Gauge valve

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 Hand wheels 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	
Forcing	**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. ▶ Do not hang the Hand wheel when transporting the valve.
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.

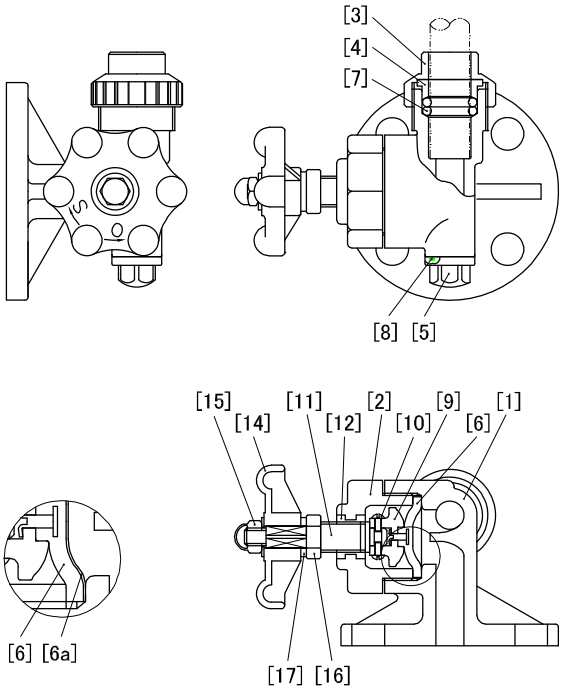
Product Handling

⚠ Warning	
Forcing	**Serious injury can result.** ▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately. ▶ When conducting a pipe leak test after completion of piping construction, be sure to check with water pressure. Contact us in advance if you are unavoidable to test with a gas.

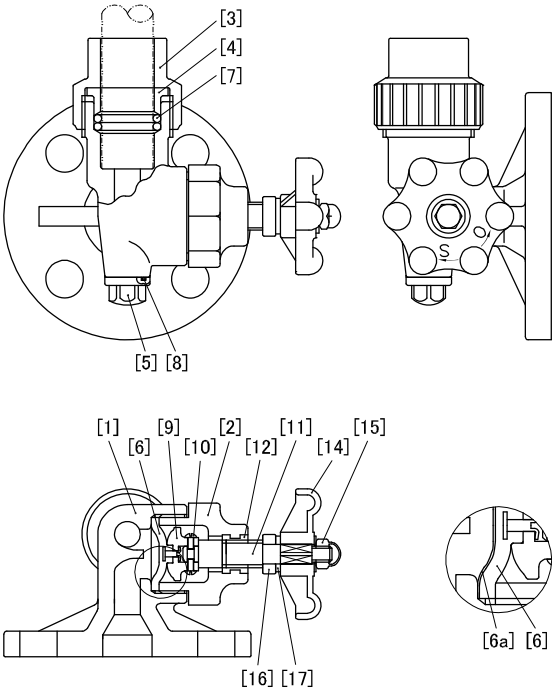
⚠ Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not step on the valve or place heavy objects on it. ▶ Keep away from fire and hot objects.
Forcing	**There is a danger of injury.** ▶ Secure sufficient space for maintenance and inspection when piping. **The valve can be damaged, or leak.** ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ 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 any place where the valve is constantly exposed to splashes of water and dust, or direct sunlight, or protect the valve with a cover or the like to cover the entire area. ▶ Perform maintenance on a regular basis referring to "**8. Inspection items**." Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ Retighten the bonnet if leakage occurs due to long-term storage, shutdown, or temperature change during use. (Do not overtighten.)

3. Name of each part

20mm



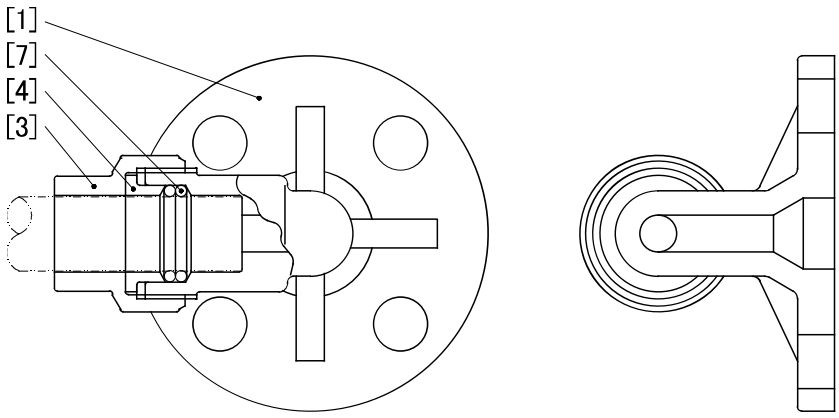
25mm



[1]	Body	[6]	Diaphragm (rubber)	[10]	Compressor pin	[16]	Stopper
[2]	Bonnet	[6a]	Diaphragm (PTFE)	[11]	Stem	[17]	Spring Washer
[3]	Gland nut	[7]	O-ring (A)	[12]	Inserted metal		
[4]	Gland	[8]	O-ring (B)	[14]	Hand wheel		
[5]	Drain plug	[9]	Compressor	[15]	Nut		

Flanged elbow

[1]	Body
[3]	Gland nut
[4]	Packing holder
[7]	O-ring (A)

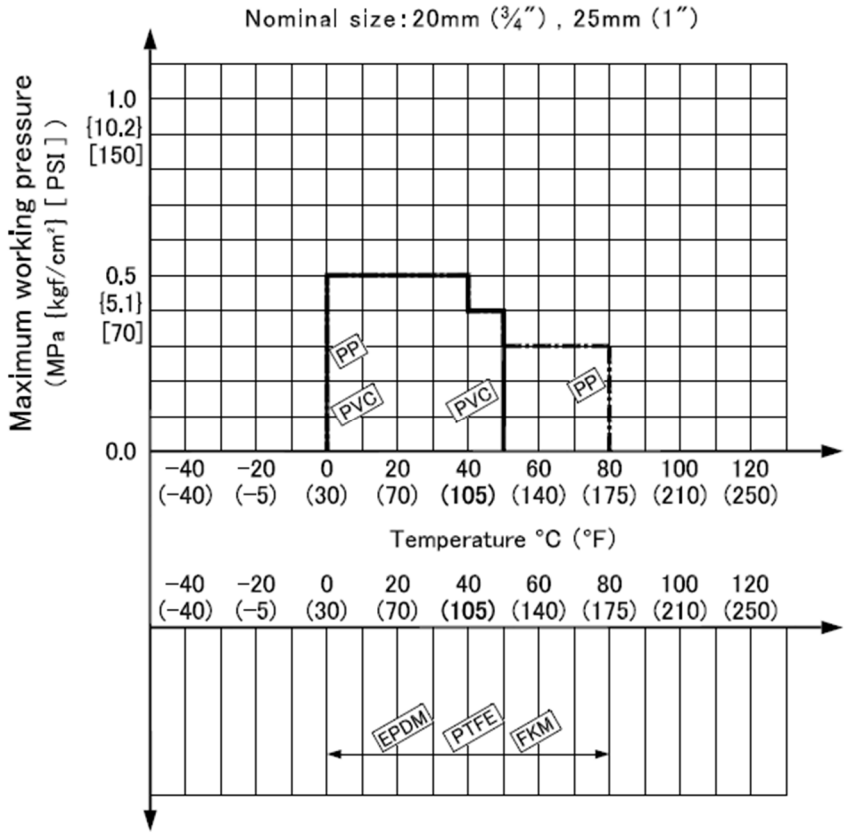


4. Product Specifications

Model number table

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
V	G E	* *	*	*	F	*	* * *	*
V MANUAL	GE GAUGE VALVE	MH ROUND HANDLE ZZ FLANGED ELBOW	U PVC P PP	E EPDM V FKM T PTFE	F FLANGED	J JIS 10K D DIN A ANSI	020 20mm 025 25mm	1 LIBRICANT FREE

Relationship between maximum allowable pressure and temperature



5. Piping method

⚠Warning	
Prohibition	**Serious injury can result.** ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ When installing piping, be sure to wear the appropriate protective equipment according to the operation details. (Risk of injury)

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not over-tighten when supporting piping with a U-band, etc. ▶ When installing, avoid applying excessive stress such as tension, compression, bending or impact to the piping and valve, etc.

Flange portion

Caution	
Forcing	**The valve can be damaged or leak.** ▶ Use a connection flange with a full-face seat. ▶ Check that the flange standards of each other are correct. ▶ Be sure to use sealing gaskets (AV packing), bolts, nuts and washers, and tighten them to the specified tightening torque. (The tightening torque will change if the gasket is not an AV gasket.)

Preparations ▶ Torque wrench ▶ gage tube ▶ AV packing

[Procedure]

1) Set packing between flanges.

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

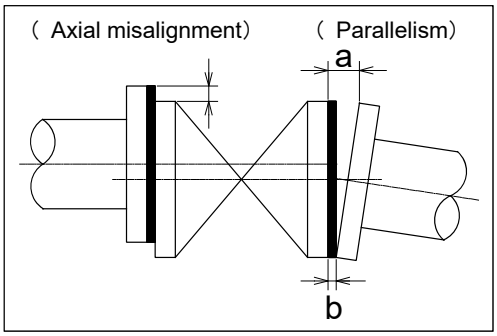
Caution

Forcing

The valve can be damaged, or leak.

▶ Keep the parallelism of the flange surface and the dimension of shaft misalignment below the values shown below.

Nominal size (mm)	Axial misalignment	Parallelism (a-b)
20, 25	1.0mm	0.5mm



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

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

Caution

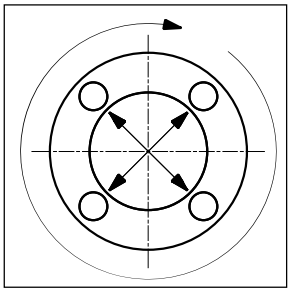
Prohibition

The valve can be damaged, or leak.

▶ Do not tighten more than the specified torque value.

Flange tightening torque Units: N-m

DN (mm)	20	25
PTFE coating and PVDF coating	17.5	20.0
Rubber	8.0	20.0



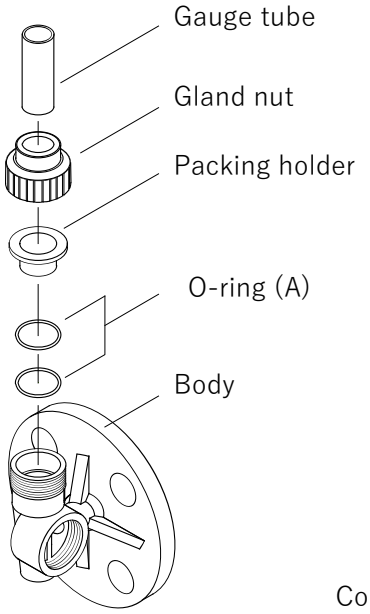
Gauge tube

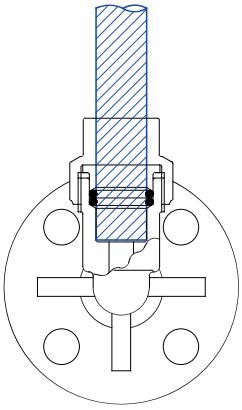
[Procedure]

1) Loosen and remove the gland nut by hand. Remove the packing retainer and O-ring (A) from the body**.**

2) Guide the gage tube through the gland nut, packing retainer and O-ring (A) in order in advance.

3) Insert the gauge tube into the body and tighten the gland nut by hand to secure the gauge tube.





Complete drawing of gauge tube installation

Recommended gauge tube outer diameter

Nominal size	Gauge tube outside diameter
20mm	18mm
25mm	26mm

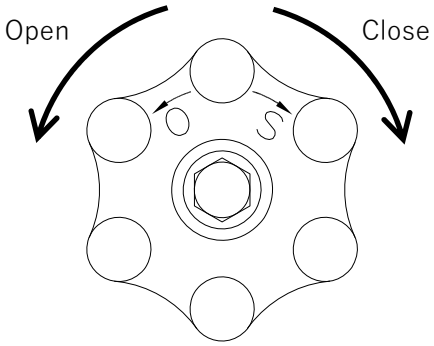
6. Operation method

⚠Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not open or close the valve with dust or other foreign matter in the fluid. ▶ Foreign matter such as sand may remain in the pipeline after installing the valve. Open and close the valve after cleaning the inside of the pipe. ▶ Do not turn the Hand wheel more than necessary with excessive force when fully closing or opening the valve. ▶ Hand wheel operation must be done by hand.

[**Procedure**]

1) Open and close the Hand wheel by gently rotating it. Turn in the "S" direction on the Hand wheel display when closing, or in the "O" direction on the Hand wheel display when opening.

2) Check the open/close status of the valve. When the Hand wheel operation torque becomes heavy during closing operation, it is in the fully closed state.



7. How to disassemble/assemble parts for replacement

Warning	
Forcing	**Serious injury can result.** ▶ Wear appropriate protective equipment for the work details when installing piping. (Risk of injury)

Caution	
Prohibition	**The valve can be damaged, or leak.** ▶ Do not overtighten the gland nut. ▶ Do not use a pipe wrench when tightening the gland nut.

Preparations	▶ Torque Wrench	▶ Wrench	▶ Protective gloves
	▶ Protective glasses	▶ Monkey wrench	▶ Phillips screwdriver

[Disassembly Procedure]

1) Completely drain the fluid in the piping.
2) Loosen the gland nut [3] on the valve side and remove the gauge tube.
3) Loosen the pipe bolt nut with a spanner and remove the valve from the pipe.
4) Loosen and remove the nut [15] on the upper part of the Hand wheel [14].
5) Remove Hand wheel [14].
6) Loosen and remove the bonnet [2] with a monkey wrench.
7) Remove stem [11] from bonnet [2].
8) Unscrew compressor pin [10] on compressor [9] with a Phillips screwdriver and remove.
9) Remove compressor [9] from stem [11].

[Assembly Procedure]

1) Follow the disassembly procedure in reverse.
2) Check that manual Hand wheel operation is smooth after assembly.

8. Inspection item

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

Daily inspection

Inspection items and inspection methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	For leakage No	Pipe flange connection	① Retighten the pipe bolts to the specified torque. ② Remove the valve from the pipe and re-tighten the pipe bolts. (Ref: 5. Piping method)
		Top flange of the valve	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble/assemble parts for replacement)
		Surface of the entire valve	Remove the valve from the pipe and replace the valve. (Ref: 7. How to disassemble/assemble parts for replacement)
Internal leakage (visual and measurement)	For leakage No	Leakage to secondary side when valve is fully closed	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble/assemble parts for replacement)
		Measured values of flowmeters, pressure gauges, etc.	Remove the valve from the piping and replace the valve or defective part. (Ref: 7. How to disassemble/assemble parts for replacement)
Abnormal noise (hearing)	Of abnormal noise No	Valves and surrounding piping	Remove valve from piping and replace valve or part (Ref: 7. How to disassemble/assemble parts for replacement)
		Piping around the valve	Reconfirm the conditions of use (Ref: 2. Safety Precautions)

Periodic inspection

●Guideline for the inspection cycle: 3 months

Inspection items and inspection methods	Guideline of judgment	Check point	Remedy for malfunctions
Vibration (palpation)	To differences from other parts No	Valves and surrounding piping	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions)
			Remove valve from piping and replace valve or part (REF.: 7. How to disassemble/assemble parts
		Piping around the valve	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Precautions)

●Guideline of the inspection cycle: 6 months

As inspection items Inspection method	Guideline of judgment	Check point	Remedy for malfunctions
On the manual Hand wheel Operability (touch)	Smoothly Turning	Manual operation unit	Remove the valve from the pipe and replace the valve or actuator. (Ref: 7. How to disassemble/assemble parts for replacement)
Of bolts Looseness (visual and palpation)	Loose No	For flange piping	Retighten the pipe bolts to the specified torque. (Ref: 5. Piping method [Flanged end])
Corrosion Or rust ※1) (visual inspection)	Corrosion or Of rust No	Appearance of the product and surrounding piping	Remove the valve from the piping and replace the valve or the relevant part. (Ref: 7. How to disassemble/assemble parts for replacement)
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the valve from the piping and replace the valve or the relevant part. (Ref: 7. How to disassemble/assemble parts for replacement)

9. Cause of malfunction and remedy

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

Failure phenomenon	Possible cause	Measures and measures
Leakage from body and bonnet	Insufficient tightening of bonnet	Retighten the bonnet
	Fluid is crystallized	Disassemble and clean
Cannot seal the valve seat.	Foreign matter is caught	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 7. How to disassemble/assemble parts for replacement)
	Damage to the valve seat or diaphragm	Replace the relevant parts
Leak from the gauge tube mounting part	Ground nut is loose	Retighten the gland nut
	Foreign matter is caught	Disassemble and clean
	O-ring is damaged.	Replace the O-ring
	The gauge tube is broken.	Replace the gauge tube
Leak from the stem	The diaphragm is broken.	Replace the diaphragm

CAUSE OF FAILURE AND HOW TO REMEDY (continued)

Failure phenomenon	Possible cause	Measures and measures
Fluid leaks even when fully closed (internal leak)	High fluid pressure	Use below the maximum allowable pressure (Ref: 7. How to disassemble/assemble parts for replacement)
	Diaphragm or body has flaws	Remove the valve from the piping, replace the relevant part, or replace the valve. (Ref: 7. How to disassemble/assemble parts for replacement)
	Missing parts	Remove the valve from the piping and attach the relevant part or replace the valve. (Ref: 7. How to disassemble/assemble parts for replacement)
	Foreign matter caught in valve	Remove the valve from the piping, disassemble it, and remove foreign matter. (Ref: 7. How to disassemble/assemble parts for replacement)
	Piping stress is applied to the valve.	Remove the piping stress
Fluid leaks from valve (external leak)	Valve is cracked or broken	Stop using the product immediately, remove the valve from the piping, and replace the valve. (Ref: 7. How to disassemble/assemble parts for replacement)
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. (Ref: 7. How to disassemble/assemble parts for replacement)

10. Disposal method of residual materials and waste materials

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]

Gauge valve

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

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