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Operating Instructions

PMK04

Capsule- Element Pressure Gauge

Contents

1 Introduction

Series PMK04 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

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 PMK04 pressure gauges are designed for measuring process pressures.
Any application extending beyond this specific intended use does not constitute proper usage. Series PMK04 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 PMK04 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

The measuring element in this type of device consists of two welded diaphragm halves which, when pressurized from the inside, operate a pointer mechanism that indicates the pressure on an aluminum scale.

4 Installation

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

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.

PMK04

Capsule Element Pressure Gauge

- for gaseous media
- nominal sizes 60, 100, 160 mm
- accuracy class 1,6
- versions with brass connection and stainless steel housing or completely in stainless steel
- zero correction
- measuring ranges from -25...+15 to 0...600 mbar

Description:

The PMK04 capsule pressure gauges are used to measure small negative and positive overpressures of gaseous media. The measuring element of such a device consists of two diaphragm halves welded together, which actuate a pointer measuring mechanism from the inside when pressure is applied, which indicates the system pressure on an aluminium scale.
The devices are available in a brass version and in a stainless steel version. The overload protection up to 25 mbar is 6 times the full scale value, with larger measuring ranges 10 times.
The devices are available in stainless steel housings of nominal sizes 63, 100 or 160 mm with radial bottom or centric rear connection.
Other version are available on request.

Typical applications:

Capsule pressure gauges are ideal for measuring very low pressure.
All DIN levels are available between 0…6 mbar and 0…600 mbar in the positive or –25…15 mbar and –400…0 mbar in the negative overpressure range.
Typical applications can be found in medial technology, air conditioning technology, gas generation or in laboratories. Applications are e.g. leak tests, filter condition measurements, exhaust gas measurements or in the stainless steel version the monitoring of aggressive, corrosive gases.

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Models:

Nominal sizes: housing diameter 60, 100 or 160 mm

Materials:

PMK04.x.M: stainless steel housing 1.4301, brass of copper alloy, brass connection

PMK04.x.E: stainless steel housing 1.4301, measuring element and connection made of stainless steel 1.4571

Process connection: G 1/4 A (NG 63)
G 1/2 A (NG 100, NG 160)

Measuring Ranges:

Measuring range [mbar]	Order code					
						
	for all nominal sizes					
-25...+15	A109	B109	C109	D109	E109	F109
-20...+40	A110	B110	C110	D110	E110	F110
-40...+20	A210	B210	C210	D210	E210	F210
-6...0[1]	A05	B05	C05	D05	E05	F05
-10...0[2]	A06	B06	C06	D06	E06	F06
-16...0	A07	B07	C07	D07	E07	F07
-25...0	A08	B08	C08	D08	E08	F08
-40...0	A09	B09	C09	D09	E09	F09
-60...0	A10	B10	C10	D10	E10	F10
-100...0	A11	B11	C11	D11	E11	F11
-160...0	A12	B12	C12	D12	E12	F12
-250...0	A13	B13	C13	D13	E13	F13
-400...0	A14	B14	C14	D14	E14	F14
0...6[1]	A57	B57	C57	D57	E57	F15
0...10[2]	A58	B58	C58	D58	E58	F58
0...16	A59	B59	C59	D59	E59	F59
0...25	A60	B60	C60	D60	E60	F60
0...40	A61	B61	C61	D61	E61	F61
0...60	A62	B62	C62	D62	E62	F62
0...100	A63	B63	C63	D63	E63	F63
0...160	A64	B64	C64	D64	E64	F64
0...250	A65	B65	C65	D65	E65	F65
0...400	A66	B66	C66	D66	E66	F66
0...600	A94	B94	C94	D94	E94	F94

[1] only in NG 160
[2] only in NG 100 and NG 160

Order Code:

Order number:	PMK04.	10.	M.	3.	1.	A57.	0

Capsule element pressure gauge with round housing

Models:
06 = 60 mm
10 = 100 mm
16 = 160 mm
S = special version

Materials:
M = stainless steel housing, brass connection
E = stainless steel housing, connection st. steel
S = special material (please specify in plain text)

Process connection:
1 = G 1/4 A bottom (only for NG 63)
2 = G 1/4 A centric on back (only for NG 63)
3 = G 1/2 A bottom
4 = G 1/2 A centric on back
9 = special connection

Vibration damping:
1 = without
2 = with glycerin filling (measuring range >25 mbar only)

Design and measuring range:
A109…F94 = see table „Measuring Ranges“

Options and Accessories (multiple selection possible):
0 = without
xx = see table „Options and Accessories“

Technical Data:

Housing: Round gauge housing of stainless steel, d = 60, 100, or 160 mm protection class IP45

Vibration damping:

PMK04.x.M: glycerine filling for measuring range > 25 mbar, class 2,5

PMK04.x.E: glycerine filling for measuring range > 25 mbar, class 2,5 with pressure relief opening

Measuring element:

PMK04.x.M: capsule spring of copper alloy

PMK04.x.E: capsule spring of st. steel 1.4571, welded

Pointer element:

PMK04.x,M: barrel nickel silver

PMK04.x.E: stainless steel 1.4571 / 1.4301

Dial: aluminium, white, black font according to EN 837-1

Viewing class:

PMK04.x.M: NG 63: acrylic glass
NG 100, NG 160: instrument glass

PMK04.x.E: NG 63: acrylic glass
NG 100, NG 160: laminated safety glass

Accuracy: Kl. 1,6

Max. media temperature: 100 °C

Overload capacity: < 25 mbar: 6 x of full scale
≥ 25 mbar: 10 x of full scale

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Versions with square and profile housing:

Nominal sizes: housing diameter 72x72, 96x96, 144x144, 144x172, 192x196 mm

Materials:

PMK04.x.M: plastic housing, measuring element made of copper alloy, brass connection

Process connection: G 1/2 A

Measuring Ranges:

Measuring range [mbar]	Order code				
					
	for all nominal sizes				
- 25…+15	G109	H109	K109	L109	M109
- 20…+40	G110	H110	K110	L110	M110
- 40…+20	G210	H210	K210	L210	M210
- 6…0	-	H05	K05	L05	M05
- 10…0	-	H06	K06	L06	M06
- 16..0	-	H07	K07	L07	M07
- 25…0	G08	H08	K08	L08	M08
- 40…0	G09	H09	K09	L09	M09
- 60…0	G10	H10	K10	L10	M10
-100..0	G11	H11	K11	L11	M11
-160..0	G12	H12	K12	L12	M12
- 250..0	G13	H13	K13	L13	M13
- 400..0	G14	H14	K14	L14	M14
0…6	-	H57	K57	L57	M57
0…10	-	H58	K58	L58	M58
0…16	-	H59	K59	L59	M59
0…25	G60	H60	K60	L60	M60
0…40	G61	H61	K61	L61	M61
0…60	G62	H62	K62	L62	M62
0…100	G63	H63	K63	L63	M63
0…160	G64	H64	K64	L64	M64
0…250	G65	H65	K65	L65	M65
0…400	G66	H66	K66	L66	M66
0…600	G94	H94	K94	L94	M94

Attention:
All profile housing versions available with cross or high scale.

Order Code:

Order number: **PMK04. Q07. M. 1. 1. G12. 0**

Capsule element pressure gauge with square and profile housing

Models:
Q07 = 72x72 mm
Q09 = 96x96 mm
Q14 = 144x144 mm
P14 = 144x72 mm
P19 = 192x96 mm

Materials:
M = plastic housing, brass connection
S = special material (please specify in plain text)

Process connection:
1 = G 1/2 A at back

Vibration damping:
1 = without

Design and measuring range:
G109…M94 = see table „Measuring Ranges“

Options and Accessories (multiple selection possible):
0 = without
xx = see table „Options and Accessories“

Technical Data:

Housing: square housing, profile housing made of glass-fibre reinforced plastic protection class IP45

Measuring element:

PMK04.x.M: capsule spring of copper alloy

Pointer element:

PMK04.x,M: barrel nickel silver

Dial: aluminium, white, black font according to EN 837-1

Viewing class:

PMK04.x.M: plastic (polycarbonate)

Accuracy: class 1,6

Max. media temperature: 100 °C

Overload capacity: < 25mbar: 6 x of full scale
≥ 25mbar: 10 x of full scale

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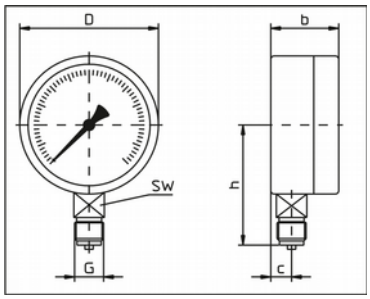
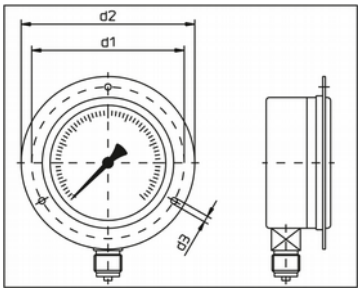
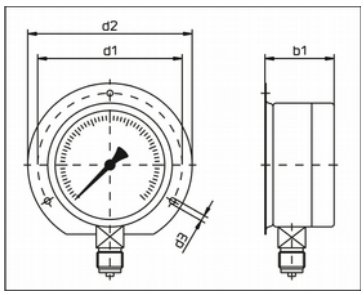
Models:



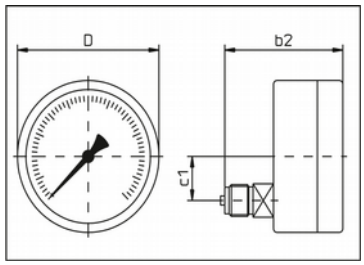
model A:
connection at bottom



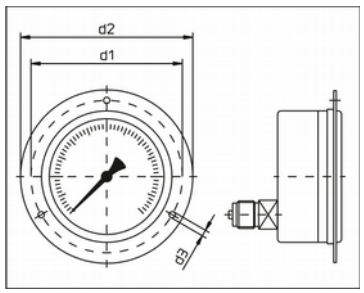
model B:
connection at bottom,
rim at front



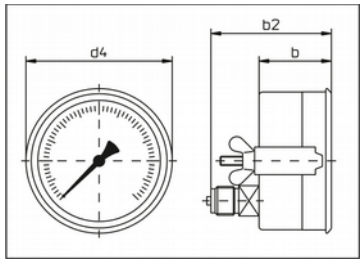
model C:
connection at bottom,
rim at back



model D:
connection at back



model E:
connection at back,
rim at front
<u>panel cut-out:</u>
NG 60: 65 mm
NG 100: 105 mm
NG 160: 165 mm



model F:
connection at back
triangular front ring
and mounting
bracket
<u>panel cut-out:</u>
NG 60: 63 mm
NG 100: 103 mm
NG 160: 163 mm

Dimensions Round Housing:

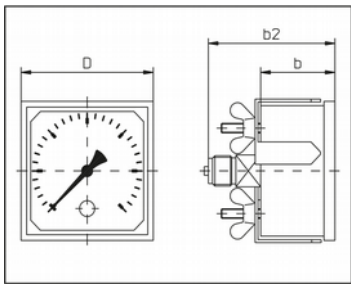
Dimensions:	Value [mm]		
	NG 63 brass / st. steel	**NG 100**	**NG 160**
b	42 / 28,5	50	50
b1	46 / 46,5	56	56
b2	55 / 32,5	86,5	88
b5	57	86,5	88
b6	37	50	50
c	11 / 11	15	14,5
D	64 / 64	100,8	161,3
d1	75 / 75	116	178
d2	85 / 85	132	196
d3	3,5 / 3,5	4,8	5,8
d4	67 / 67	107	166
h	84 / 84	87	118
SW	14 / 14	22	22
Weight [kg]	0,12 / 0,12	0,5-0,8*	1,1-1,95*

* weight with glycerine filling

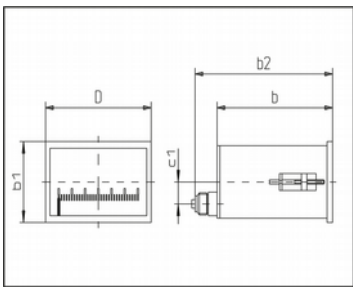
Dimensions Square and Profile Housing:

Dimensions:	Value in mm				
	Model G	Model H	Model K	Model L	Model M
b	38	47	47	139,5	139,5
b1	-	-	-	72	96
b2	58	81	81	175	175
D	72	96	144	144	192
c1	-	-	-	7	7

Models:



form G-K:
square housing



form L-M:
profile housing

Options and Accessories:

Description:	Code	für Typ PMK04...
over- and underpressure-proof ≤ 25 mbar 3-fold > 25 mbar 10-fold	U	all types
Front ring painted black	FS	all brass types except NG 63
front ring polished	FP	all st. steel types
red stamp on dial	MR	all types
measuring system cleaned for oxygen	MO	all types
throttle screw in connection spigot	D08	all types

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