



READ THE INSTRUCTION MANUAL BEFORE USING

# INSTRUCTION MANUAL

MANOSTAR GAGE

WO71

No. TR-WO71-E03

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Manostar  


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## INTRODUCTION

Thank you very much for purchasing of "MANOSTAR GAGE WO71".

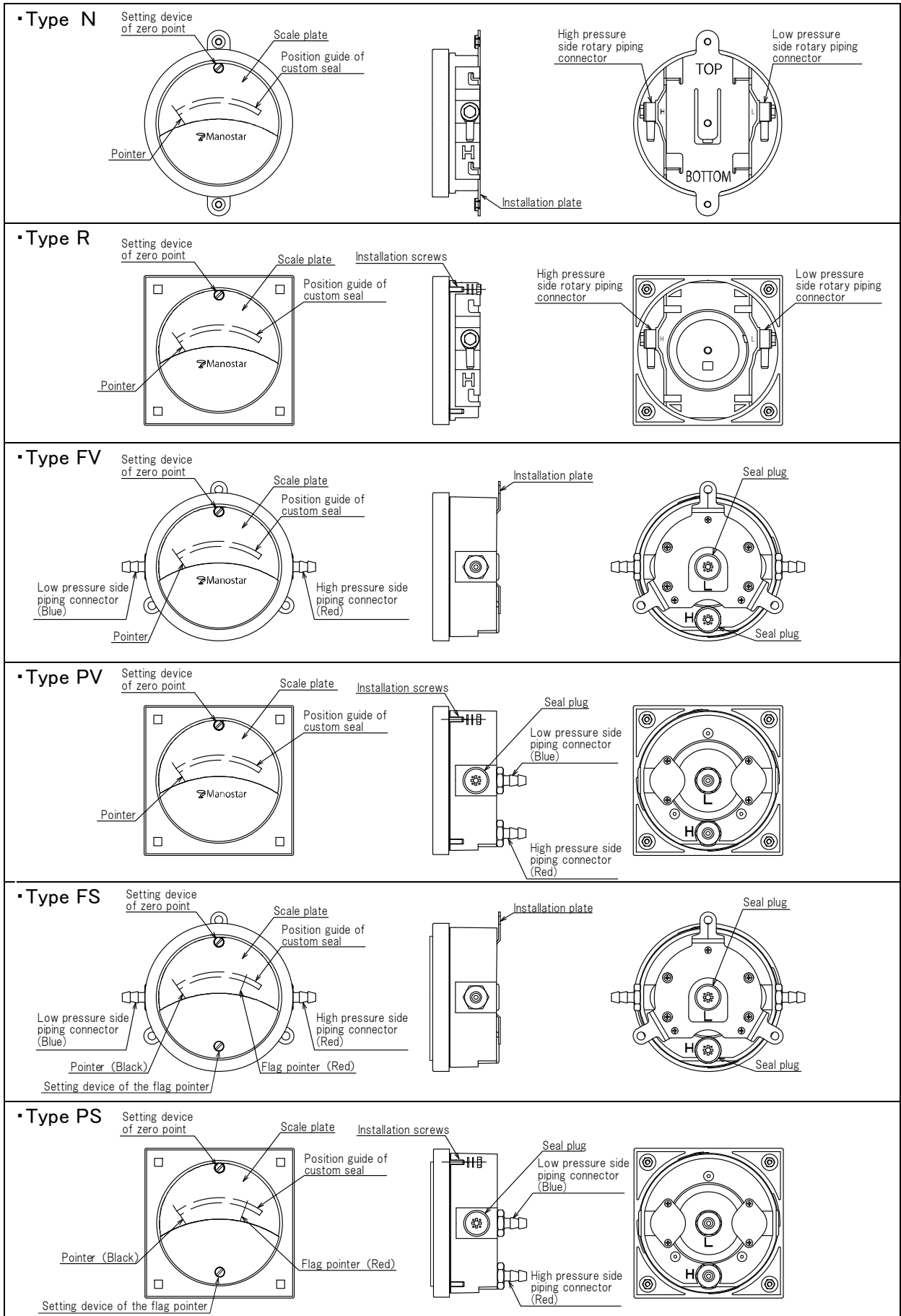
 Caution	<p>To ensure your safety in using this instrument :</p> <ul style="list-style-type: none"><li>•Be sure to read the instruction manual carefully before using the instrument so that you can use it properly.</li></ul> <p>Wrong use may result in failure of the instrument and lead to its damage and accident. This manual should be kept in a proper place so that you can refer to it any time you need.</p>
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## I . PRECAUTIONS

 Warning
<ul style="list-style-type: none"><li>•<b>Do not use the instrument where flammable gas is present.</b> The instrument is not explosion-proof. Do not use instrument in the circumstance where flammable gas is present or with flammable liquid. It may cause explosion.</li><li>•<b>Do not use the instrument at the place where corrosive gas is present.</b> The instrument is not corrosion resistance construction. Measuring corrosive gas may corrode the receiving element and housing material of the instrument. It is expected that corrosive gas which leaks out of the instrument may cause harm to humans.</li><li>•<b>Do not apply the pressure to the instrument more than it can withstand.</b> The diaphragm and the retainer break and may cause injury and disaster. The body itself breaks and may cause injury and disaster, if the pressure which exceed the withstanding pressure of instrument body is applied.</li><li>•<b>The instrument is measurable for air and non-corrosive gas only.</b> When it is used to measure the pressure of water or oil, it breaks. It may also cause injury and disaster.</li><li>•<b>Avoid using the instrument in places subject to large vibrations and shocks.</b> When the instrument is used in places subject to large vibrations and shocks, it may lead to performance degradation, breakdown, injury and disaster.</li><li>•<b>Use within the operating temperature and humidity range.</b> When the instrument is used out the operating temperature and humidity range, the body breaks and may cause injury and disaster.</li><li>•<b>Do not disassemble or reconstruct the instrument.</b> Disassembly and remodeling are not only void of the warranty and lead to performance degradation or breakdown, but also cause injury and disaster.</li></ul>

 Caution
<ul style="list-style-type: none"><li>•<b>As to where to install and how to install this instrument, be sure to follow the instruction manual provided so as to ensure a proper method.</b></li><li>•<b>Use the instrument indoors.</b></li><li>•<b>Use in a dry and clean place indoors.</b> Using in a place exposed to direct sunlight or in a humid place may cause deterioration or breakdown.</li><li>•<b>Do not use organic solvent for cleaning.</b> Use a cloth soaked with water-diluted neutral detergent to wipe the surface of a product. Using organic solvent causes damage on the surface.</li><li>•<b>Do not drop the product.</b> Product is a precision instrument. If you drop the product, there is a possibility that not only the exterior, but also the interior mechanism may damage.</li><li>•<b>Do not pull the pipe with a strong force.</b> If you pull the pipe with a strong force, there is a possibility that the pipe cap may break.</li></ul>

## II . THE NAME OF EACH PART



### III. INSTALLATION

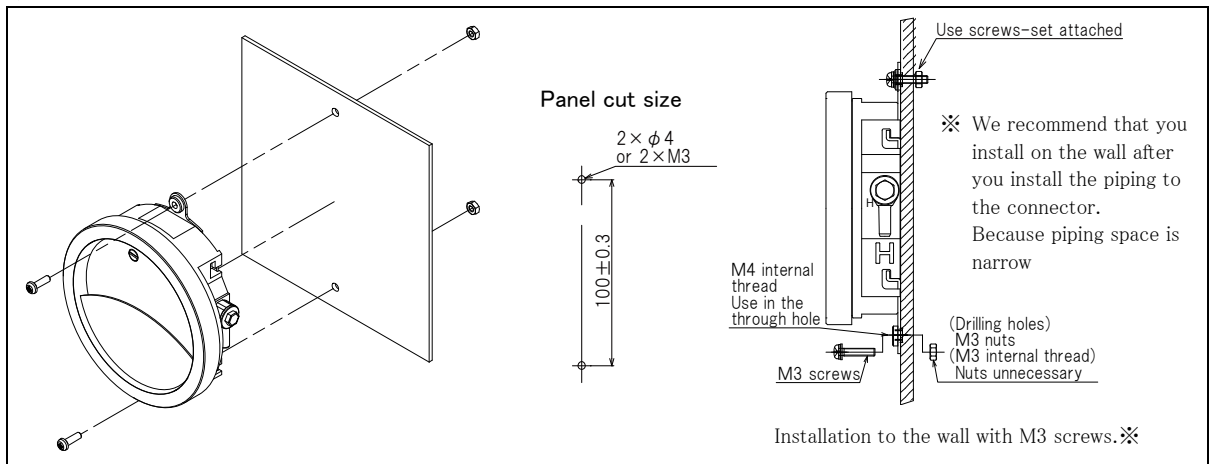
Before using this instrument, make sure if it is the type that you requested and meets the demand of the environment, pressure and piping conditions where it is used, by specification.

#### 1. Caution of service condition

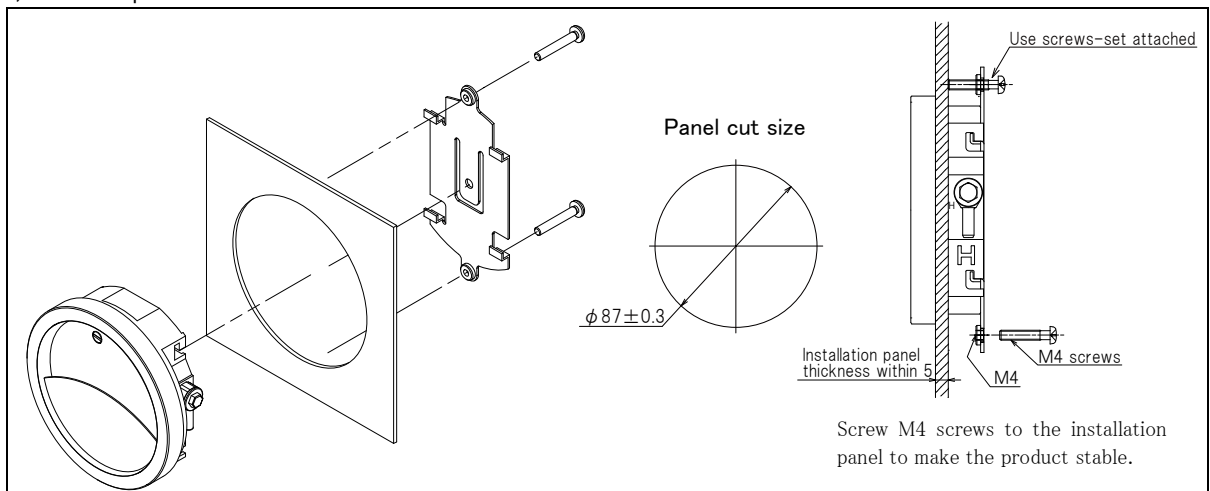
- Do not use the instrument in a place subjected to direct sunlight, vibration or shock, or excessive moisture. In particular, vibration and shock to the instrument should shorten its life.
- Use under the medium and ambient temperature from  $-10$  to  $+50$  °C.
- The instrument is not waterproof. Do not use it in a place subjected to rain, or other splashing water.
- In installing the instrument, select the place where the ground is smooth and flat.

#### 2. Installation of type N

##### a) In case of wall surface installed

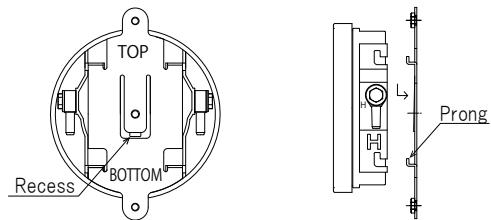


##### b) In case of panel embedded installed



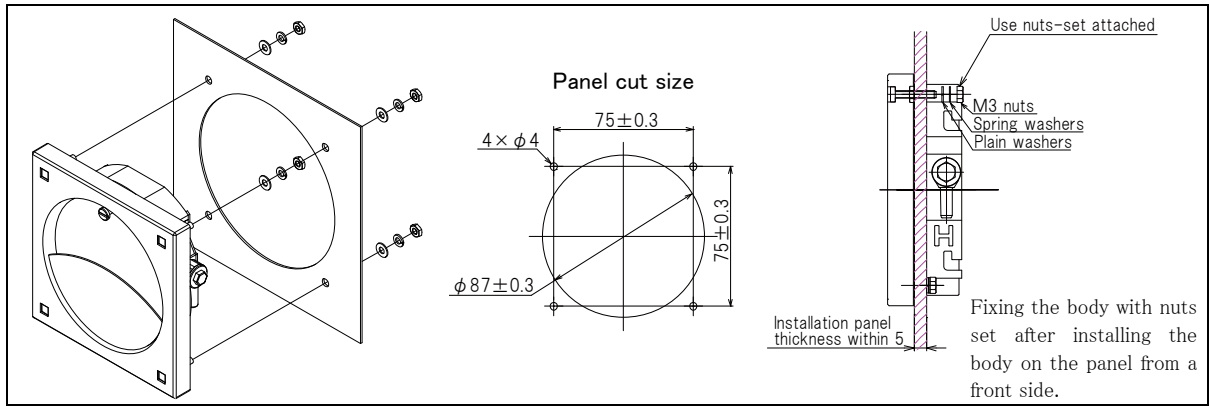
##### <Description method of an installation board>

The prongs on the mounting plate are held by the gage.  
 To remove the plate, use a flat head screwdriver gently to lift the bottom of the U-shaped groove on the plate, and slide the plate downwards. To attach the plate, align the prongs with the indentations on the back of the gage, and slide the plate upward to engage.

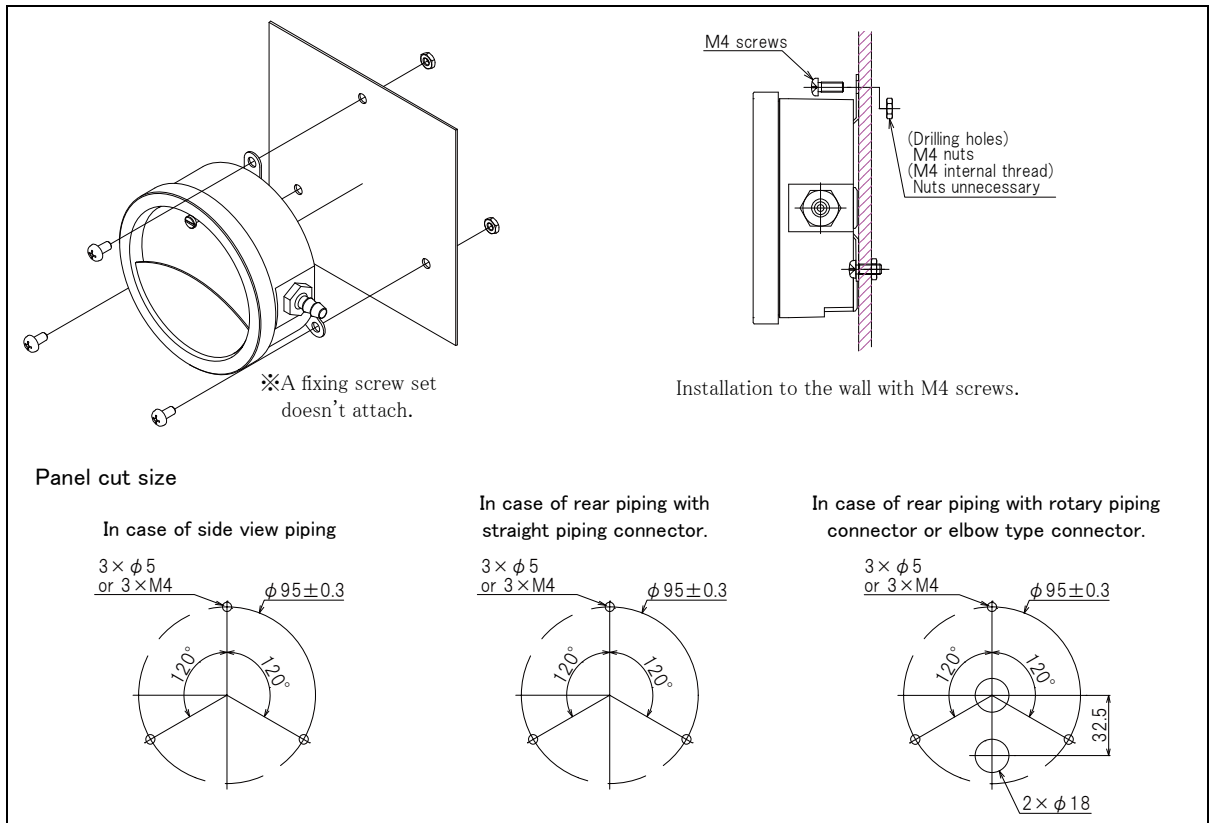


 Caution	<ul style="list-style-type: none"> <li>The tightening torque of the screw is <math>0.8 \text{ N} \cdot \text{m}</math>.</li> <li>Do not apply excessive torque more than stipulated value, otherwise it will damage the body of the instrument.</li> </ul>
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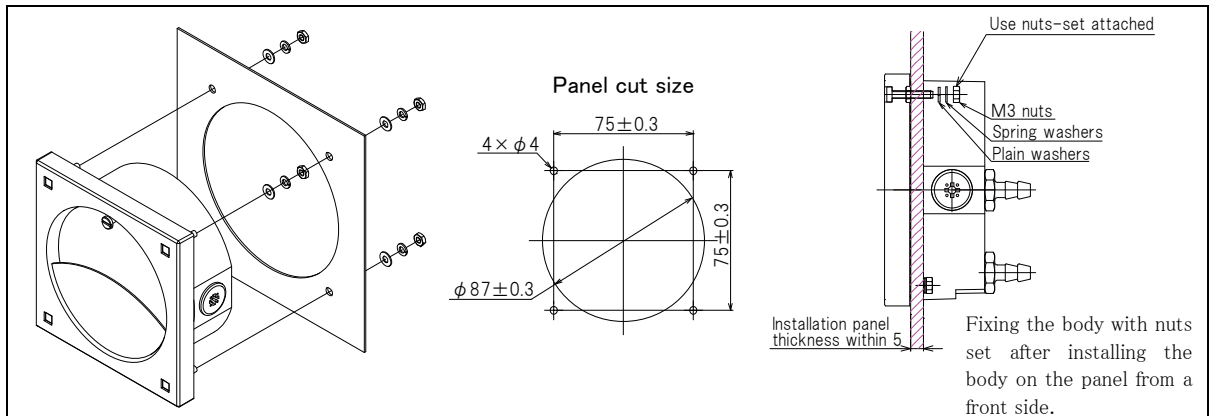
### 3. Installation of type R



### 4. Installation of type FV, type FS



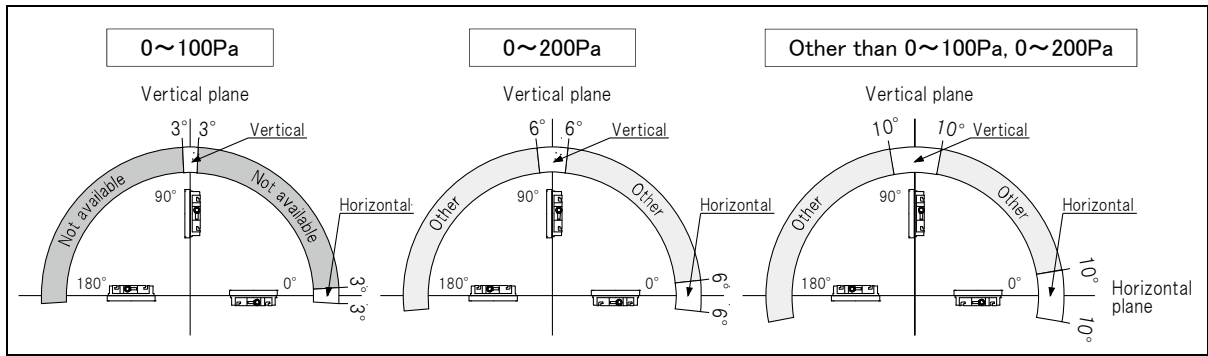
### 5. Installation of type PV, type PS



 <b>Caution</b>	<ul style="list-style-type: none"> <li>• The tightening torque of the screw is 0.8 N·m.</li> <li>• Do not apply excessive torque more than stipulated value, otherwise it will damage the body of the instrument.</li> </ul>
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## 6. Installation position

Must be specified at the time of ordering. After inspection and adjustment in accordance with the specified installation position, it will be.



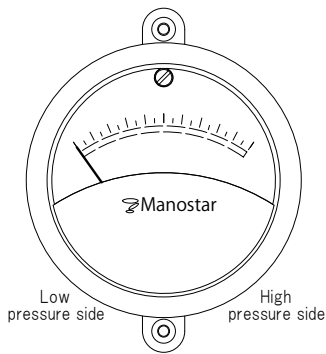
**Caution** To become not covered by the warranty, do not use other than the specified installation position at the time of order.

## 7. Use of in a position other than the specified is out of accuracy warranty

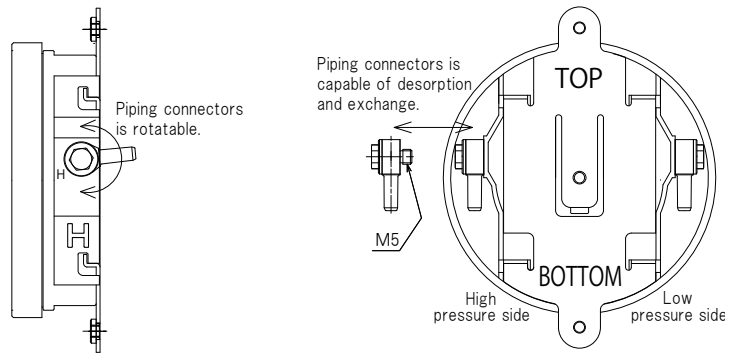
### •Type N, type R

Polarity can't be changed, because there is distinction between high pressure side and low pressure side.

<Front view>



<Back view>



**Caution**

- The tightening torque of the connector is 0.5Nm. There is a fear that the meter body and nut thread are damaged for fastening beyond the stipulated value.

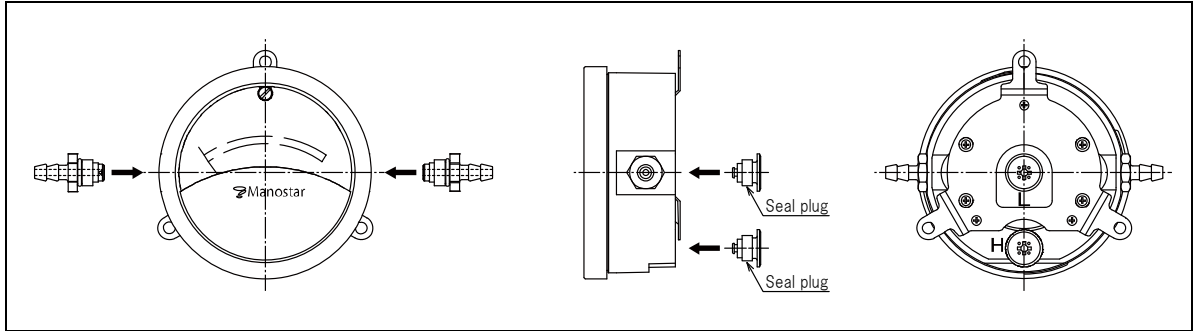
VR connector (KGA71VR) :

- The desorption of the base, please use the box driver or wrench of Hex.7
- O-rings is not fixed. Please be careful not to lose the O-rings at the time of piping connector removal.
- At the time of installation, please don't forget to connect O-rings, or to bite O-rings. Forget connecting O-rings and biting O-ring, it will be airtightness failure of the piping connector.

The diagram shows the structure of the type VR piping, including the ground (Hex.7), O-rings (I.D.7, W.D.1), and Nipple.

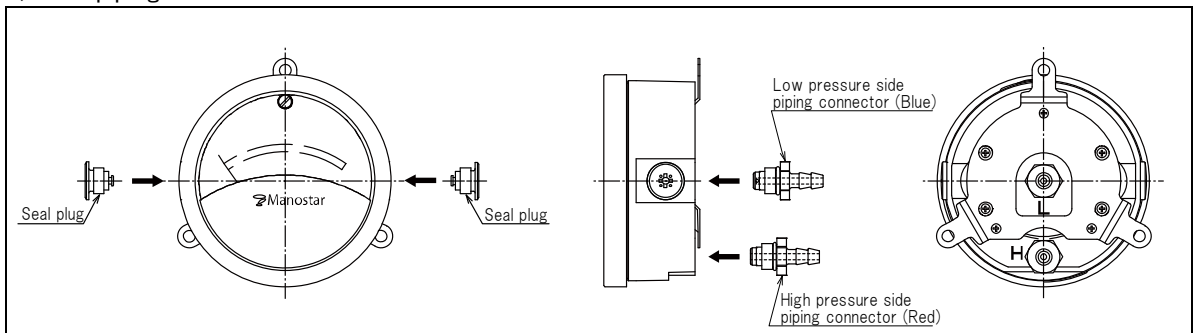
• Type FV, type PV, type FS, type PS

a) The piping connector installed on side view




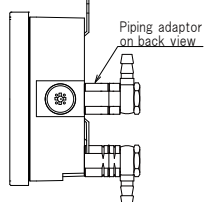
About side connector ports of the instrument body, there is no distinction between high pressure side and low pressure side. The polarity of the high and low pressure side is determined by the piping connector attached. It is able to convert the polarity by changing connectors. The high pressure side and the low pressure side are identified with red and blue color respectively.


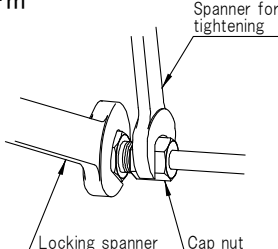
b) The piping connector installed on back view



Polarity can't be changed, because there is distinction between high pressure side and low pressure side in back mounting parts.


When installing the connectors to back view connector parts, install the connector of high pressure side (red) to the port with the sign of "H" and the connector of low pressure side (blue) in the port with the sign of "L".

 <b>Caution</b>	<p>Type FV, type FS</p> <p>Piping adaptors of back view (KGA81FBA-H and L) are necessary to avoid interference with piping connectors and panel to make a locking spacer easier.</p>	
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 <b>Caution</b>	<p>The plug sealing between the piping connector port of the instrument, the piping connector, and the sealing plug is achieved by O-rings. Apply the tightening torque specified below when tightening the piping connector and sealing plug. The instrument body will be broken if excessive torque is applied.</p> <ul style="list-style-type: none"> <li>• Piping connector for vinyl or plastic tube and metal tube..... 1N·m</li> <li>• Seal plugs..... 0.5N·m</li> </ul> <p><b>Tightening with locking spanner</b></p> <p>Always use locking spanner to tighten the cap nut of MT connectors, MR connectors, and MTW connectors or piping R1/8 connector to the R1/8 Connector adapter. Be careful not to apply the tightening torque directly to the instrument body.</p>	
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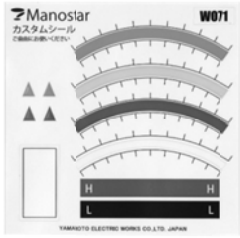
## 8. Accessory for WO71

Installation plate steel-made [ installed ]	
 <p>(for type N)</p>	Product code
	ADPL71


Used with the installation of the instrument body.

VR connector polycarbonate duralumin made [ installed ]	
 <p>(for type N, type R)</p>	Product code
	KGA71VR


These connectors are rotary elbow type and can be connected to vinyl, plastic and rubber tube of I.D.4.

Custom seal polyester film made [ installed ]	
	Product code
	SEAL-WO71


Freely set the color-scale and flag pointer and paste it into the instrument body.

 <b>Caution</b>	
<ul style="list-style-type: none"> <li>• Accessories for WO71 cannot be used in other products.</li> <li>• No polarity of the low pressure side and the high pressure side to the VR connector. (KGA71VR)</li> </ul>	


## 9. Accessory for type FV, type PV, type FS, type PS

VT connector for vinyl or plastic tube resin-made [ installed ]		
	Product code	
	High pressure	Low pressure
	KGA81VT-H-P	KGA81VT-L-P


Be sure to use I.D. 6 and thickness of 1mm or more. However, the vinyl or plastic tube with enough withstanding pressure (including vacuum pressure) is required when the instrument range or the line pressure is higher than 50 kPa.

VR connector for vinyl, plastic tube brass-made [ option ]		
	Product code	
	High pressure	Low pressure
	KGA81VR-H	KGA81VR-L


These connectors are rotary elbow type and can be connected to vinyl, plastic and rubber tube of I.D. 6.

PT connector for hard tube PBT, brass-made [ option ]		
	Product code	
	High pressure	Low pressure
	KGA81PT-H	KGA81PT-L


The joint installed tube is push-in type. Use the optional tube or the applicable tube (JIS B8381-1).

MT connector for metal tube brass-made [ option ]		
	Product code	
	High pressure	Low pressure
	KGA81MT-H	KGA81MT-L


This connector can be connected to the metal tube (O.D.6 ±0.1) made from copper, aluminum and so on. When this connector is connected to hard plastic tube (O.D. 6, I.D. 4), remove the brass-made sleeve and use the resinous inner sleeve set (XIN6×4) that is sold separately. (please use the type MTW connector for the stainless steel pipe)

MR connector for metal tube brass-made [ option ]		
	Product code	
	High pressure	Low pressure
	KGA81MR-H	KGA81MR-L


This connector is rotary elbow type and can be connected to the metal tube (made from copper and aluminum and so on). Applicable piping material is the same as MT connector.

PR connector for hard tube PBT, brass-made [ option ]		
	Product code	
	High pressure	Low pressure
	KGA81PR-H	KGA81PR-L

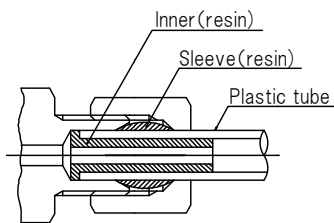
The joint installed tube is push-in and rotary elbow type. Applicable piping material is the same as PT connector.


<b>MTW connector (double ring joint type) stainless steel-made [ option ]</b>		
	Product code	
	High pressure	Low pressure
	KGA81MTW-H-S	KGA81MTW-L-S

This is connector can be connected to stainless tube (O.D. 6, the tolerance  $\pm 0.1$ ).


<b>Inner sleeve set for plastic tube polypropylene-made [ option ]</b>	
	Product code
	XIN6X4

You need this to connect hard plastic tube (O.D. 6, O.D. 4) to the connectors for metal tube. (the following figure)




<b>Piping adaptor brass-made</b>	
	High pre
	KGA81F


Exclusive use for type FV, type F  
When you install MT, VR and  
MTW connector) on back side  
this adaptor is necessary to av  
connectors and panel. It is als  
use a locking spanner at this e

<b>R1/8 Conne brass-made</b>	
	High pre
	KGA81R1/

Joint of R1/8 can be connecte  
※Specifications are different t  
back view.

<b>Seal plug polypropyle</b>	
	

※Seal plugs of other products  
structure is different.

 <b>Caution</b>	Commercial products (connectors etc) can't be used, because the structure is exclusive connectors.
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## 10. Zero point setting

Set the zero point of the gage or the pressure transmitter by turning the zero adjuster, after installing them in the position which they are used.

Please use a flat-blade screwdriver of the max. width 2 ~ 3mm.

Before setting the zero point, be sure to open the high and low pressure piping connector to atmosphere, or stop the equipment to run low the residual pressure to zero.

Setting device of zero point to the right pointer by turning to the right, pointer by turning to the left will move to the left.

This instrument has zero point fluctuations due to temperature drift.

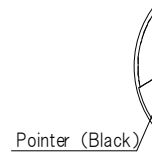
Zero point setting, please do at a temperature of environment you use.

Set  
of

## 11. Setting of flag pointer

The flag pointer is used for indicating a predicted values or a limit values. Set it at the predicted or limit values.

If you turn the setting device of the flag pointer clockwise, the flag pointer moves counter-clockwise.



Setting c  
the flag