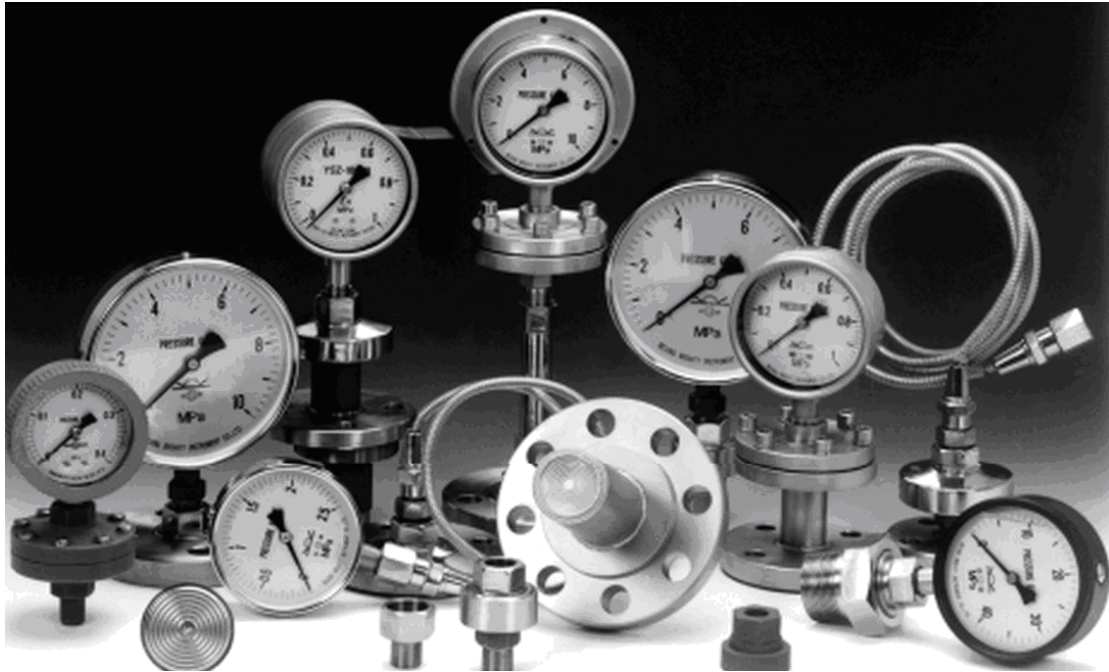


## Diaphragm Series Pressure Gauge

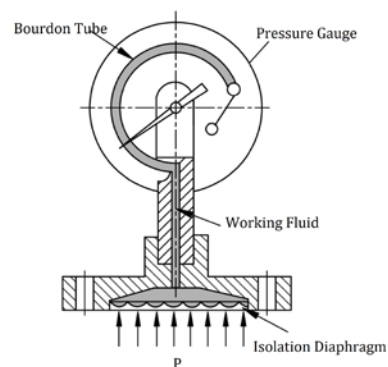


### Product Overview

Diaphragm pressure gauge (chemical seals) is composed of a conventional pressure measuring instrument, a connector and a diaphragm seal. This combination enables a general purpose pressure gauge to measure media of strong corrosion, high temperature, and high viscosity, containing suspended matter or crystallizing. Diaphragm gauges are universally used in petrochemical, alkali, and chemical fiber, pharmaceutical, metallurgical, and food industries.

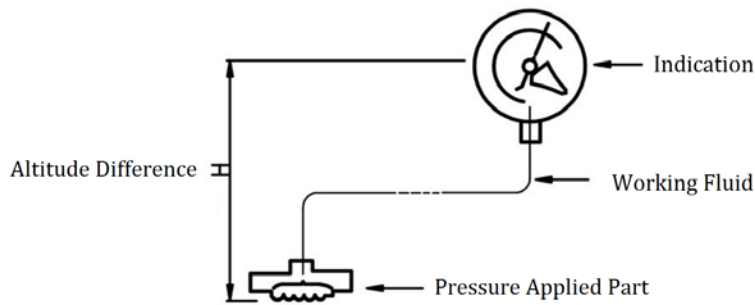
### Configuration Principle

This illustration shows the operating principle of the diaphragm pressure gauge. The diaphragm is deflected by the pressure of medium  $P$ , and an equivalent pressure  $P$  is generated. With transmitting through working fluid, the pressure  $P$  deflect the elastic element of a pressure measuring instrument which thereafter shows the pressure value.



### Level Difference of Diaphragm Pressure Gauge Seals Liquid

When a diaphragm pressure gauge is mounted with pressure gauge and diaphragm seal at different positions, the effect of level difference should be taken into consideration (especially for a diaphragm gauge with capillary). As the illustration shows, with a S.G of the working fluid at approx. 1, and level difference of 1m, the pressure difference is approx. 0.001Mpa.



Level Difference=d.H d=S.G. of Working Fluid H=Altitude Difference

## Temperature Influence of diaphragm pressure gauge

The temperature influence of a diaphragm pressure gauge is relative to expansion coefficient of the seals working fluid, rigidity of the diaphragm, and temperature of pressed part. When working temperature deviates from  $20 \pm 5^\circ\text{C}$ , the indication varies within  $0.1\%/^\circ\text{C}$  for rigid system, and within  $0.1+0.025L\%/^\circ\text{C}$  ( $L$ -length of capillary in m.) for flexible system (remote mounting). Diaphragm pressure gauges are filled with suitable working fluid according to different operating conditions.

**Table1**

Working Fluid	Temperature range for Diaphragm equipment	Specific Gravity g/cm <sup>2</sup>	Factor of Expansion 1/ <sup>o</sup> C
Glycerin-Water Solution	-5-100 <sup>o</sup> C	1.27	$0.61 \times 10^{-3}$
Silicon (low viscosity)	-40-130 <sup>o</sup> C	0.94	$1.08 \times 10^{-3}$
Silicon (high viscosity)	-30-240 <sup>o</sup> C	1.07	$0.95 \times 10^{-3}$
Fluorocarbon Oil	-30-160 <sup>o</sup> C	1.93	$0.75 \times 10^{-3}$
Vegetable Oil	-5-100 <sup>o</sup> C	0.93	$1.03 \times 10^{-3}$

Or other special working fluid

## Corrosion-Proof Properties of diaphragm pressure gauge

Our Diaphragm Pressure Gauge satisfies customers requirements of both environmental conditions and flow conditions (corrosive media) based on its significant corrosion-proof properties. Choose various pressure gauges combined with appropriate separator according to environmental conditions. Choose material of diaphragm and housing compatible with corrosive media.

①.Diaphragm Material: SUS316, SUS316L, Monel (Cu30Ni70), Hastelloy(HC276), Tantalum (Ta), Fluoroplastic (PTFE)coated

②.Body Material: 1Cr18Ni9Ti, SUS316, SUS316L, Fluoroplastic (F4), Fluoroplastic Coated Stainless Steel

③.Gasket Material: Nitrile Rubber, Viton, Silicone Rubber, Fluoroplastic

Options for diaphragm material

Anti-corrosion materials

**Table2**

Corrosive Media	SUS316L	Tantalum	Monel	Hastelloy	Ti	PTFE
Vitriol(H <sub>2</sub> SO <sub>4</sub> )	△	○	▽	▽	×	▽
Nitric acid(HNO <sub>3</sub> )	▽	○	×	▽	▽	▽
Muriatic acid (HCl)	×	○	×	▽	△	▽
Phosphoric acid (H <sub>3</sub> PO <sub>4</sub> )	▽	○	▽	▽	×	▽
Acetate (CH <sub>3</sub> COOH)	▽	○	▽	○	○	▽
(NaOH)	○	△	○	○	▽	▽
Pure alkali (Na <sub>2</sub> CO <sub>3</sub> )	○	○	○	▽	▽	▽
Saleratus (NaHCO <sub>3</sub> )	○	○	○	○	○	▽
Chlorine (Cl)	Dry:V. Wet:×	○	Dry: ▽ . Wet:×	▽	Dry: × . Wet:○	▽
Bromine (Br <sub>2</sub> )	Dry:V. Wet:△	○	Dry: ○ . Wet:×	○	▽	▽
Ammonia (NH <sub>3</sub> )	▽	×	×	○	○	▽
Sea water (30% NaCl)	▽	○	○	○	○	▽

Remark: ○-best; △-conditional; ▽-use; ×-no using.

Standard material is SUS316L, corrosion-proof materials should be applied in normal temperature.

## Model Selection

**Table3**

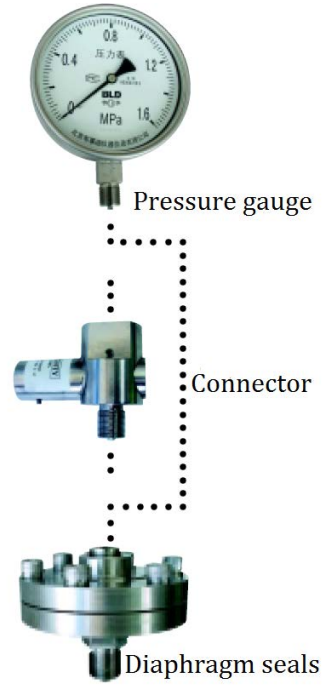
Item	Code	Description
Basic Type	Y	General service pressure gauge
Material	F	Stainless steel material (Option)
Function	ZT	With resistance transmitting
	N	liquid filled (anti-vibration)
	XC	Snap-action electric contact pressure gauge
	SZ	Three pointers
	S	Others
Diameter	60	Φ 60
	100	Φ 100
	150	Φ 150
		Others
Connectors *refer to table 5	Z	Direct Mounting (Medium < 80°C)
	Z1	Damper(Medium < 80°C)
	Y1	Capillary(Medium < 200°C)
	R1	Radiator(Medium < 200°C)
	G1	Overpressure Protector(Medium < 80°C)
	C	Special Angle(Medium < 150°C)

	R4	Siphon (1,2,4,6 meters)
Diaphragm Seals *refer to table6	F8	Diaphragm seal with thread connection
	F1	I-Shape Flange
	F2	diaphragm seal with flange connection
	F4	Angle Adjustable
	F5A	Extended Thread
	F5B	Extended Flange
	F6	Tri-Clamp Connection
	F7	Threaded Connection (Sanitary Type)
	F9	In Line Diaphragm Seals
Diaphragm Material	1	Stainless steel 316
	2	Stainless steel 316L
	3	Hastelloy
	4	Monel
	5	Tantalum
	6	PTFE
Range	M***	(Refer to range table 4)
Option		Flange size and standard

**Table4**







Table of Ranges					
Code	Ranges	Code	Ranges	Code	Ranges
M500	-0.1~0MPa	M030	0.1Mpa	M180	4Mpa
M510	-0.1~0.06Mpa	M040	0.16Mpa	M200	6Mpa
M520	-0.1~0.15Mpa	M060	0.25Mpa	M220	10Mpa
M530	-0.1~0.3Mpa	M080	0.4Mpa	M230	16Mpa
M540	-0.1~0.5Mpa	M100	0.6Mpa	M240	25Mpa
M550	-0.1~0.9Mpa	M120	1Mpa	M270	40Mpa
M560	-0.1~1.5 Mpa	M140	1.6Mpa	M280	60Mpa
M570	-0.1~2.4 Mpa	M160	2.5Mpa		

### Example



### Connectors

Table5

	
<p>G1 Overpressure Protector</p>	<p>Y1 Capillary</p>
	
<p>R1 Radiator</p>	<p>Z1 Damper</p>
	
<p>R4 Siphon</p>	<p>C Special Angle</p>

**Diaphragm Seals**

**Table6**

	
<p>F8 Diaphragm seal with thread connection</p>	<p>F1 I-Shape Flange</p>
	
<p>F2 diaphragm seal with flange connection</p>	<p>F4 Angle Adjustable</p>
	
<p>F5A Extended Thread</p>	<p>F5B Extended Flange</p>
	
<p>F6 tri-Clamp Connection(Sanitary Type)</p>	<p>F7 Threaded Connection (Sanitary Type)</p>