

Double Bourdon Differential Pressure Gauge

► **FMN-B**

Product overview

Double bourdon system differential pressure gauges are designed to measure difference between 2 pressures. 2 models available: FMN-B-S General available and FMN-B-P Corrosion-Proof. The FMN-B-S type is suitable to measuring the uncorrode medium and the FMN-B-P type could be used in corrode environments.

The instrument has 2 independent measuring systems. The measured pressure deflects the elastic elements, displacements then take place to actuate gear mechanisms through linkages to carry 2 pointers traveling over instrument dial, and an auxiliary dial shows the pressure difference.

FMN-B-S

Standart type Double bourdon tubes Differential Pressure gauge

FMN-B-P

Corrosion-proof type Double bourdon tubes Differential Pressure gauge

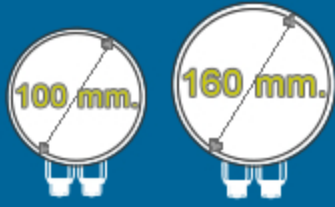


How to Order

Please specify the following properties when the manometer ordering.

- Model number,
- Dial size,
- Dry or Liquid filled (GD= Glycerin filled, SD= Silicone filled)
- Range and pressure unit
- Panel mounting; Front Flange (FF), Rear Flange (RF),
- Connection thread,
- Accuracy,
- (If necessary; special scale,..)

For example: **FMN-B-P-100-(0/1 Bar)-R1/2-1.6**



Double Bourdon Differential Pressure Gauge

▶ FMN-B

Technical Specifications

FMN-B-S

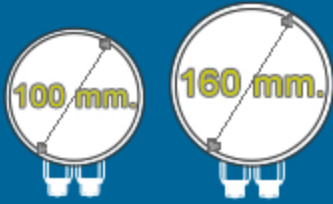
- ◆ Accuracy: $\pm 1.6\%$
- ◆ Ranges: 1..... 100 Bar
- ◆ Ambient temperature: $-20 \sim +60^{\circ}\text{C}$
- ◆ Media temperature: less than 60°C
- ◆ Mounting: bottom directly mounting (with front or back flange available)
- ◆ Process connection: M20X1.5, G1/2", 1/2" NPT, G3/8", 3/8" NPT
- ◆ Protection class: IP45
- ◆ Connection material: copper alloy
- ◆ Bourdon tube: copper alloy
- ◆ Welding: Tin-welding
- ◆ Case material: AISI304
- ◆ Sealing circle and blow out vent material: rubber
- ◆ Window: 3mm plain glass (Organic or double layers available)
- ◆ Movement: copper alloy
- ◆ Pointer: aluminium, black and red color
- ◆ Dial: Aluminium, white with black letters (Special dial available)

FMN-B-P

- ◆ Connection material: AISI 304
- ◆ Bourdon tube: AISI 316
- ◆ Welding: AISI 316 TIG Argonarc
- ◆ Movement: Stainless Steel
- ◆ Media temperature: 100°C
- ◆ Case material: Stainless Steel 304
- ◆ Others as FMN-B-S

TABLE OF RANGES		
0~1 Bar	0~6 Bar	0~40 Bar
0~1.6 Bar	0~10 Bar	0~60 Bar
0~2.5 Bar	0~16 Bar	0~100 Bar
0~4 Bar	0~25 Bar	

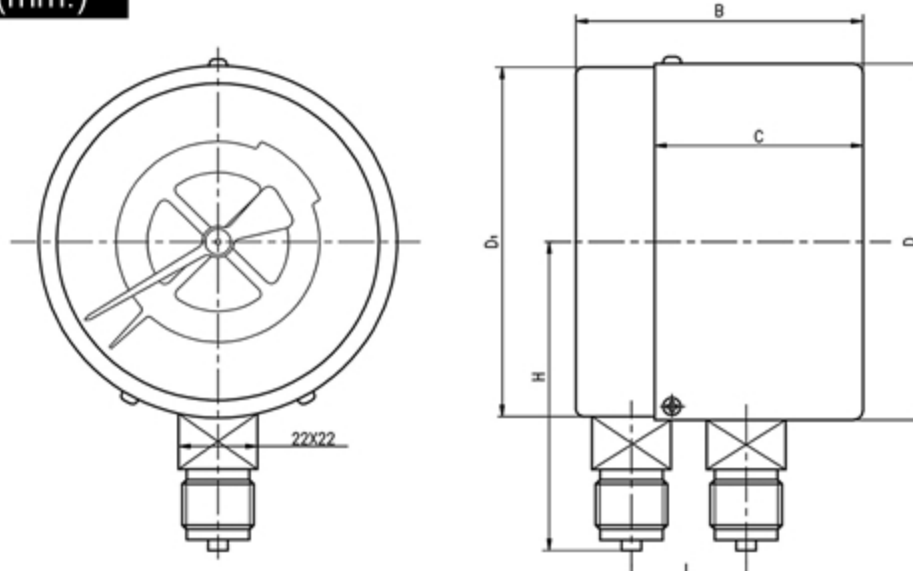
Note: Accuracy is ± 2.5 to 0~1 Bar



Double Bourdon Differential Pressure Gauge

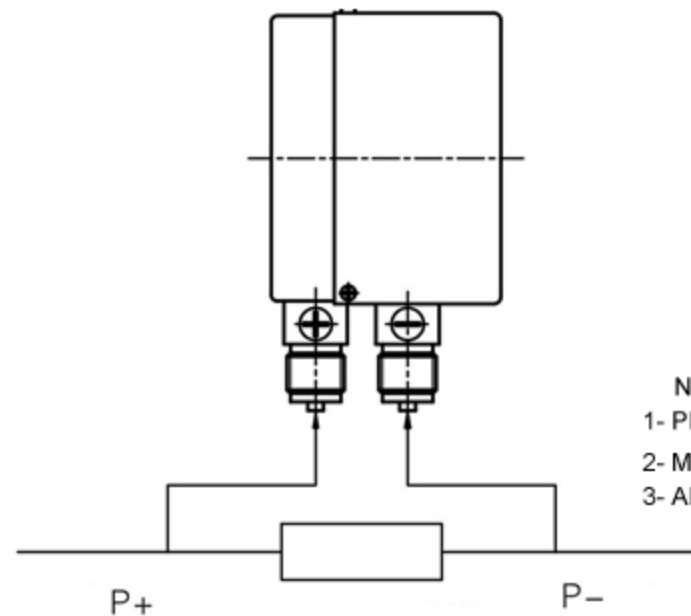
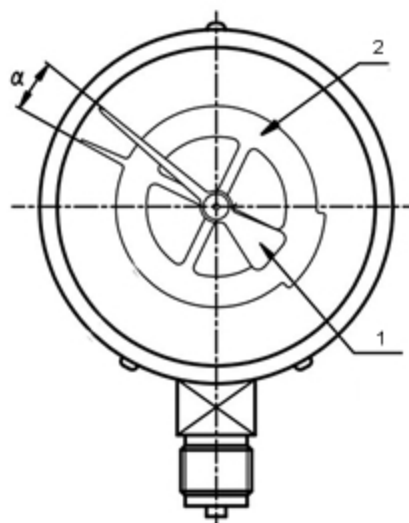
FMN-B

Dimensions (mm.)



Type code	D	D1	B	C	H	L
FMN-B-S-100	101	99	80	58	87.5	32
FMN-B-P-160	159	157	82	76	146	32

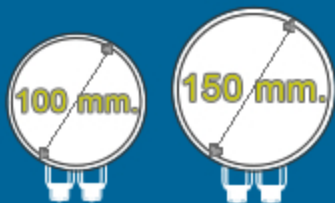
Mounting



- Notes;
- 1- Plus (High) pressure red pointer
 - 2- Minus (Low) pressure dial pointer
 - 3- Alfa is DP value

Operating Instruction

- ◆ The highest indicated value is the highest pressure permitted.
- ◆ We advice using the 1/2~1/3 of the range as ΔP . It is not convenient to read if it is too small. ΔP should not lower than 1/10 of full scale value.
- ◆ The red pointer shows the plus pressure (the pressure input); the dial pointer shows the minus pressure (the pressure output). The value could be saw by the angle α between the red and dial pointers (see directly on the dial pointer). And we can compute the difference using the pointed values of the red pointer and the dial pointer ($\Delta P = P+ - P-$)
- ◆ It is suitable to measure gas and liquid medium, suggested in room in $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$.
- ◆ The general lowest range is 1,6 Bar . It is could be made to 2.5% if range is 1 Bar requested.
- ◆ While mounting, the \oplus end should be deployed with pressure input terminal and the \ominus end should be deployed with pressure output terminal



Double Diaphragm DP Gauge

► **FMN-D**

Product overview

Mainly used for measuring the difference between two pressure values, in the plus and minus ends of filter, the level of liquid, the entrance and exit of pump, oil pipeline, gas pipeline and high pressure pump station and so on. It is excellent while overpressure take place, also suitable corrosion environments.

FMN-D

Standart type Double diaphragm
Differential Pressure gauge

FMN-D-.-

Vibration-proof type Double diaphragm
Differential Pressure gauge

Feature

- ◆ Static pressure: 100 Bar
- ◆ Vibration-proof type
- ◆ Capillary diaphragm
- ◆ Many mounting type

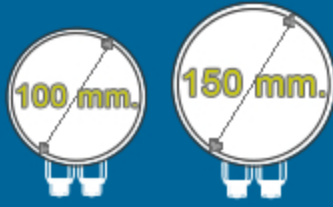


How to Order

Please specify the following properties when the manometer ordering.

- Model number,
- Dial size,
- Dry or Liquid filled (GD= Glycerin filled, SD= Silicone filled)
- Range and pressure unit
- Connection thread,
- Accuracy,
- (If necessary; special scale,..)

For example: **FMN-D-GL-100-(0/1 Bar)-R1/2-1.6**



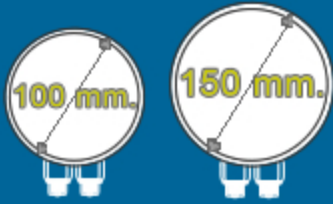
Double Diaphragm DP Gauge

▶ FMN-D

Technical Specifications

- ◆ Accuracy: $\pm 1.6\%$, $\pm 2.5\%$ (1.6% available if range above 1 Bar)
- ◆ Window: laminated safe glass
- ◆ Pointer: zero adjustable black aluminium pointer
- ◆ Case: 100, 150 airtight type dry gauge (oil filled available)
- ◆ Protection: IP65
- ◆ Diaphragm material: 316L (for negative pressure); 316 Ti (for positive pressure)
- ◆ Process connection: 316
- ◆ Case material: 304SS
- ◆ Movement: stainless steel 304
- ◆ The material of blow out vent and filling plug: oil resistant rubber
- ◆ Steady: full scale value
- ◆ Fluctuating: 0.7XFS
- ◆ Overpressure protection: both ends support 100 Bar
- ◆ Operate temperature: $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$
- ◆ Thermal drift: $\pm 0.8\%$ every $\pm 10^{\circ}\text{C}$ of media temperature
- ◆ Range: detail in range table
- ◆ Connection: M20 \times 1.5, G1/2", NPT1/2, NPT1/4 thread inside (without 3-way manifold) or capillary connection, capillary threaded connection, diaphragm capillary flanged connection (mainly used in viscous medium or diaphragm in special materials).
- ◆ Dial: aluminium, white with black letters (can be made as required). The instrument should be used with 3-way manifold group or 5-way manifold.
- ◆ Oil filling: oil filled available

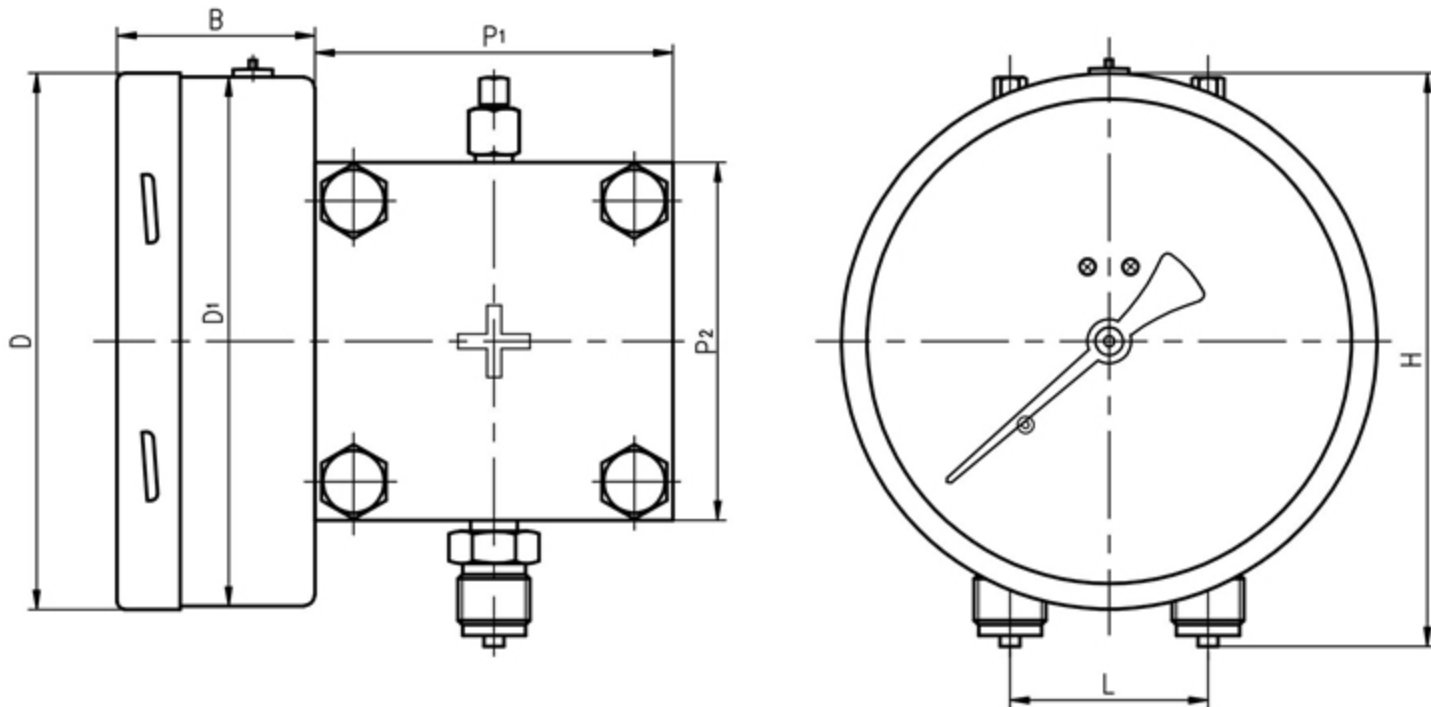
TABLE OF RANGES		
0~0,16 Bar	0~1 Bar	0~4 Bar
0~0,4 Bar	0~1,6 Bar	0~6 Bar
0~0,6 Bar	0~2,5 Bar	
other ranges please contact us		



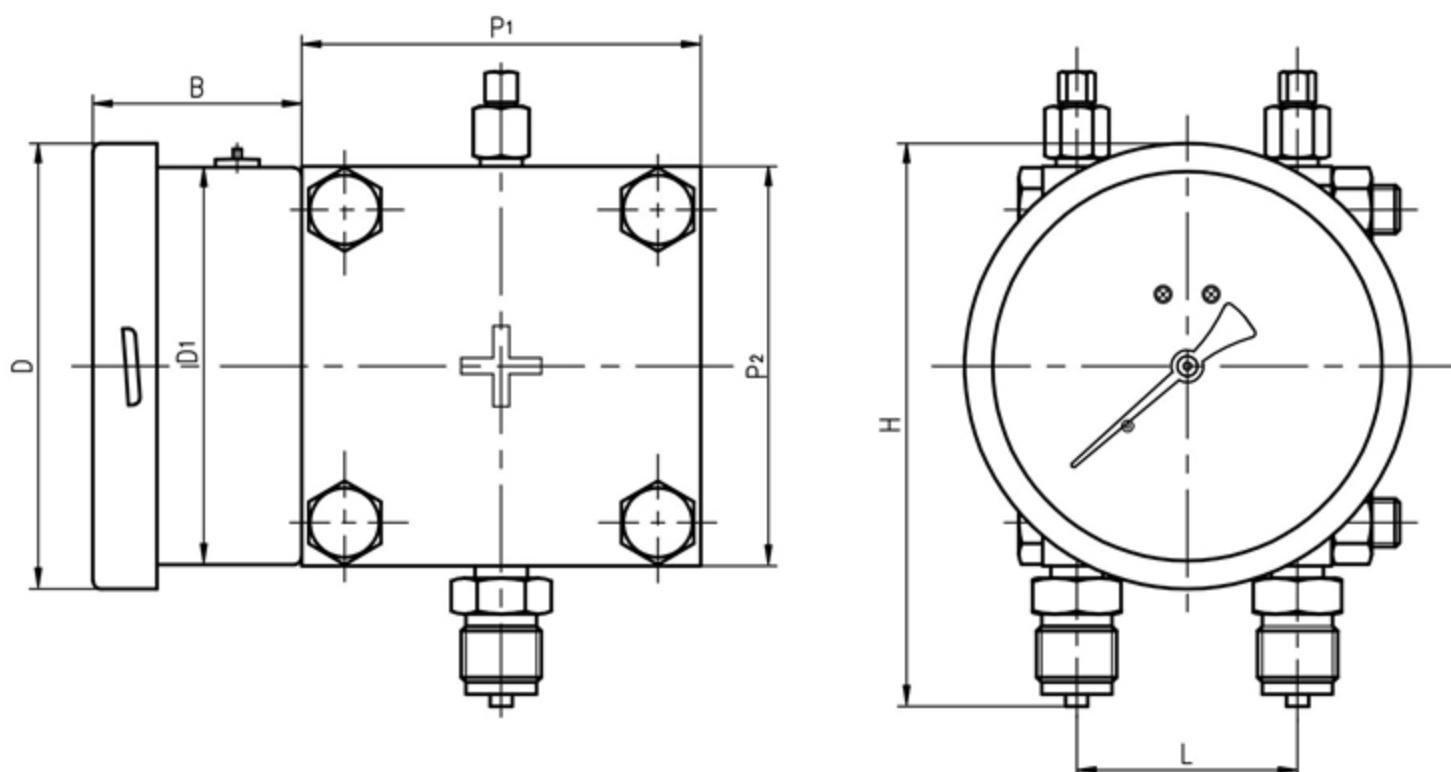
Double Diaphragm DP Gauge

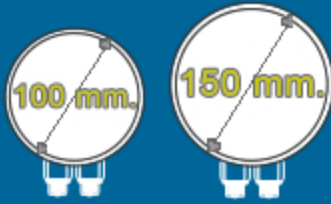
▶ FMN-D

Dimensions (mm.)



Type code	mm					
	D	D1	B	H	P ₁ /P ₂	L
FMN-D-100	111	97	51	141	100	54
FMN-D-150	149	147	55	158	100	54



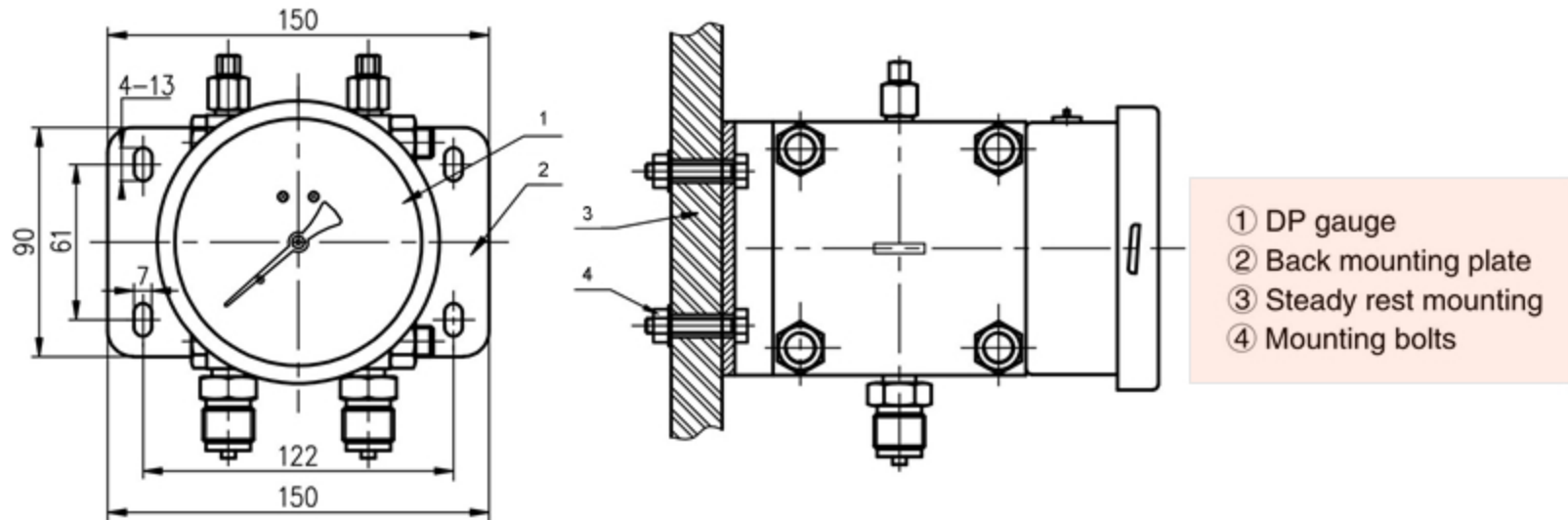


Double Diaphragm DP Gauge

FMN-D

Dimensions (mm.)

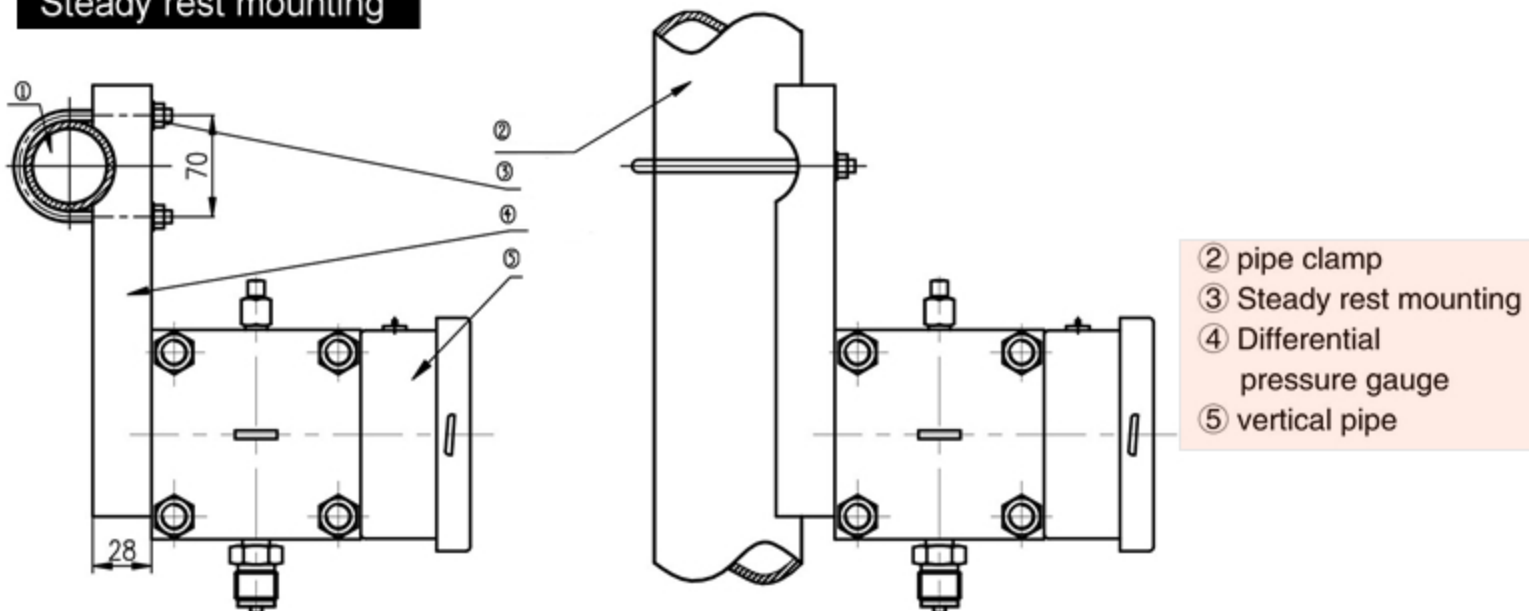
Back mounting



Note:

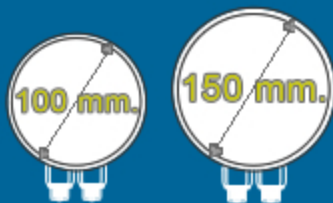
1. back mounting fit for plate mounting (instrument plate, and outer surface etc)
2. Make sure the plane and differential gauge are tight, which will not mount the fall off
3. Special back plate available as per request.

Steady rest mounting



Note:

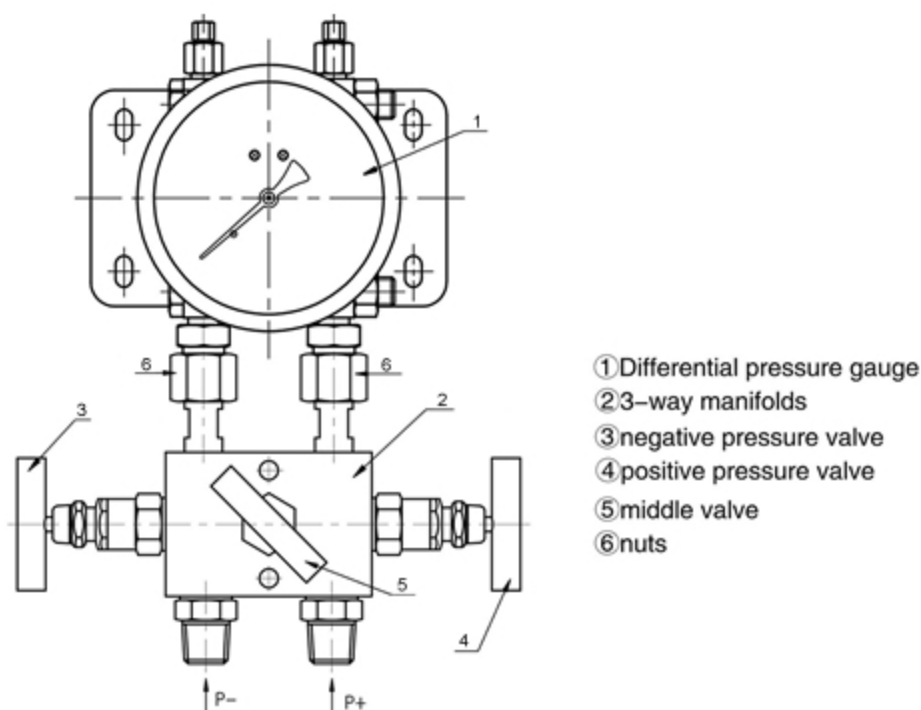
1. Steady rest mounting is suitable for pipe (horizontal or vertical)
2. Outer diameter of pipe cannot over 60mm.



Double Diaphragm DP Gauge

▶ FMN-D

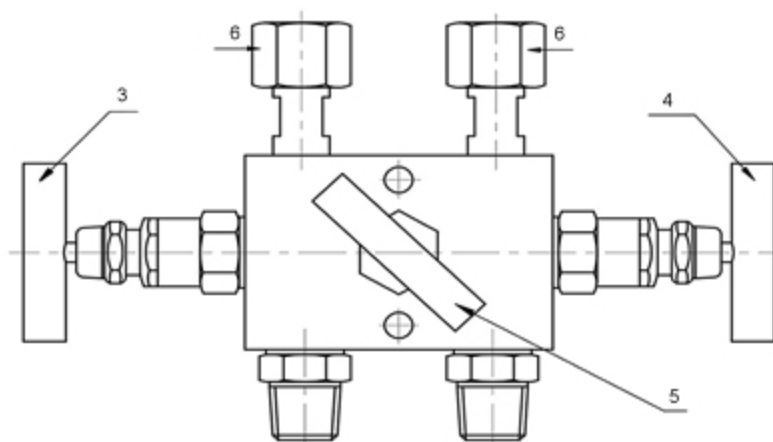
Three Valves mounting



- ① Differential pressure gauge
- ② 3-way manifolds
- ③ negative pressure valve
- ④ positive pressure valve
- ⑤ middle valve
- ⑥ nuts

1. Use differential gauge must fit out three valves in order to insure its normal working.
2. The differential gauge and there valves are connected by two nuts tightly, nuts and socket are with PTFE spacer.
3. Open the middle valve, negative pressure valve and positive pressure valve before use the differential gauge, when either of P- or P+ input, the middle valve can have equilibrium activity, and avoid to damage the gauge.
4. When P- and P+ normal input the three valves, then close the middle valve, to make the gauge works right. If the gauge's pointer is not at zero, please adjust it to zero (note must use soap water to inspect the seal, if has leak, please tight.)
5. The differential pressure gauge has back plate mounting (see the chart) and standpipe fixed (the pipe with clamp).

Disassembly



1. Open the middle valve, negative pressure valve and positive pressure valve (Negative pressure valve and positive pressure valve original state is open)
2. Close these two input valves (on the main pipe of equipment).
3. Discharge instrument (discharge two nuts), use spanner lock the socket of gauge, and just discharge the nuts on three valves Discharge pressure, then put off the nuts and clamp.
4. Screw down the two nuts and take down the differential pressure gauge (note screw down these two nuts together)
5. Then install the new gauge (same as mounting method), change two spacers to ensure it will not leak.
6. Fix the clamp.
7. Open main switch (two), then close the middle valve. (use soap water to inspect leak)
8. Two minutes later, set the pointer at zero (if it is at zero, you needn't to adjust).