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## **Operating Instructions**

### **PMP04**

*Diaphragm Pressure Gauge*

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## ***1 Introduction***

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Series PMP04 pressure gauges are noted for their reliable function and easy operation. To obtain the greatest benefit from this device, please observe the following cautionary statement: **Persons who are responsible for setting up or operating this device must be sure to read the and understand the operating instructions and the safety information pertaining to it.**

## ***2 Safety Information***

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### ***2.1 General Instructions***

To ensure safe operation, the device must only be operated according to the information in the operating instructions. When the device is in use, the regulations and safety standards applicable to the specific application must also be observed. This statement also applies to the use of accessories.

### ***2.2 Proper Usage***

Series PMP04 pressure gauges are designed for measuring process pressures. Any application extending beyond this specific intended use does not constitute proper usage. Series PMP04 must not be employed as the sole means of avoiding hazardous conditions in machinery and installations. The machinery and installations must be designed in such a manner that faulty conditions and malfunctions will not present hazardous situations for operating personnel.

### ***2.3 Qualified Personnel***

Series PMP04 must only be used by qualified, knowledgeable personnel trained in correct use of these devices. Qualified personnel are those persons familiar with setting up and assembling these devices, placing them in service and operating them. In addition, such personnel must also be qualified to perform the work associated with the application for which the device is being used.

### ***3 Functional Description***

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Diaphragm pressure gauges have a thin, circular, dished diaphragm mounted between two flanges. One side of this diaphragm is exposed to the fluid. The deformation of the diaphragm caused by the fluid pressure is transmitted to a pointer element used to indicate pressure on a dial face.

### ***4 Installation***

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For connections with cylindrical screw threads, use suitable gaskets to seal the pressure gauge connections to the sealing face. For connections with tapered thread (e.g. NPT screw thread), apply a sealing component such as Teflon tape directly to the screw threads (EN 837-2). In order to be able to bring the measuring device into a position where it can be most easily read, we recommend the use of a tension bushing or gland nut.

During installation and removal, pressure gauges must not be turned by the housing. Be sure to only tighten and loosen gauges with suitable wrenches at the hexagonal drive points provided for this purpose.

If the pressure gauge is to be installed below the pressure tapping point, then the process line must be thoroughly flushed out first to remove any foreign objects before the gauge is installed. Some device models have a pressure-relief opening that can be vented and closed to equalize the internal pressure. In as-delivered condition, this pressure-relief opening is closed. Before checking these devices and/or after installation but before placing them in service, these devices must be vented (refer to label on housing). When pressure testing or purging piping systems or tanks, make sure that the pressure gauge is not subjected to pressure beyond the upper scale value. If this cannot be ensured, the pressure gauge must first be isolated or removed from the system. Before removing the pressure gauge, be sure to relieve the pressure in the measuring element. To do this, it may also be necessary to relieve the pressure in the process line.

**Caution:** Exposure to residue and deposits of materials being measured may pose a danger to people, the environment and the apparatus.

Be sure to follow proper safety procedures. Pressure gauges with measuring elements filled with water or mixtures containing water must be protected against frost.

### ***5 Maintenance***

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Mechanical pressure gauges are maintenance-free.

The measuring accuracy (as defined per DIN EN 837) of the pressure gauge should be checked regularly. Inspection or recalibration should only be performed by trained, qualified personnel with suitable equipment.

**Caution:** If the pressure gauge is being used to monitor **hazardous substances** such as oxygen, acetylene, flammable or combustible materials, or poisonous materials and/or being used in **refrigeration systems, compressors**, etc., then the regulations applying in such cases must be also be observed in addition to the ones generally applicable. Be sure to take appropriate precautions and follow proper safety procedures.

# PMP04

## Diaphragm Pressure Gauge

- for aggressive, highly viscous, crystallizing media
- nominal sizes 100, 160, 250 mm
- accuracy class 1,6
- versions aluminium / brass, aluminium / st. steel or completely in stainless steel
- insensitive to shocks and vibrations
- high overpressure safety



### Description:

The diaphragm pressure gauges are equipped with a thin, circular, corrugated diaphragm which is fixed between two flanges and is exposed to the medium on one side. The deflection of the diaphragm caused by the medium pressure is indicated by a pointer mechanism.

Diaphragm pressure gauges are insensitive to vibrations and can optionally be supplied with high overpressure safety. Due to an appropriate coating of the diaphragm, the devices can also be used under particularly rough conditions and aggressive media.

### Typical applications:





Due to their design principle and material selection, diaphragm pressure gauges meet the tough requirements that arise when used in industrial production plants.

Open connecting flanges allow the use even with highly viscous crystallizing and contaminated media, since there are no dead spaces in this design which allow the build-up of deposits. Diaphragm pressure gauges are often used in the food and beverage industry as well as in machine, plant and apparatus engineering.

## Models:

<b>Nominal sizes:</b>	housing diameter 100, 160 or 250 mm
<b>Materials:</b>	
PMP04.x.A:	stainless steel housing 1.4301, upper and lower flange made of aluminium, st. steel measuring element 1.4571, brass connection
PMP04.x.M:	stainless steel housing 1.4301, upper flange made of aluminium, lower flange made of st. st. 1.4571, stainless steel connection 1.4571
PMP04.x.E:	stainless steel housing 1.4301 upper and lower flange made of stainless steel 1.4571, st. steel measuring element and connection
<b>Process connection:</b>	G 1/2 (standard) flange connection DN 25, DN 50, DN 64, ANSI

## Measuring Ranges:

Measuring range [mbar]	Order code			
				
	For all nominal sizes			
-1200...0	P17	S17	T17	V17
0...10	P58	-	-	-
0...16	P59	-	-	-
0...25	P60	-	-	-
0...40	P61	-	T61	V61
0...60	P62	-	T62	V62
0...100	P63	-	T63	V63
0...160	P64	-	T64	V64
0...250	P65	-	T65	V65
0...400	P66	-	T66	V66
[bar]				
-1...0	P16	S16	T16	V16
-0.6...+1,0	P18	S18	T18	V18
-1...+0,6	P42	S42	T42	V42
-1...+1,5	P43	S43	T43	V43
-1...+3	P44	S44	T44	V44
-1...+5	P45	S45	T45	V45
-1...+9	P46	S46	T46	V46
-1...+15	P49	S49	T49	V49
-1...+25	P52	S52	T52	V52
0...0,6	P67	S67	T67	V67
0...1	P69	S69	T69	V69
0...1,6	P70	S70	T70	V70
0...2,5	P72	S72	T72	V72
0...4	P73	S73	T73	V73
0...6	P74	S74	T74	V74
0...10	P75	S75	T75	V75
0...16	P76	S76	T76	V76
0...25	P78	S78	T78	V78
0...40	P79	S79	T79	V79

## Order Code:

Order number: **PMP04. 10. A. 1. P67. 0**

### Diaphragm pressure gauge

#### Models:

10 = 100 mm  
16 = 160 mm  
25 = 250 mm

#### Materials:

A = upper and lower flange alu., connection brass  
M = upper fl. alu., lower fl. st. st., connection st. st.  
E = upper and lower flange st. st., connection st. st.

#### Process connection:

1 = G 1/2, model P  
2 = connection flange DN 25, model V  
3 = connection flange DN 50, model T  
4 = connection flange DN 64, model S  
S = ANSI B16.5 150 / 300 lb / sq. in. (on request)

#### Measuring range:

P17...V79 = see table "Measuring Ranges"

#### Options and Accessories (multiple selection possible)

0 = without  
xx = see table „Options and Accessories“

## Technical Data:

<b>Housing:</b>	round stainless steel housing, d = 100, 160, or 250 ms protection class IP45
<b>Vibration damping:</b>	optional with glycerine filling
<b>Measuring element:</b>	stainless steel diaphragm 1.4571
<b>Pointer mechanism:</b>	
PMP04.x.A:	brass base and cover plate, barrel nickel silver
PMP04.x.M:	brass base and cover plate, barrel nickel silver
PMP04.x.E:	stainless steel 1.4571/1.4301
<b>Dial:</b>	aluminium, white, black font according to EN 837-1
<b>Viewing class:</b>	
PMP04.x.A:	instrument glass
PMP04.x.M:	laminated safety glass
PMP04.x.E:	laminated safety glass
<b>Accuracy:</b>	class 1,6
<b>Max. media temperature:</b>	100 °C
<b>Overload safety:</b>	5,0 times full scale value, maximal 40 bar

## Dimensions:

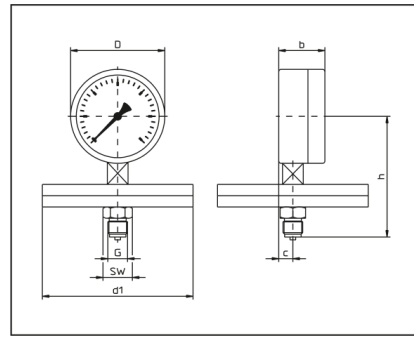
Dimension:	Value [mm]
	size 100, size 160, NG 250 G 1/2 / 10 - 400 mbar/ 0, 6 to 40 bar
b	50 / 50 / 55
c	15 / 14,5 / 16
D	100,8 / 161,3 / 251
G	G 1/2
h	129,5 / 168 / 209
d1	160 / 100
SW	27
weight without glycerine filling	1,1 / 1,6 / 2,8 kg
weight with glycerine filling	1,4 / 2,5 / 5,0 kg

Dimension:	Value in [mm]
	size 100, size 160, size 250 DN64 / 0,6 - 40 bar
D	100,8 / 161,3 / 251
d1	100
d2	82
d3	75
e	1
f	19
G	M8
h	103,5 / 142 / 183
weight without glycerine filling	1,3 / 1,8 / 3,0 kg
weight with glycerine filling	1,6 / 2,7 / 5,2 kg

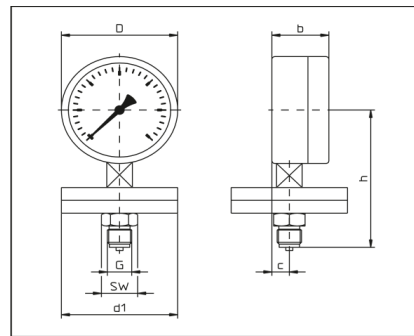
## Options and Accessories:

Description:	Code	for type PMP04
PTFE lined	PE	all types
measuring system overpressure proof 10 – times, max. 40 bar	U	all types
meas. system vacuum-proof, - 1 bar measuring range $\geq 0,6$ bar measuring range $< 0,6$ bar	A	all types
pointer with fine graduation and cutting edge pointer	ZF	all types
double scale (e.g. bar / psi )	SD	all types
movement CrNi- steel	ZC	all types
multiple scale	SM	all types
meas. system with venting and flushing valve	SH	all types
cliché creation for special scale (1-colored or multicolored)	SS1 SSx	all types
meas. syst. free of oil and grease for oxygen	MO	all types
measuring system silicone-free	MS	all types
glycerine filling, measuring. range $< 0,6$ bar $\geq 0,6$ bar	ZG FK	all types
throttle screw in connection, d = 0,8 or 0,3 mm	D08 D03	all types
process connection 1/2 NPT	Px	all types
connection spigot drilled out to 8 mm	AG8	all types
connection spigot drilled out to 12mm	AG12	all types
medium resistance 200 °C	MB	all types
red stamp on dial	MR	all types
red mark pointer in the sight glass	ZR	all types
slave pointer, resettable, 1-times or 2-times	ZS1 ZS2	all types
red marker hand on the dial	ZR1	all types
calibratable acc. To calibration regulations	E	all types

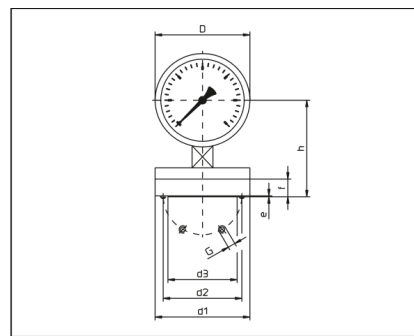
## Models:



model P:  
10 - 400 mbar



model P:  
0,6 to 40 bar



model S:  
0,6 to 40 bar

## Dimensions:

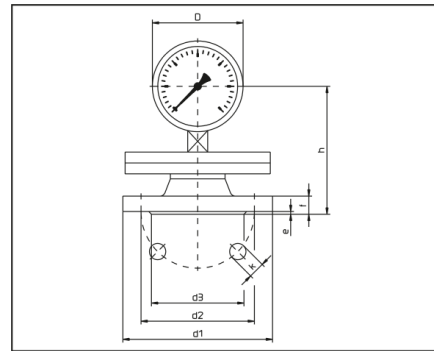
Dimension:	Value [mm] size 100 / size 160/ size 250 DN 50 / 40 - 400 mbar
D	100,8 / 161,3 / 251
d1	165
d2	125
d3	102
e	3
f	20
h	141 / 179,5 / 220,5
k	18
weight without glycerine filling	5,0 / 5,5 / 6,7 kg
weight with glycerine filling	5,3 / 6,4 / 8,9 kg

Dimension:	Value [mm] size 100 / size 160/ size 250 DN 50/ 0,6 - 40 bar
D	100,8 / 161,3 / 251
d1	165
d2	125
d3	-
e	-
f	20
h	104, 5 / 143 / 184
k	18
weight without glycerine filling	2,7 / 3,2 / 4,4 kg
weight with glycerine filling	3,0 / 4,2 / 5,6 kg

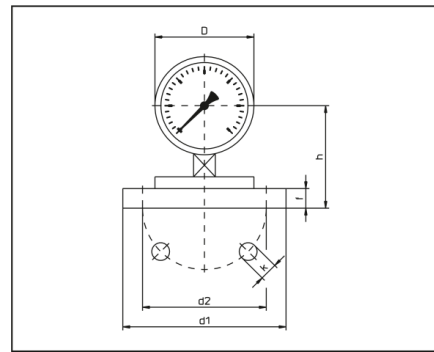
Dimension:	Value [mm] size 100 / size 160/ size 250 DN 25 / 40 - 400 mbar
D	100,8 / 161,3 / 251
d1	115
d2	85
d3	68
e	2
f	18
h	133 / 171,5 / 212,5
k	18
weight with glycerine filling	3,2 / 5,3 / 6,8 kg
weight with glycerine filling	3,5 / 6,2 / 8,0 kg

Dimension:	Value [mm] size 100 / size 160/ size 250 DN 25/ 0,6 - 40 bar
D	100,8 / 161,3 / 251
d1	115
d2	85
d3	68
e	2
f	25
h	109, 5 / 148 / 189
k	-
weight without glycerine filling	2,9 / 3,4 / 4,6 kg
weight with glycerine filling	3,1 / 4,3 / 5,7 kg

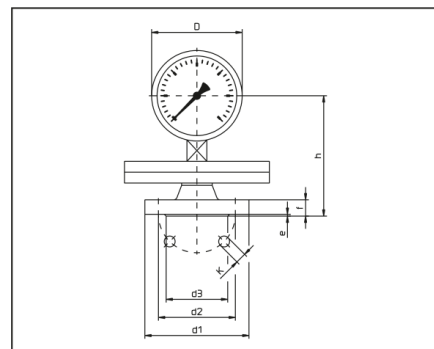
## Models:



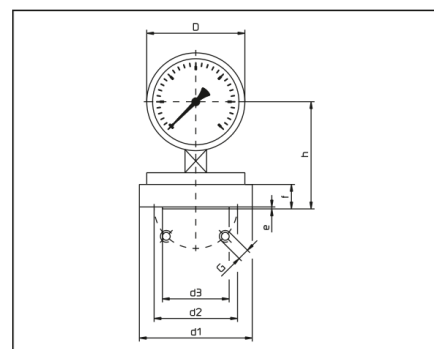
model T:  
40 to 400 mbar



model T:  
0,6 to 40 bar



Bauform V:  
40 to 400 mbar



model V:  
0,6 to 40 bar