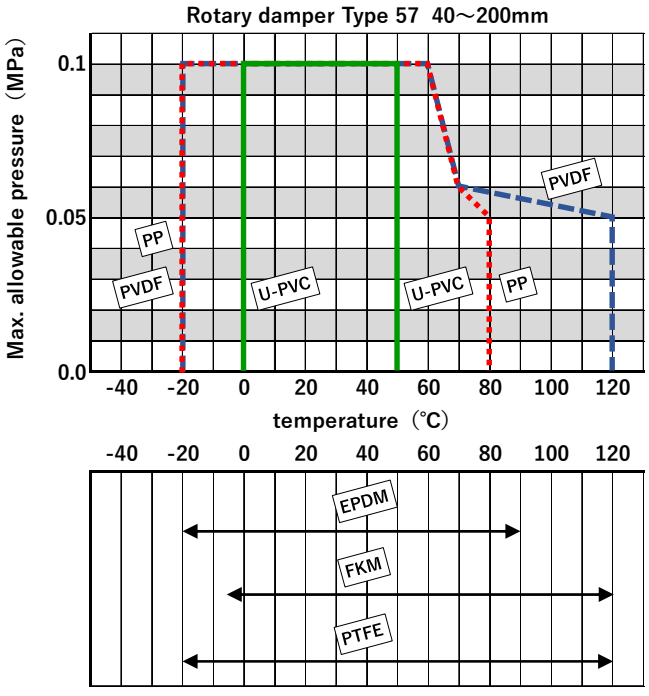
4. Product Specifications

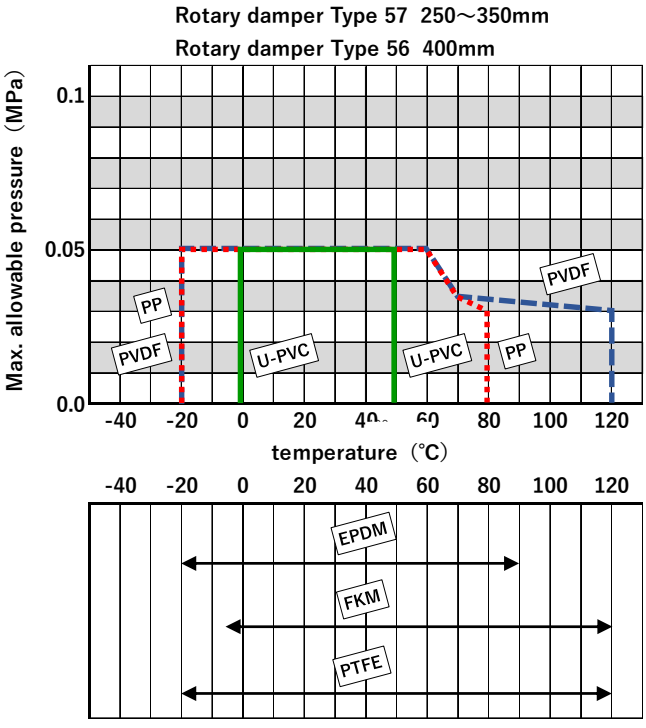
Model number table

Actuation	Valve type	Actuator type	Action	Body material	Seal material	Connection	Standard	Size
A	* *	L	*	*	*	W	*	* * *

A Automatic	D7 Rotary damper Type 57 D6 Rotary damper Type 56	L Type AR	F Double acting G Air to open S Air to close	U U-PVC P PP F PVDF	E EPDM V FKM T PTFE	W Wafer	1 JIS 10K 5 JIS 5K D DIN A ANSI	040 40mm 050 50mm 065 65mm 080 80mm 100 100mm 125 125mm 150 150mm 200 200mm 250 250mm 300 300mm 350 350mm 400 400mm

Relationship between maximum allowable pressure and temperature





Actuator

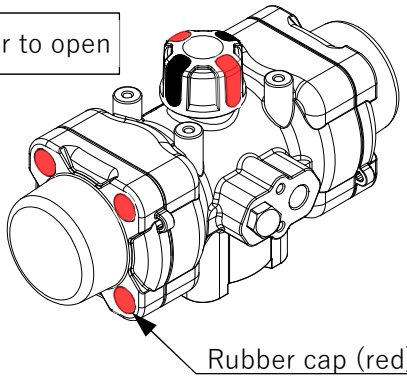
Operation	Applicable nominal size	Angle adjusting range *1)	Operating Pressure Range	Operating Temperature Range (°C)
Double acting Air to open Air to close	40～400mm	Angle cannot be adjusted.	0.4～0.7MPa	-10～60

*1) Angle adjustment is not available for the product without full opening adjustment mechanism. Products with full-opening adjustment mechanism can be adjusted to any opening (Return operation and reverse operation: Closed → Open, Direct operation: Open → Closed direction only). Refer to "**9. How to adjust the full-opening adjustment mechanism**" for the adjustment method.

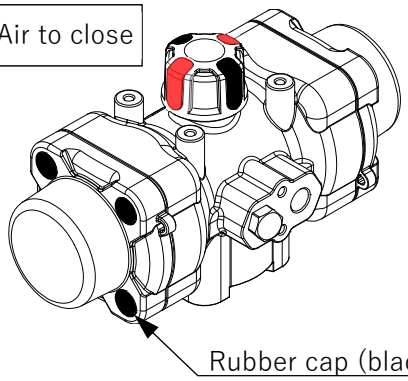
Action	Applicable nominal size (mm)	Actuator Basic model	Air consumed (NL/ open/close)				Air supply port size
			at 0.4MPa	at 0.5MPa	at 0.6MPa	at 0.7MPa	
Double acting	40～100	AR050DA14NN	1.3	1.6	1.8	2.1	Rc1/4
	125,150	AR063DA17SN	1.8	2.1	2.5	2.8	
	200~350	AR100DA22SN	12.4	14.9	17.4	19.9	
	400	AR125DA22SN	25.7	30.9	36.0	41.1	
Air to open	40～65	AR050NC14NN	0.4	0.5	0.6	0.6	
	80,100	AR063NC17SN	0.8	1.0	1.1	1.3	
	125,150	AR070NC17SN	2.5	3.0	3.5	4.0	
	200,250	AR100NC22SN	5.9	7.1	8.3	9.5	
	300~400	AR125NC22SN	12.9	15.4	18.0	20.6	
Air to close	40～65	AR050NO14NN	0.4	0.5	0.6	0.6	
	80,100	AR063NO17SN	0.8	1.0	1.1	1.3	
	125,150	AR070NO17SN	2.5	3.0	3.5	4.0	
	200,250	AR100NO22SN	5.9	7.1	8.3	9.5	
	300~400	AR125NO22SN	12.9	15.4	18.0	20.6	

The color of the rubber cap identifies the return operation and reverse operation as red (standard color) and the direct operation as black.

Double acting and Air to open



Air to close



Standard option

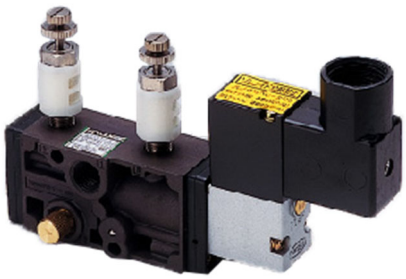
Option name	Objectives and specifications	Applicable nominal size
Solenoid valve	・Controls opening and closing of valves ・Possible to retrofit ・Silencer with throttle valve at exhaust port provided as standard ・Built-in bypass valve	40～400mm
Filter-regulator	・Adjust the pressure of the operation air ・Only with solenoid valve can be retrofitted (single mounting is not possible)	40～400mm
Speed controller (Standard equipment)	・Adjust the actuator operation time. ・Meter-out system	40～400mm
Bypass valve	・Used for manual operation of return movement ・Retrofit possible only without solenoid valve ・Built-in speed controller	40～400mm
Limit switch box	・Detects open/close status of valve	40～400mm
E/P positioner	・Control the valve in proportion to the electric signal (4～20mADC)	40～400mm
P/P positioner	・Control the valve in proportion to the pneumatic signal (0.02～0.1MPa)	40～400mm
Full opening adjustment mechanism	・Can be set to any opening in the range of 0 to 45°	40～400mm
Open/close counter	・The number of times the actuator is opened/closed is counted.	40～400mm

Solenoid Valve Specification

Operation	Applicable nominal size (mm)	Model code	Power consumption
Double acting Air to open Air to close	40～400	4N3S102K-W□-G31193	AC: 6VA DC: 5.5W

Operation	Air pipe bores	Perforated cross section	Additional functions
Double acting Air to open Air to close	Rc1/4	10mm^2 or higher	▶ Built-in bypass valve ▶ Silencer with throttle valve included (used as speed controller)

4N3S102K-W□-G31193



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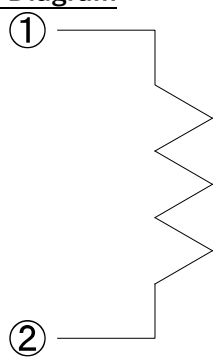
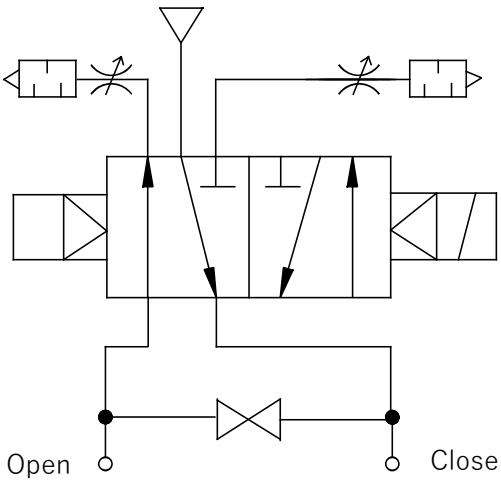
Text entry	Degree of protection
1	100VAC 50/60Hz
(2)	110VAC 50/60Hz
3	200VAC 50/60Hz
(4)	220VAC 50/60Hz
5	24VDC
(6)	48VDC
(7)	100VDC
(8)	125VDC
(9)	110VDC

(　) Appended text is a special item.

Terminal Diagram



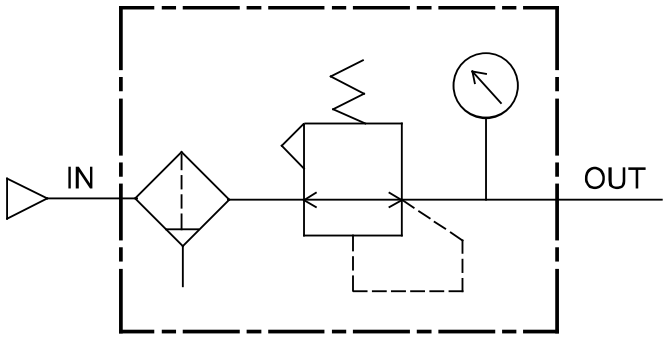
JIS symbol



Filter-regulator specification

Operation	Applicable nominal size (mm)	Model code	Air supply port size	Element filtration rate
Double acting Air to open Air to close	40～400	ARU2-02-8A-G	Rc1/4	5 μm

JIS symbol



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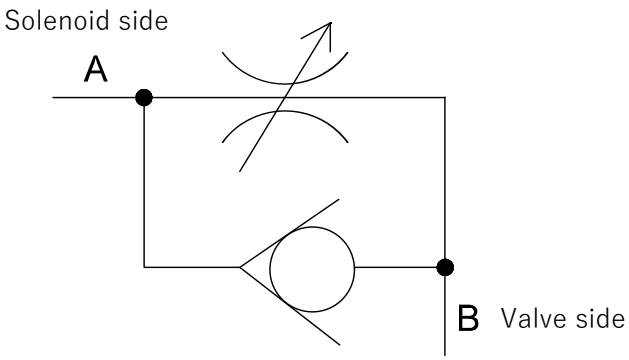
Speed controller specification

Action	Applicable nominal size (mm)	Air supply port size	Model code	Applicable tube O.D. (mm)	Handle rotation
Double acting Air to open Air to close	40～400	Rc1/4	AS2201FG-02-06A	ϕ6	11

JIS symbol



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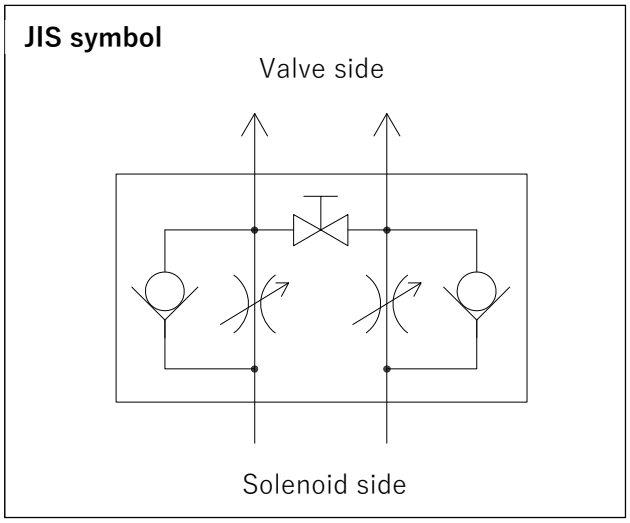
Bypass valve specification

Action	Applicable nominal size (mm)	Air supply size	Model code
Double acting	40～400	Rc1/4	BPSC-08A

▶ Bypass valve is for return operation only. Cannot be used for reverse or direct operation.

JIS symbol



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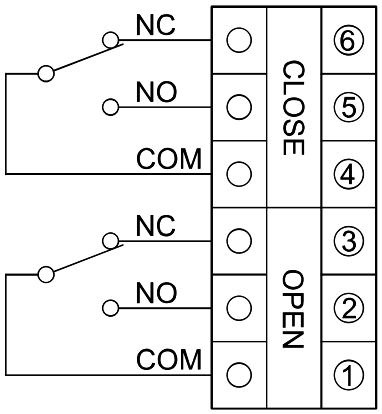
Limit switch box specification

Action	Applicable nominal size (mm)	Model code	Switch contact	Protection grade	Rated voltage	Max. current
Double acting Air to open Air to close	40～400	CFC-6301	Silver contact	IP67 (IEC529)	250VAC	10A
					24VDC	2.5A
		CFC-6302	Gold contact (Micro load)	IP67 (IEC529)	250VAC	0.1A
					24VDC	0.1A

Internal circuit

Double acting and air to open
: Fully closed
Air to close: Fully open

Double acting and air to open
: Fully open
Air to close: Fully closed



1) The circuit diagram shows the intermediate position.
2) When fully open and fully closed, ①-② or ④-⑤ (COM and NO) are turned ON.

* The photo is an image

E/P positioner specification

Action	Applicable nominal size (mm)	Model code	Input signal current/resistance	Air supply port size	Cable entrance	Protection grade
Double acting	40～400	YT-1000R-DJ121S	DC4～20mA/250Ω	Rc1/4	G1/2	ExdIIBT5
Air to open Air to close	40～400	YT-1000R-SJ131S				

P/P positioner specification

Action	Applicable nominal size (mm)	Model code	Input signal air pressure	Air supply port size	Protection grade
Double acting	40～400	YT-1200R-D121S	0.02～0.10MPa	Rc1/4	IP66
Air to open Air to close	40～400	YT-1200R-S131S			

E/P positioner

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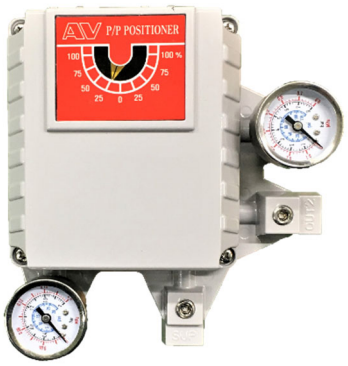
P/P positioner



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5. Piping method

Warning	
Prohibition	**Serious injury can result.** ▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.
Forcing	**Serious injury can result.** ▶ 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	**The valve can be damaged, or leak.** ▶ Do not over-tighten when piping support is removed with a U-band, etc. ▶ Do not tighten the bolt nut for piping with the specified torque or more.
Forcing	**The valve can be damaged, or leak.** ▶ When installing the product, make sure that no excessive stress such as tension, compression, bending or impact is applied to the piping or valve. ▶ Use a connection flange with a full-face seat. ▶ Check that the flange standards of each other are correct. **The following information applies only to products with a size of 400 mm and a connection standard of JIS10K.** ▶ When temporarily connecting the short pipe to the valve, first attach the threaded bolts (2 on one side, 4 on both sides) to the valve. ▶ Tighten the piping bolts and nuts starting from the through holes.

⚠Caution

Forcing

The valve can be damaged, or leak.

▶ The parallelism of the flange surface and the dimension of shaft misalignment should be less than the numerical value shown in **Table 5-1**.

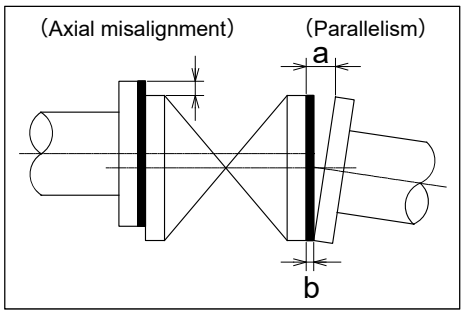


Table 5-1 Axial misalignment and parallelism

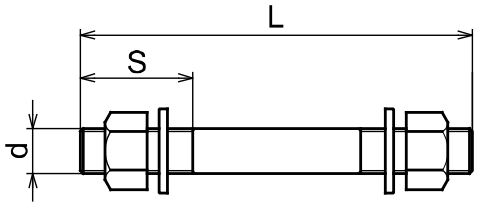
Size (mm)	Axial misalignment	Parallelism (a-b)
40～80	1.0mm	0.8mm
100～150	1.0mm	1.0mm
200~400	1.5mm	1.0mm

Preparations

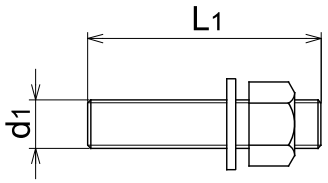
● Torque Wrench ● Wrench ● Bolts, nuts, and washers (with the following dimensions)

Dimensions of bolts

Bolt A



Bolt B



Connection standard	Nominal size	Bolt A				Bolt B			Nut and washers
	mm	D	L (mm)	S (mm)	Qty	d1	L1 (mm)	Qty	Qty
JIS 10K	40	M16	115	40	4	-	-	-	8
	50	M16	125	40	4	-	-	-	8
	65	M16	135	45	4	-	-	-	8
	80	M16	135	45	8	-	-	-	16
	100	M16	145	45	8	-	-	-	16
	125	M20	165	50	8	-	-	-	16
	150	M20	175	55	8	-	-	-	16
	200	M20	195	55	12	-	-	-	24
	250	M22	225	60	12	-	-	-	24
	300	M22	245	60	16	-	-	-	32
	350	M22	255	65	16	-	-	-	32
	400	M24	290	69	14	M24	115	4	32

Connection standard	Nominal diameter	Bolt A				Nut and washers
	Mm	D	L (mm)	S (mm)	Qty	Qty
JIS 5K	40	M12	100	30	4	8
	50	M12	105	30	4	8
	65	M12	110	30	4	8
	80	M16	120	35	4	8
	100	M16	130	40	8	16
	125	M16	140	40	8	16
	150	M16	150	40	8	16
	200	M20	195	55	8	16
	250	M20	225	55	12	24
	300	M20	240	55	12	24
	350	M20	245	65	12	24
	400	M22	270	55	16	32

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

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

[Procedure]

1) Turn valve fully closed.

2) Install a AV seal between the connecting valve and flange.

3) Temporarily set by hand with through bolts, washers, and nuts for connection.

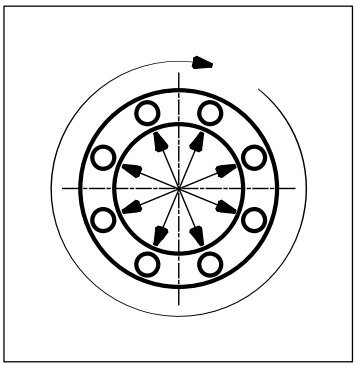
4) Gradually tighten to the specified torque value diagonally with a torque wrench.

5) Tighten clockwise at least two turns at the specified torque value.

Flange tightening torque Unit: N-m

Size (mm)	40	50,65	80,100	125,150
Torque value	20.0	22.5	30.0	40.0

Size (mm)	200、250	300～350	400
Torque value	55.0	60.0	80.0



Product support

Warning	
Prohibition	**The valve may be damaged or broken.** ▶ Do not cause large vibrations to the valve by the piping around the pump.
Forcing	**Damage to the valve body and piping may occur.** ▶ Install a valve support.

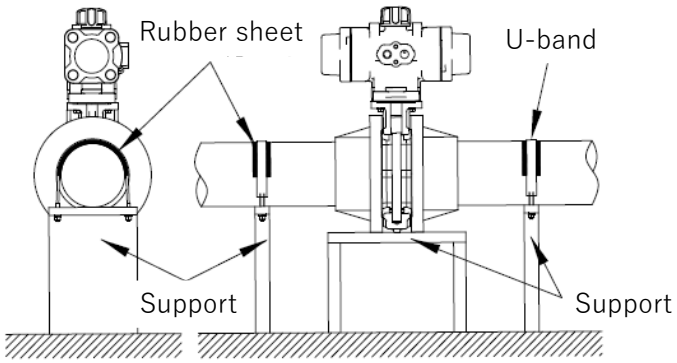
Preparations ▶ Spanner ▶ U-band (with bolt) ▶ Rubber sheet

Horizontal piping

[Procedure]

1) Place the frame under the valve.
2) Place a rubber sheet on the pipe and secure it with a U band.

(Support installation example)

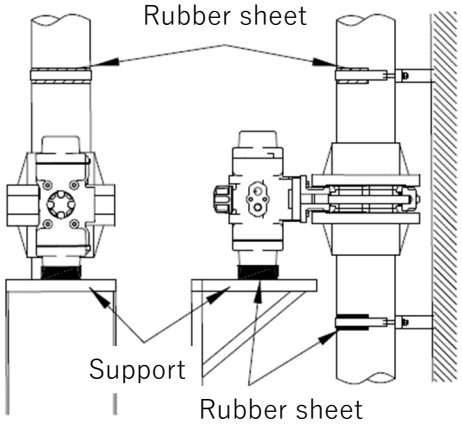


Vertical piping

[Procedure]

1) Place a rubber sheet under the actuator and attach the support.
2) Place a rubber sheet on the pipe and secure it with a U band.

(Support installation example)



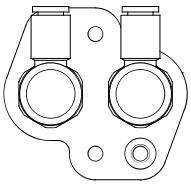
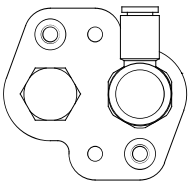
6. Air piping method

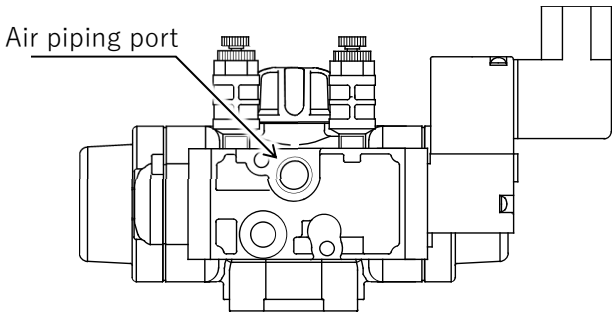
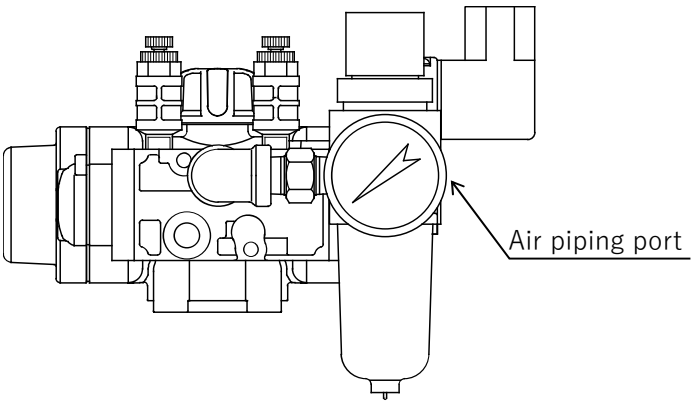
⚠Caution	
Prohibition	**Otherwise, the actuator may be damaged or malfunction may result.** ▶ Do not remove the protective plug until just before connecting the air piping. ▶ Do not overtighten the fitting for air piping.
Forcing	**Otherwise, the actuator may be damaged or malfunction may result.** ▶ Confirm the connection location, air piping size, and screw type from the drawing of the product before connecting the air piping. ▶ Use clean, dehumidified and dust-free air for operation. However, when using high dry air with a dew point of-40°C or less, contact us separately. ▶ When using the product in a place where the ambient temperature may drop below 5°C, remove moisture from the operation air to prevent freezing. ▶ When using metal 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. ▶ Use sealing tape as a sealing material for air piping. If liquid sealant or liquid gasket is used, stress cracking (environmental stress cracking) may occur. ▶ When piping air, be careful not to allow foreign matter, such as sealant, to enter the piping. ▶ Be sure to remove any burrs on the threads of the pipe fittings. **Otherwise, the actuator or optional accessories may fail.** ▶ Set the secondary side pressure of the filter-regulator to a value suitable for the equipment specifications. ▶ Regularly drain the drain from the filer-regulator.

Preparations	▶ Metal or tube for air piping ▶ Fittings for metal pipes or tubes ▶ Wrench ▶ Sealing tape

[Procedure]

1) Wrap sealing tape around the male thread of the fitting, leaving approximately 3mm at the tip.
2) Tighten a fitting to the air piping port of the actuator or pneumatic equipment (speed controller, pressure regulator with filter, solenoid valve).
3) Screw the fitting in one turn with a wrench.
4) Install the fitting for air piping or the tube pipe.

	Double acting	Air to open / Air to close
With or without options	AR050DA14NN AR063DA17SN AR070DA17SN AR100DA22SN AR125DA22SN	AR050NC14SN / AR050NO14SN AR063NC17SN / AR063NO17SN AR070NC22SN / AR070NO22SN AR100NC22SN / AR100NO22SN AR125NC22SN / AR125NO22SN
With speed controller (Standard equipment)		

With solenoid valve	With solenoid valve and Filter-regulator
	

7. How to Connect Options

Limit switch

Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not connect or disconnect wires to the limit switch while the power is on. ▶ Do not connect wires in an environment where rainwater or moisture may be splashed on the wires (e.g. outdoors in rainy weather). ▶ Do not perform wiring work with wet hands or tools.
Forcing	**Serious injury can result.** ▶ 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	**Doing so may damage the limit switch.** ▶ Do not leave the limit switch cover open or use it.
Forcing	**Doing so may damage the limit switch.** ▶ Securely tighten the cover fixing screws of the limit switch. ▶ Tighten the terminal block screws securely.

Preparations	▶ Phillips screwdriver ▶ Flat-blade screwdriver ▶ Electric knife ▶ Wire stripper ▶ Terminal crimping tool

[Procedure]

1) Loosen the four screws holding the limit switch cover with a Phillips screwdriver and remove the cover. (The screws are structured so that they do not come off the cover.)

2) Remove the dust seal from the connector and thread the cable.

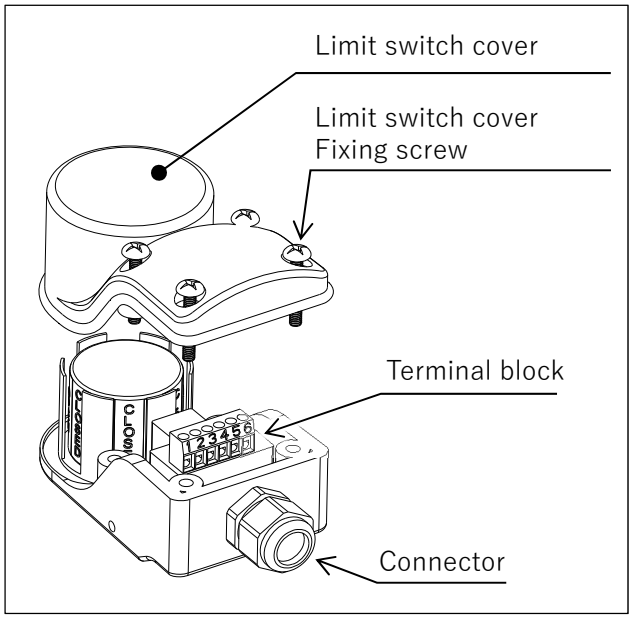
3) Strip the insulation of the cable sheath and the lead wire with an electric knife and wire stripper.

4) Twist the end of the lead wire so that no whisker comes out.

5) Wire according to the internal circuit diagram of the limit switch box specifications.

6) Tighten the cable with the connector.

7) Attach the cover by tightening the four screws holding the limit switch cover with a Phillips screwdriver.



Solenoid valve

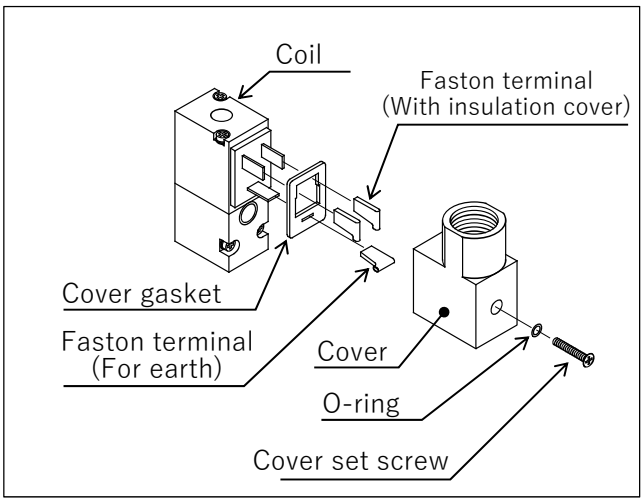
Warning	
Prohibition	**There is a risk of electric shock.** ▶ Do not connect wires or disconnect wires to the solenoid valve in an energized state. ▶ Do not connect wires in an environment where rainwater or moisture may be splashed on the wires (e.g. outdoors in rainy weather). ▶ Do not perform wiring work with wet hands or tools.
Forcing	**Serious injury can result.** ▶ 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.

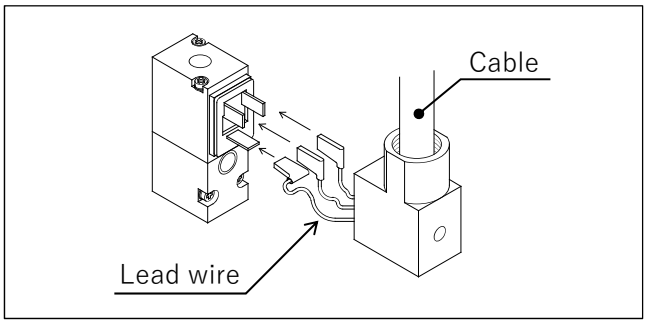
Caution	
Prohibition	**Otherwise, the solenoid valve may be damaged.** ▶ Do not leave the solenoid valve cover open or use it.
Forcing	**Otherwise, the solenoid valve may be damaged.** ▶ Securely tighten the cover set screw of the solenoid valve. ▶ Be careful not to lose the O-ring attached to the cover set screw. ▶ Confirm that the power supply voltage indicated on the solenoid valve matches the voltage to be connected.

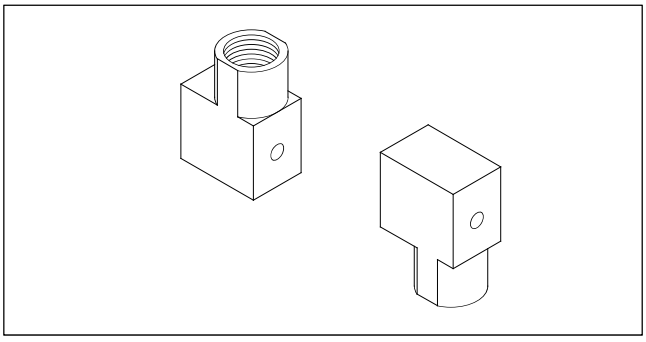
Preparations	▶ Phillips screwdriver	▶ Electric knife	▶ Wire stripper
	▶ Terminal crimping tool	▶ Cable connector (G1/2)	

[Procedure]

1) Loosen the cover setscrew of the solenoid valve with a Phillips screwdriver and remove the cover.
2) Pull out the Faston terminal and insulation cover inserted in the coil side. (An insulation cover is not attached to the grounding terminal.)
3) Pass the cables through the cable connector and then through the cover.
4) Using an electric knife and wire stripper, strip off the insulation of the cable sheath and lead wire.
5) Twist the end of the lead wire so that no whisker comes out.
6) Pass the lead wire through the insulation cover of the Faston terminal.
7) Attach the Faston terminal to the lead wire with a terminal crimping tool.
8) Insert the Faston terminal into the terminal on the coil side and cover the insulation cover. (For DC power, there is no polarity.)
9) Fit the cover to the coil side, and tighten the cover set screw with a Phillips screwdriver to fix the cover. (The cover can be installed upside down.)
10) Tighten the cable with the cable connector.







8. Commissioning method

Manual override (double acting only)

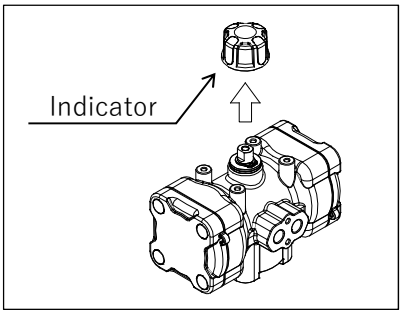
Warning	
Prohibition	**There is a danger of injury.** ▶ Do not supply air during manual operation.

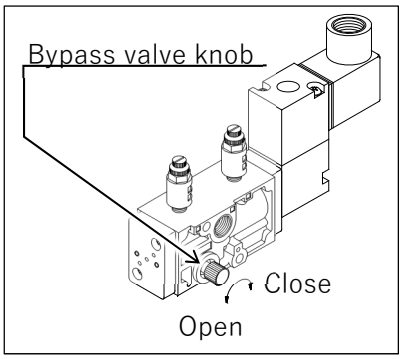
Caution	
Prohibition	**Doing so may damage the actuator.** ▶ Do not forcibly rotate the wrench from the fully opened or closed position.

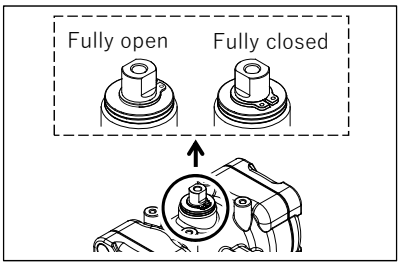
Preparations ▶ Wrench ▶ Hex wrench (Hex 5mm for M6)

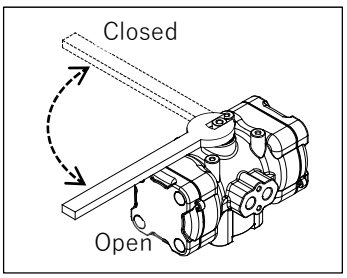
[Procedure]

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) Check the direction (fully open or closed) of the indicator before manual operation.
4) Remove the nominal size 40 to 150mm by pulling the indicators as they are. For the nominal size 200 to 400mm, remove the rubber cap at the top of the indicator, remove the fixing bolt with an Allen wrench, and then pull the indicator to remove it.
5) Engage the spanner with the upper output shaft of the actuator and open/close the actuator while checking the direction of the output shaft. (The output shaft is fully open when the width across flats is parallel to the piping direction.)
6) Return to the condition before manual operation (fully open or fully closed) and remove the wrench from the upper output shaft of the actuator.
7) For the nominal size 40 to 150mm, the indicators are mated with the upper shaft. For the nominal size 200 to 400mm, fit the indicators to the upper output shaft and attach the rubber cap by screwing the fixing screws with a hex wrench.
8) Close the bypass valve by turning the knob of the bypass valve clockwise.
9) Open the main valve of the operation air to supply air to the solenoid valve.









Automatic operation

Warning	
Forcing	**There is a danger of injury.** ▶ Check that the spanner for manual operation is not mated with the upper output shaft.

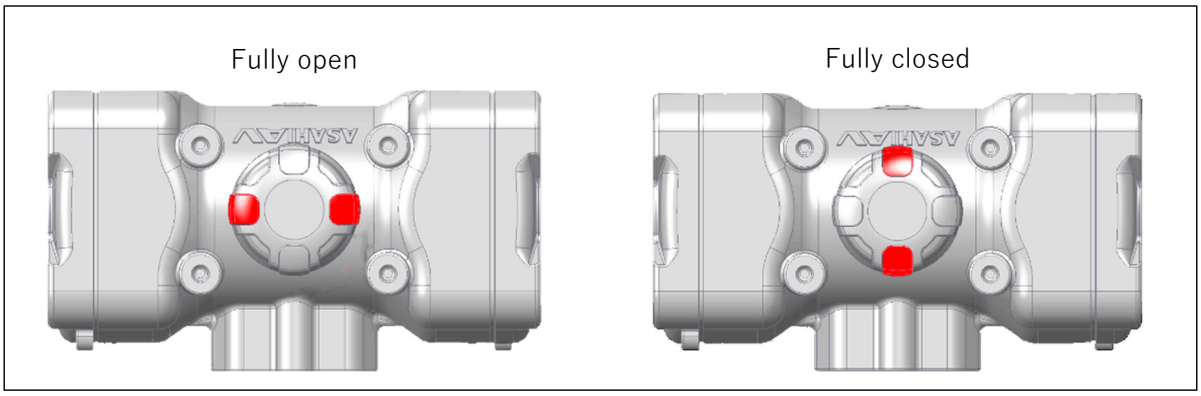
Caution	
Forcing	**Doing so may cause the actuator to malfunction.** ▶ Always use the product within the range of the indicated product specifications.

[Procedure]

1) Air is supplied to the air piping port or solenoid valve.

2) Open and close the valve on the operation panel and check that the air supply side and the display position match.

Fully open/closed display



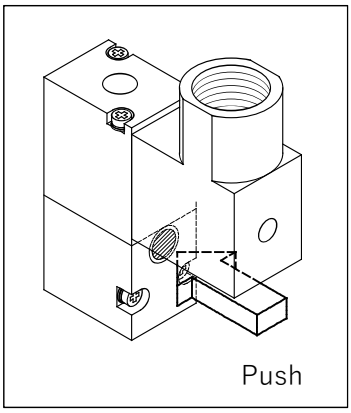
3) Check that the operation shown in the table below is achieved by pressing the pushbutton below the solenoid valve terminal cover (see the figure below) with your finger.

4) Confirm that the operation shown in the table below is achieved by energizing or de-energizing the solenoid valve.

5) Turn off the power to the solenoid valve.

6) Stop air supply.

Push button	Power supply	Double acting Air to open	Air to close
Push	Energizing	Valve fully open	Valve fully closed
Do not push	De-energizing	Valve fully closed	Valve fully open



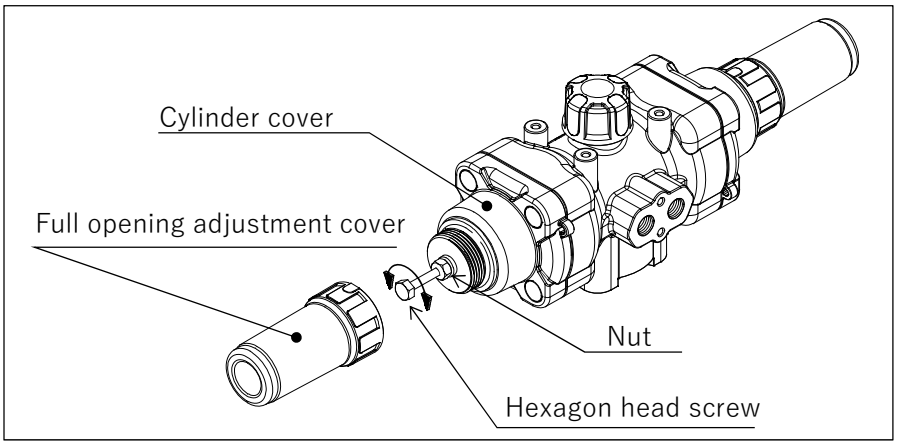
9. How to adjust the full-opening adjustment mechanism

Warning	
Prohibition	**Risk of injury.** ▶ Do not turn the hexagon head bolt forcibly.

Preparations ▶ Wrench

[Procedure]

1) Remove both left and right full-opening adjustment covers from the cylinder cover by turning them counterclockwise by hand.
2) Loosen both hexagon nuts with a wrench, and turn both hexagon bolts counterclockwise about 5 turns with a wrench.
3) After supplying air to the open side of the actuator, turn both hexagon head bolts clockwise 1/2 to 1 turn with a wrench to confirm that the hexagon head bolt can be turned.
4) With air supplied, turn both the hexagon head bolts clockwise with a spanner and stop turning when the hexagon bolt no longer turns.
5) Exhaust air from the actuator.
6) Refer to the "Adjustment Angle and Hex Bolt Rotation Number (Reference)" in the table below and check the Hex Bolt Rotation Number that matches the angle you want to adjust.
7) Turn the hexagon head bolt clockwise with a wrench to the number of revolutions confirmed, turn the hexagon nut clockwise with a wrench, and fix the hexagon bolt with tightening torque. (Keep the other hex bolt.)
8) Air is supplied to the open side of the actuator.
9) Turn the hexagon head bolt clockwise with a wrench to stop turning it when the hexagon bolt no longer turns. Then, turn the hexagon nut clockwise with a wrench to fix the hexagon bolt with tightening torque.
10) Exhaust air from the actuator.
11) Attach both left and right full-opening adjustment covers to the cylinder cover by turning them clockwise by hand.



Adjustment angle and number of revolutions of bolt (reference) Unit; Rotate

Adjustment angle / Model	5°	10°	15°	20°	25°	30°	35°	40°	45°	Hexagonal nut Tightening torque N-m
AR050□□14SN	1	2	3+¼	4+¼	5+¼	6+¼	7+¼	8+½	9+½	5.2
AR063□□17SN	1+¼	2+¼	3+¼	4+½	5+½	6+¾	7+¾	9	10	12.5
AR070□□17SN	1+½	3	4+½	6	7+½	9	10+½	12	13+½	24.5
AR100□□22SN	½	1	1+½	3	3+½	5	5+½	7	7+½	106
AR125□□22SN	2	4	6	8+½	10+½	12+½	14+½	17	19	106

10. Inspection item

Caution	
Forcing	**Leakage may occur due to changes in temperature or aging during long-term storage, resting, or use.** ▶ Carry out daily and periodic inspections.

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and re-tighten the pipe bolts.
		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.
Misalignment of operating position (visual inspection)	No deviation	Actuator opening display	Remove the actuator cover and adjust the limit switch operating position.
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

Periodic inspection

●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Vibration (tactile)	No different from other parts	Valves and actuators	Recheck the operating conditions and remove the source of vibration.
			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.

●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	Between the mounting base and actuator	Retighten the mounting bolts
		For flange piping	Retighten the pipe bolts to the specified torque.
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve or actuator.

11. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
Do not open or close by air operation.	The solenoid valve is turned off.	Turn on the power.
	Connection to the solenoid valve is disconnected.	Check the connection condition again.
	Air is not supplied	Supply air.
	The power voltage of the solenoid valve is different.	Check the voltage with a tester and set the correct voltage.
	Solenoid valve voltage is low	Check the voltage with a tester and set the correct voltage.
	The speed controller adjustment knob is turned all the way to the right.	Turn the speed controller knob to the left.
	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
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use
	Interference between the disc and pipe	Loosen the pipe bolt, align the shaft core, and reinstall.
	Excessive tightening of pipe bolts	Loosen the pipe bolts and re-tighten them with an appropriate torque.
	The actuator does not move due to external corrosion of the actuator.	Stop using the product immediately and replace the actuator.
	High fluid pressure	Use below the maximum allowable pressure
	Disc is worn or scratched	Remove the valve from the pipe and replace the valve.
	Missing parts	Remove the valve from the pipe and 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 malfunction and remedy (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks from valve (external leak)	O-ring is scratched, worn, melted, or altered	Stop using the product immediately, remove the valve from the piping, and 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, and 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 or adapter	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve.
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.

12. Disposal method of residual materials and waste materials

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

Inquiries

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

[User's Manual]

Rotary Damper Pneumatic Type AR

40～400mm

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

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