NIPPON VALVE CONTROLS, INC.

Instruction manual

Electric Actuated Ball Valve PA PL

SP-1519

Please read this manual before installation and use.

GENERAL

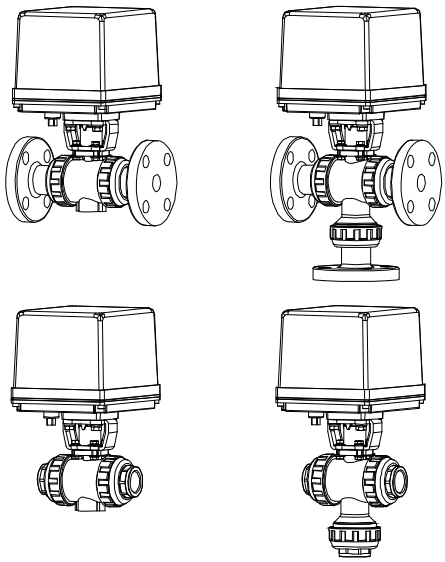
A plastic ball valve and high-power electric actuator.
Various connections can be selected.
(Various materials can be selected.)

Actuator

- AE1 : For AC power
- AE2 : For AC / DC power

Valve

- PA type 2-way ball valve
- PL type 3-way ball valve



J10K Flanged-end, Threaded End Rc, Socket

PRODUCT CODE

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)		(10)
PA, PL type	J10K Flanged-end					1	P	P		-		-	
						1	H	H		-		-	
						1	R	R		-		-	
						1	Q	Q		-		-	
	Threaded End Rc					5	P	P		-		-	
						5	H	H		-		-	
						5	R	R		-		-	
						5	Q	Q		-		-	
	Socket					7	P	P		-		-	
						7	H	H		-		-	
						7	Q	Q		-		-	

(1) Actuator
- AE1
- AE2

(2) Valve
- PA
- PL

(3) Voltage
- 1 : 100 / 110 V AC
- 2 : 200 / 220 V AC
- 0 : 24 V DC

(4) Sizing code
- 0 : Standard
- 1 : Light
- 2 : Heavy

(5) Connection
- 1 : J10K Flanged-end
- 5 : Threaded End Rc
- 7 : Socket

(6) Body material
- P : PVC
- H : C-PVC
- R : PVDF
- Q : PP

(7) Ball material
same as body material

(8) Stem seal
- E : EPDM
- V : FKM

(9) Size [mm]
ex. 25 A → 025

(10) Option
- L0 : Auxiliary limit switch
- L2 : Auxiliary limit switch

VALVES SPECIFICATIONS

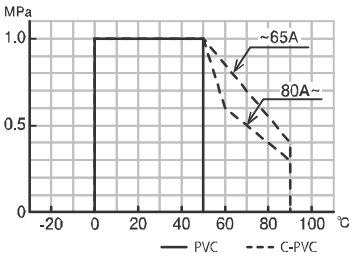
Water Oil Air, Gas Steam Chemicals Sea water Slurry Negative pressure

PA PL type

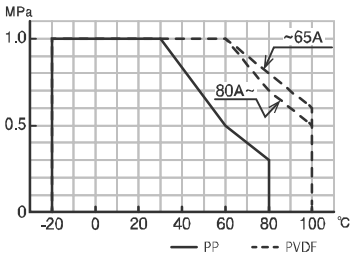
Valve type		PA				PL			
Design		2 way, Full port				3 way, Full port			
Connection		J10K Flanged-end Threaded End Rc	Socket			J10K Flanged-end Threaded End Rc	Socket		
Fluid									
Max pressure		1 MPa				1 MPa			
Size [mm]		015 to 100	015 to 025	032	040 to 100	015 to 100	015 to 025	032	040 to 100
Material	Body Ball	PVC C-PVC PVDF PP	PVC C-PVC PP	PVC C-PVC	PVC C-PVC PP	PVC C-PVC PVDF PP	PVC C-PVC PP	PVC C-PVC	PVC C-PVC PP
	Seat	PTFE				PTFE			
Stem seal	O-ring	EPDM FKM				EPDM FKM			

PRESSURE & TEMPERATURE RATING (PA)

Body material: PVC, C-PVC

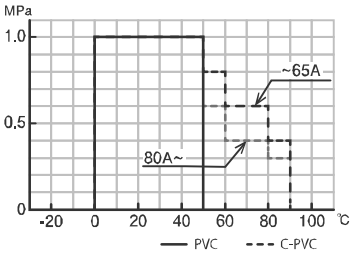


Body material: PVDF, PP

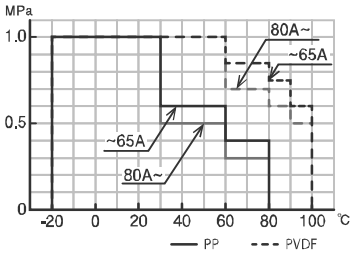


PRESSURE & TEMPERATURE RATING (PL)

Body material: PVC, C-PVC



Body material: PVDF, PP



FLOW PATHS (Position① / P1) (Position② / P2)

PL	
P1	P2
	

Note) When a closed path is exposed to high pressure, it may leak slightly to an open path.

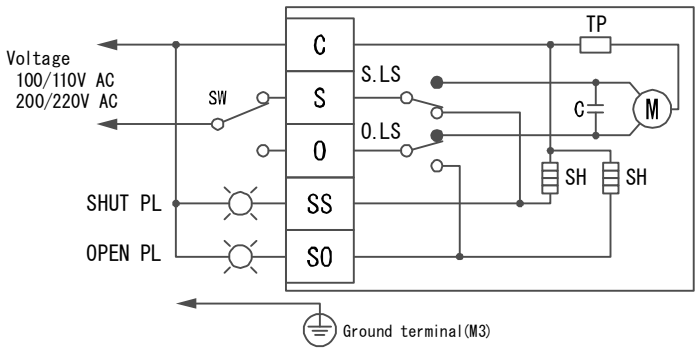
ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AE1 type

Actuator type (☐:Voltage code)	AE1-120-☐	AE1-300-☐	AE1-600-☐	AE1-02K-☐	AE1-06K-☐
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)				
Rated torque [N·m]	12	30	60	200	600
Operation time [s]	10 / 8.5 (50/60 Hz)	7.2 / 6 (50/60 Hz)	15 / 12 (50/60 Hz)	30 / 25 (50/60 Hz)	
Power consumption [VA]	19	60		110	350
Motor	Synchronous motor	Reversible motor self-contained mechanical brake			
Overload protection	Thermal protector				
Method of operation	Transfer input type				
Operation	Power to S → SHUT (SHUT PL is lit.) Power to O → OPEN (OPEN PL is lit.)				
Output signal rating	Resistance load 3 A 250 V AC (Minimum 0.1 A)				
Duty cycle	20 % 15 min.				
Ambient temperature	-20 to 55 ºC				
Space heater	3 W				
Manual operation	Manual shaft				
Enclosure	Equivalent to IP65 (IEC 60529)				
Housing material	Aluminum alloy diecast (acrylic resin baking finish)				
Wire connection	Terminal Block: M3, Ground terminal: M3				
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.				

WIRING



Note) Control switch should be prepared one by one for actuator.
Do not operate two or more actuator from one switch. It might malfunction.

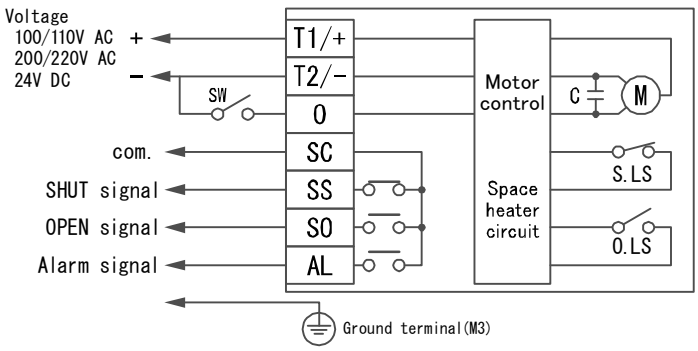
ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AE2 type

Actuator type (□:Voltage code)	AE2-120-□	AE2-300-□	AE2-600-□	AE2-02K-□	AE2-06K-□	AE2-120-0
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)					24 V DC (Code: 0)
Rated torque [N·m]	12	30	60	200	600	12
Operation time [s]	11 / 9.5 (50/60 Hz)	8.2 / 7 (50/60 Hz)	16 / 13 (50/60 Hz)	31 / 26 (50/60 Hz)		3 to 4.5
Power consumption [VA]	26	60		110	350	Max 24
Motor	Synchro-nous motor	Reversible motor self-contained mechanical brake				DC motor
Overload protection	Timer					Current limiter
Method of operation	a-contactinput type, with built-in relay					
Operation	SW is OFF → SHUT (SHUT signal is output.) SW is ON → OPEN (OPEN signal is output.) Overtorque → Alarm signal is output					
Input signal current	9 mA (O-terminal) Leakage current in SW: less than 1 mA					
Output signal rating	Resistance load 0.5 A 125 V AC 1 A 24 V DC					
	Micro load 1 mA 5 V DC					
Alarm signal	Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal)					
Duty cycle	20 % 15 min.					
Ambient temperature	-20 to 55 ºC					
Space heater	3 W					
Manual operation	Manual shaft					
Enclosure	Equivalent to IP65 (IEC 60529)					
Housing material	Aluminum alloy diecast (acrylic resin baking finish)					
Wire connection	Terminal Block: M3, Ground terminal: M3					
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.					

WIRING



Note) Do not use control switch with current leakage (more than 1 mA) such as TRIAC or relay with CR.

ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

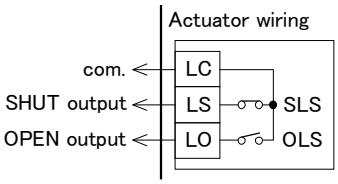
OPTIONAL PARTS

Specifications		Code No.	AE1	AE2	Remarks
Auxiliary limit switch	Select limit switch depending on the load	L0	○	○	For standard signal
		L2	○	○	For micro load signal

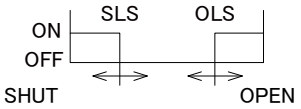
*Auxiliary limit switch: Please refer to the specifications.

WIRING (OPTION)

L0, L2	Auxiliary limit switch



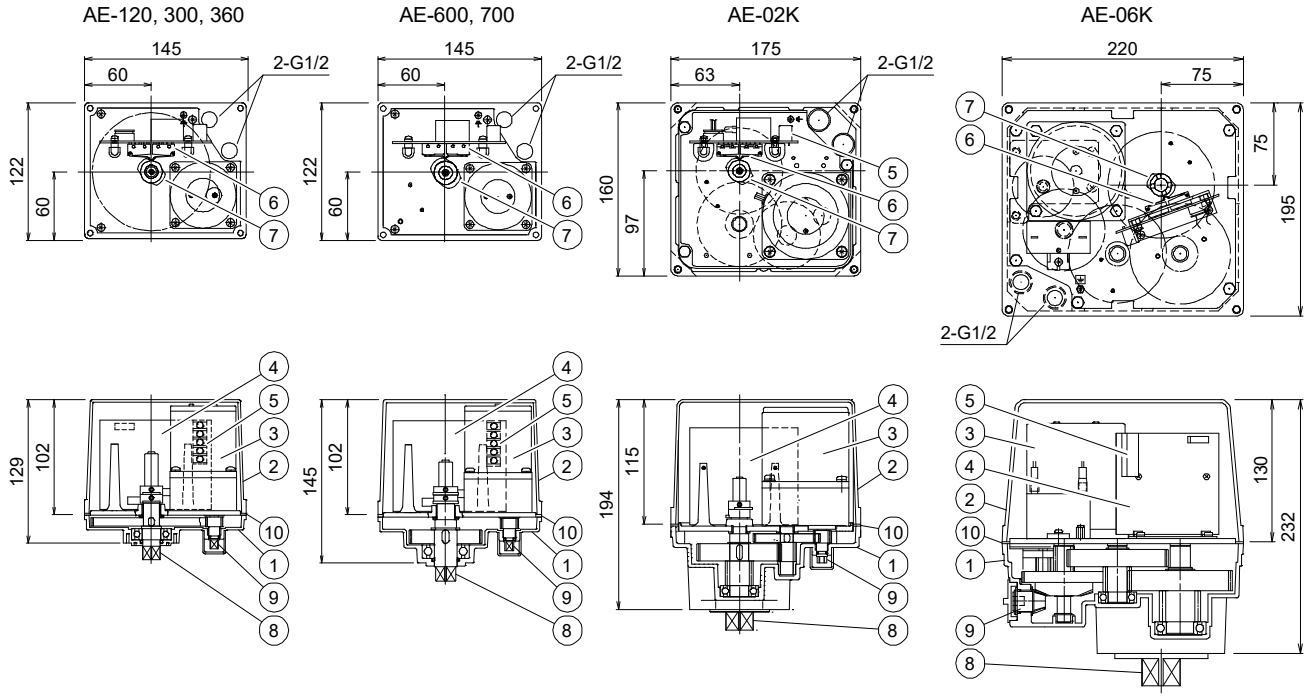
At CLOSE side, LC and LS is ON.
At OPEN side, LC and LO is ON.



ON point can be reset by adjusting the cam.

DIMENSIONS

AE



Parts name

1	Body	5	Terminal block	9	Manual shaft
2	Motor cover	6	Limit switch	10	Rubber packing
3	Motor	7	SW setting cam		
4	Control board	8	Drive shaft		

GENERAL OPERATING INSTRUCTIONS

①WARNING

- 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.
- Certain liquid such as H_2O_2, NaClO, etc may be prone to vaporization (Off-Gassing) which may cause irregular pressure increases, which may destroy the valve.

②CAUTION

- 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 the valve to fluid containing slurry. (The valve will not operate properly.)
- 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.)
- Regarding the ball valve type, we recommend that you use fully open or fully closed. This is because the edge of the ball opening remains on the seat (PTFE) when used at an intermediate opening, so that the sealing performance temporarily deteriorates at the time of full closing.

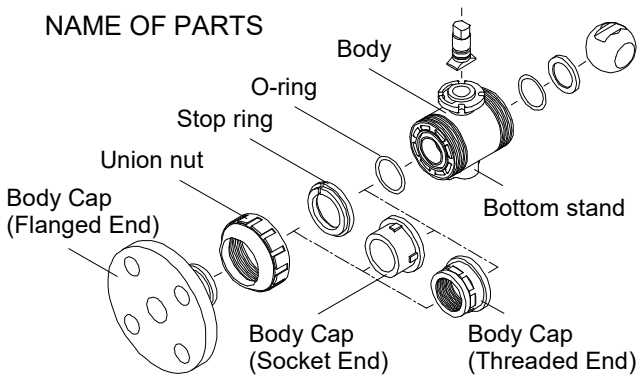
UNPACKING AND STORAGE

①WARNING

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

②CAUTION

- 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.)
- When transporting a valve, do not carry it by the handle.
- 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.



HOW TO INSTALL A PLASTIC BALL VALVE

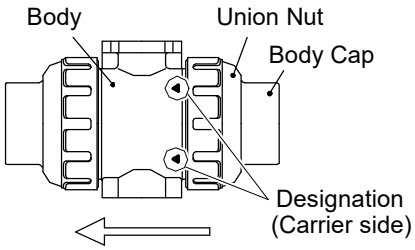
①WARNING

- 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.)

②CAUTION

- 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.
- When installing a piece of equipment at the end of the piping line, be sure to keep the secondary (Downstream) Body Cap and Union Nut installed on the valve.

- When installing Ball Valve, 15 to 50 mm (1/2" to 2") at the end, note the direction of flow.
- Find the mark ◄ molded on the Carrier-side body.
- The mark side is the primary side (upstream side).
- On the secondary (Downstream) side, the Carrier is integral with the valve body.
- This is the preferred method if installation when installing the equipment at the end of the line for safety purposes.



- When installing, disassembling, or reassembling the piping, fix the Body Cap.
- Before a water test, be sure that the Union Nut is tightly fastened.
- Fasten the Union Nut while avoiding the parallelism and axial misalignment of the flange surface.
- When connecting an ASAHI AV Valve to metal piping, take care not to let the pipe stress on the ASAHI AV Valve.
- When screwing in a Metal Insert (Ensat), install it vertically. Refer to the User's Manual for Metal Insert (Ensat) by the Maker.
- When loosening the union nut on the union side, fix the body cap (hold it with your hand) and do work. (If the body cap turns, the union will turn together, resulting in the union and ball separating from the body.) If the union is loosened, retighten the union.
- Take care not to over-tighten the Union Nut. (The valve can be damaged.)
- Do not use the pipe wrench. (The valve can be damaged.)

FLANGED END

①CAUTION

- Do not use the valve to fluid containing slurry. (The valve will not operate properly.)
- The installed valve must never be opened or closed when foreign matter such as sand is present in the pipeline.
- 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 specification should be followed.)

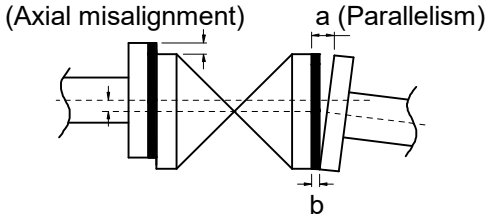
Necessary items

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

②PROCEDURE

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 them by hand.

   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)



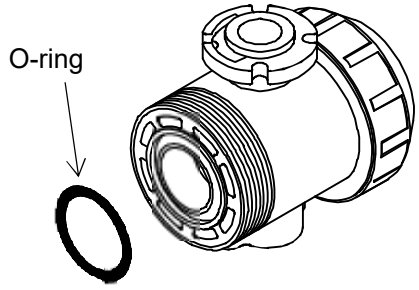
Valve size [mm]	Dimensions [mm]	
	Axial Misalignment	Parallelism (a-b)
015 020 025 032	1	0.5
040 050 065 080	1	0.8
100	1	1

3) Tighten the bolts and nuts gradually with a torque wrench to the specified torque level in a diagonal manner.
4) Tighten it more than 2 turns clockwise with specified torque.
   Do not tighten above the specified torque value. (The valve can be damaged or leaks.)

Valve size [mm]	Torque [N·m]	
	PTFE coated PVDF coated	Rubber
015 020	17.5	8
025 032 040	20	20
050 065	22.5	22.5
080 100	30	30

When the Union Nut is Loosened or Removed

If the union nut has been removed from the body (or loosened), install it in the following manner.



1) Make sure that the O-ring is mounted.
2) Set the body cap and union nut directly on the body without allowing the O-ring to come off.
3) Tighten union nuts on each valve until hand tight.
4) Using a strap wrench tighten union nuts uniformly on each side approx 90°-180° turns, 1/4 to 1/2 turns.

Threaded End

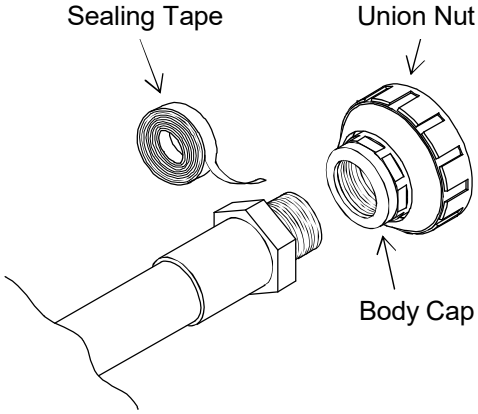
①CAUTION

- Avoid excessive tightening. (The valve can be damaged.)
- Make sure that the threaded connections are plastic × plastic. (Metallic thread can cause damage.)
- Wrap the threaded joints on our plastic piping with sealing tape.
  Using a liquid sealing agent or liquid gasket may cause stress cracks (Environmental Stress Cracking). Our product warranty shall not apply in case of said use, even when said use is unavoidable.

Necessary items

Sealing tape	Strap wrench	Spanner wrench

②PROCEDURE



1) Wind a sealing tape around the external thread of joint, leaving the end (about 3 mm) free.
2) Loosen the union nut with a strap wrench.
3) Remove the union nut and the Body Cap.
4) Tighten the external thread of the joint and the Body Cap hardly with hand.
5) Using a spanner wrench, screw in the Body Cap by turning 180°-360° carefully without damaging it.
6) Make sure that the O-ring is mounted.
7) Set the body cap and union nut directly on the body without allowing the O-ring to come off.
8) Tighten union nuts on each valve until hand tight.
9) Using a strap wrench tighten union nuts uniformly on each side approx 90°-180° turns, 1/4 to 1/2 turns.

Socket End (PVC / C-PVC)

①WARNING

- When using an adhesive, ventilate the space sufficiently, prohibit the use of a fire in the vicinity, and do not inhale adhesive vapors directly.
- If an adhesive gets into contact with your skin, wash it off immediately. If you feel sick or find any anomaly, receive a physician's diagnosis and take appropriate measures promptly.

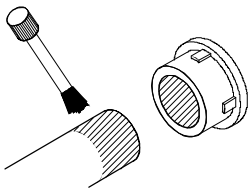
②CAUTION

- Take care in doing work at low temperatures. Solvent vapors are hard to evaporate and are likely to remain. (Solvent cracks may occur, damaging the equipment.) After assembling the piping system, open both ends of the piping and use a fan (of the Low-Voltage Type) or something similar to ventilate the space, thus removing the solvent vapors.
- Use the appropriate Asahi AV cement.
- Conduct a water test at least 24 hours after joining the pipes with an adhesive / cement.

Necessary items

Adhesive for hard vinyl chloride pipes
Strap wrench

③PROCEDURE



1) Loosen the union nut with a strap wrench.
2) Remove the union nut and the Body Cap.
3) Lead the union nut through the pipe.
4) Clean the hub part of the Body Cap by wiping the waste cloth.
5) Apply adhesive evenly to the hub part of the Body Cap and the pipe spigot.

   Do not apply more adhesive than necessary. (The valve can be damaged due to solvent cracking.)

Valve size [mm]	Adhesive quantity (guideline) [g]
015	1
020	1.3
025	2
032	2.4
040	3.5
050	4.8
065	6.9
080	9
100	13

6) After applying adhesive, insert the pipe quickly to the Body Cap and leave it alone for at least 60 seconds.

   Do not under any circumstances try to insert a pipe into another fitting or valve by striking it, which may break the piping.

7) Wipe away overflowing adhesive.
8) Make sure that O-ring is mounted.
9) Set the Body Cap and union nut directly on the body without allowing the O-ring to come off.
10) Tighten union nut hardly with hand.
11) Using a strap wrench tighten union nuts uniformly on each side approx 90°-180°turns, 1/4 to 1/2 turns.

Socket End (PP)

Necessary items

Strap wrench
Sleeve welder or automatic welding machine
User's manual for the above equipment

PROCEDURE

1) Loosen the union nut with a strap wrench.
2) Remove the union nut and the Body Cap.
3) Lead the union nut through the pipe.
4) For the next step, refer to the user's manual for the sleeve welder or the automatic welding machine.
5) After welding, make sure that the O-ring is mounted.
6) Set the Body Cap and the union nut directly without allowing the O-ring to come off.
7) Tighten union nut hardly with hand.
8) Using a strap wrench tighten union nuts uniformly on each side approx 90°-180° turns, 1/4 to 1/2 turns.

How to install the support for the valve (PA)

①CAUTION

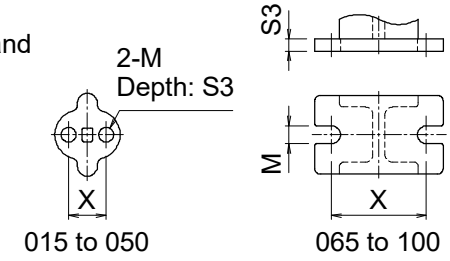
- Do not allow the piping around the pump to cause significant vibration to the valve. Failure to do so may result in failure or damage.
- Install the valve support. If the valve body and piping are subjected to excessive force, it may cause damage to the valve.

Necessary items

Wrench U-band (with bolts) Rubber sheet

②Attach Inserted metal to the bottom stand.
- When screwing in a Metal Insert (Ensat), install it vertically. Refer to the User's Manual for Metal Insert (Ensat) by the Maker.
- If specifying additional ensat fittings (option: 32), add ensat (off-the-shelf) to the valve. It will be shipped with it installed.

Bottom stand



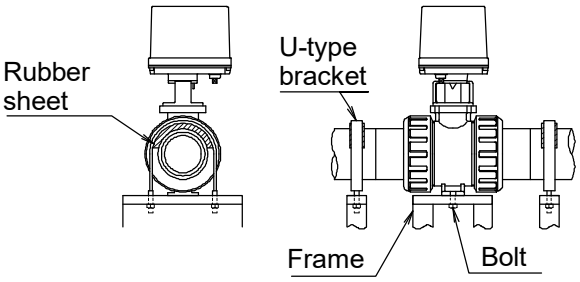
Valve size [mm]	Bottom stand [mm]			Ensat
	X	M	S3	
015 020 025	19	Φ7.3	11	M5 × 10
032 040 050	30	Φ9	15	M6 × 14
065	48	M9	6	-
080	55	M11	7	-
100	65	M11	8	-

③HORIZONTAL PIPING
- If a bottom stand (ensat) is used and a support is installed, bolt the ensat section and the trestle together.

Valve size [mm]	Bolt size [mm]
015 020 025	M5
032 040 050	M6

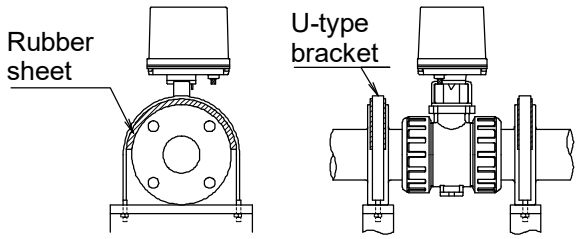
- Put a rubber sheet on the top of the pipe and secure it with a U-band.

HORIZONTAL PIPING



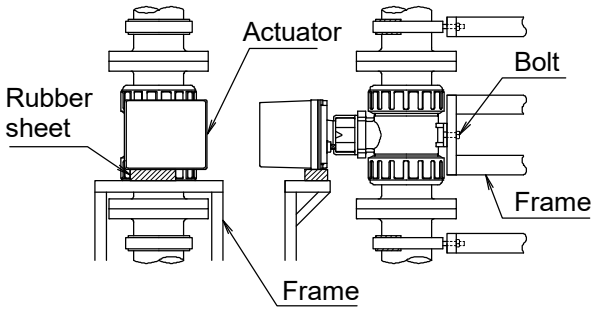
③HORIZONTAL PIPING (FLANGE TYPE)
If you do not use a bottom stand (ensat) and you are installing a support, you may need to install a support at the valve flange. Lay down a rubber sheet and secure it with a U-band. (Body caps are flanged only.)

HORIZONTAL PIPING (Flange type)



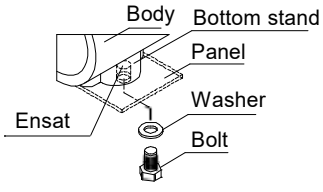
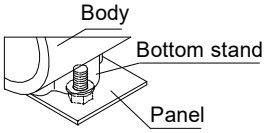
④VERTICAL PIPING
- Bolt the bottom stand (ensat) to the trestle.
- Put a rubber sheet on the top of the pipe and fix it with a U-band.

VERTICAL PIPING

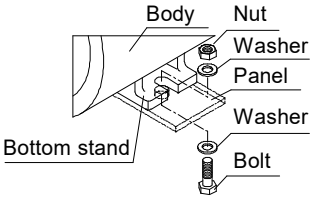
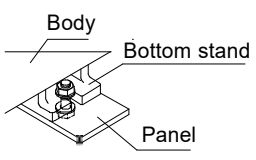


⑤FIXATION OF BOTTOM STAND WITH PANEL

015 to 050 mm

Before the fixation	After the fixation
	

065 to 100 mm

Before the fixation	After the fixation
	

INSTALLATION

①PRECAUTIONS

- Flush the pipeline carefully before installing the valve. Foreign particles, such as sand or pieces of welding electrode, will damage the ball and seats.
- When the flow path is subjected to a high pressure from arrow, it may leak slightly to the low pressure port. (PL)

②ENVIRONMENT

- Do not install in place where corrosive gas is present or where vibration is heavy (0.5 G or more).
- When radiant heat causes the surface temperature of the control unit to exceed 55 °C, provide an appropriate shielding plate.
- If there is a possibility that the fluid and drive part freeze, please take measures to prevent freezing.

③POSITIONING

Should be positioned through 90° upward from horizontal. Provide space around the product to allow manual operation, inspection and replacement work.

Maintenance space for upper part of actuator.	
AE (120 / 300 / 600)	More than 105 mm
AE (02K / 06K)	More than 120 mm

④OTHER NOTES

Until the wiring is completed there must be no condensation or flooding in the interior of the actuator, after piping. Protective caps on the cable gland are not waterproof.

WIRING

①PRECAUTIONS

- Remove the actuator cover before wiring.
- Two G1/2 electrical connections are provided with a cable gland and plug. Usable cable size is Φ6 to 12 mm.
- When using a flexible tube, dew condensation may occur inside the actuator due to respiration from the inside of the tube and malfunction may result. Seal the flexible tube connector part with a sealant.
- Sealants that affect the electrical contacts should not be used inside the electric actuator.
- If long distance wiring or low voltage operation, check that terminal voltage is in the proper range.

②CONNECTION

- Do not wiring outdoors on a rainy day.
- Check the power supply and voltage.
  Connect the signal as shown in the wiring diagram.
  Do not connect unnecessarily terminal.
- Actuator should be electrically grounded.
  Use the terminal marked (⏚) inside the actuator.

PREVENT DEW CONDENSATION

- When installing the cover after wiring, perform the bolt by the temporary tightening procedure and the permanent tightening procedure to tightly and securely tighten the rubber packing so that water does not enter from the outside.
- Tighten the cable gland nut so that there is no leakage from the wire entrance.

CONTROL

①AE1

Each control switch should be prepared one by one. Do not operate two or more from one switch at the same time.

②AE2

When using control switch with current leakage (more than 1 mA) such as TRIAC or relay with CR, it can cause malfunction.

③DC POWER SUPPLY (AE2)

- Battery or full wave rectification can be used.
- Consider an inrush current of motor.
  (It is 1.5 to 3 times of consumed current.)
- When using a DC voltage, be selected the wire thickness by the wiring distance.
- Do not use power supply that require more than 1 second with rise and fall time.

④USE OF OPEN/SHUT SIGNALS

Use signals within the capacity of output signal rating.

OPERATION

①TESTING

- Make sure that power supply voltage is correct. Also check operating position, wiring, speed and signals.
- During trial operation, check that valve movement and OPEN and SHUT signals are correct.

②DUTY CYCLE

Confirm that the operation frequency is within the specified duty cycle.
Use beyond the load time rate range will affect product life. Also, it may cause burnout.

> Duty cycle is a value that regulates the opening / closing frequency of the actuator. The meaning of 20 % 15 minutes for Duty cycle is that 3 minutes (20 % of 15 minutes) operation is possible.
> The calculated value obtained by dividing 3 minutes by the operation time is the number of times of operation within 15 minutes.

③ATTENTION

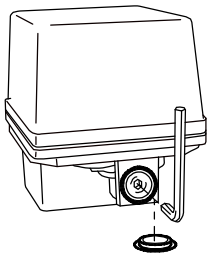
- Keep power supplied for built-in space heater to prevent condensation inside actuator.
- Do not touch the moving parts of actuator in operation.
- Do not insert a reverse signal during operation.
  It may shorten the life of product.
- Never put anything on the actuator or make it into a foothold.

MANUAL OPERATION

①PRECAUTIONS

- Be sure to turn off the power before manual operation.
- Operate manually with reference to the opening degree label. Do not turn beyond the fully open / fully closed position. Operation failure may occur during automatic operation.

②THE WAY OF OPERATION

AE	AE (06K)
	
Turn manual shaft slowly with an adjustable wrench.	Remove the cap. Turn manual shaft solely with M8 hexagon socket screw keys.

Before automatic operation, be sure to remove wrench.

MAINTENANCE

- To prevent electric shock, be sure to turn off the power when removing the actuator cover.
- Do the routine maintenance at least once in half a year.

Inspection items

- Confirm operation of opening and closing.
- Confirm that an actuator is not hot excessively.
- Confirm existence of abnormal noise and vibration during operation.
- Confirm whether screws are loose or not.
- Confirm that water or condensation no remains in the actuator.
- Confirm the fluid temperature or pressure.
- Confirm the leak from valve stem.
- Confirm the bolt tightening torque.

TROUBLE SHOOTING

Problem	Cause	Solution
Actuator does not move.	Faulty wiring.	Correct the wiring.
	No voltage is coming.	Check the voltage.
	Incorrect voltage.	When it's burned out by excess voltage, replace the actuator.
	Short the circuit, contact failure.	Review wires and connection.
	Motor is too old.	Replace the actuator. Repair in our factory.
Operation is unstable.	Excess surge or voltage was applied.	• Replace the control board or limit switch. (Repair in our factory) • Replace the actuator.
	Rainwater entered the actuator.	• Dry the inside. • Replace the actuator.
	Added high harmonics noise from an inverter.	Attachment a filter for each inverter maker option.
	Effect of high level noise.	Use the shielded wire and ground the wiring. Separate signal wire from power line.
	Two or more valves operated by the same switch. AE1	Each control switch should be prepared one by one.
	Switch leakage current is large. AE2	Current leakage should be less than 1 mA.

Problem	Cause	Solution
Stop in the mid position.	• Biting of valve seat. • The scale has adhered to the valve ball.	Remove a foreign object.
	Overload protector runs because of over-torque.	Turn off the power for about 3 minutes to remove a heat from motor protection circuit. AE1
		Motor protection circuit returns by the signal of operation of an opposite direction. Turn on the power again. AE2
Received the alarm signal. AE2		
Leakage from valve body	• Valve cap get loose. • Valve body is damaged.	Replace the valve.
Leakage from valve seat	Seat is worn or damaged.	
Leakage from valve stem	Stem packing is worn or distorted.	

For more information contact
NIPPON VALVE CONTROLS, INC. for consultation.

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