

USER MANUAL

PRODUCT NAME : DIFFERENTIAL PRESSURE GAUGE

MODEL : P660



WISE[®] WISE Control Inc.
www.wisecontrol.com

Instructions for proper and safe operation

Please read instructions carefully prior to using the instrument for proper and safe operations.

Mishandling could cause device malfunctions and result in disastrous injuries or accidents.

WARNING

1. Do not exceed the pressure range allowed.

2. Do not use it to measure the pressure of corrosive fluid.

Damage or rupture of pressure gauge may cause release of fluid which could lead to bodily injury or destroy surrounding area.

3. Do not apply excessive load, vibration or impact.

4. Please use within the specified temperature ranges.

Exceeding the temperature range may cause disruption in nearby area due to damage to the temperature indicator.

5. Make sure to turn off the valve to prevent the measuring fluid leak when dismantling the gauge.

6. Use a pressure gauge with no oil in an environment with hydrocarbon or oxygen.

Oil contained in the gauge may react with oxygen which may be flammable or explosive.

7. Please always follow the mounting instructions in the manual in cases of field installation.

8. Do not make any modifications to the product or to add more functions.

Please consult with us for any repair.

9. Be sure to close the valve and shut off the pressure before you open this product case.

CONTENTS

1. Introduction
2. Specification and standards
3. Structure and Function
4. Operating Principle
5. Use
6. Operation

1. Introduction

P660 differential pressure gauge is an indicator of precise class by using a diaphragm, and is designed with the structure that can protect the diaphragm against excessive pressure, and can be used for measuring the differential pressure of filter, flow meter, etc. by using orifice, or for measuring the water level of storage tank.



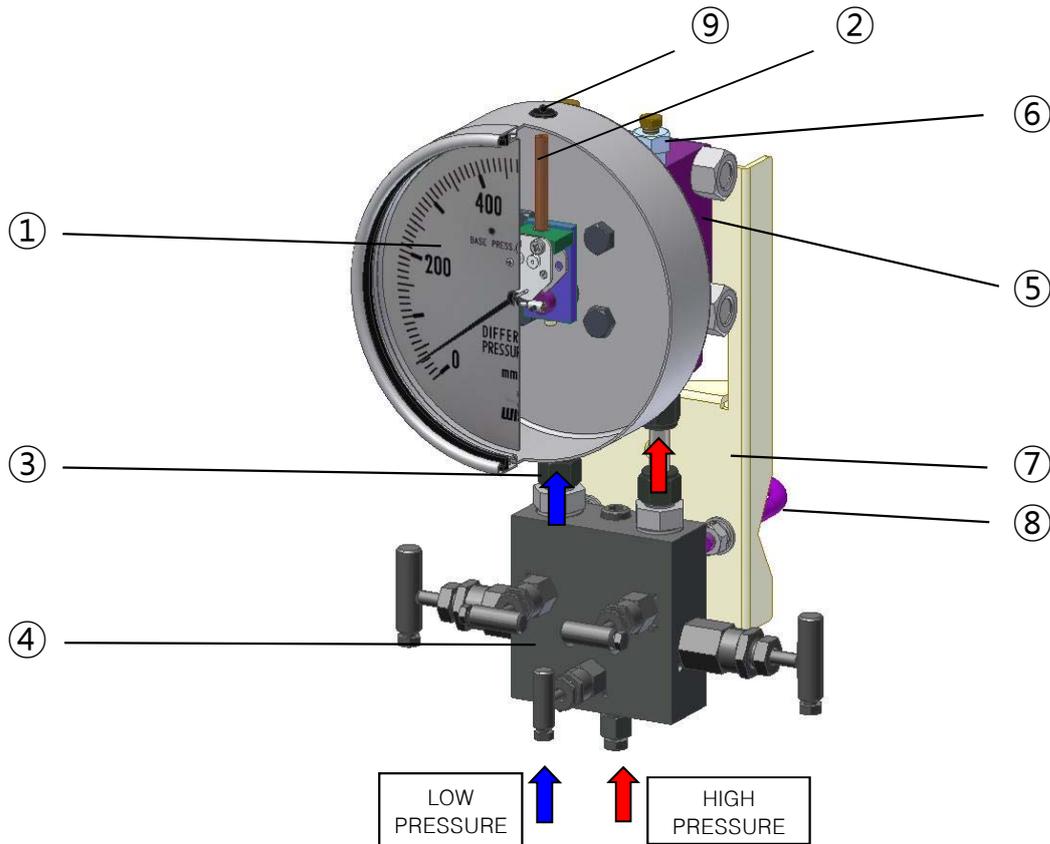
The external appearance of products is shown in (Fig. 1)

(Fig. 1)

2. Specification and standards

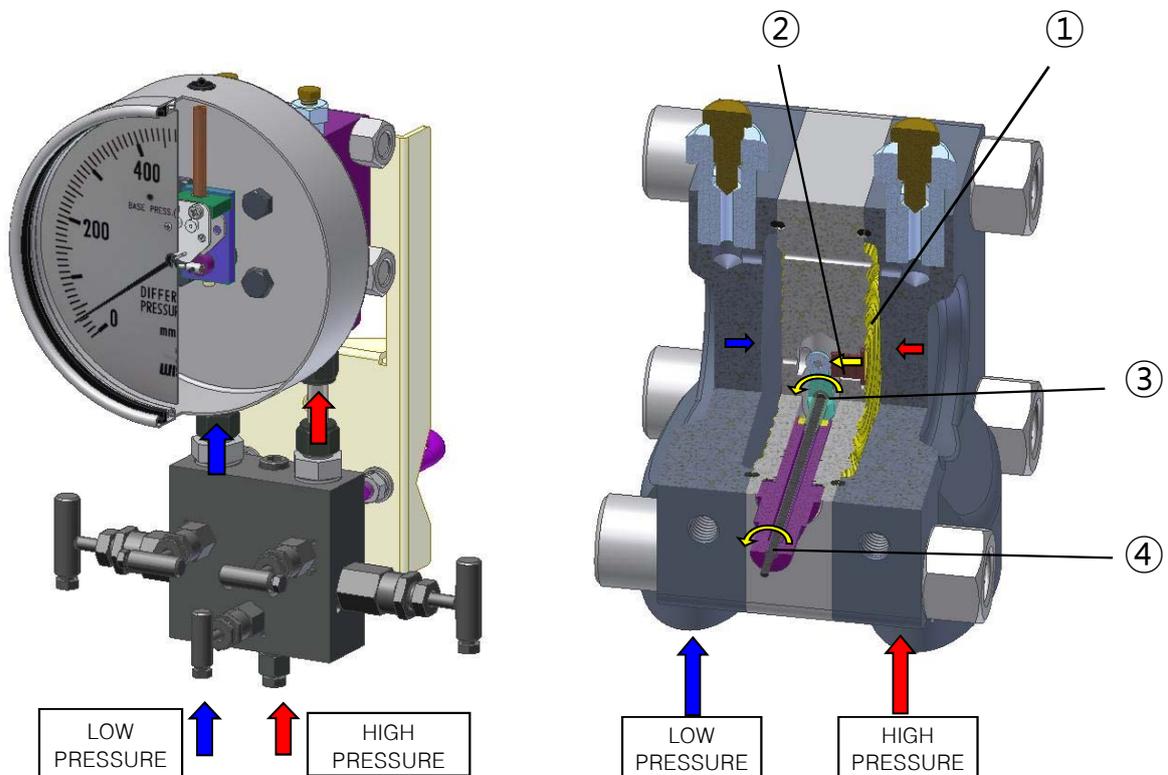
- 1) Nominal diameter : 100mm / 160mm
- 2) Accuracy : $\pm 1.6\%$ (or $\pm 1.0\%$) of Full Scale
- 3) Static pressure : Max. 100 bar or 250 bar
- 4) Materials of wetted part :
MEASUREMENT DEVICE - Duratherm600, 316Ti
BODY - ASTM A351 CF8M
CASE COVER - ASTM A240 304
- 5) Connection type : NPT1/4" (F)
- 6) Accessories : 3-WAY or 5-WAY MANIFOLD, 1/2" NPT (F)
2 inch Mounting Bracket

3. Structure and Function



NO.	NAME	FUNCTION	REMARKS
①	Differential pressure scale plate	Indicate pressure difference between two points, and flow rate.	160mm
②	Zero adjustment screw	Adjust zero point according to the mounting position.	
③	Impulse pipe	Connection tube for the differential pressure gauge body and 5-way manifold	
④	3-WAY or 5-WAY MANIFOLD	A device that enables valve to be opened in consecutive order in pressure transducing, in order to prevent a differential pressure gauge from being damaged.	
⑤	Differential pressure gauge body	Pressure measurement equipment to which a measurement device is mounted.	
⑥	Air vent	A device that releases air from the piping to the outside in pressure transducing.	
⑦	Mounting bracket	A device used in case of intending to mount a differential pressure gauge on measurement	
⑧	U- bolt	A device that fastens the mounting bracket to 2-inch pipe	
⑨	OIL CAP	Cap of inlet through which oil is injected into case	

4. Operating Principle



- 1) If pressure comes in the pressure transducing part of high pressure side and the pressure transducing part of low pressure side, ① diaphragm will shrink by differential pressure between two points. Then, ② ROD connected to the diaphragm moves in the right and left direction. And ③ SHAFT and ④ POST, which is connected to the indicating part of differential pressure gauge, rotates by this moving distance, and indicates differential pressure.
- 2) In case of diaphragm, high pressure side and low pressure side is made to be separated. And a uniform moving distance is made to occur by diaphragm's characteristic according to the differential pressure range.

5. Use

- 1) To prevent differential gauge measuring set damage, operate the differential gauge along with the 3-way or 5-way manifold all the time and check both the high and low sides before it is installed on the manifold.
- 2) The differential gauge should be installed as a higher position than the pressure diffuser during gas differential pressure measurement and lower than it during liquid differential pressure measurement.
- 3) Connect the measuring tube pressure diffuser in such a way to set the upstream to the high pressure and the downstream to the low pressure. During water level checking, set the lower part to the high side and the upper part to the low side for the pressurizing tank but connect the lower part to the high side and open the low side to the atmosphere for the open tank for atmosphere.
- 4) In case of corrosive fluid, you must choose anticorrosive diaphragm or side diaphragm.
- 5) In case you choose a side diaphragm and its high side and low side are not installed at the same point, be sure to conduct zero point adjustment after differential gauge installation.

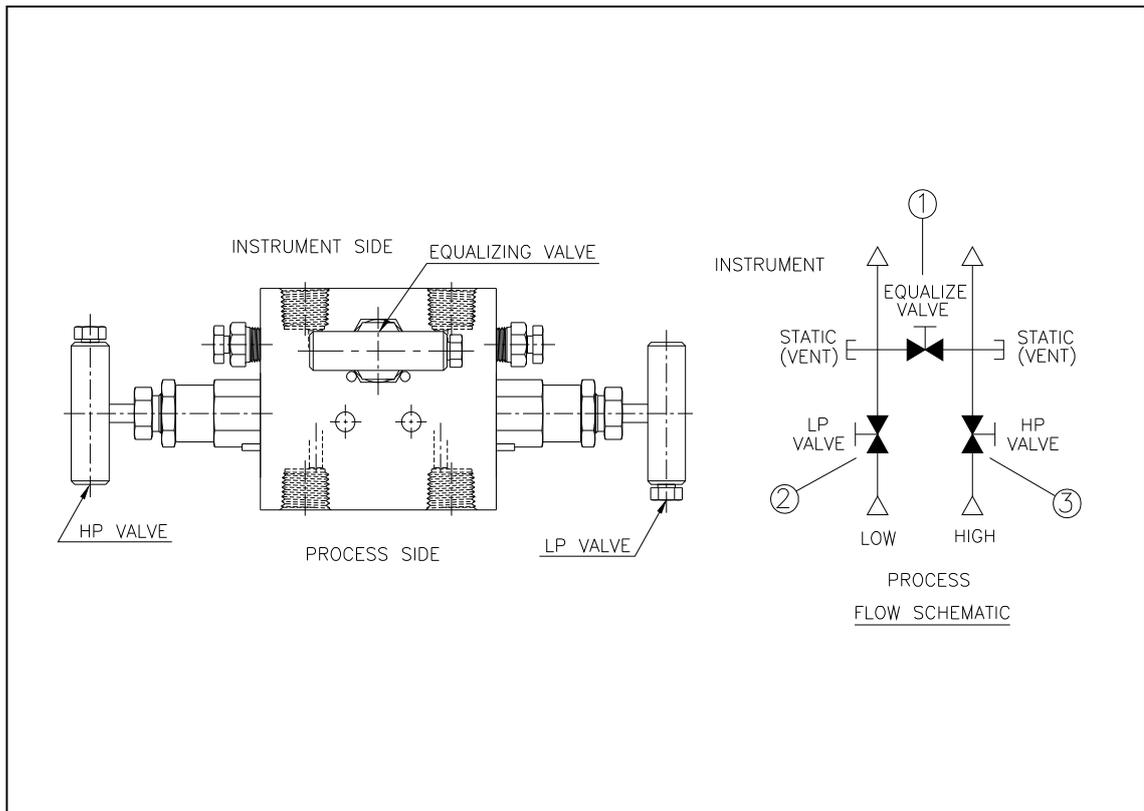
(Zero point is adjusted by turning zero adjustment screw inside case after removing an oil cap on the top of differential pressure gauge case.)
- 6) In case of operation in hot fluid, use a seal pot to keep the differential gauge incoming fluid under the set temperature.

6. OPERATIONS

6-1) Operation of the 3-way valve

- ① Equalizing Valve
- ② Low Pressure Valve (LP Valve)
- ③ High Pressure Valve (HP Valve)

Fig. 6-1



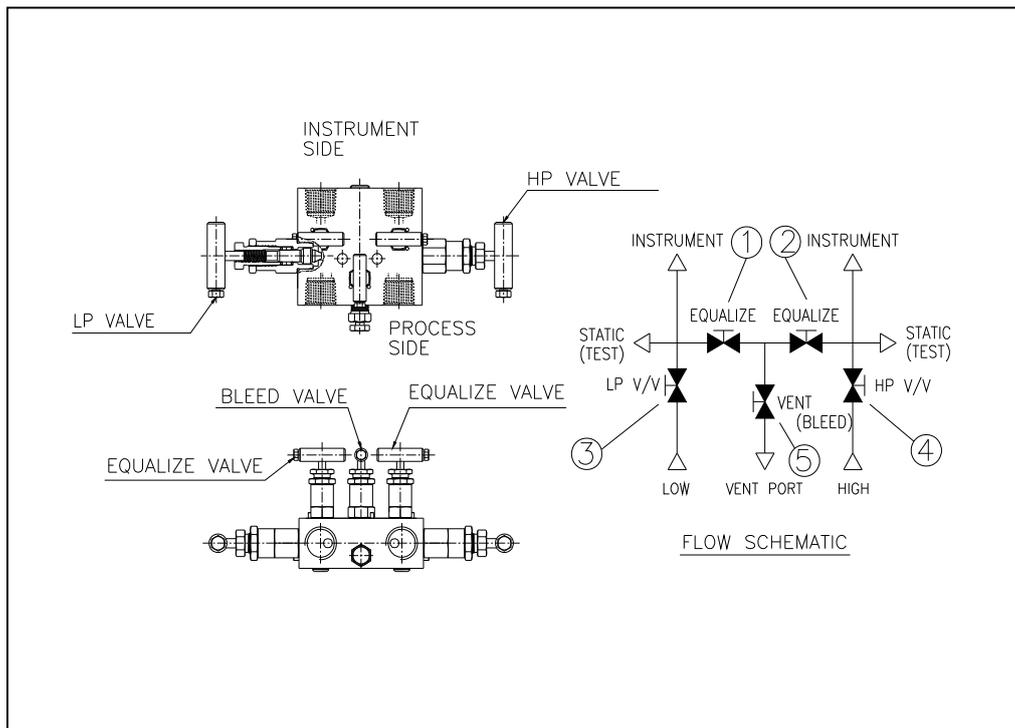
- (1) For initial setup, all the valves must be closed
- (2) After complete installation, first release Equalizing valve, then release HP valve at this point check whether the pointer is pointing at "0", if there is an error, must perform zero adjustment.
- (3) Before operating other valves, make sure all the air is out of the DP gauges by opening the air vent at the top of the housing. left over air could cause error in measuring DP.
- (4) Then, open LP valve. after opening LP valve, close the Equalizing valve, Then make sure it is indicating correct value. now, it is ready to use.

6-2) In case of DP gauge is malfunctioning, release Equalizer valve,
Then close LP valve. now, close HP valve, then close equalizer valve.
Release all the air inside the DP gauge by opening up the air vent.
Now take DP gauges to manufacturing for repair service.

6-3) Operation of the 5-way valve

- ①② Equalizing Valve
- ③ Low Pressure Valve (LP V/V)
- ④ High Pressure Valve (HP V/V)
- ⑤ Bleed Valve (Vent valve)

Fig. 6-2



- (1) For initial setup, all the valves must be closed
- (2) After complete installation, first release Equalizing valve, then release HP valve at this point check whether the pointer is pointing at "0", if there is an error, must perform zero adjustment.
- (3) Before operating other valves, make sure all the air is out of the DP gauges by opening the air vent at the top of the housing. left over air could cause error in measuring DP.
- (4) Then, open LP valve. after opening LP valve, close the Equalizing valve, Then make sure it is indicating correct value. now, it is ready to use.

6-4) In case of DP gauge is malfunctioning, release Equalizer valve,
Then close LP valve. now, close HP valve, then close equalizer valve.
Release all the air inside the DP gauge by opening up the bleed valve.
Now take DP gauges to manufacturing for repair service.