

# 3-way ball valve Type 23

## Manual

### 15~100mm

## 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**

[User's Manual] 3-way ball valve type 23 Manual 15~100mm

## - 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 >

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

### < Prohibition & forced indication >

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

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## 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

 <b>Warning</b>	
 <b>Prohibition</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>The valve can be damaged, damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Do not subject the product to impact by throwing, dropping or hitting.</li> <li>▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook.</li> <li>▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing.</li> <li>▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc.</li> </ul>
 <b>Forcing</b>	<p><b>The valve can be damaged, damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ 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.)</li> <li>▶ After unpacking, make sure that the product is correct and that it meets the specifications.</li> </ul>

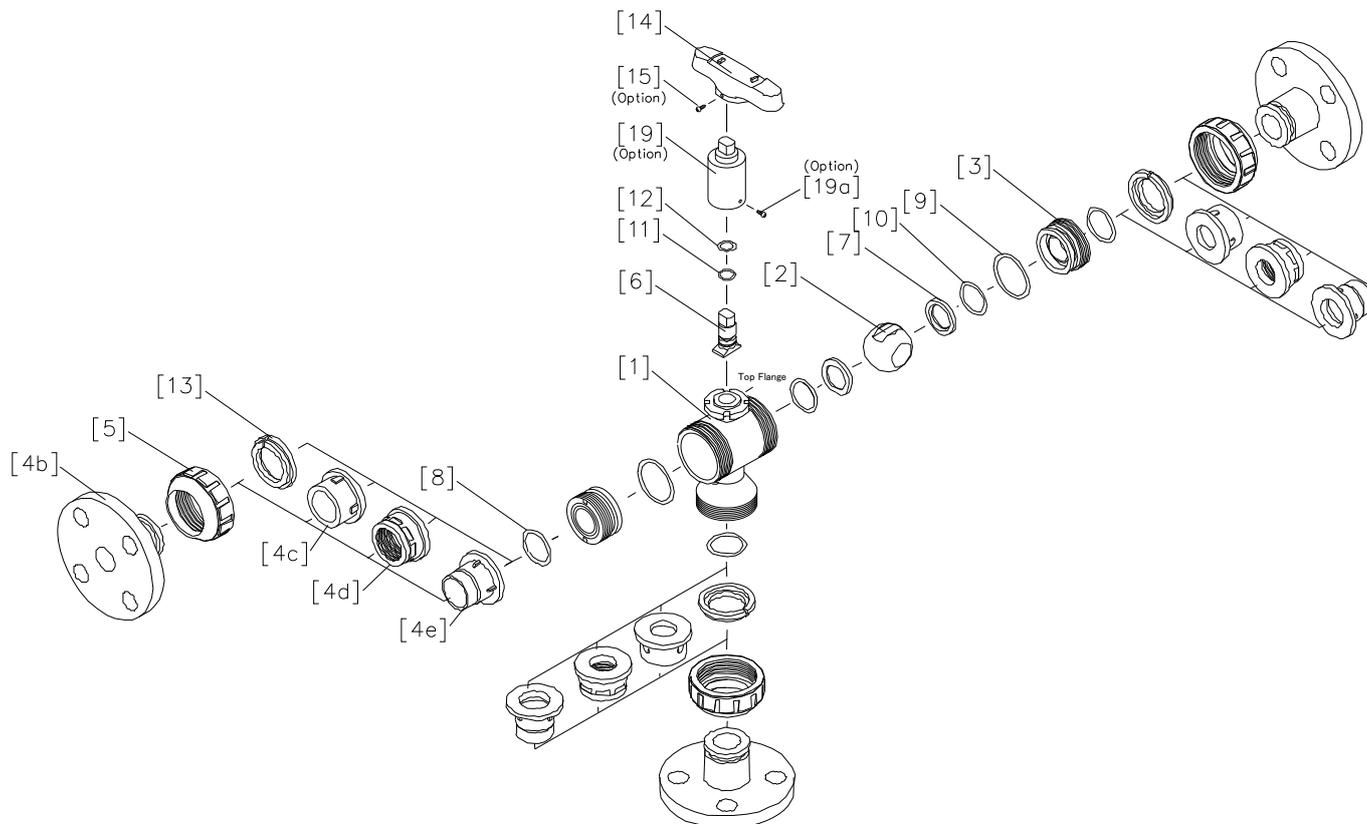
**Product Handling**

 <b>Warning</b>	
 <b>Forcing</b>	<p><b>The valve can be damaged or seriously injured.</b></p> <ul style="list-style-type: none"> <li>▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately.</li> <li>▶ This valve is structurally dead space. Vaporizing fluids such as hydrogen hydroxide (H<sub>2</sub>O<sub>2</sub>) and soda hypochlorite (NaClO) may vaporize in the deadspace and cause an abnormal pressure rise inside the valve. Be very careful.(Gas with abnormal pressure increase due to vaporization is a compressible fluid. Therefore, if a valve should break, fragments will scatter explosively, which is very dangerous.)</li> <li>▶ 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.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Do not step on the valve or place heavy objects on it.</li> <li>▶ Keep away from fire and hot objects.</li> <li>▶ Do not use for fluids containing slurry.</li> </ul>
 <b>Forcing</b>	<p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Keep the temperature and pressure of the fluid within the allowable range.</li> <li>▶ Allow sufficient space for maintenance and inspection.</li> <li>▶ Select and use an appropriate material.</li> <li>▶ Perform periodic maintenance.</li> <li>▶ For the ball valve type, when used at an intermediate position, a mark of the ball opening remains on the seat (PTFE). Therefore, temporary deterioration of sealing performance may occur when the valve is fully closed to the right, fully closed to the left, or fully closed. Therefore, it is recommended to use the valve in the right fully open, left fully open, or fully closed positions (fully closed applies only to the single L port).</li> </ul> <p><b>Otherwise, the valve will not operate normally.</b></p> <ul style="list-style-type: none"> <li>▶ Use the product under conditions that do not recrystallize in fluids containing crystalline substances.</li> <li>▶ Avoid any place where water or dust is constantly splashed or where the product is exposed to direct sunlight, or provide a cover to cover the entire area.</li> <li>▶ Select and use an appropriate material</li> </ul>

## 3. Name of each part

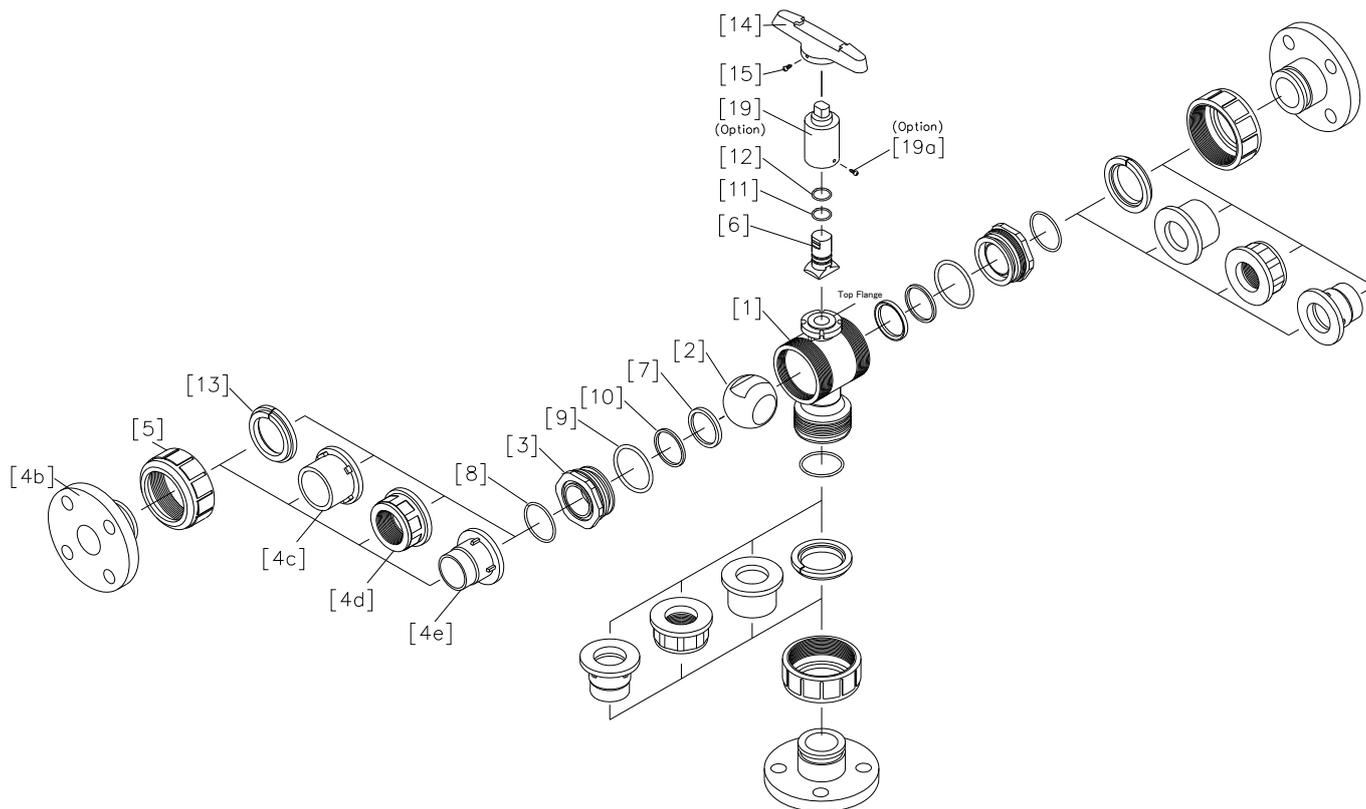
Nominal Size 15~50mm



[1]	Body	[5]	Union nut	[12]	O-ring (E)
[2]	Ball	[6]	Stem	[13]	Stop ring
[3]	Carrier	[7]	Seat	[14]	Handle
[4b]	End connector (Flanged end)	[8]	O-ring (A)	[15]	Tapping screw (A)
[4c]	End connector (Socket end)	[9]	O-ring (B)	[19]	Extension stem
[4d]	End connector (Threaded end)	[10]	O-ring (C)	[19a]	Tapping screw (B)
[4e]	End connector (Spigot end)*1)	[11]	O-ring (D)		

\*1) 32mm Excluding

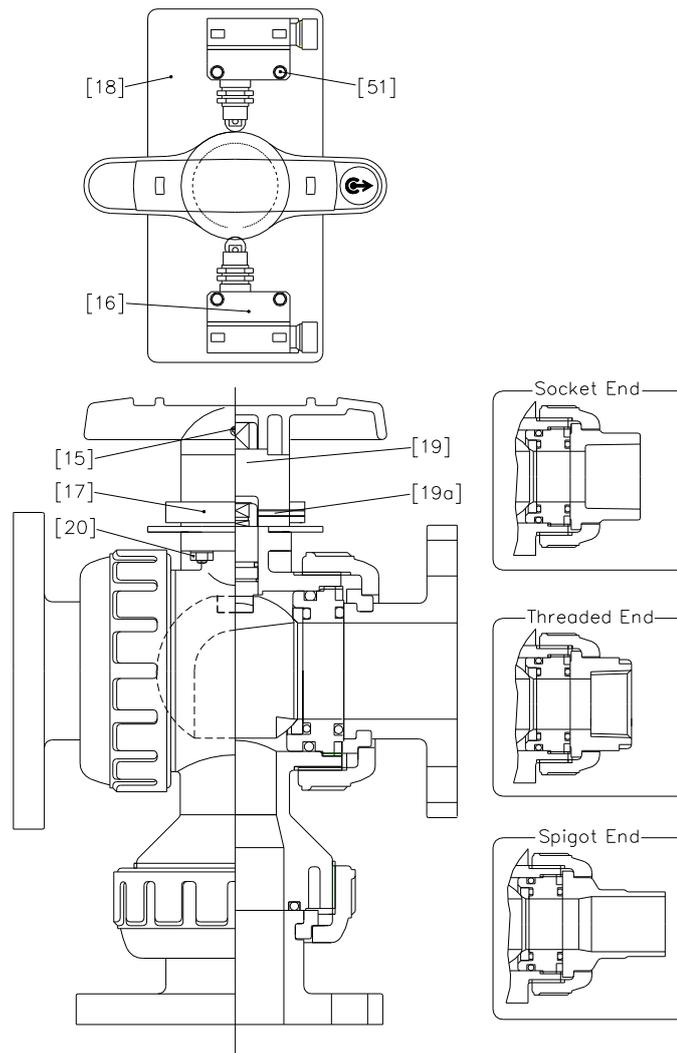
## Nominal Size 65~100mm



[1]	Body	[6]	Stem	[14]	Handle
[2]	Ball	[7]	Seat	[15]	Tapping screw (A)
[3]	Carrier	[8]	O-ring (A)	[19]	Extension stem
[4b]	End connector (Flanged end)	[9]	O-ring (B)	[19a]	Tapping screw (B)
[4c]	End connector (Socket end)	[10]	O-ring (C)		
[4d]	End connector (Threaded end)	[11]	O-ring (D)		
[4e]	End connector (Spigot end) <sup>*1)</sup>	[12]	O-ring (E)		
[5]	Union nut	[13]	Stop ring		

\*1) 65mm Excluding

## Nominal Size 15~100mm With optional Limit switch (SL1-A)



[15]	Tapping screw (A)	[19]	Extension stem
[16]	Limit switch	[19a]	Tapping screw (B)
[17]	Limit switch retainer	[20]	Bolts and nuts(A)
[18]	Bracket (A)	[51]	Bolts and nuts (F)

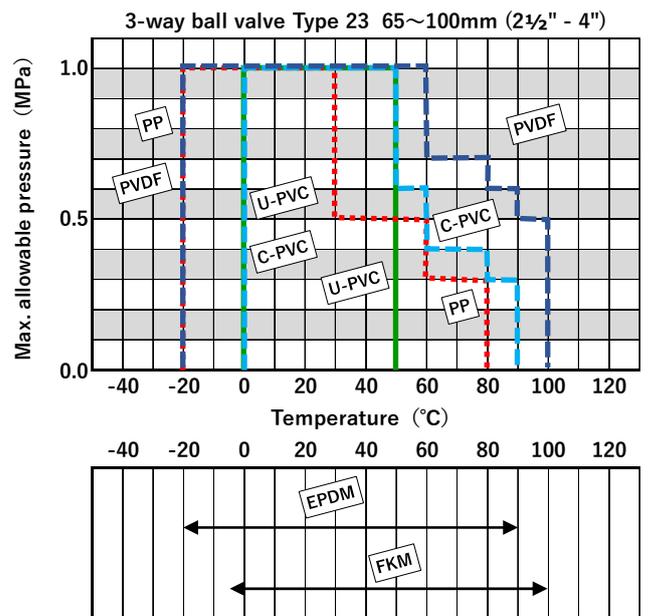
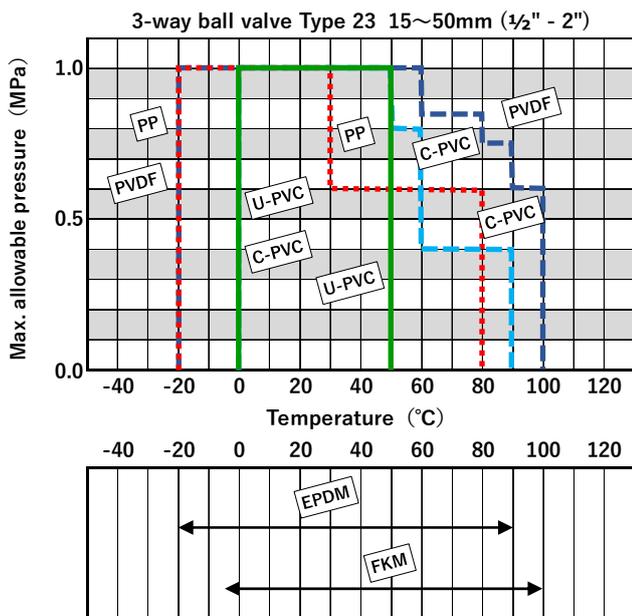
## 4. Product Specifications

### Model number table

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
V	23	LV	*	*	*	*	***	1
V MANUAL VALVE	23 TYPE 23	LV LEVER TYPE	U U-PVC C C-PVC P PP F PVDF	E EPDM V FKM	S SOCKET N THREADED P SPIGOT F FLANGED	J JIS D DIN 1 JIS10K 5 JIS5K A ANSI	015 15mm 100 100mm	1 LUBRICANT FREE

- NOTE**
- PP and PVDF socket end is welded. However, 32mm socket end manufactured by JIS Standard PP is not manufactured.
  - PVDF socket end is not JIS standard.

### Relationship between maximum allowable pressure and temperature



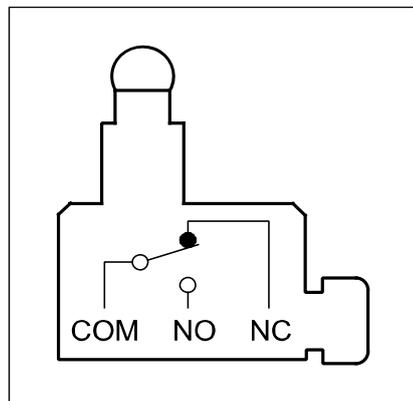
## Limit switch specifications

Nominal Size (mm)	Model code	Switch contact	Protection class
15~100	SL1-A	Silver contact	IP67

### Limit switch rating

Rated voltage (V)	Resistive load (A)	Inductive load (A)
AC125	5	3
AC250	5	3
DC8	5	3
DC14	5	3
DC30	5	3
DC115	0.5	0.1
DC230	0.25	0.05

Internal circuit



COM-NC is ON when valve right is fully open or left is fully open.

**5. Piping method**

**Flanged end**

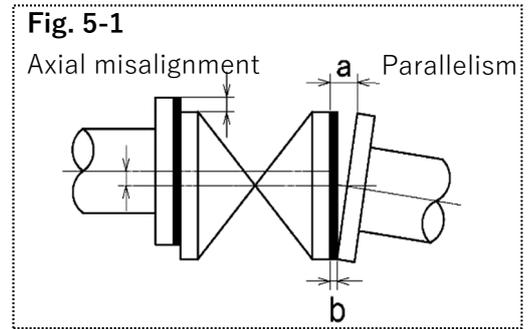
 <b>Warning</b>	
 <b>Prohibition</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Do not overtighten the union nut.</li> <li>▶ Do not use a pipe wrench to tighten the union nut.</li> <li>▶ Do not tighten the bolts and nuts for piping to the specified torque values in Table 5-2.</li> </ul>
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.</li> <li>▶ Wear appropriate protective equipment according to the type of work being performed.</li> </ul> <p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve.</li> <li>▶ Fix the body cap during piping work or disassembly and reassembly.</li> <li>▶ When connecting to metal piping, do not apply piping stress to the valve.</li> <li>▶ Use a connection flange with a full-face seat.</li> <li>▶ Check that there is no difference in mutual flange standards.</li> <li>▶ Be sure to use a sealing gasket (AV packing) between the flanges and tighten the pipe bolts/nuts to the specified torque values in <b>Table 5-2</b> "Flange tightening torque."(When other than AV packing, the tightening torque value will change.)</li> <li>▶ Keep the axis misalignment and parallelism of the flange surface below the values shown in <b>Table 5-1</b> "Axis misalignment and parallelism."</li> <li>▶ Tighten the bolts and nuts for piping diagonally with the specified torque values in <b>Table 5-2</b>.</li> </ul>

Preparations	▶ Torque wrench	▶ Spanner or an eyeglass wrench	▶ Belt Wrench
	▶ Piping bolts, nuts, and washers	▶ AV packing	▶ Waste cloth

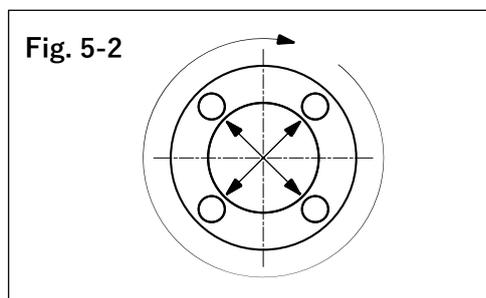
**[Procedure]**

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



**Table 5-1**  
**Axis misalignment and parallelism**

Nominal Size	Axial Misalignment	Parallelism (a-b)
15mm	1.0 mm	0.5 mm
20mm		
25mm		
32mm		
40~80mm	1.0 mm	0.8 mm
100mm	1.0 mm	1.0 mm



**Table 5-2 Flange tightening torque**

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

## Threaded end

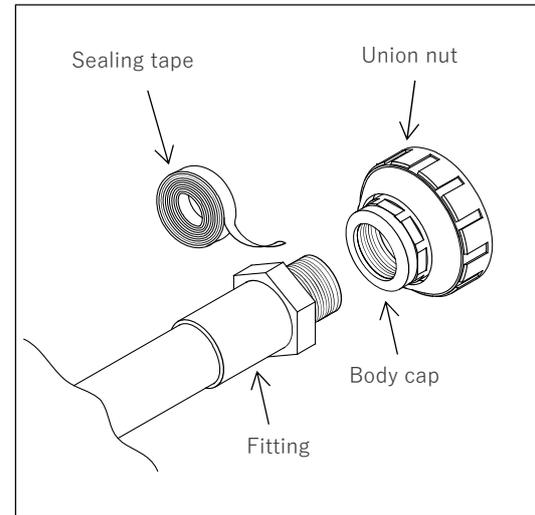
 <b>Warning</b>	
 <b>Prohibition</b>	<p>Serious injury can result.</p> <ul style="list-style-type: none"> <li>▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Do not overtighten the screws at the joints.</li> <li>▶ Do not overtighten the union nut.</li> <li>▶ Do not use a pipe wrench to tighten the union nut.</li> </ul>
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.</li> <li>▶ Wear appropriate protective equipment according to the type of work being performed.</li> </ul> <p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ The union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the body cap before installation.</li> <li>▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve.</li> <li>▶ Fix the body cap during piping work or disassembly and reassembly.</li> <li>▶ When connecting to metal piping, do not apply piping stress to the valve.</li> <li>▶ Make sure that the screws at the joints are made of resin.</li> <li>▶ Use sealing tape for the sealing material of the screw-in part. If liquid sealant or liquid gasket is used, stress cracking (environmental stress cracking) may occur.</li> </ul>

Preparations : ▶ Sealing tape ▶ Belt Wrench ▶ Spanner or motor wrench

**[Procedure]**

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



Socket end (adhesive)

 <b>Warning</b>	
 <b>Prohibition</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.</li> </ul> <p><b>Fire or an explosion can result.</b></p> <ul style="list-style-type: none"> <li>▶ Ensure adequate ventilation when using adhesives and do not use open flames in the surroundings.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ The adhesive contains volatile solvents, so do not inhale odors directly.</li> </ul> <p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ Do not apply too much adhesive. Excessive adhesive will flow into the valve.</li> <li>▶ Do not strike the pipe when inserting it into the body cap.</li> <li>▶ Do not overtighten the union nut.</li> <li>▶ Do not use a pipe wrench to tighten the union nut.</li> </ul>
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.</li> <li>▶ Wear appropriate protective equipment according to the type of work being performed.</li> <li>▶ If the adhesive adheres to the skin, remove it immediately.</li> <li>▶ If you feel worse or feel unusual when using the adhesive, promptly seek a doctor's diagnosis and take appropriate action.</li> </ul> <p><b>The valve can be damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ The union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the body cap before installation.</li> <li>▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve.</li> <li>▶ Fix the body cap during piping work or disassembly and reassembly.</li> <li>▶ When attaching the valve to the end of the pipe, be sure to attach the union nut and body cap on the secondary side (downstream side).</li> <li>▶ Be careful when constructing under low temperature, as solvent vapor is less likely to evaporate and tends to remain.</li> <li>▶ After piping, open both ends of the pipe and use a blower (low-pressure type) to ventilate to remove the solvent vapor.</li> <li>▶ Use "ASAHI AV adhesive" depending on the material.</li> <li>▶ Perform the water flow test after 24 hours or more have elapsed after completion of bonding.</li> </ul>

Preparations : ▶ ASAHI AV glue                      ▶ Belt Wrench                      ▶ Waste cloth

**[Procedure]**

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

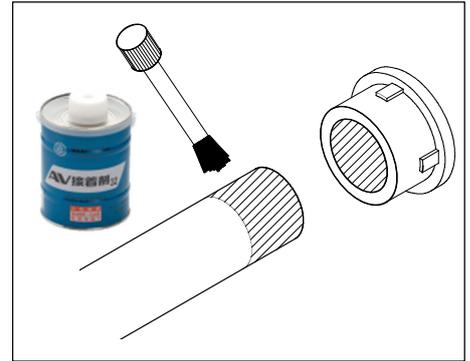


Table 5-3. Usage of adhesives (reference)

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

**Socket end, spigot end (fusing)**

 <b>Warning</b>	
 <b>Prohibition</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ When hanging or slinging a valve, pay sufficient attention to safety, and do not enter under the load.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p>The valve can be damaged, damaged, or leak.</p> <ul style="list-style-type: none"> <li>▶ Do not overtighten the union nut.</li> <li>▶ Do not use a pipe wrench to tighten the union nut.</li> </ul>
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool beforehand.</li> <li>▶ Wear appropriate protective equipment according to the type of work being performed.</li> </ul> <p><b>The valve can be damaged, damaged, or leak.</b></p> <ul style="list-style-type: none"> <li>▶ The union nut of this product is lightly tightened to make it easier to loosen. Be sure to remove the body cap before installation.</li> <li>▶ Install the product so that excessive stress such as tension, compression, bending or impact is not applied to the piping or valve.</li> <li>▶ Fix the body cap during piping work or disassembly and reassembly.</li> <li>▶ When attaching the valve to the end of the pipe, be sure to attach the union nut and body cap on the secondary side (downstream side).</li> </ul>

Preparations	▶ Belt Wren ▶ Fusing machine	▶ Instruction manual of the fusing machine
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**[Procedure]**

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

**6. Limit switch wiring method**

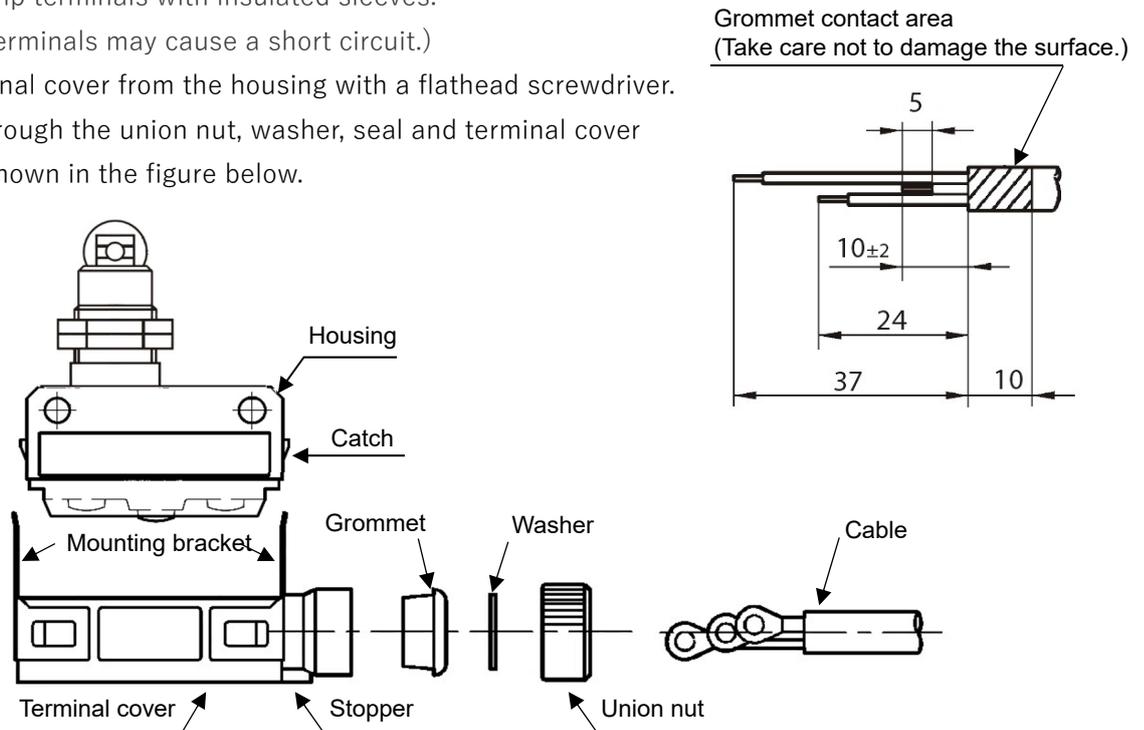
 <b>Warning</b>	
 <b>Prohibition</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ Do not connect or separate lines to the limit switch in the power supply status. (Electric shock or sudden start of opportunity)</li> </ul>
 <b>Forcing</b>	<p><b>Serious injury can result.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool before starting operation.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>Doing so may cause a malfunction.</b></p> <ul style="list-style-type: none"> <li>▶ Do not leave or use with the cover open. (Water, dust, etc. may penetrate and cause operation failure.)</li> </ul>
 <b>Forcing</b>	<p><b>Otherwise failure or malfunction can result.</b></p> <ul style="list-style-type: none"> <li>▶ Connect the wires using solderless terminals with insulation covering so that they do not come into contact with the cover or housing. (If the crimp terminal comes into contact with the cover, the cover may not be tightened or a ground fault may occur.)</li> <li>▶ Securely attach the cover. (Rainwater, etc. may enter the product and cause malfunction.)</li> </ul>

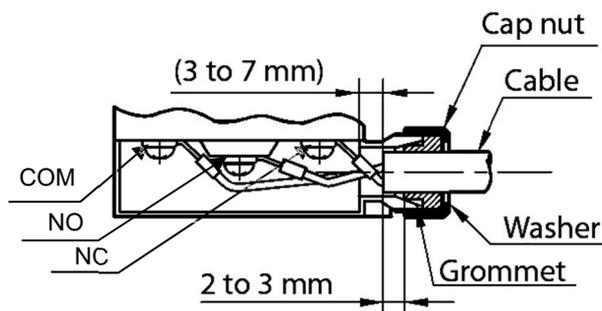
What to prepare	▶ Phillips screwdriver	▶ Flat head screwdriver	▶ connector (G1/2)
	▶ Wire stripper	▶ Terminal crimping tool	

**[Procedure]**

- 1) Process the tip of the lead wire as shown in the figure on the right.
- 2) Attach the crimp terminal to the end of the lead wire.  
Use M3 round crimp terminals with insulated sleeves.  
(Bare solderless terminals may cause a short circuit.)
- 3) Remove the terminal cover from the housing with a flathead screwdriver.
- 4) Pass the cable through the union nut, washer, seal and terminal cover in this order as shown in the figure below.



- 5) Connect the crimp terminal to the terminal by referring to the figure below.  
When the valve is fully open (or fully closed), COM-NC are ON.



- 6) Attach the terminal cover to the housing with one touch.  
Confirm that the mounting bracket of the terminal cover is securely held by the claw of the housing.
- 7) Tighten the union nut to secure the cable.

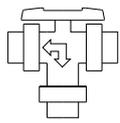
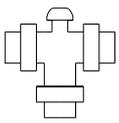
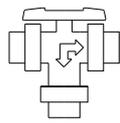
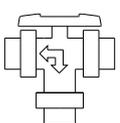
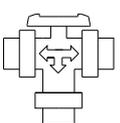
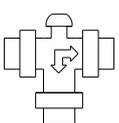
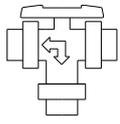
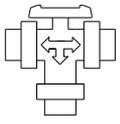
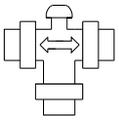
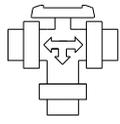
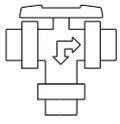
**7. How to operate**

▶ **Valve switching operation**

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>Damage may occur.</b></p> <ul style="list-style-type: none"> <li>▶ When operating the valve, do not turn the handle more than necessary with excessive force.</li> <li>▶ Do not open/close the product with dust or other foreign matter mixed in the fluid.</li> </ul>
 <b>Forcing</b>	<p><b>Doing so may cause a malfunction.</b></p> <ul style="list-style-type: none"> <li>▶ Even after the valve is installed, foreign matter such as sand may remain in the pipeline. Clean the inside of the pipe before opening or closing the valve.</li> <li>▶ Handle operation must be done by hand.(Use of an instrument, etc. may cause damage.)</li> <li>▶ Be sure to pass water before opening/closing the oil-prohibited parts.</li> </ul>

▶ Rotate the handle gently to open/close the camera. The handle can be rotated 360° .

▶ The arrow direction of the mark on the upper part of the handle matches the direction of the flow path of the ball. Turn the handle in the direction you want to switch.

	0°	45°	90°	135°	180°
L ポート					
					
					
WL ポート					
					
					
クロス ポート					
					
					

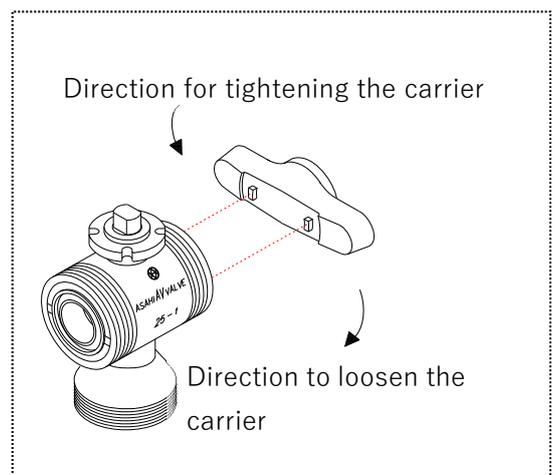
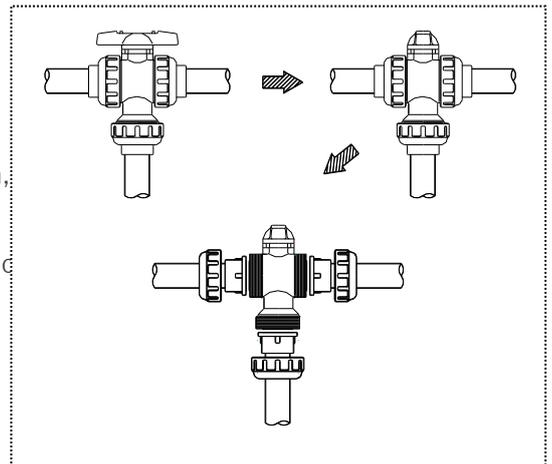
**8. How to adjust the surface pressure of the ball and seat**

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>Damage may occur.</b></p> <ul style="list-style-type: none"> <li>▶ Do not over tighten the union nut.</li> <li>▶ Do not open/close the product with dust or other foreign matter mixed in the fluid.</li> </ul>
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Some fluid remains in the body. Wear protective gloves and goggles.</li> </ul>

Preparations	▶ Belt wrench	▶ protective goggles
	▶ Protective glove	▶ Phillips screwdriver (for nominal Size 65~100mm only)

**[Procedure]**

- 1) Completely drain the fluid in the piping.
- 2) Turn valve fully closed.
- 3) Loosen the right and left union nuts [5] with a belt wrench.
- 4) Remove the body from the piping.
- 5) Pull the handle [14] off the body. For nominal Size 65~100mm, Loosen the tapping screw [15] completely before proceeding.
- 6) Mate the convex part on the upper part of the handle with the carrier. Toward the trademark (AV Mark) for nominal Size 15~50mm Only the right carrier [3] is adjustable. If the nominal Size is 65~100mm, adjust both sides.
- 7) Turn carrier [3] clockwise or counterclockwise for adjustment.
- 8) Check that the handle operation can be performed smoothly.
- 9) Restore by reversing steps from 6)..



**9. Disassembly method for parts replacement**

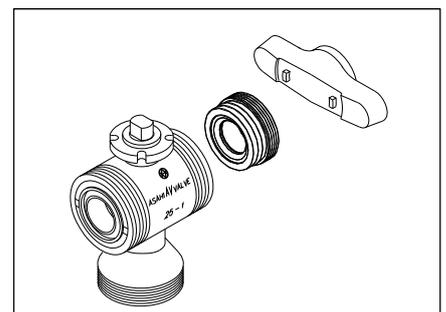
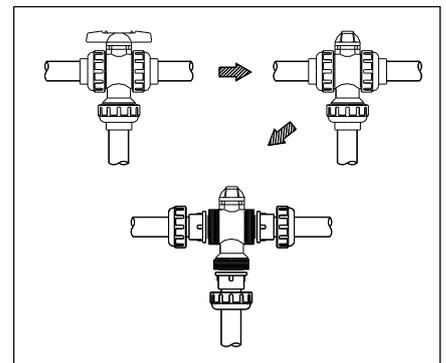
 <b>Warning</b>	
 <b>Forcing</b>	<p><b>There is a danger of injury.</b></p> <ul style="list-style-type: none"> <li>▶ Be sure to perform safety inspections of the machine tool and power tool before starting operation.</li> <li>▶ Wear appropriate protective equipment for the work details when installing piping.</li> </ul>

 <b>Caution</b>	
 <b>Prohibition</b>	<p><b>Damage may occur.</b></p> <ul style="list-style-type: none"> <li>▶ When replacing the valve or replacing parts, completely drain the fluid from the piping to reduce the fluid pressure to zero.</li> <li>▶ Do not over tighten the union nut.</li> <li>▶ Do not use a pipe wrench when tightening the union nut.</li> </ul>
 <b>Forcing</b>	<p><b>Damage may occur.</b></p> <ul style="list-style-type: none"> <li>▶ Fix the body cap during piping installation or disassembly and reassembly.</li> <li>▶ Be sure to confirm that the union nut is fully tightened before the water flow test.</li> <li>▶ Tighten the union nut paying attention to the shaft center misalignment and face-to-face dimension.</li> <li>▶ When connecting a resin valve to metal piping, be careful not to apply piping stress to the resin valve.</li> </ul>

- Preparations : ▶ Belt wrench ▶ protective goggles  
 : ▶ Protective glove ▶ Phillips screwdriver (for nominal Size 65~100mm only)

**[Disassembly procedure]**

- 1) Completely drain the fluid in the piping.
- 2) Turn valve fully closed.
- 3) Loosen the right and left union nuts [5] with a belt wrench.
- 4) Remove the body from the piping.
- 5) For nominal diameters of 65 to 100 mm, use a Phillips screwdriver to completely loosen the tapping screw [15] and then remove it.
- 6) Fit the convex part on the top of the handle and the concave part of the union [3]. For nominal diameters of 15 to 50 mm, only the union [3] on the right side facing the trademark (AV mark) can be adjusted. If the nominal diameter is 65 to 100 mm, please adjust both sides.



## How to disassemble for parts replacement (continuation)

- 7) Turn handle [14] with mated to remove carrier [3]
- 8) Remove the seat [7] by hand to avoid scratching.
- 9) Push out the ball [2] by hand.
- 10) Push the stem [6] out from the top flange side to the body side.

### [Assembly procedure]

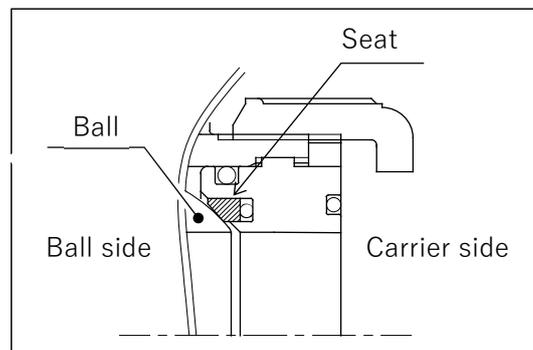
- 10) to reverse the procedure.

## ⚠ Caution

### ! Forcing

**Damage may occur.**

- ▶ Check the front and back sides of the sheet before attaching it.  
(Recessed side = Mated with ball)



**10. Inspection item**

 **Caution**



**Forcing**

**Fluid may leak from the valve.**

- ▶ Maintenance should be performed every 3 to 6 months as a guide in order to keep the watch in normal condition and use it for a long time.y particular attention to temperature changes and aging during long-term storage or shutdown or use.
- ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work.
- ▶ If any trouble is found, take the appropriate action referring to "**12. Causes and remedies for problems.**"

## Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	[Flanged end] Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and re-tighten the pipe bolts. <a href="#">(Ref: 5. Piping method [Flanged end])</a>
		[Socket end] Adhesive construction section	Remove the valve from the piping and retry the bonding process. <a href="#">(Ref: 5. Piping method [Socket end])</a>
		[Threaded end] Threaded connection	Remove the valve from the piping and screw the valve in again. <a href="#">(Ref: 5. Piping method [Threaded end])</a>
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. <a href="#">(Ref: 9. How to disassemble for parts replacement)</a>
		Union nut portion of the valve	① Retighten the union nut ② Remove the valve from the piping, check the O-ring and sealing surface, and replace the defective part. <a href="#">(Ref: 5. Piping method)</a>
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. <a href="#">(Ref: 9. How to disassemble for parts replacement)</a>
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. <a href="#">(Ref: 9. How to disassemble for parts replacement)</a>
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. <a href="#">(Ref: 2. Safety Precautions [Handling the Product])</a>
Abnormal noise (hearing)	No abnormal noise	Valve	Remove the valve from the pipe and replace the valve. <a href="#">(Ref: 2. Safety Precautions [Handling the Product])</a>
		Piping around the valve	Reconfirm the conditions of use <a href="#">(Ref: 2. Safety Precautions [Handling the Product])</a>

## Periodic inspection

### ●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Vibration (palpation)	No different from other parts	Valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions [Handling the Product])
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions [Handling the Product])

### ●Guideline of the inspection cycle: 6 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
On the manual handle Operability (touch)	Smoothly Turning	Manual operation unit	Remove the valve from the pipe and replace the valve. (Ref: 9. How to disassemble for parts replacement)
Looseness of bolts (visual and palpation)	No Loose	mounting base + valve	Retighten the mounting bolts with the following torque. Nominal Size 15~32mm:5 N-m 40, 50mm:6 N-m 65, 80mm:8 N-m 100mm :10 N-m
		[Flanged end] For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method [Flanged end])
Corrosion (visual inspection)	Corrosion or Of rust No	Appearance of the product	Remove the valve from the pipe and replace the valve. (Ref: 9. How to disassemble for parts replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the pipe and replace the valve. (Ref: 9. How to disassemble for parts replacement)

**11. Causes and remedies for problems**

 **Caution**



**Forcing**

**There is a danger of injury.**

- ▶ If any malfunction is found, immediately stop using the product and take appropriate action.
- ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work.

Failure phenomenon	Possible cause	Measures and measures
The handle does not turn (cannot turn) during manual operation.	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. <a href="#">(Ref: 9. How to disassemble for parts replacement)</a>
	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 <a href="#">(Ref: 2. Safety Precautions [Handling the Product])</a>
	The torque of the valve has increased due to the effects of the fluid (temperature, components, pressure, etc.)	Reconfirm the conditions of use <a href="#">(Ref: 2. Safety Precautions [Handling the Product])</a>
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure <a href="#">(Ref: 4. Product Specifications [Relationship between maximum allowable pressure and temperature])</a>
	The carrier is loose.	Remove the valve from the pipe and tighten the carrier to adjust the surface pressure. <a href="#">(Ref.: 9. How to adjust the surface pressure of the ball and seat)</a>
	Sheet or ball is worn or scratched	Remove the valve from the piping, replace the relevant part, or replace the valve. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Piping stress is applied to the valve.	Remove the piping stress

**Causes and remedies for problems (Continued)**

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks from valve (external leak)	Union nut is loose	Retighten the union nut <a href="#">(Ref: 5. Piping method)</a>
	O-ring is scratched, worn, melted, or altered	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Scratches or wear are found on the sliding or fixing surfaces of the O-ring.	Stop using the product immediately, remove the valve from the piping, replace the relevant part, or replace the valve. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
Heavy handle opening/closing	Adhesion of foreign matter	Cleaning <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Deformation (thermal deformation, etc.)	Parts replacement <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
	Over-tightening the carrier	Adjusting the surface pressure between the ball and seat <a href="#">(Ref: 19. How to disassemble for parts replacement)</a>
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. <a href="#">(Ref: 9. How to disassemble for parts replacement)</a>

**12. Disposal method of residual materials and waste materials**

 <b>Warning</b>	
 <b>Forcing</b>	<p><b>When burnt, toxic gas is generated.</b></p> <ul style="list-style-type: none"> <li>▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.</li> </ul>

**Contact**

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

**[User's Manual]**

3-way ball valve Type 23  
Manual  
15~100mm



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

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

**March 2024**

[User's Manual] 3-way ball valve type 23 Manual 15~100mm