

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)



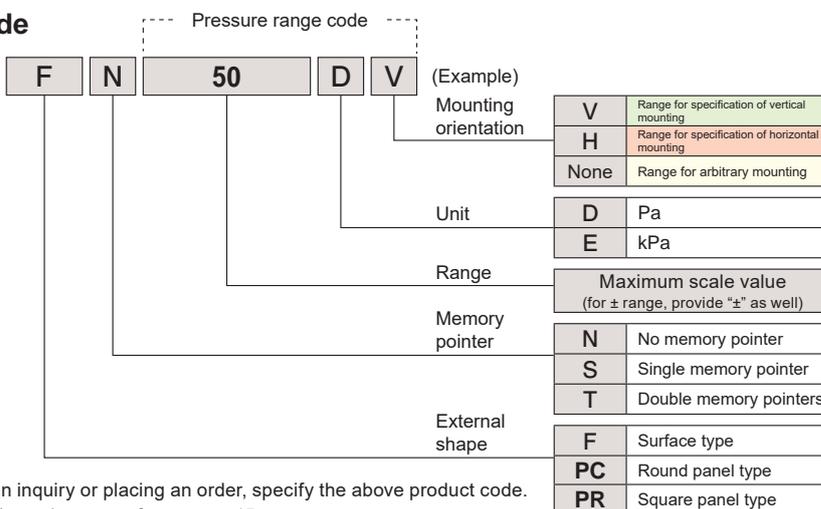
Example of selection of memory pointer

*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
	Memory pointer		F	PC	PR
	No memory pointer	N	WO81FN	WO81PCN	WO81PRN
	Single memory pointer (red)	S	WO81FS	WO81PCS	WO81PRS
	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°C to +50°C (no freezing allowed) 90% RH or below (no condensation allowed) 200 kPa (refer to page 118) Polycarbonate and polyamide 100 m/s ² (six times each for three axial directions) 5 to 10 Hz Amplitude of 10 mm, 10 to 50 Hz Acceleration of 39 m/s ² (two hours each for three axial directions)	Compatible pipe Base polarity Mass	<ul style="list-style-type: none"> Vinyl pipe or rubber pipe (inner diameter of 6 mm) Base for resin vinyl pipe (already mounted on gauge) Metallic pipe (outer diameter of 6 ± 0.1 mm) Separately sold base for metallic pipe is necessary. Hard plastic pipe (outer diameter 6 mm × inner diameter 4 mm) Separately sold base for metallic pipe and inner sleeve set (refer to page 111) or push-in joint is necessary. Identification with red on high pressure side and blue on low pressure side By exchanging the base on the high-pressure side with that on the low pressure side, it is possible to change the polarity. Approx. 270 g		
Accessories	WO81F		WO81PC		WO81PR
	Mounting screw set		Two sets of mounting fittings (already mounted on gauge body)		Mounting nut set (already mounted on gauge body)
Pressure range code	Pressure range	Mounting orientation (Refer to page 18)	Accuracy (Note) (at 20°C)	Pressure-receiving element material	Withstanding pressure of pressure-receiving element (Refer to page 118)
50 DH	0–50 Pa	Horizontal (specification)	±5% FS	Silicone rubber	10 kPa
50 DV		Upright (specification)			
100 DH	0–100 Pa	Horizontal (specification)	±2.5% FS		
100 DV		Upright (specification)			
200 D	0–200 Pa	Between horizontal and upright Arbitrary mounting	±1.5% FS		
300 D	0–300 Pa				
500 D	0–500 Pa				
1000 D	0–1000 Pa				
1 E	0–1 kPa				
2 E	0–2 kPa				
3 E	0–3 kPa				
5 E	0–5 kPa				
10 E	0–10 kPa				
20 E	0–20 kPa				
30 E	0–30 kPa				
50 E	0–50 kPa				
100 E	0–100 kPa				
+ - 50 DH	-50 to +50	Horizontal (specification)	±2.5% FS	Silicone rubber	10 kPa
+ - 50 DV		Upright (specification)			
+ - 100 D	-100 to +100 Pa	Between horizontal and upright Arbitrary mounting	±1.5% FS		
+ - 200 D	-200 to +200 Pa				
+ - 300 D	-300 to +300 Pa				
+ - 500 D	-500 to +500 Pa				
+ - 1000 D	-1000 to +1000 Pa				
+ - 1 E	-1 to +1 kPa				
+ - 2 E	-2 to +2 kPa				
+ - 3 E	-3 to +3 kPa				

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

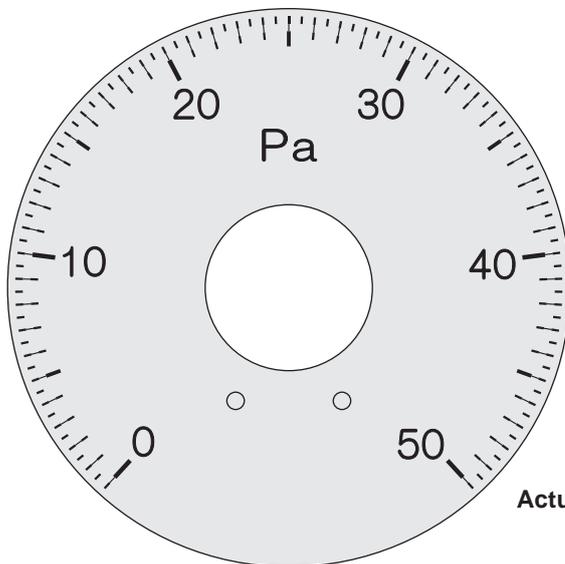
◆ For biased pressure range, the polarity symbol “-” can be indicated for a fee. If the indication is necessary, make a request at the time of order placement.

◆ For use environment, refer to page 118.

WO81 List of scales

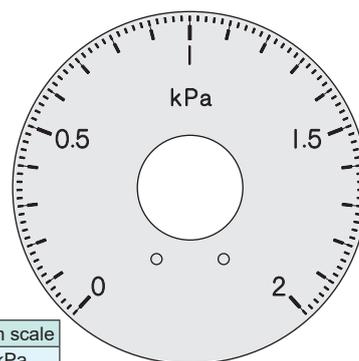
Biased pressure range

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

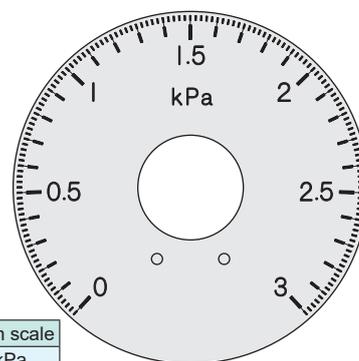


Pressure range	Minimum scale
0-50 Pa	0.5 Pa

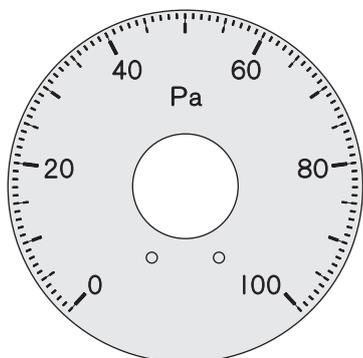
Actual size



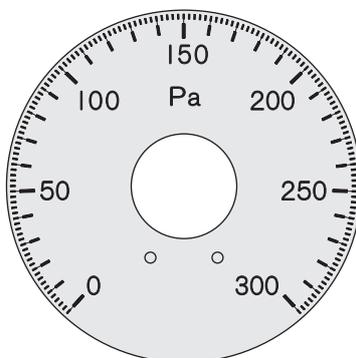
Pressure range	Minimum scale
0-2 kPa	0.02 kPa
0-20 kPa	0.2 kPa



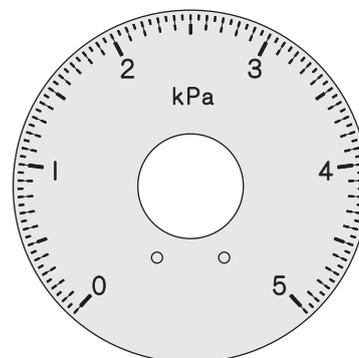
Pressure range	Minimum scale
0-3 kPa	0.02 kPa
0-30 kPa	0.2 kPa



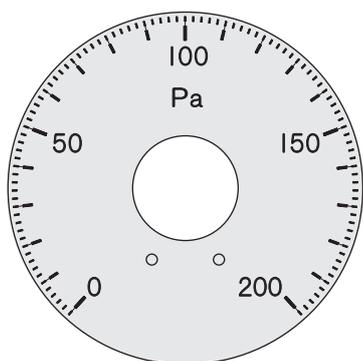
Pressure range	Minimum scale
0-100 Pa	1 Pa
0-1000 Pa	10 Pa
0-1 kPa	0.01 kPa



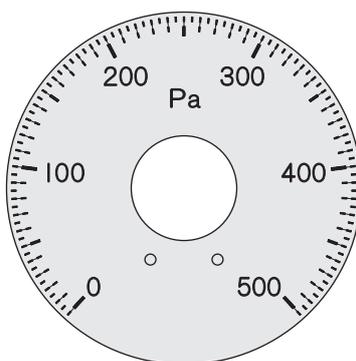
Pressure range	Minimum scale
0-300 Pa	2 Pa



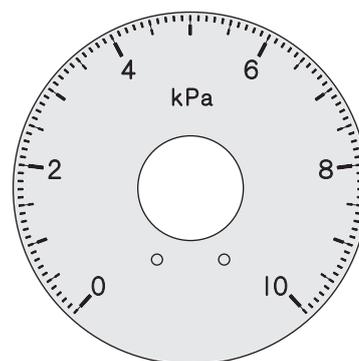
Pressure range	Minimum scale
0-5 kPa	0.05 kPa
0-50 kPa	0.5 kPa



Pressure range	Minimum scale
0-200 Pa	2 Pa



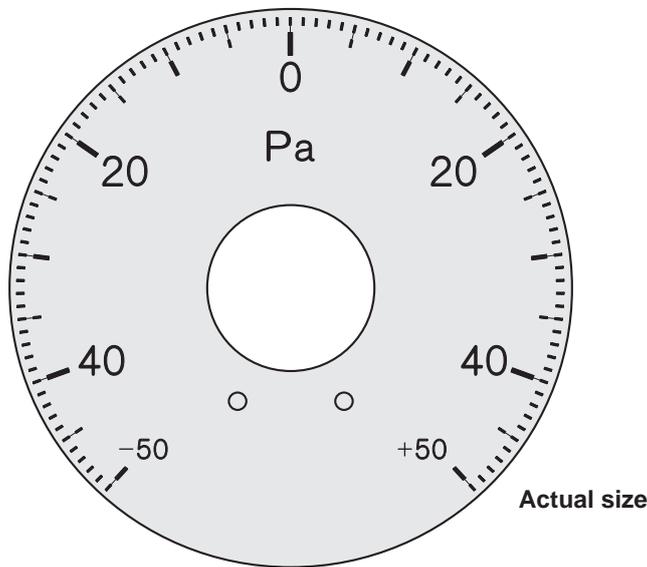
Pressure range	Minimum scale
0-500 Pa	5 Pa



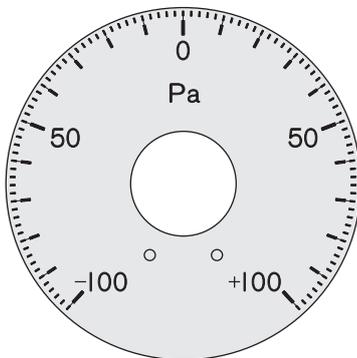
Pressure range	Minimum scale
0-10 kPa	0.1 kPa
0-100 kPa	1 kPa

- List of products
- WO81
- WO71
- FR51A
- MS99
- MS99S
- MS61A-RA
- QDP33
- EMD8A
- EMD7
- EMT1
- EMTGP1
- EMT1H
- EMT6
- EMP5A
- EMRT1
- HWS15A
- Accessories
- Application
- Precautions
- Maintenance

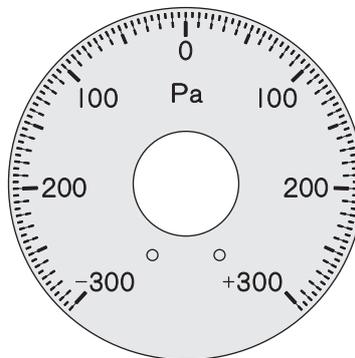
Zero center range



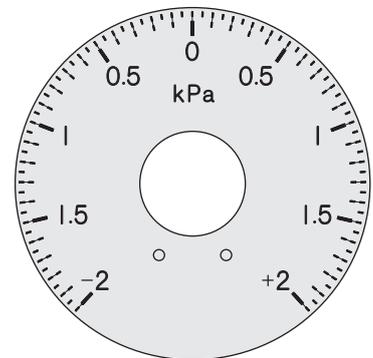
Pressure range	Minimum scale
-50 to +50 Pa	1 Pa



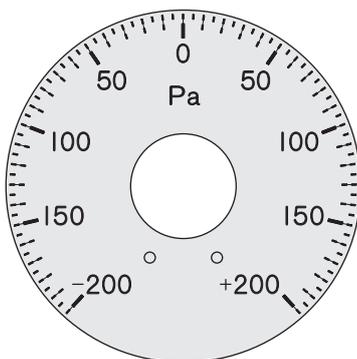
Pressure range	Minimum scale
-100 to +100 Pa	2 Pa
-1000 to +1000 Pa	20 Pa
-1 to +1 kPa	0.02 kPa



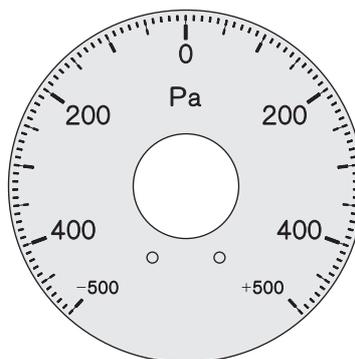
Pressure range	Minimum scale
-300 to +300 Pa	5 Pa



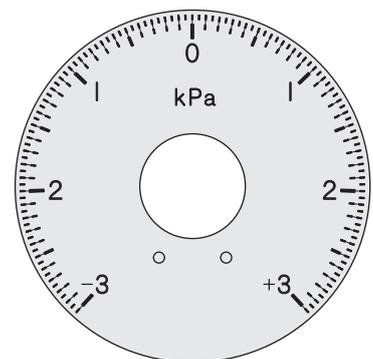
Pressure range	Minimum scale
-2 to +2 kPa	0.05 kPa



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

Model WO81F

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

Application

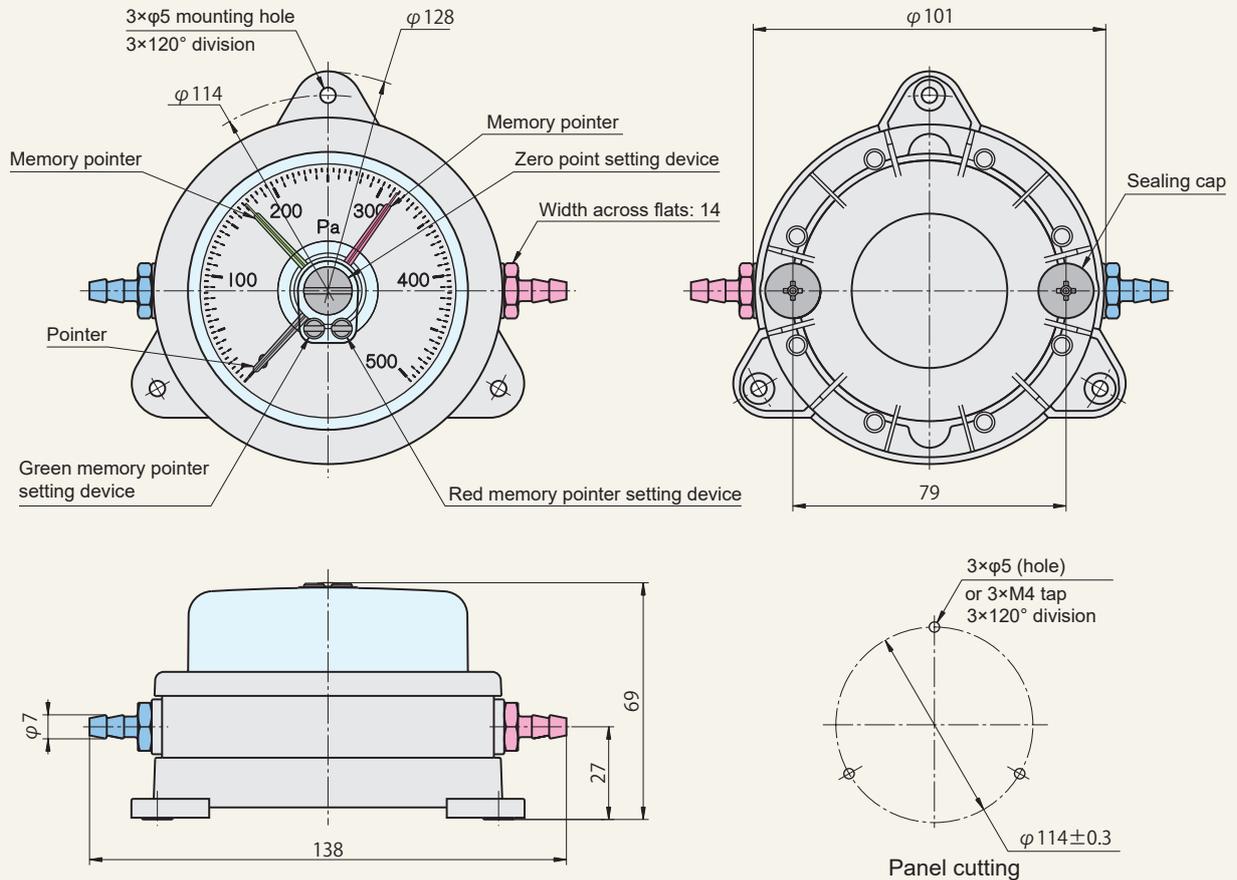
Precautions

Maintenance

External dimension drawing

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

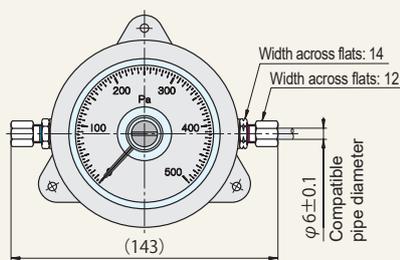
VT base (for vinyl pipe)



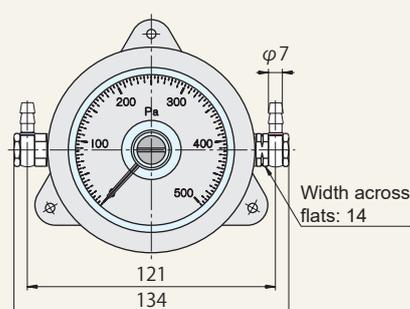
Example of base arrangement

Installation of base on side face

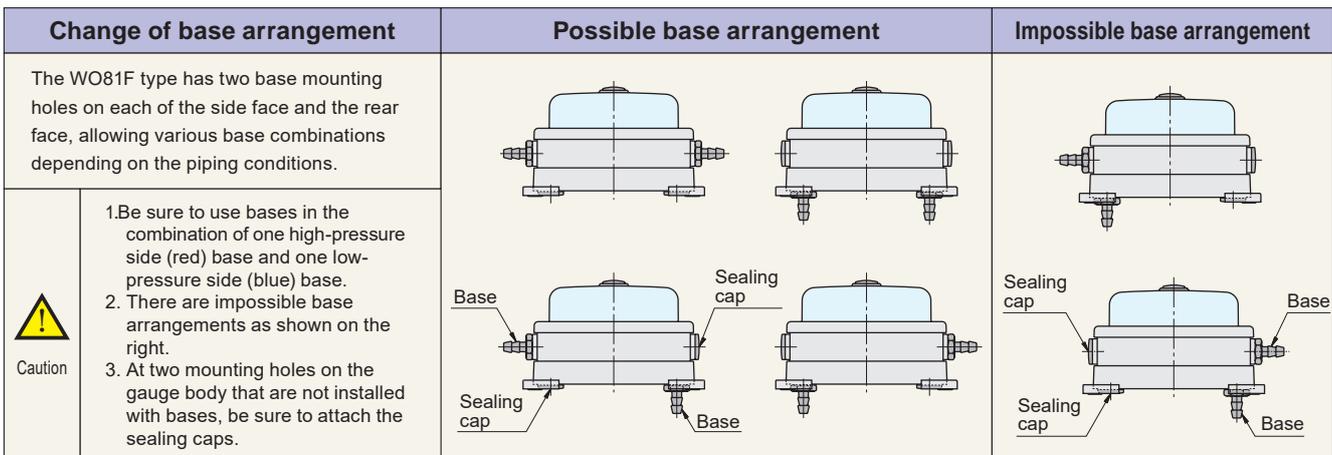
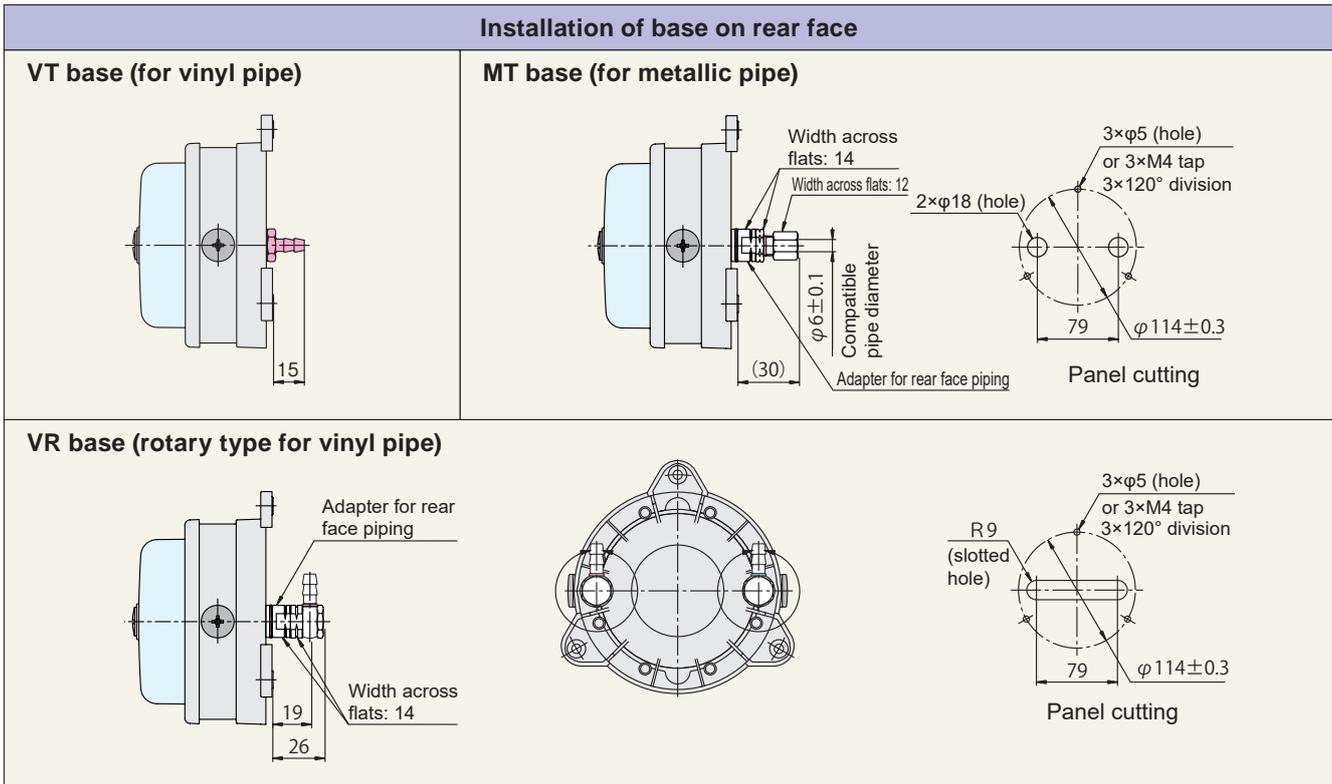
MT base (for metallic pipe)



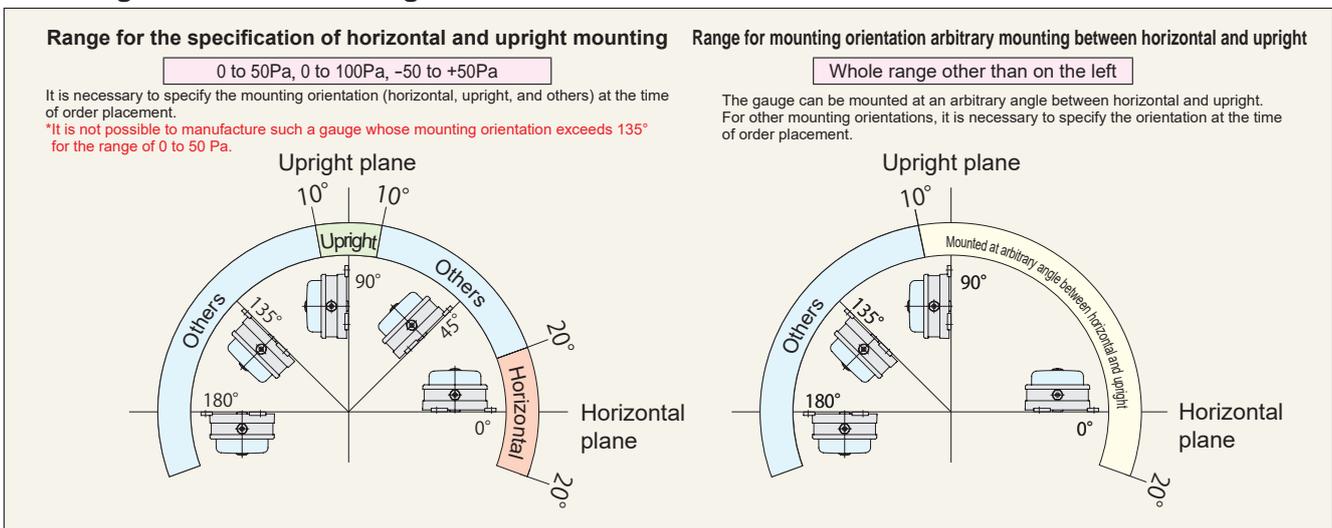
VR base (rotary type for vinyl pipe)



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.)



Mounting orientation and range



Model WO81PC

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

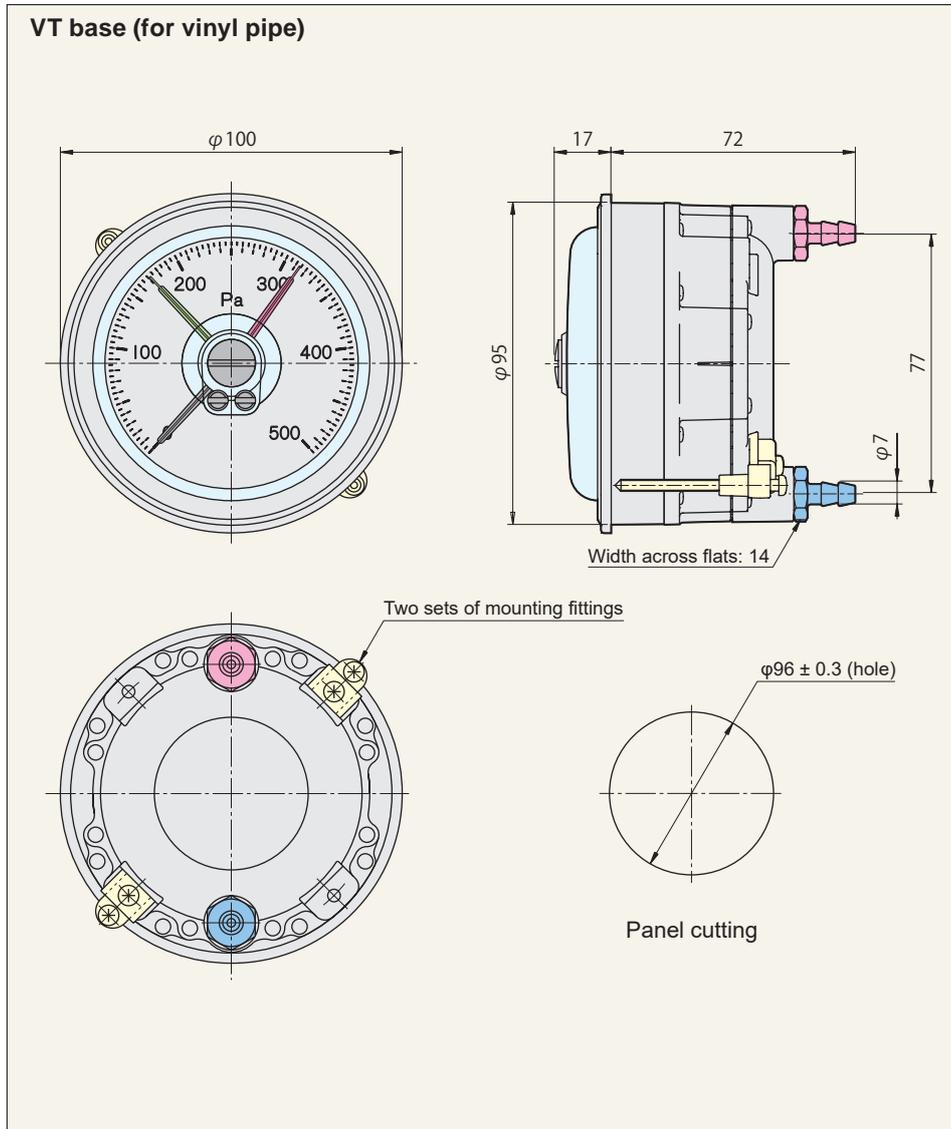
Accessories

Application

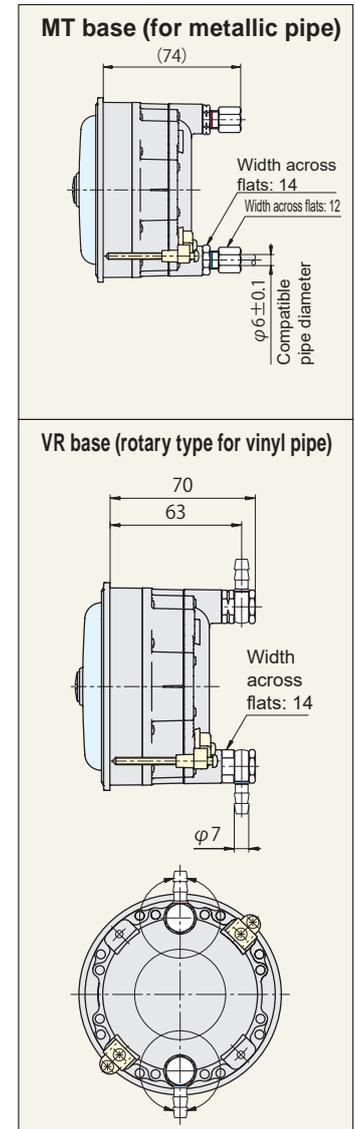
Precautions

Maintenance

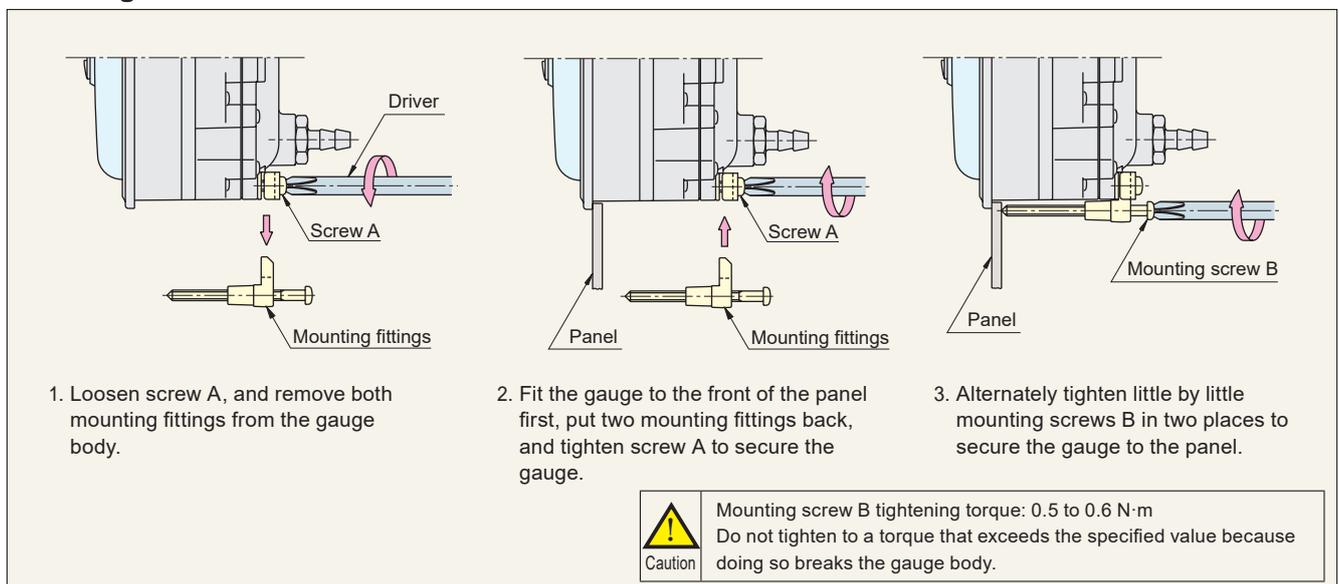
External dimension drawing



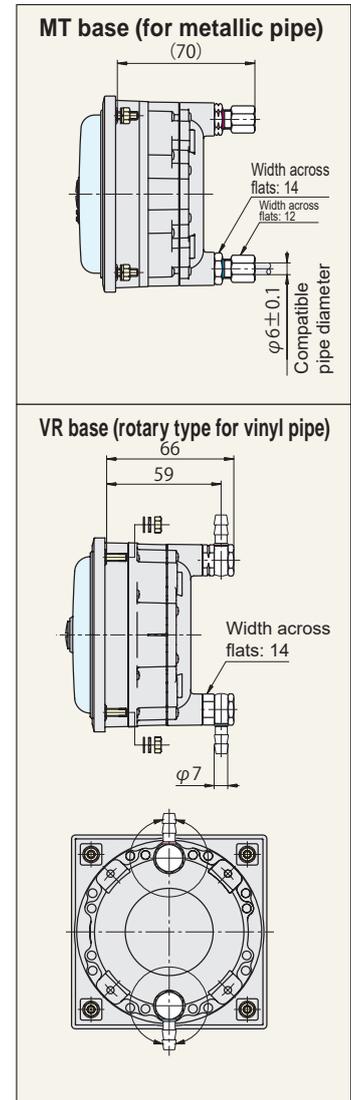
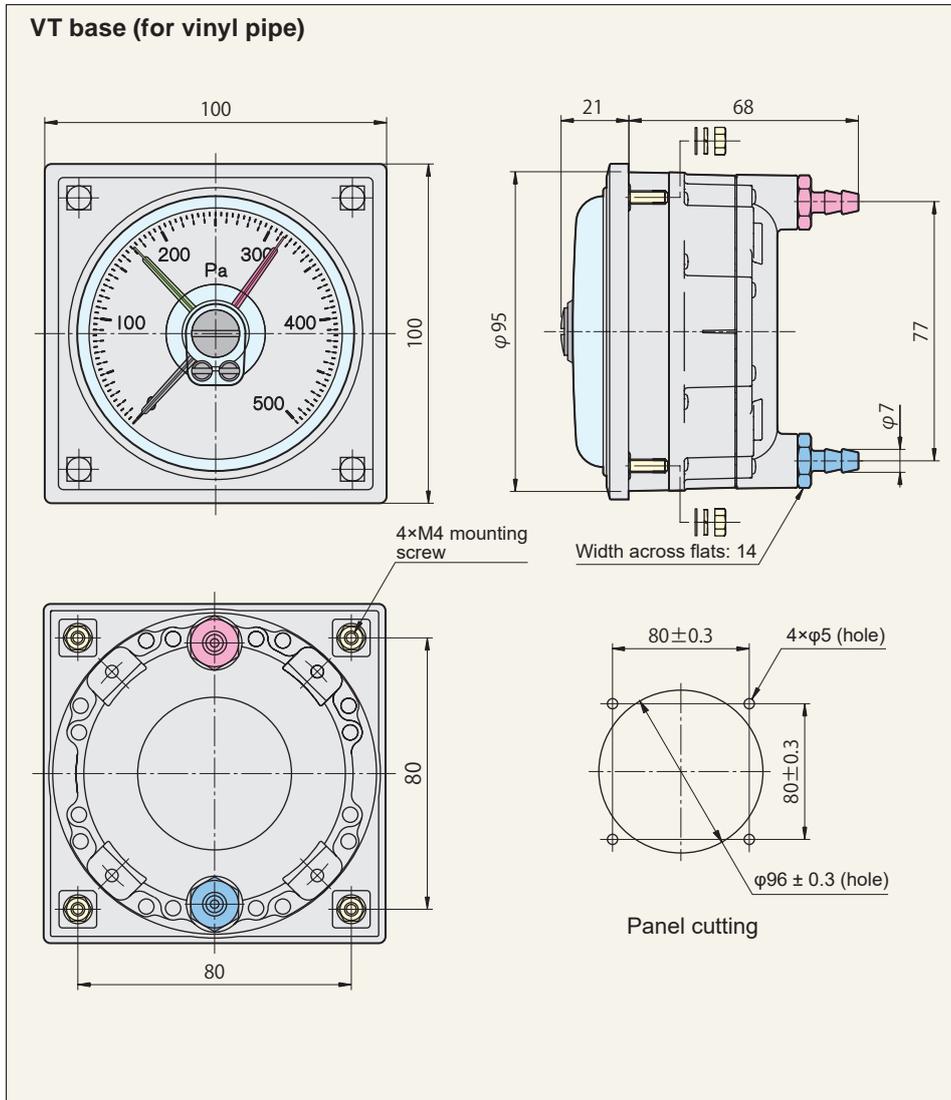
Example of base arrangement



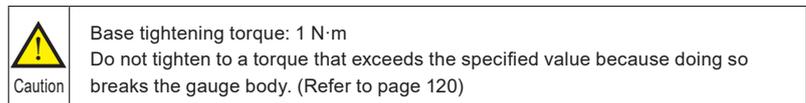
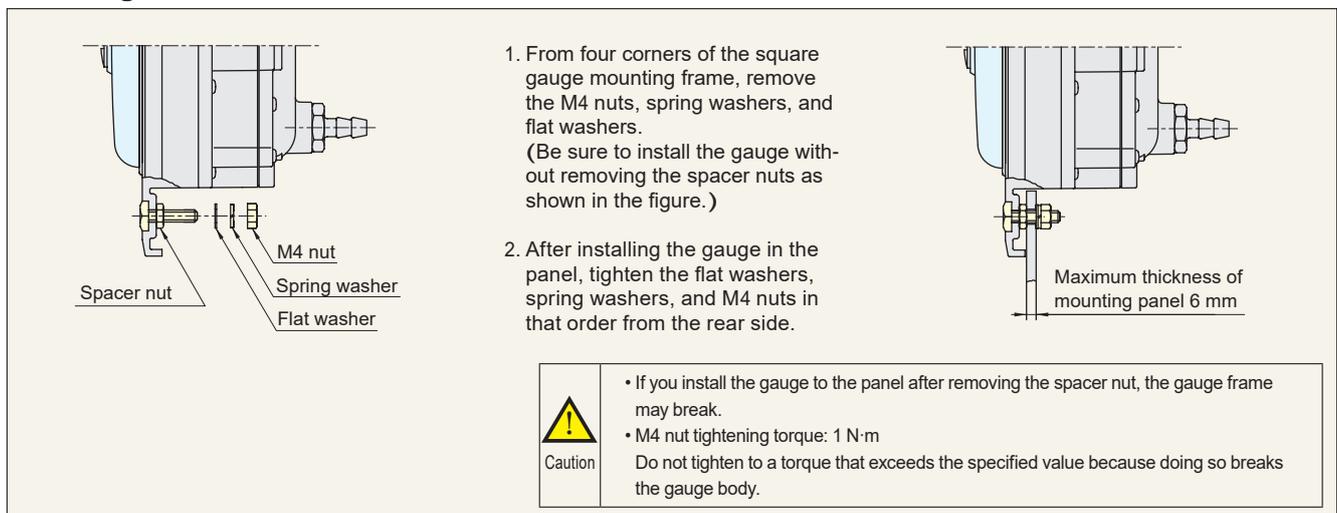
Mounting method



External dimension drawing

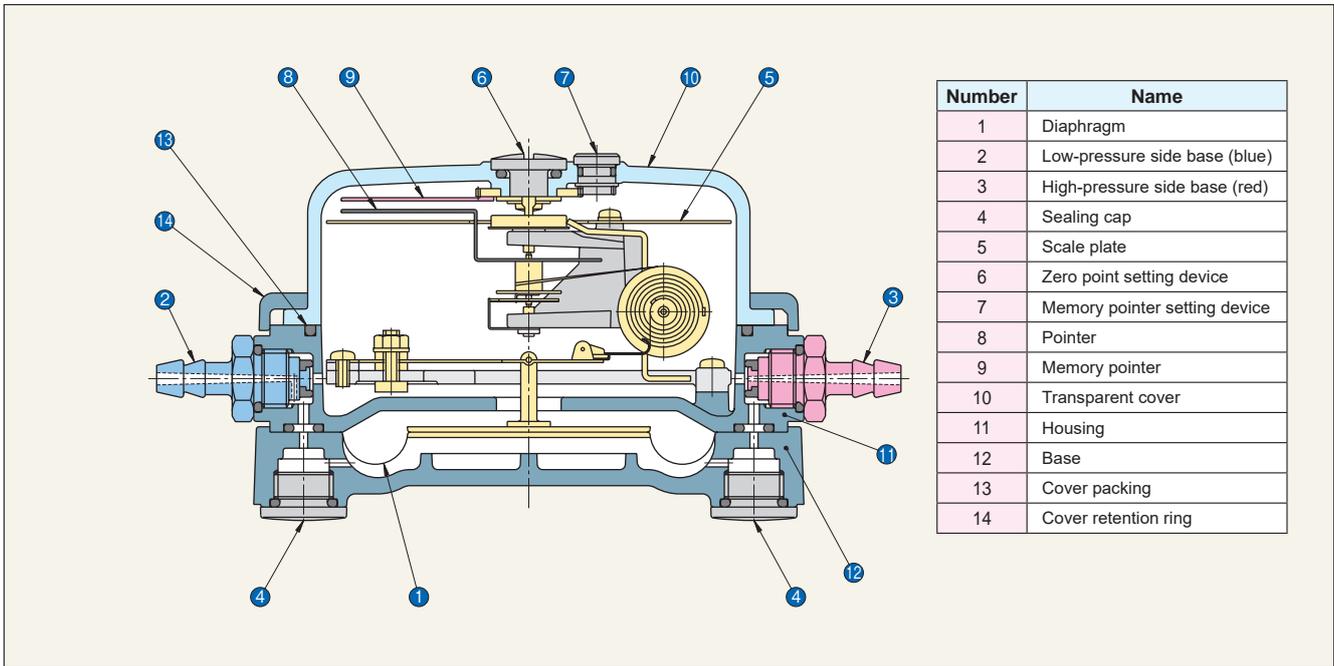


Mounting method



WO81

Overview of structure



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 KGA81VT-H-P	Material Polypropylene	Item number KGA81VT-L-P	Material 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 KGA81VR-H	Material Brass	Item number KGA81VR-L	Material 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																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PT-H</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PT-H	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PT-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PT-L	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PT-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PT-L	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PT-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PT-L	PBT/brass
Item number	Material																		
KGA81PT-H	PBT/brass																		
Item number	Material																		
KGA81PT-L	PBT/brass																		
Item number	Material																		
KGA81PT-L	PBT/brass																		
Item number	Material																		
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. (Connectable tube outer diameter: 6 mm)</p>																			

PR base																			
High-pressure side		Low-pressure side																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PR-H</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PR-H	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PR-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PR-L	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PR-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PR-L	PBT/brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81PR-L</td><td>PBT/brass</td></tr></table>	Item number	Material	KGA81PR-L	PBT/brass
Item number	Material																		
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Item number	Material																		
KGA81PR-L	PBT/brass																		
Item number	Material																		
KGA81PR-L	PBT/brass																		
Item number	Material																		
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																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MT-H</td><td>Brass</td></tr></table>	Item number	Material	KGA81MT-H	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MT-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MT-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MT-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MT-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MT-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MT-L	Brass
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KGA81MT-L	Brass																		
Item number	Material																		
KGA81MT-L	Brass																		
Item number	Material																		
KGA81MT-L	Brass																		
<p>A metallic pipe, such as copper pipe and aluminum pipe, with an outer diameter of 6 ± 0.1 mm can be connected. However, for stainless steel pipe, use an MTW base. When connecting with a plastic pipe (outer diameter 6 mm \times inner diameter 4 mm), remove the brass sleeve and use the separately sold resin inner sleeve set (XIN6\times4; refer to page 111).</p>																			

MR base																			
High-pressure side		Low-pressure side																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MR-H</td><td>Brass</td></tr></table>	Item number	Material	KGA81MR-H	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MR-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MR-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MR-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MR-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MR-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81MR-L	Brass
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KGA81MR-L	Brass																		
Item number	Material																		
KGA81MR-L	Brass																		
Item number	Material																		
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 \times inner diameter 4 mm), remove the brass sleeve and use the separately sold resin inner sleeve set (XIN6\times4; refer to page 111).</p>																			

MTW base																			
High-pressure side		Low-pressure side																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MTW-H-S</td><td>Stainless steel</td></tr></table>	Item number	Material	KGA81MTW-H-S	Stainless steel	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MTW-L-S</td><td>Stainless steel</td></tr></table>	Item number	Material	KGA81MTW-L-S	Stainless steel	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MTW-L-S</td><td>Stainless steel</td></tr></table>	Item number	Material	KGA81MTW-L-S	Stainless steel	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81MTW-L-S</td><td>Stainless steel</td></tr></table>	Item number	Material	KGA81MTW-L-S	Stainless steel
Item number	Material																		
KGA81MTW-H-S	Stainless steel																		
Item number	Material																		
KGA81MTW-L-S	Stainless steel																		
Item number	Material																		
KGA81MTW-L-S	Stainless steel																		
Item number	Material																		
KGA81MTW-L-S	Stainless steel																		
<p>This is used to connect a stainless steel pipe with an outer diameter of 6 ± 0.1 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)																	
																			
<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81FBA-H</td><td>Brass</td></tr></table>	Item number	Material	KGA81FBA-H	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81FBA-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81FBA-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81FBA-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81FBA-L	Brass	<table border="1" style="width: 100%;"><tr><th>Item number</th><th>Material</th></tr><tr><td>KGA81FBA-L</td><td>Brass</td></tr></table>	Item number	Material	KGA81FBA-L	Brass
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Item number	Material																		
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																	
																			
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<p>It is possible to connect an R1/8 joint. *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																	
																			
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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  **Manostar Shop Co., Ltd.**

1-2-3 Nishishiriike-cho, Nagata-ku, Kobe City, Hyogo 653-0031
TEL. +81-78-621-7000 FAX. +81-78-621-7788

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

1-2-3 Nishishiriike-cho, Nagata-ku, Kobe City, Hyogo 653-0031
TEL. +81-78-631-6000 FAX. +81-78-631-6020