

### High-accuracy fine differential pressure gauge

- Boasting a wide variety, the product is also compatible with airflow rate and speed scales (refer to page 15).
- Easy-to-read wide angle scale (pointer rotation angle of 270°)
- Pipe connection port that facilitates polarity conversion
- Unique mechanism less subject to abnormal high pressure inrush
- High-performance silicone rubber diaphragm with small hysteresis
- Band-link mechanism that prevents the pointer from vibrating



**Model WO81F**  
(surface type)



**Model WO81PC**  
(round panel type)



**Model WO81PR**  
(square panel type)



### Example of selection of memory pointer

\*Memory pointer can be set at an arbitrary position.



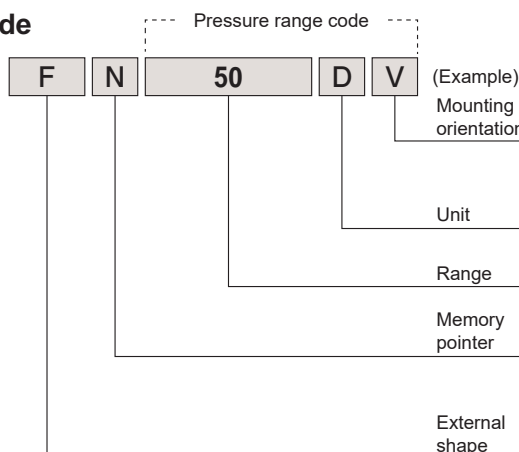
With single memory pointer



With double memory pointers

### Product code

**WO81**



#### <Main application fields>

- Nuclear facilities
- Food-related factory management equipment
- Air-conditioning control equipment in high-rise building
- Hospital and medical facilities
- Automotive manufacturing/semiconductor manufacturing lines
- Control of air discharge pressure from coffee roaster

#### <Usage>

- Room pressure measurement in a clean room
- Detection of clogging of air filter
- Measurement of airflow rate/speed of ventilation/exhaust device and others

\*(Refer to pages 114 to 117)

◆When making an inquiry or placing an order, specify the above product code.

◆For airflow rate/speed meter, refer to page 15.

### Specifications

Model	Main body		Surface type	Round panel type	Square panel type
			F	PC	PR
	Memory pointer		WO81FN	WO81PCN	WO81PRN
	No memory pointer	N			
Single memory pointer (red)	S <th>WO81FS</th> <th>WO81PCS</th> <th>WO81PRS</th>	WO81FS			
	Double memory pointers (one each for red and green)	T	WO81FT	WO81PCT	WO81PRT
Pressure unit Pressure measurement method Pressure-receiving element Measured gas Scale indication angle Operating ambient temperature Operating ambient humidity Instrument body withstanding pressure Exterior material Durable impact Durable vibration	Pa, kPa Differential pressure method  Diaphragm  Air and noncorrosive gas (liquid cannot be measured) Wide-angle indication of approx. 270 degrees  −10℃ to +50℃ (no freezing allowed)  90% RH or below (no condensation allowed)  200 kPa (refer to page 118)  Polycarbonate and polyamide 100 m/s <sup>2</sup> (six times each for three axial directions) 5 to 10 Hz Amplitude of 10 mm, 10 to 50 Hz Acceleration of 39 m/s <sup>2</sup> (two hours each for three axial directions)		Compatible pipe   <		

(Note) Accuracy in full span (refer to page 121)

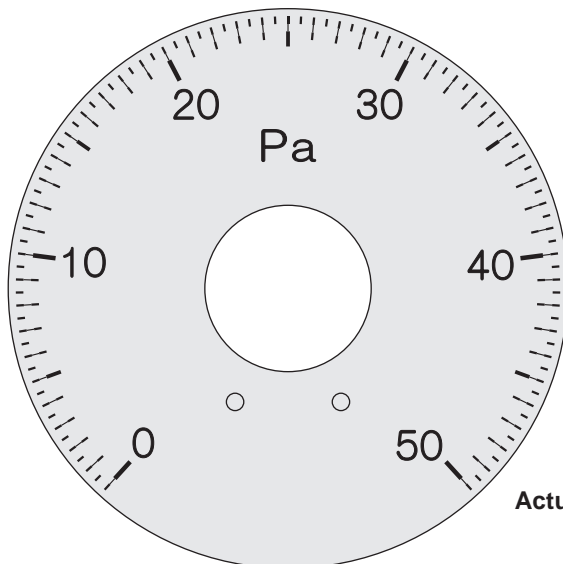
◆ For biased pressure range, the polarity symbol “-” can be indicated for a fee. If the indication is necessary, make a request at the time of order placement.

◆ For use environment, refer to page 118.

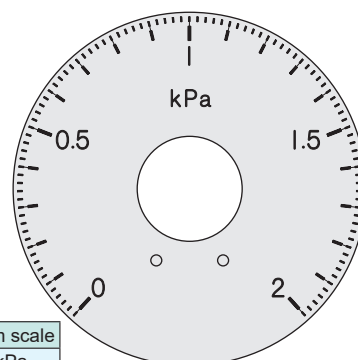
## WO81 List of scales

### Biased pressure range

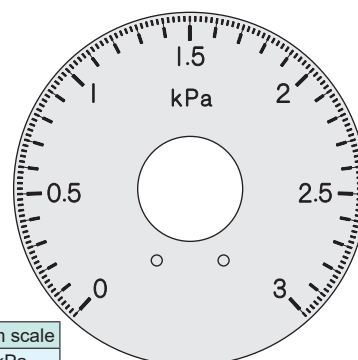
◆The polarity symbol “-” can be indicated for a fee. If the indication is necessary, make a request at the time of order placement.



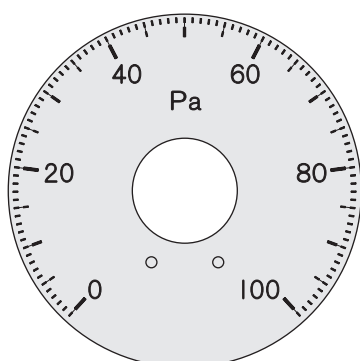
Pressure range	Minimum scale
0-50 Pa	0.5 Pa



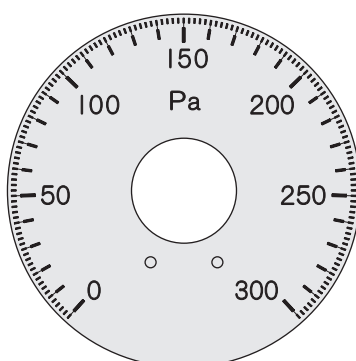
Pressure range	Minimum scale
0-2 kPa	0.02 kPa
0-20 kPa	0.2 kPa



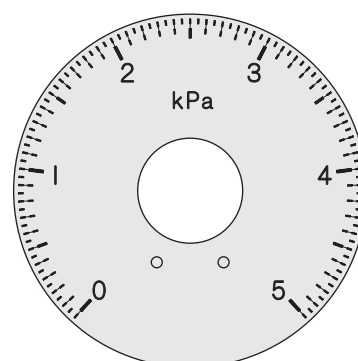
Pressure range	Minimum scale
0-3 kPa	0.02 kPa
0-30 kPa	0.2 kPa



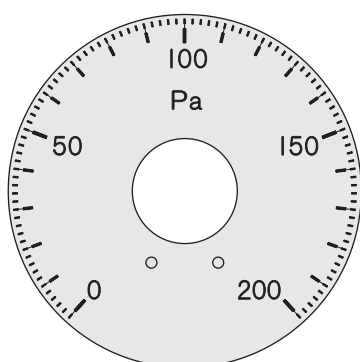
Pressure range	Minimum scale
0-100 Pa	1 Pa
0-1000 Pa	10 Pa
0-1 kPa	0.01 kPa



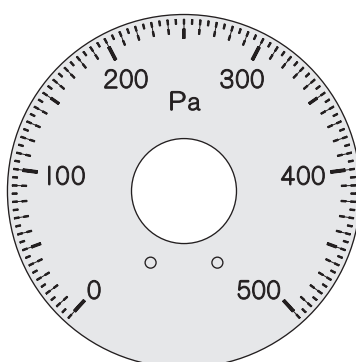
Pressure range	Minimum scale
0-300 Pa	2 Pa



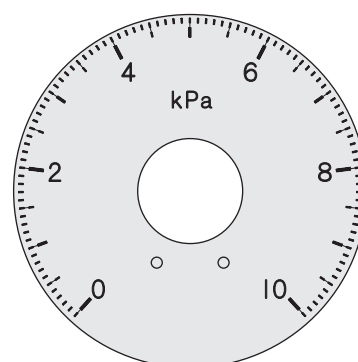
Pressure range	Minimum scale
0-5 kPa	0.05 kPa
0-50 kPa	0.5 kPa



Pressure range	Minimum scale
0-200 Pa	2 Pa

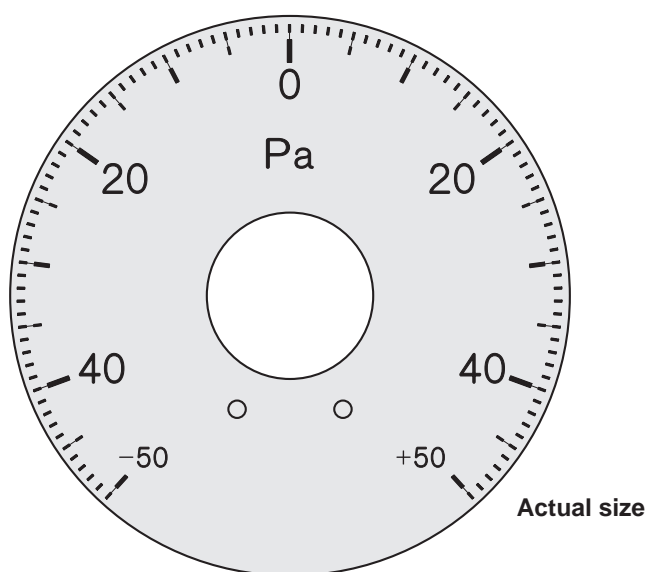


Pressure range	Minimum scale
0-500 Pa	5 Pa

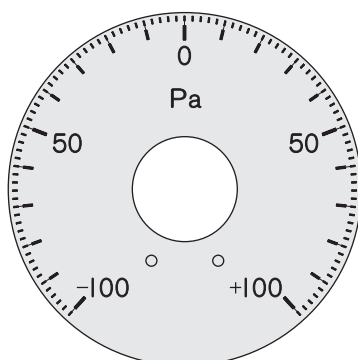


Pressure range	Minimum scale
0-10 kPa	0.1 kPa
0-100 kPa	1 kPa

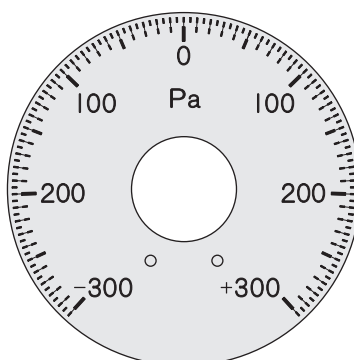
### Zero center range



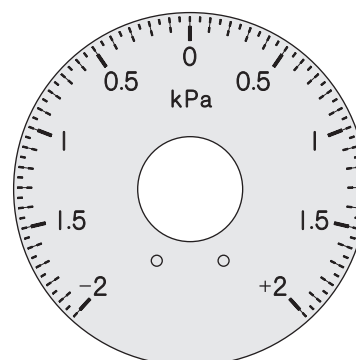
Pressure range	Minimum scale
-50 to +50 Pa	1 Pa



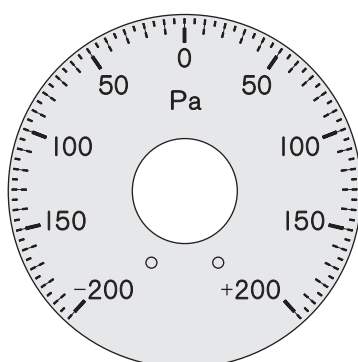
Pressure range	Minimum scale
-100 to +100 Pa	2 Pa
-1000 to +1000 Pa	20 Pa
-1 to +1 kPa	0.02 kPa



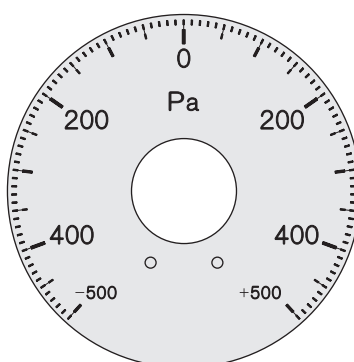
Pressure range	Minimum scale
-300 to +300 Pa	5 Pa



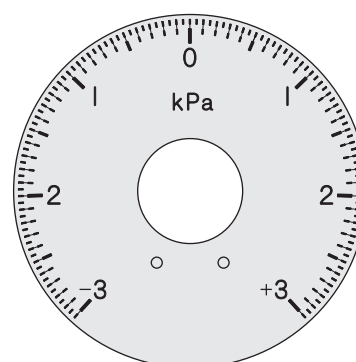
Pressure range	Minimum scale
-2 to +2 kPa	0.05 kPa



Pressure range	Minimum scale
-200 to +200 Pa	5 Pa



Pressure range	Minimum scale
-500 to +500 Pa	10 Pa



Pressure range	Minimum scale
-3 to +3 kPa	0.05 kPa

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

Application

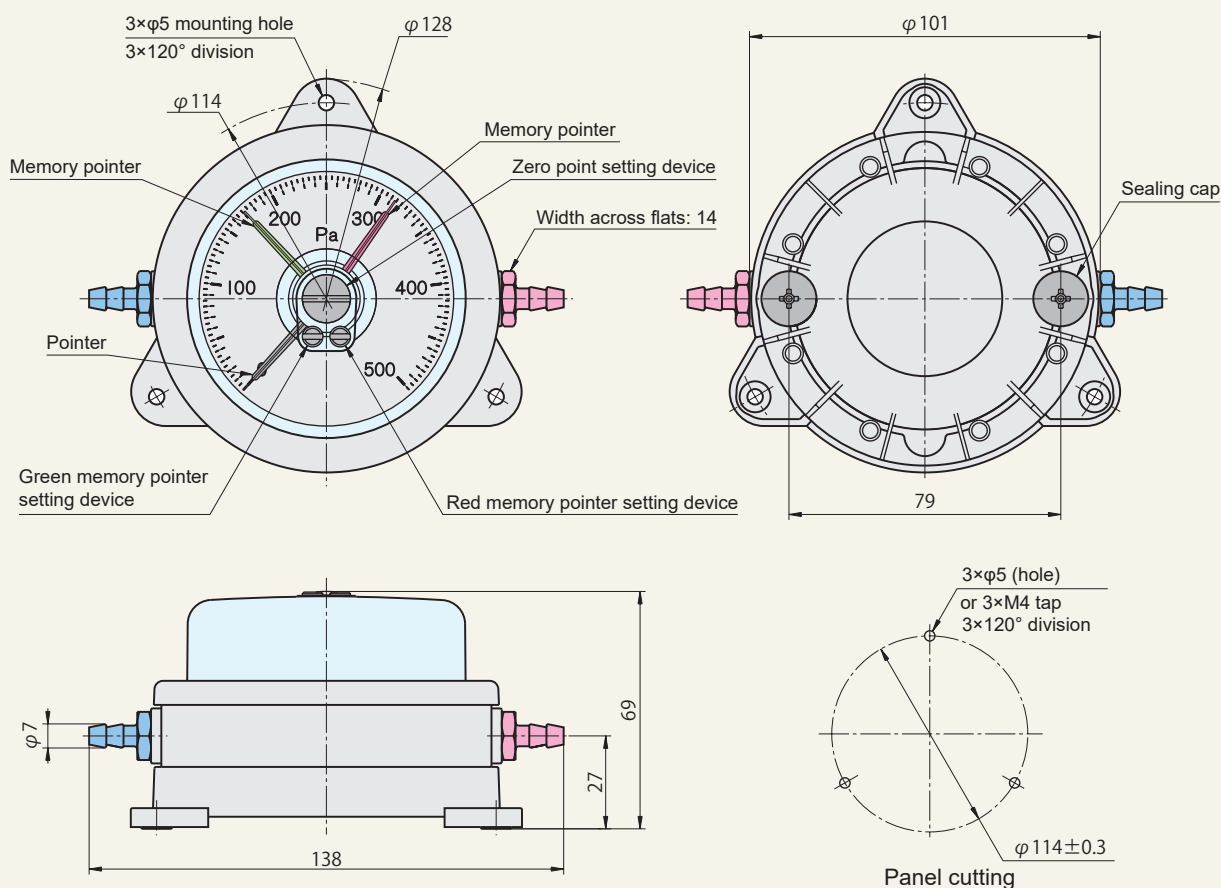
Precautions

Maintenance

### External dimension drawing

Installation of base on side face.....(standard condition at time of shipment from factory)

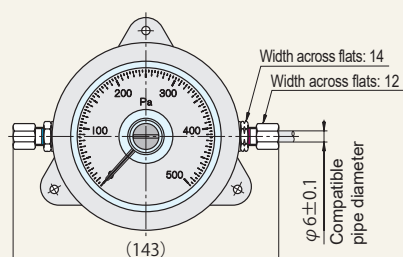
#### VT base (for vinyl pipe)



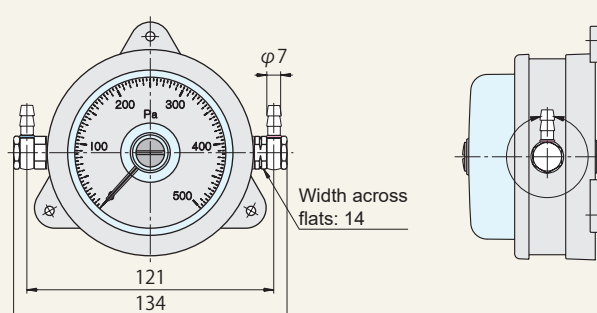
### Example of base arrangement

Installation of base on side face

#### MT base (for metallic pipe)



#### VR base (rotary type for vinyl pipe)

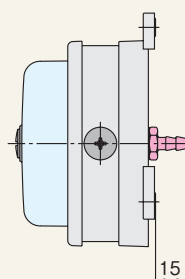


Caution

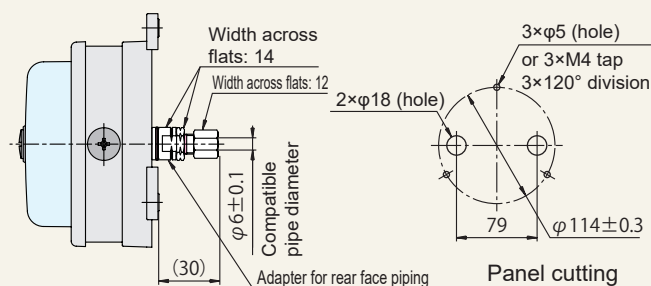
Base tightening torque: 1 N·m Sealing cap tightening torque: 0.5 N·m  
Do not tighten to a torque that exceeds the specified value because doing so breaks the gauge body. (Refer to page 120.)

### Installation of base on rear face

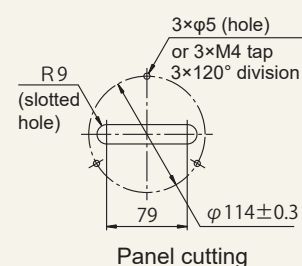
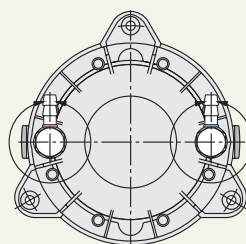
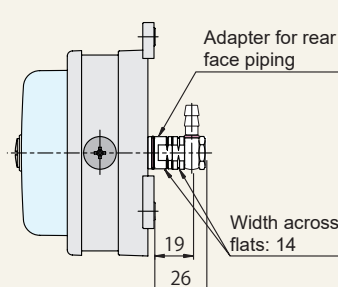
#### VT base (for vinyl pipe)



#### MT base (for metallic pipe)



#### VR base (rotary type for vinyl pipe)



### Change of base arrangement

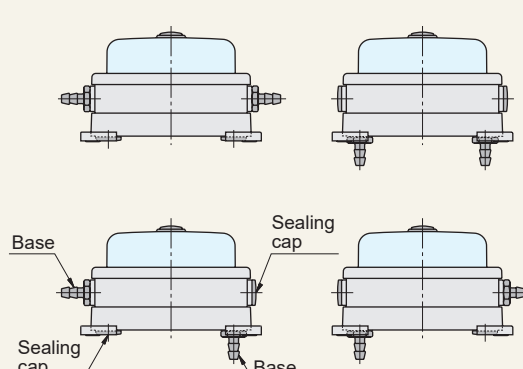
The WO81F type has two base mounting holes on each of the side face and the rear face, allowing various base combinations depending on the piping conditions.



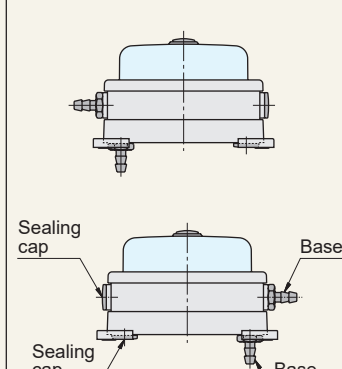
Caution

1. Be sure to use bases in the combination of one high-pressure side (red) base and one low-pressure side (blue) base.
2. There are impossible base arrangements as shown on the right.
3. At two mounting holes on the gauge body that are not installed with bases, be sure to attach the sealing caps.

### Possible base arrangement



### Impossible base arrangement



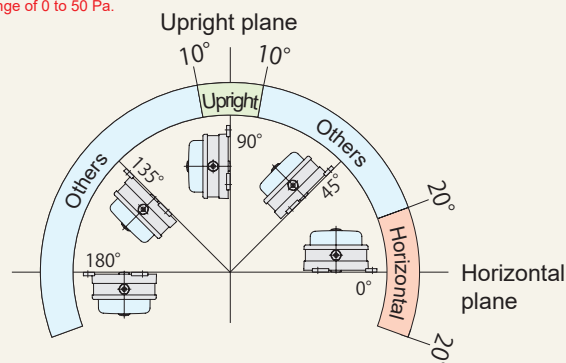
## Mounting orientation and range

### Range for the specification of horizontal and upright mounting

0 to 50Pa, 0 to 100Pa, -50 to +50Pa

It is necessary to specify the mounting orientation (horizontal, upright, and others) at the time of order placement.

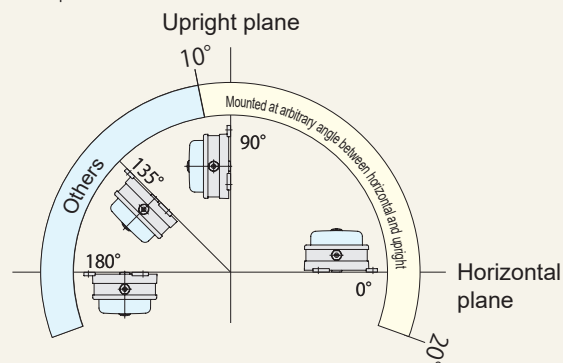
**"It is not possible to manufacture such a gauge whose mounting orientation exceeds 135° for the range of 0 to 50 Pa."**



### Range for mounting orientation arbitrary mounting between horizontal and upright

Whole range other than on the left

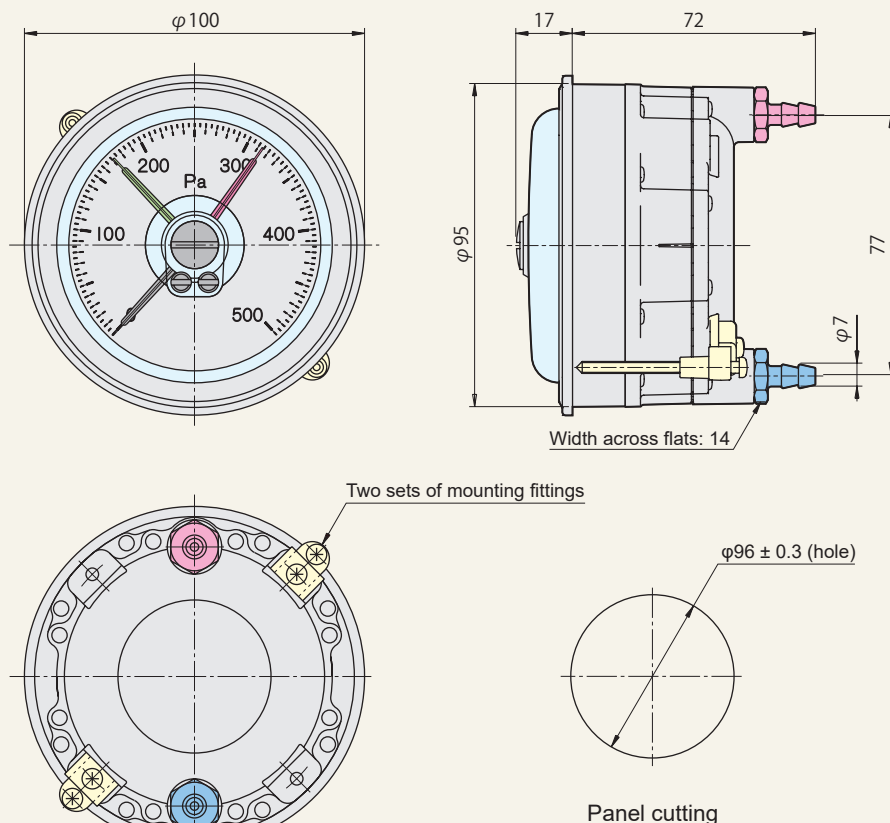
The gauge can be mounted at an arbitrary angle between horizontal and upright. For other mounting orientations, it is necessary to specify the orientation at the time of order placement.





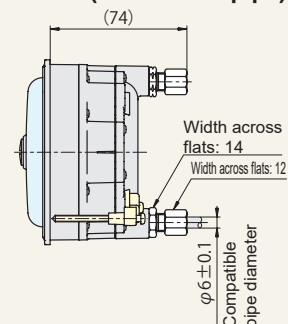
### External dimension drawing

#### VT base (for vinyl pipe)

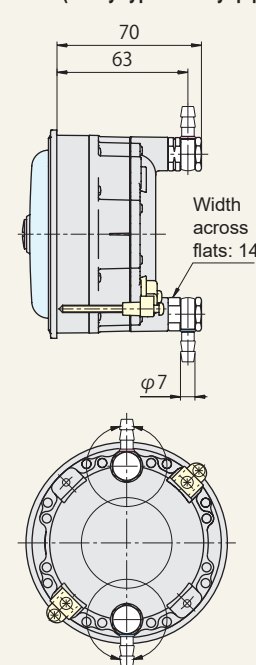


### Example of base arrangement

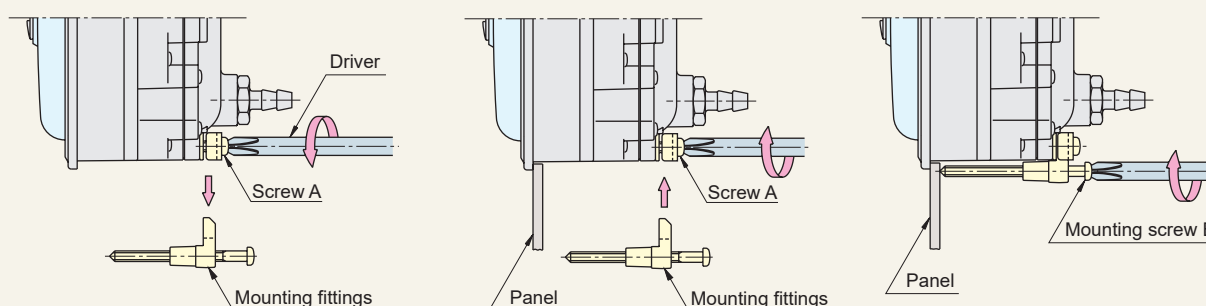
#### MT base (for metallic pipe)



#### VR base (rotary type for vinyl pipe)



### Mounting method



1. Loosen screw A, and remove both mounting fittings from the gauge body.

2. Fit the gauge to the front of the panel first, put two mounting fittings back, and tighten screw A to secure the gauge.

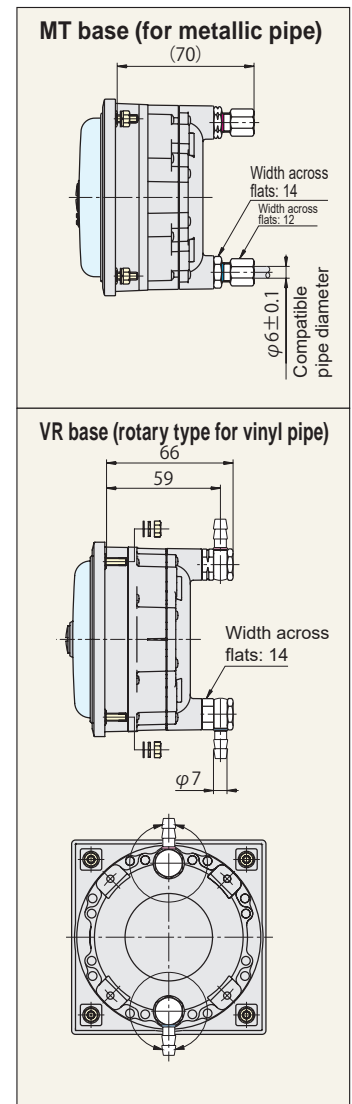
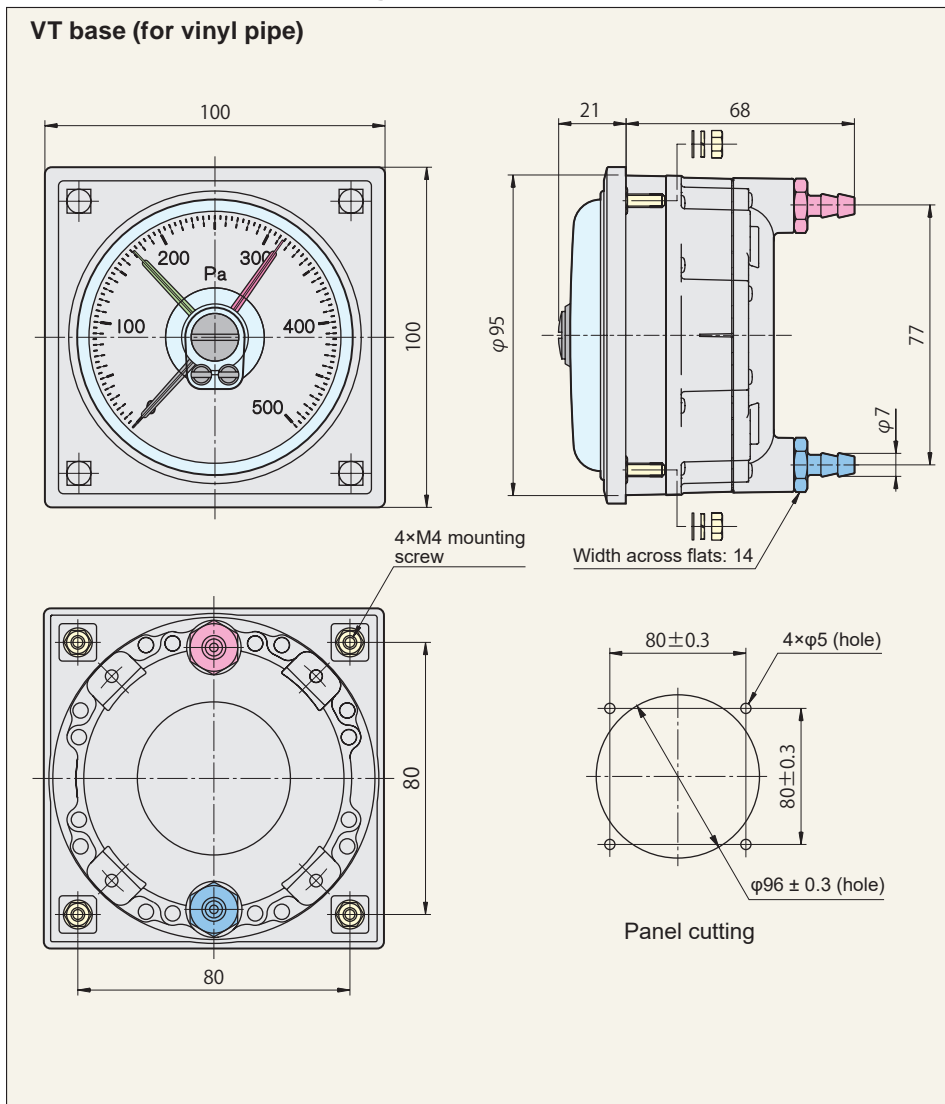
3. Alternately tighten little by little mounting screws B in two places to secure the gauge to the panel.



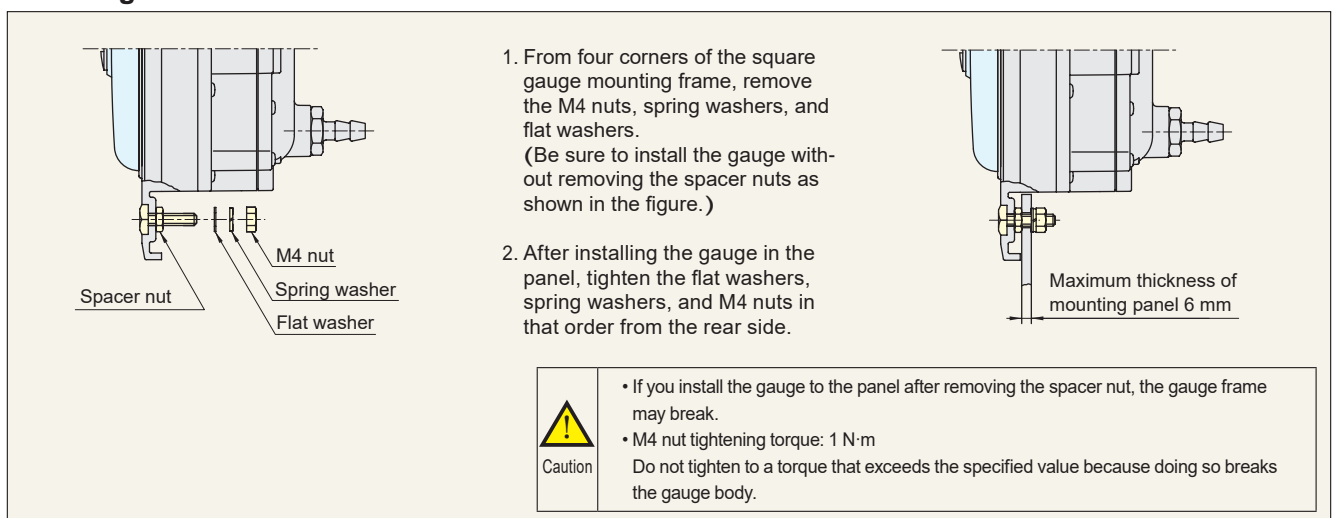
Caution

Mounting screw B tightening torque: 0.5 to 0.6 N·m  
Do not tighten to a torque that exceeds the specified value because doing so breaks the gauge body.

### External dimension drawing



### Mounting method



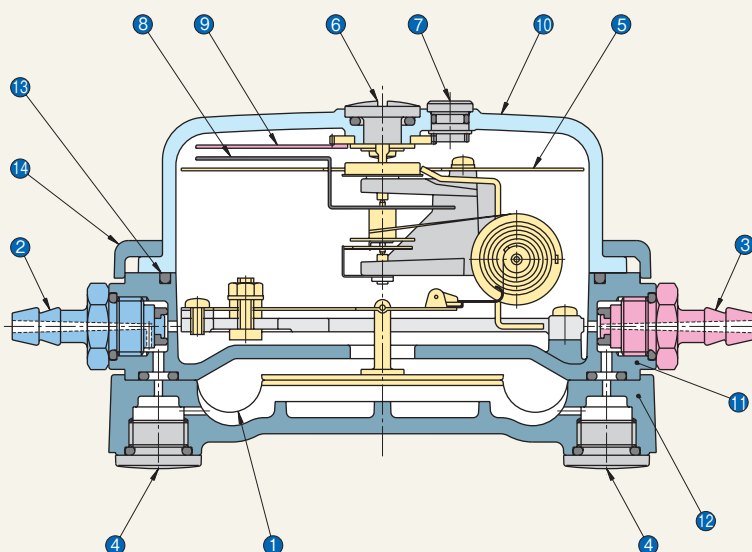
Caution

Base tightening torque: 1 N·m

Do not tighten to a torque that exceeds the specified value because doing so breaks the gauge body. (Refer to page 120)



### Overview of structure



Number	Name
1	Diaphragm
2	Low-pressure side base (blue)
3	High-pressure side base (red)
4	Sealing cap
5	Scale plate
6	Zero point setting device
7	Memory pointer setting device
8	Pointer
9	Memory pointer
10	Transparent cover
11	Housing
12	Base
13	Cover packing
14	Cover retention ring

### Accessories dedicated to WO81

RoHS

#### Sealing cap

Dedicated to F type



(Auxiliary item)

This is already installed when the gauge is purchased.

Item number	Material
KGA81PLG	Polypropylene

#### Mounting fitting set

Dedicated to PC type



(Auxiliary item)

The combination of parts in the photograph constitutes one set. On the gauge, two sets (for one gauge) are already installed as a standard accessory.

Item number	Material
TKA81PC	Aluminum die casting/steel

#### Portable box

Dedicated to F type



Item number	Material
PB-01	Steel

\*Gauge body is not included.

### Accessories for WO81

RoHS

#### VT base

High-pressure side

(Auxiliary item)



Low-pressure side

(Auxiliary item)



Item number	Material
KGA81VT-H-P	Polypropylene

Item number	Material
KGA81VT-L-P	Polypropylene

A vinyl pipe or rubber pipe with an inner diameter of 6 mm can be connected. This is already installed when the gauge is purchased.

#### VR base

High-pressure side



Low-pressure side







Item number	Material
KGA81VR-H	Brass



Item number	Material
KGA81VR-L	Brass


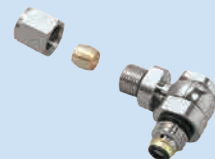
This serves as an elbow whose tube mounting part rotates. A vinyl pipe or rubber pipe with an inner diameter of 6 mm can be connected.



### Accessories for WO81 RoHS



PT base			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81PT-H	PBT/brass	KGA81PT-L	PBT/brass
<p>The tube mounting part is a push-in joint. For piping, use the separately sold tube (refer to page 112) or a tube compatible with JIS B 8381-1.</p> <p>(Connectable tube outer diameter: 6 mm)</p>			



PR base			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81PR-H	PBT/brass	KGA81PR-L	PBT/brass
<p>The tube mounting part is a rotary elbow push-in joint. The piping is the same as that for the PT base. (Connectable tube outer diameter: 6 mm)</p>			



MT base			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81MT-H	Brass	KGA81MT-L	Brass
<p>A metallic pipe, such as copper pipe and aluminum pipe, with an outer diameter of <math>6 \pm 0.1</math> mm can be connected. However, for stainless steel pipe, use an MTW base. When connecting with a plastic pipe (outer diameter 6 mm <math>\times</math> inner diameter 4 mm), remove the brass sleeve and use the separately sold resin inner sleeve set (XIN6<math>\times</math>4; refer to page 111).</p>			

MR base			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81MR-H	Brass	KGA81MR-L	Brass
<p>This serves as an elbow whose tube mounting part rotates. The piping material is the same as that for the MT base. When connecting with a plastic pipe (outer diameter 6 mm <math>\times</math> inner diameter 4 mm), remove the brass sleeve and use the separately sold resin inner sleeve set (XIN6<math>\times</math>4; refer to page 111).</p>			

MTW base			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81MTW-H-S	Stainless steel	KGA81MTW-L-S	Stainless steel
<p>This is used to connect a stainless steel pipe with an outer diameter of <math>6 \pm 0.1</math> mm.</p>			

Adapter for rear face piping			
High-pressure side (Dedicated to F type rear face piping)		Low-pressure side (Dedicated to F type rear face piping)	
			
Item number	Material	Item number	Material
KGA81FBA-H	Brass	KGA81FBA-L	Brass
<p>When arranging an MT base on the rear face of the WO81F type, this adapter is required as a spacer for hooking a stabilizing wrench to the base at the time of pipe connection. This adapter is also required when arranging the VR base or MR base (excluding MTW base) on the rear face in order to avoid interference between the base and panel. When connecting an R1/8 joint, use an R1/8 base adapter.</p>			

R1/8 base adapter			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81R1/8AD-H	Brass	KGA81R1/8AD-L	Brass
<p>It is possible to connect an R1/8 joint.</p> <p>*The specifications of this adapter differ from those of the adapter for rear face piping.</p>			

R1/8 base adapter (SUS)			
High-pressure side		Low-pressure side	
			
Item number	Material	Item number	Material
KGA81R1/8AD-H-S	Stainless steel	KGA81R1/8AD-L-S	Stainless steel
<p>It is possible to connect an R1/8 joint.</p> <p>*The specifications of this adapter differ from those of the adapter for rear face piping.</p>			

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

Application

Precautions

Maintenance

## Warranty

### ■ Warranty period

The warranty period for our product is one (1) year from delivery to the location specified by the orderer who makes a direct transaction with us.

### ■ Scope of warranty

If any failure or defect attributable to us becomes clear during the above warranty period, we will repair the product or supply a substitute product free of charge. However, even during the warranty period, we will exclude the product from the scope of the warranty if the failure or defect corresponds to any of the following:

- (1) The failure or defect was caused by an unreasonable condition, environment, handling, or usage not mentioned in the instruction manual, specifications, and our product catalog.
- (2) The failure or defect was caused by a factor other than our product.
- (3) The failure or defect was caused by a modification or repair conducted by a party other than us.
- (4) The failure or defect was caused by an event that could not be foreseen at the scientific and technical levels at the time of product shipment from us.
- (5) The failure or defect was caused by an external factor not attributable to us, such as acts of God and disasters.

Please note that the warranty mentioned here means the warranty for our individual product, and damage provoked by a failure or defect of the product is excluded from the scope of the warranty.

\*This warranty is valid only in Japan.

## Application and usage

Our products are designed and manufactured as general-purpose instruments for general industries.

Therefore, our products are not intended for the following uses, and our products used in such a manner are outside the scope of application.

- (1) Equipment that is anticipated to greatly affect lives and properties, such as nuclear power generation, aviation, railways, marine vessels, vehicles, and medical devices
- (2) Utilities that include electricity, gas, and service water
- (3) Use in outdoor locations and under similar conditions or environments other than those stipulated in the instruction manual
- (4) Usage to which considerable safety consideration and attention equivalent to (1) and (2) above need to be given

## Service

### ■ Scope of service

Because the product price does not include service expenses, such as the dispatch of engineers, we will separately charge for the expenses in the following cases:

- (1) Instruction for installation and adjustment and a witnessed test run
- (2) Maintenance inspection, adjustments, and repairs
- (3) Technical guidance and technical education
- (4) Witnessed inspections of products at our factory

<<Note>> The product specifications and information in this catalog are subject to change without prior notice for product improvement or other reasons.

● For order placement, contact

General  
agent



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Manufacturer



**Yamamoto Electric Works Co., Ltd.**

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TEL. +81-78-631-6000 FAX. +81-78-631-6020