Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Cerabar M PMC51, PMP51, PMP55

Process pressure measurement
Pressure transmitter with ceramic and metal sensors;
Modular design and easy operation;
With analog or HART electronics

Application

The Cerabar M pressure transmitter is used for the following measuring tasks:

- Absolute pressure and gauge pressure measurement in gases, steams or liquids in all areas of process engineering and process measurement technology
- Level, volume or mass measurements in liquids
- High process temperature
  - without diaphragm seals up to 125°C (257°F)
  - with diaphragm seals up to 400°C (752°F)
- High pressure up to 400 bar (6000 psi)
- International usage thanks to a wide range of approvals

Your benefits

- Very good reproducibility and long-term stability
- High reference accuracy: up to ±0.15%, as PLATINUM version: ±0.075%
- Turn down up to 100:1
- End-to-end modularity for differential pressure, hydrostatics and pressure (Deltabar M – Deltapilot M – Cerabar M), e.g.
  - replaceable display
  - universal electronics
- Easy commissioning without the need for an operating tool
- Menu-guided operation
- Output signals: 4 to 20 mA, 4 to 20 mA with HART

TI436P/00/EN/02.10
No. 71109889

Endress+Hauser
People for Process Automation

Table of contents

Function and system design

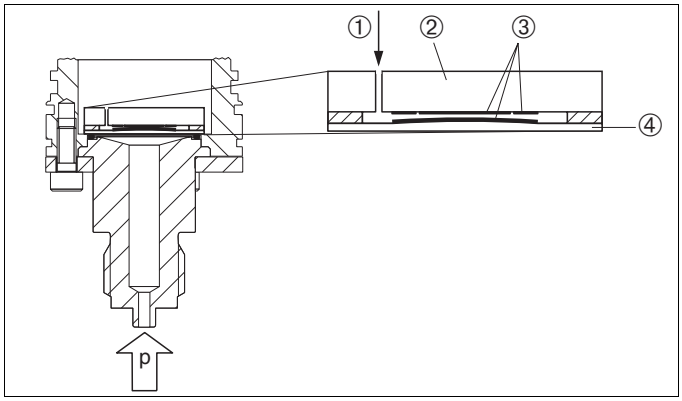
Device selection

Cerabar M – Product family	**PMC51** P01-PMC51xxx-16-xx-xx-xx-000 **With capacitive measuring cell and ceramic process isolating diaphragm (Ceraphire®)**	**PMP51** P01-PMP51xxx-16-xx-xx-xx-000 **With piezoresistive measuring cell and metal welded process isolating diaphragm**	**PMP55** P01-PMP55xxx-16-xx-xx-xx-000 **With diaphragm seal**
Field of application	– Gauge pressure and absolute pressure – Level		
Process connections	– Thread – EN flanges DN 25 – DN 80 – ANSI flanges 1" – 4" – JIS flanges 50 A – 100 A	– Thread – EN flanges DN 25 – DN 80 – ANSI flanges 1" – 4" – JIS flanges 25 A – 100 A – Prepared for diaphragm seal mount	– Wide range of diaphragm seals
Measuring ranges	From –100/0 to 100 mbar (–1.5/0 to 1.5 psi) to –1/0 to 40 bar (–15/0 to 600 psi)	From –400/0 to 400 mbar (–6/0 to 6 psi) to –1/0 to 400 bar (–15/0 to 6000 psi)	
OPL [1]	Max. 60 bar (900 psi)	Max. 600 bar (9000 psi)	
Process temperature range	–20 to +100 °C (–4 to +212°F)	–40 to +125°C (–40 to +257°F)	–70 to 400 °C (–94 to +752 °F) depending on the filling oil
Ambient temperature range	■ Without LCD display: -40 to +85°C (–40 to +185 °F) ■ With LCD display: –20 to +70°C (–4 to +158°F) (extended temperature application range (-40 to 85°C (-40 to 185°F)) with restrictions in optical properties such as display speed and contrast) ■ Separate housing: –20 to +60°C (–4 to +140°F) ■ Diaphragm seal systems depending on the version		
Reference accuracy	– Up to ±0.15% of the set span – PLATINUM version: up to ±0.075% of the set span		Up to ±0.15% of the set span
Supply voltage	– 11.5 to 45 V DC (versions with plug-in connection 35 V DC) – For intrinsically safe device versions: 11.5 to 30 V DC		
Output	4 to 20 mA, 4 to 20 mA with superimposed HART protocol		
Options	– PMP51, PMP55: NACE-compliant materials – PMC51, PMP51, PMP55: inspection certificate 2.2 or 3.1 or other certificates – Specific firmware versions – Initial device settings – Separate housing – Broad range of accessories		
Specialties	– Metal-free measurement with PVDF connection – Special cleaning of the transmitter to remove paint-wetting substances, for use in paint shops	– Process connections with minimum oil volume – Gas-tight, elastomer-free	– Wide range of diaphragm seals – For extreme medium temperatures – Process connections with minimum oil volume – Completely welded versions

1) OPL = over pressure limit; depends on the lowest-rated element, with regard to pressure, of the selected components

Measuring principle

Ceramic process isolating diaphragm used in PMC51 (Ceraphire®)

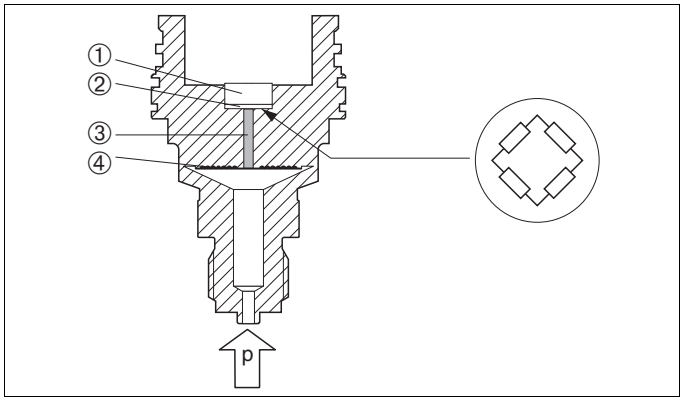


P01-PMC71xxx-03-xx-xx-xx-000

Ceramic sensor

1 Air pressure (gauge pressure sensors)
2 Ceramic substrate
3 Electrodes
4 Ceramic process isolating diaphragm

Metal process isolating diaphragm used in PMP51 and PMP55



P01-PMP7xxxx-03-xx-xx-xx-000

Metal sensor

1 Silicon measuring element, substrate
2 Wheatstone bridge
3 Channel with fill fluid
4 Metal process isolating diaphragm

Ceramic process isolating diaphragm used in PMC51 (Ceraphire®)

The ceramic sensor is a dry sensor, i.e. the process pressure acts directly on the robust ceramic process isolating diaphragm and deflects it. A pressure-dependent change in capacitance is measured at the electrodes of the ceramic substrate and the process isolating diaphragm. The measuring range is determined by the thickness of the ceramic process isolating diaphragm.

Advantages:
- Guaranteed overload resistance up to 40 times the nominal pressure
- Thanks to ultrapure 99.9% ceramic (Ceraphire®, see also "www.endress.com/ceraphire")
  – extremely high chemical stability, comparable with Alloy C
  – less relaxation
  – high mechanical stability
- Can be used in absolute vacuum
- Outstanding surface finish, $R_a \leq 0.3$ µm (11.8 µin)

Metal process isolating diaphragm used in PMP51 and PMP55

PMP51

The operating pressure deflects the process isolating diaphragm and a fill fluid transfers the pressure to a resistance bridge (semiconductor technology). The pressure-dependent change in the bridge output voltage is measured and evaluated.

Advantages:
- Can be used for process pressure up to 400 bar (6000 psi)
- High long-term stability
- Guaranteed overload resistance up to 4 times the nominal pressure
- Significantly less thermal effect compared to diaphragm seal systems

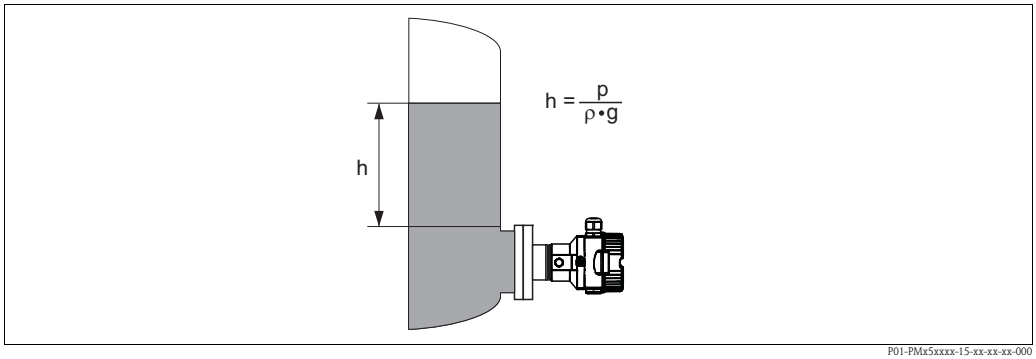
PMP55

The operating pressure acts on the process isolating diaphragm of the diaphragm seal and is transferred to the process isolating diaphragm of the sensor by a diaphragm seal fill fluid. The process isolating diaphragm is deflected and a fill fluid transfers the pressure to a resistance bridge. The pressure-dependent change in the bridge output voltage is measured and evaluated.

Advantages:
- Depending on the version, can be used for process pressure up to 400 bar (6000 psi) and simultaneous extreme process temperatures
- High long-term stability
- Guaranteed overload resistance up to 4 times the nominal pressure

Level measurement (level, volume and mass)

Function and design



P01-PMx5xxxx-15-xx-xx-xx-000

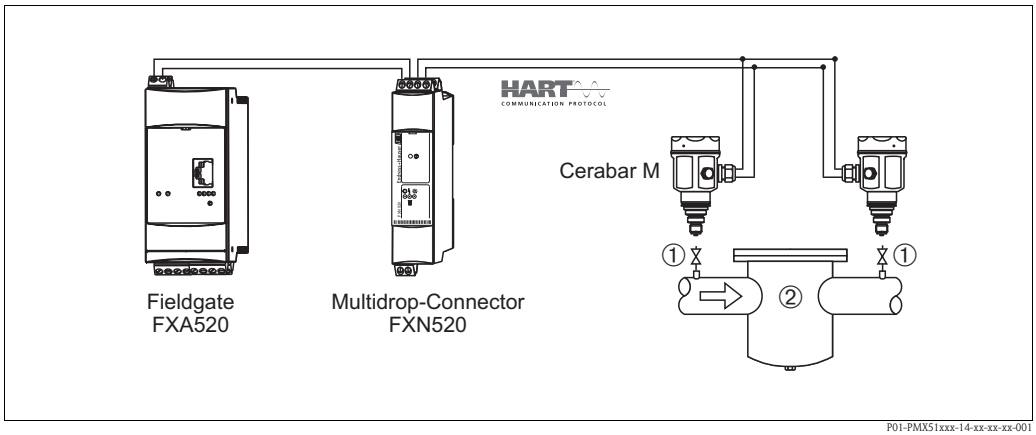
Level measurement

h *Height (level)*
p *Pressure*
ρ *Density of the medium*
g *Gravitation constant*

Your benefits

- Choice of different level measuring modes in the device software
- Volume and mass measurements in any tank shapes by means of a freely programmable characteristic curve
- Choice of diverse level units
- Has a wide range of uses, even in the following cases:
  - in the event of foam formation
  - in tanks with agitators or screen fittings
  - in the event of liquid gases

Electrical differential pressure measurement with gauge pressure sensors



P01-PMX51xxx-14-xx-xx-xx-001

1 *Shut-off valves*

2 *e.g. filter*

In the example given, two Cerabar M devices (each with a gauge pressure sensor) are interconnected. The pressure difference can thus be measured using two independent Cerabar M devices.

Caution!
If using intrinsically safe devices, strict compliance with the rules for interconnecting intrinsically safe circuits as stipulated in IEC60079-14 (proof of intrinsic safety) is mandatory.

Communication protocol

- 4 to 20 mA without communication protocol (analog electronics)
- 4 to 20 mA with HART communication protocol

System integration (except analog electronics)

The device can be fitted with a tag name and a preset bus address, see → 63 ff "Ordering information" feature 895 "Identification:" version "Z1" and "Z2".

Input

Measured variable

- Analog electronics: Absolute pressure and gauge pressure
- HART electronics: Absolute pressure and gauge pressure, from which level (level, volume or mass) is derived

Measuring range

PMC51 – with ceramic process isolating diaphragm (Ceraphire®) for gauge pressure

Nominal value	Range limit		Smallest calibratable span (preset at the factory) [1]	MWP [2]	OPL [3]	Vacuum resistance	Version in the order code[4]
	lower (LRL) [bar (psi)]	upper (URL) [bar (psi)]	[bar (psi)]	[bar (psi)]	[bar (psi)]	[bar_{abs} (psi_{abs})]	
100 mbar (1.5 psi)	–0.1 (–1.5)	+0.1 (+1.5)	0.01 (0.15)	2.7 (40.5)	4 (60)	0.7 (10.5)	1C
250 mbar (4 psi)	–0.25 (–4)	+0.25 (+4)	0.01 (0.15)	3.3 (49.5)	5 (75)	0.5 (7.5)	1E
400 mbar (6 psi)	–0.4 (–6)	+0.4 (+6)	0.02 (0.3)	5.3 (79.5)	8 (120)	0	1F
1 bar (15 psi)	–1 (–15)	+1 (+15)	0.05 (1)	6.7 (100.5)	10 (150)	0	1H
2 bar (30 psi)	–1 (–15)	+2 (+30)	0.1 (1.5)	12 (180)	18 (270)	0	1K
4 bar (60 psi)	–1 (–15)	+4 (+60)	0.2 (3)	16.7 (250.5)	25 (375)	0	1M
10 bar (150 psi)	–1 (–15)	+10 (+150)	0.5 (7.5)	26.7 (400.5)	40 (600)	0	1P
40 bar (600 psi)	–1 (–15)	+40 (+600)	2 (30)	40 (600)	60 (900)	0	1S

PMC51 – with ceramic process isolating diaphragm (Ceraphire®) for absolute pressure

Nominal value	Range limit		Smallest span (factory calibration)[1]	MWP [2]	OPL [3]	Vacuum resistance	Version in the order code[4]
	lower (LRL) [bar_{abs} (psi_{abs})]	upper (URL) [bar_{abs} (psi_{abs})]	[bar (psi)]	[bar_{abs} (psi_{abs})]	[bar_{abs} (psi_{abs})]	[bar_{abs} (psi_{abs})]	
100 mbar (15 psi)	0	+0.1 (+1.5)	0.01 (0.15)	2.7 (40.5)	4 (60)	0	2C
250 mbar (4 psi)	0	+0.25 (+4)	0.01 (0.15)	3.3 (49.5)	5 (75)	0	2E
400 mbar (6 psi)	0	+0.4 (+6)	0.02 (0.3)	5.3 (79.5)	8 (120)	0	2F
1 bar (15 psi)	0	+1 (+15)	0.05 (1)	6.7 (100.5)	10 (150)	0	2H
2 bar (30 psi)	0	+2 (+30)	0.1 (1.5)	12 (180)	18 (270)	0	2K
4 bar (60 psi)	0	+4 (+60)	0.2 (3)	16.7 (250.5)	25 (375)	0	2M
10 bar (150 psi)	0	+10 (+150)	0.5 (7.5)	26.7 (400.5)	40 (600)	0	2P
40 bar (600 psi)	0	+40 (+600)	2 (30)	40 (600)	60 (900)	0	2S

1) Recommended turn down: Max 100:1.
Factory calibration turn down: Max 20:1, higher on request or configurable in the device.

2) The MWP (maximum working pressure) for the measuring device depends on the lowest-rated element, with regard to pressure, of the selected components, i.e. the process connection (→ 📄 26 ff) has to be taken into consideration in addition to the measuring cell (→ see Table above). Pay attention to the pressure-temperature dependence also. For the appropriate standards and other information, see → 📄 25, "Pressure specifications" section.

3) OPL: over pressure limit depends on the lowest-rated element, with regard to pressure, of the selected components

4) Version in the order code → see also → 📄 63 ff, feature 70 "Sensor range"

PMP51 and PMP55 – metal process isolating diaphragm for gauge pressure

Nominal value	Range limit		Smallest calibratable span (preset at the factory) [1]	MWP [2]	OPL [3]	Vacuum resistance [4] Silicone oil/ Inert oil	Version in the order code [5]
	lower (LRL)	upper (URL)					
	[bar (psi)]	[bar (psi)]	[bar (psi)]	[bar (psi)]	[bar (psi)]	[bar_{abs} (psi_{abs})]	
400 mbar (6 psi)	–0.4 (–6)	+0.4 (+6)	0.02 (0.3)	4 (60)	6 (90)	0.01/0.04 (0.15/0.6)	1F
1 bar (15 psi)	–1 (–15)	+1 (+15)	0.05 (1)	6.7 (100)	10 (150)		1H
2 bar (30 psi)	–1 (–15)	+2 (+30)	0.1 (1.5)	13.3 (200)	20 (300)		1K
4 bar (60 psi)	–1 (–15)	+4 (+60)	0.2 (3)	18.7 (280.5)	28 (420)		1M
10 bar (150 psi)	–1 (–15)	+10 (+150)	0.5 (7.5)	26.7 (400.5)	40 (600)		1P
40 bar (600 psi)	–1 (–15)	+40 (+600)	2 (30)	100 (1500)	160 (2400)		1S
100 bar (1500 psi)	–1 (–15)	+100 (+1500)	5 (75)	100 (1500)	400 (6000)		1U
400 bar (6000 psi)	–1 (–15)	+400 (+6000)	20 (300)	400 (6000)	600 (9000)		1W

PMP51 and PMP55 – metal process isolating diaphragm for absolute pressure

Nominal value	Range limit		Smallest calibratable span (preset at the factory) [1]	MWP [2]	OPL [3]	Vacuum resistance [4] Silicone oil/ Inert oil	Version in the order code [5]
	lower (LRL)	upper (URL)					
	[bar_{abs} (psi_{abs})]	[bar_{abs} (psi_{abs})]	[bar (psi)]	[bar_{abs} (psi_{abs})]	[bar_{abs} (psi_{abs})]	[bar_{abs} (psi_{abs})]	
400 mbar (6 psi)	0	+0.4 (+6)	0.02 (0.3)	4 (60)	6 (90)	0.01/0.04 (0.15/0.6)	2F
1 bar (15 psi)	0	+1 (+15)	0.05 (1)	6.7 (100)	10 (150)		2H
2 bar (30 psi)	0	+2 (+30)	0.1 (1.5)	13.3 (200)	20 (300)		2K
4 bar (60 psi)	0	+4 (+60)	0.2 (3)	18.7 (280.5)	28 (420)		2M
10 bar (150 psi)	0	+10 (+150)	0.5 (7.5)	26.7 (400.5)	40 (600)		2P
40 bar (600 psi)	0	+40 (+600)	2 (30)	100 (1500)	160 (2400)		2S
100 bar (1500 psi)	0	+100 (+1500)	5 (75)	100 (1500)	400 (6000)		2U
400 bar (6000 psi)	0	+400 (+6000)	20 (300)	400 (6000)	600 (9000)		2W

1) Recommended turn down: Max 100:1.
Factory calibration turn down: Max 20:1, higher on request or configurable in the device.

2) The MWP (maximum working pressure) for the measuring device depends on the lowest-rated element, with regard to pressure, of the selected components, i.e. the process connection (→ 🖹 26 ff) has to be taken into consideration in addition to the measuring cell (→ see Table above). Pay attention to the pressure-temperature dependence also. For the appropriate standards and other information, see → 🖹 25, "Pressure specifications" section.

3) OPL: over pressure limit (= sensor overload limit)

4) The vacuum resistance applies to the measuring cell at reference conditions. The pressure and temperature application limits of the selected filling oil must also be observed for the PMP55. → 🖹 59, "Diaphragm seal filling oils" section.

5) Version in the order code → 🖹 63 ff, feature 70 "Sensor range"

Explanation of terms

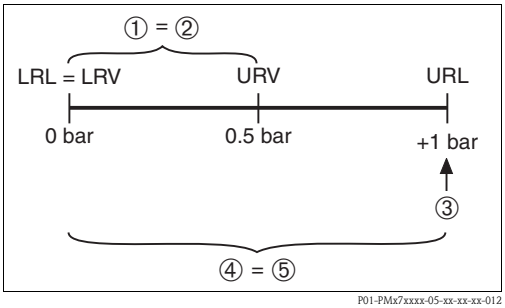
Explanation of terms: turn down (TD), set span and span based on zero point

Case 1:
- |Lower range value (LRV)| ≤ |Upper range value (URV)|

Example:
- Lower range value (LRV) = 0 bar
- Upper range value (URV) = 0.5 bar (7.5 psi)
- Nominal value (URL) = 1 bar (15 psi)

Turn down:
- TD = URL / |URV| = 2:1

Set span:
- URV – LRV = 0.5 bar (7.5 psi)
  This span is based on the zero point.



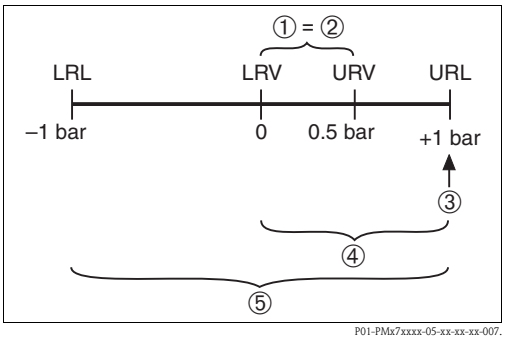
Example: 1 bar (15 psi) measuring cell

Case 2:
- |Lower range value (LRV)| ≤ |Upper range value (URV)|

Example:
- Lower range value (LRV) = 0 bar
- Upper range value (URV) = 0.5 bar (7.5 psi)
- Nominal value (URL) = 1 bar (15 psi)

Turn down:
- TD = URL / |URV| = 2:1

Set span:
- URV – LRV = 0.5 bar (7.5 psi)
  This span is based on the zero point.



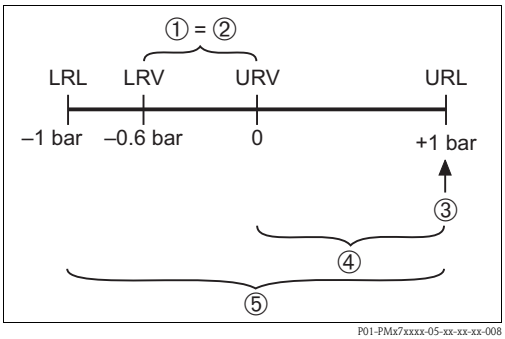
Example: 1 bar (15 psi) measuring cell

Case 3:
- |Lower range value (LRV)| ≥ |Upper range value (URV)|

Example:
- Lower range value (LRV) = –0.6 bar (–9 psi)
- Upper range value (URV) = 0 bar
- Nominal value (URL) = 1 bar (15 psi)

Turn down:
- TD = URL / |LRV| = 1.67:1

Set span:
- URV – LRV = 0.6 bar (–9 psi)
  This span is based on the zero point.



Example: 1 bar (15 psi) measuring cell

1 Set span
2 Span based on zero point
3 Nominal value ≙ upper range limit (URL)
4 Nominal measuring range
5 Sensor measuring range
LRL Lower range limit
URL Upper range limit
LRV Lower range value
URV Upper range value

Output

Output signal

- 4 to 20 mA analog, 2-wire
- 4 to 20 mA with superimposed digital communication protocol HART 6.0, 2-wire

Signal range

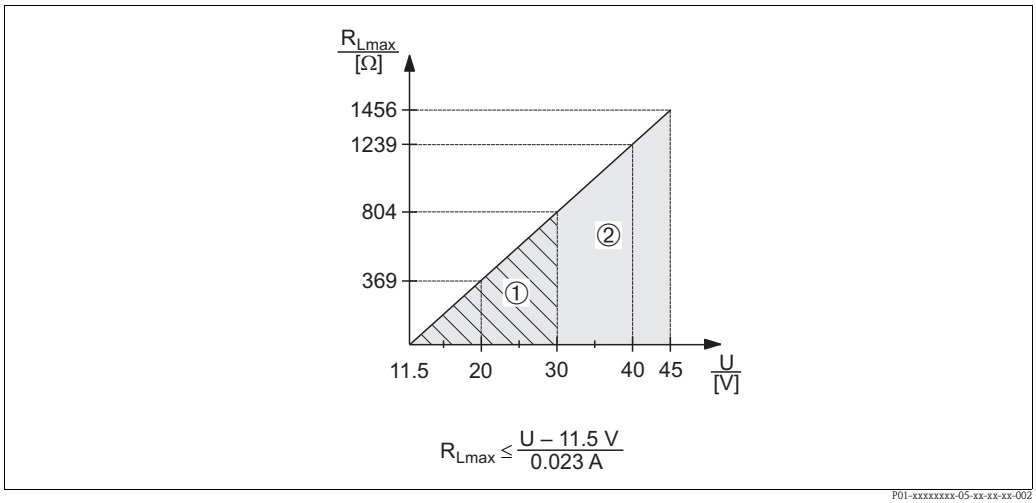
4 to 20 mA analog, 4 to 20 mA HART: 3.8 to 20.5 mA

Signal on alarm

As per NAMUR NE 43

- 4 to 20 mA Analog:
  - Signal overshoot: > 20.5 mA
  - Signal undershoot: < 3.8 mA
  - Min Alarm (3.6 mA)
- 4 to 20 mA HART
  Options:
  - Max. alarm: can be set from 21 to 23 mA (factory setting: 22 mA)
  - Hold measured value: last measured value is held
  - Min. alarm: 3.6 mA

Load - 4 to 20 mA analog and 4 to 20 mA HART



Load diagram

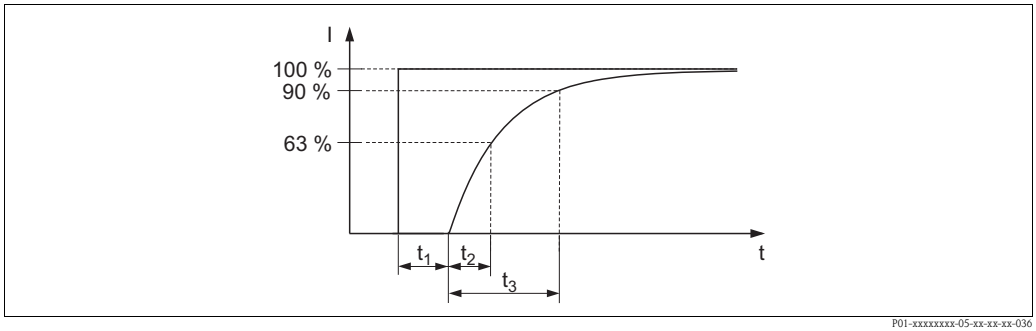
1 Power supply 11.5 to 30 V DC for intrinsically safe device versions
2 Power supply 11.5 to 45 V DC (versions with plug-in connector 35 V DC) for other types of protection and for uncertified device versions
R_{Lmax} Maximum load resistance
U Supply voltage

Note!
When operating via a handheld terminal or via a PC with an operating program, a minimum communication resistance of 250 Ω must be taken into account.

Resolution

- Current output: 1 µA
- Display HART: can be set (factory setting: presentation of the maximum accuracy of the transmitter)

Dead time, Time constant (T63)



Presentation of the dead time and the time constant

Dynamic behavior: 4 to 20 mA (analog electronics)

Dead time, time constant (T63)

Type	Dead time t_1	Time constant (T63), t_2	Time constant (T90), t_3
PMC51	60 ms	40 ms	50 ms
PMP51	40 ms	40 ms	50 ms
PMP55	PMP51 + influence of the diaphragm seal		

Dynamic behavior: current output (HART electronics)

Type	Dead time t_1	Time constant (T63), t_2
PMC51	90 ms	120 ms
PMP51	60 ms	70 ms
PMP55	PMP51 + influence of the diaphragm seal	

Dynamic behavior: digital output (HART electronics)

Dead time, time constant (T63)

A typical configuration for the PLC of 2 to 3 values per second results in the following total dead time:

Type	Dead time t_1	Time constant (T63), t_2
PMC51	340 ms	120 ms
PMP51	310 ms	70 ms
PMP55	PMP51 + influence of the diaphragm seal	

Reading cycle

HART commands: 2 to 3 per second on average.
The Cerabar M commands the BURST MODE function for cyclic value transmission via the HART communication protocol.

Response time

≤ 250 ms

Cycle time (update time)

On average 310 to 520 ms.

Damping

A damping affects all outputs (output signal, display).

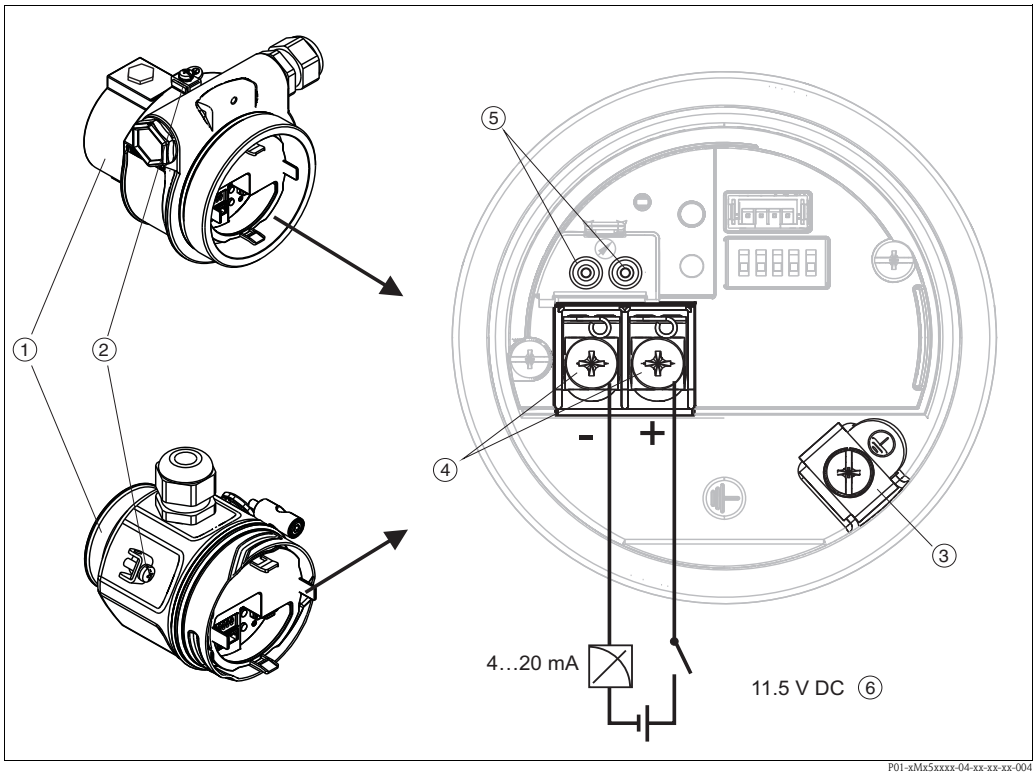
- Analog electronics: via DIP switch on the electronic insert, switch position "on" = 2s; switch position "off" = 0s
- HART: via DIP switch on the electronic insert, switch position "on" = value set in the software (factory setting: 2 s) and "off". Via local display, handheld terminal or PC with operating program, continuous from 0 to 999 s

Power supply

Electrical connection

Note!
- When using the measuring device in hazardous areas, installation must comply with the corresponding national standards and regulations and the Safety Instructions or Installation or Control Drawings.
  → 77 ff, "Safety Instructions" and "Installation/Control Drawings" sections.
- HART: Overvoltage protection HAW569Z for the non-hazardous area and for ATEX II 1/2 G Exi can be ordered as an option (see "Ordering information" section).
- Protective circuits against reverse polarity, HF influences and overvoltage peaks are installed.

4 to 20 mA analog, 4 to 20 mA HART



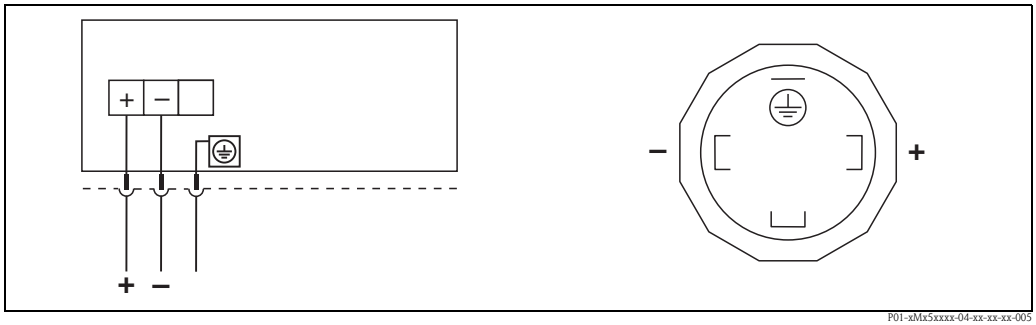
Electrical connection

1 Housing
2 External ground terminal
3 Internal ground terminal
4 Power supply terminals
5 Test terminals, see "Taking 4 to 20 mA test signal" section
6 Minimum supply voltage = 11.5 V DC

Taking 4 to 20 mA test signal

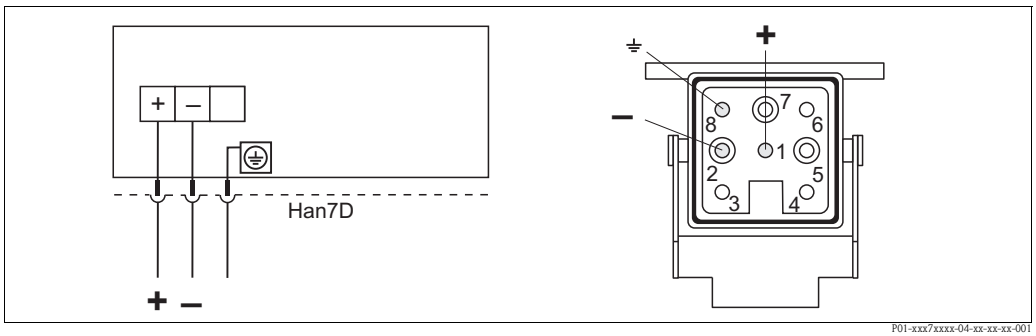
A 4 to 20 mA test signal may be measured via the test terminals without interrupting the measurement.

Devices with valve connector



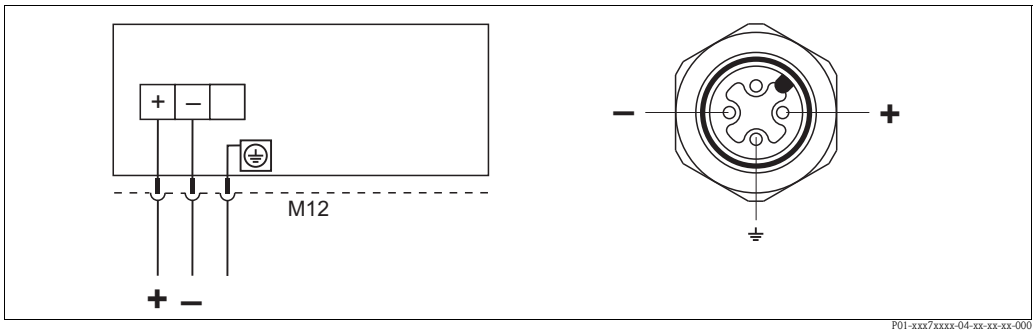
Left: electrical connection for devices with a valve connector
Right: view of the connector at the device

Devices with Harting connector Han7D



Left: electrical connection for devices with a Harting connector Han7D
Right: view of the connector at the device

Devices with M12 connector



Left: electrical connection for devices with an M12 connector
Right: view of the connector at the device

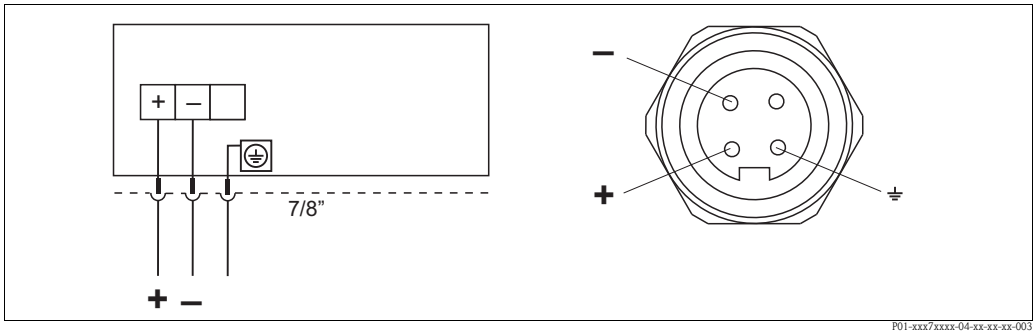
Endress+Hauser offers the following accessories for devices with an M12 connector:

Plug-in jack M 12x1, straight
- Material: body PA; coupling nut CuZn, nickel-plated
- Degree of protection (fully locked): IP67
- Order number: 52006263 or through device order, see also → 63 ff "Ordering information" section

Plug-in jack M 12x1, elbowed
- Material: body PBT; coupling nut GD-Zn, nickel-plated
- Degree of protection (in screwed situation): IP67
- Order number: 71091284 or through device order, see also → 63 ff "Ordering information" section

Cable 4x0.34 mm² (20 AWG) with M12 socket, elbowed, screw plug, 5 m (16 ft) length
- Material: body PUR; coupling nut CuSn/Ni; cable PVC
- Degree of protection (fully locked): IP67
- Order number: 52010285 or through device order, see also → 📄 63 ff "Ordering information" section

Devices with 7/8" connector



Left: electrical connection for devices with a 7/8" connector
Right: view of the connector at the device

Cable gland

Approval	Type	Clamping area
Standard, II1/2G Exia, IS	Plastic M20x1.5	5 to 10 mm (0.2 to 0.39 in)
ATEX II1/2D, II1/2GD Exia, II3G Ex nA	Metal M20x1.5 (Ex e)	7 to 10.5 mm (0.28 to 0.41 in)

Terminals

For wire cross-sections of 0.5 to 2.5 mm² (20 to 14 AWG).

Supply voltage

Note!
- When using the measuring device in hazardous areas, installation must comply with the corresponding national standards and regulations and the Safety Instructions or Installation or Control Drawings.
- All explosion protection data are given in separate documentation which is available upon request. The Ex documentation is supplied as standard with all devices approved for use in explosion hazardous areas. → 📄 77 ff, "Safety Instructions" and "Installation/Control Drawings" sections.

4 to 20 mA, 4 to 20 mA HART

- 11.5 to 45 V DC
  (Versions with plug-in connection 35 V DC)
- For intrinsically safe device versions: 11.5 to 30 V DC

Cable entry

→ 📄 63 ff, feature 50 "Electrical connection".

Cable specification

- Endress+Hauser recommends using twisted, shielded two-wire cables.
- Terminals for wire cross-sections 0.5 to 2.5 mm² (20 to 14 AWG)
- Cable outer diameter: 5 to 9 mm (0.2 to 0.35 in)

Residual ripple

No influence on 4 to 20 mA signal up to ± 5 % residual ripple within the permitted voltage range [according to HART hardware specification HCF_SPEC-54 (DIN IEC 60381-1)]

Influence of power supply

≤ 0.001% of URL/1 V

Performance characteristics – general

Reference operating conditions

- As per IEC 60770
- Ambient temperature T_A = constant, in the range of: +21 to +33°C (+70 to +91°F)
- Humidity φ = constant, in the range of: 5 to 80 % RH
- Ambient pressure p_A = constant, in the range of: 860 to 1060 mbar (12.47 to 15.37 psi)
- Position of the measuring cell: constant, in range: ±1° horizontally
- Input of LOW SENSOR TRIM and HIGH SENSOR TRIM for lower range value and upper range value
- Span based on zero point
- Material of the process isolating diaphragm PMC51: Al_2O_3 (aluminum-oxide ceramic, Ceraphire®)
- Material of the process isolating diaphragm PMP51 and PMP55: AISI 316L
- Filling oil PMP51 and PMP55: silicone oil
- Supply voltage: 24 V DC ± 3 V DC
- Load with HART: 250 Ω

Uncertainty of measurement for small absolute pressure ranges

The smallest expanded uncertainty of measurement that can be returned by our standards is:
- 0.4% of the measured value in the range of 1 to 30 mbar
- 1% of the measured value in the range < 1 mbar.

Long-term stability

PMC51	Long-term stability of URL / 1 year	Long-term stability of URL / 5 years	Long-term stability of URL / 10 years
< 1 bar (15 psi)	±0.2 %	±0.4 %	±0.5 %
> 1 bar (15 psi)	±0.1 %	±0.25 %	±0.4 %

PMP51	Long-term stability of URL / 1 year	Long-term stability of URL / 5 years	Long-term stability of URL / 10 years
< 1 bar (15 psi)	±0.2 %	±0.4 %	±0.5 %
> 1 bar to 10 bar (15 to 150 psi)	±0.1 %	±0.175 %	±0.4 %
40 bar (600 psi)	±0.1 %	±0.2 %	±0.4 %
100 bar (1500 psi)	±0.1 %	±0.25 %	±0.2 %
400 bar (6000 psi)	±0.1 %	±0.25 %	±1.0 %

Influence of orientation

- PMC51 [1]: ≤ 0.2 mbar (3 psi)
- PMP51 [1,2]
  - ≤ 4 mbar (0.06 psi) for process connections with 1/2" thread and silicone oil
  - ≤ 10 mbar (0.15 psi) for process connections with > thread 1/2" and flanges

1) Device rotated 180°, process connection pointing upwards.
2) This value is doubled for inert oil.

Note!
Position-dependent zero point shift can be corrected at the device. → 🖹 19, "General installation instructions" section and → 🖹 60 ff, "Installation instructions" section.

Warm-up period

- 4 to 20 mA analog: <1.5 s
- 4 to 20 mA HART: <5 s

Performance characteristics – ceramic process isolating diaphragm

Reference accuracy – PMC51

The reference accuracy comprises the non-linearity according to limit point setting, hysteresisand non-reproducibility as per IEC 60770. The data refer to the calibrated span.

Gauge pressure sensors		
Measuring cell	**Standard reference accuracy**	**Platinum reference accuracy**
100 mbar (1.5 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %
250 mbar (4 psi), 400 mbar (6 psi), 1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 20:1: ±0.1 %
40 bar (600 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %

Absolute pressure sensors		
Measuring cell	**Standard reference accuracy**	**Platinum reference accuracy**
100 mbar (1.5 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 13:1: 0.20 %	■ TD 1:1 to TD 5:1: ±0.075 % ■ —
250 mbar (4 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %
400 mbar (6 psi), 1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 20:1: ±0.1 %
40 bar (600 psi)	■ TD 1:1 to ≤ TD 10:1: 0.15 % ■ TD > 10:1 to TD 20:1: 0.20 %	■ TD 1:1 to ≤ TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %

Total performance – PMC51

The "Total performance" specification comprises the non-linearity including hysteresis, non-reproducibility as well as the thermal change in the zero point. All specifications apply to the temperature range –10 to +60°C (+14 to +140°F) and Turndown 1:1.
For devices with NBR or HNBR seals, the values must be multiplied by a factor of 3.

Measuring cell	% URL
100 mbar (1.5 psi), 250 mbar (4 psi), 400 mbar (6 psi)	TD 1:1: ±0.5
1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi), 40 bar (600 psi)	TD 1:1: ±0.44

Total error - PMC51

The total error comprises the long-term stability and the total performance. All specifications apply to the temperature range –10 to +60°C (+14 to +140°F) and Turndown 1:1.
For devices with NBR or HNBR seals, the values must be multiplied by a factor of 3.

Measuring cell	% URL/year
100 mbar (1.5 psi), 250 mbar (4 psi), 400 mbar (6 psi)	±0.55
1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi), 40 bar (600 psi)	±0.47

Thermal change in the zero output and the output span – PMC51

Measuring cell	–10 to +60 °C (+14 to +140°F)	–20 to –10 °C, +60 to +100 °C (–4 to +14°F, +140 to +212°F)
	% of the calibrated measuring span	
100 mbar (1.5 psi), 250 mbar (4 psi), 400 mbar (6 psi)	±(0.34 + 0.15 x TD)	±(0.39 + 0.25 x TD)
1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi), 40 bar (600 psi)	±(0.32 + 0.1 x TD)	±(0.36 + 0.2 x TD)

Performance characteristics – metal process isolating diaphragm

Reference accuracy – PMP51, PMP55

The reference accuracy comprises the non-linearity according to limit point setting, hysteresisand non-reproducibility as per IEC 60770. The data refer to the calibrated span.

Gauge pressure sensors/absolute pressure sensors

Measuring cell	Standard reference accuracy	Platinum reference accuracy [1]
400 mbar (6 psi)	■ TD 1:1: ±0.15 % ■ TD >1:1: ±0.15 % x TD	■ TD 1:1: ±0.15 % ■ TD >1:1: ±0.15 % x TD
1 bar (15 psi)	■ TD 1:1 to TD 5:1: ±0.15 % ■ TD >5:1: ±0.03 % x TD	■ TD 1:1 to TD 2.5:1: ±0.075 % ■ TD >2.5:1: ±0.03 % x TD
2 bar (30 psi)	■ TD 1:1 to TD 10:1: ±0.15 % ■ TD >10:1 to TD 13:1: ±0.20 %	■ TD 1:1 to TD 5:1: ±0.075 % ■ TD >5:1: ±0.015 % x TD
4 bar (60 psi)	■ TD 1:1 to TD 10:1: ±0.15 % ■ TD >10:1 to TD 20:1: ±0.20 %	■ TD 1:1 to TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %
10 bar (150 psi), 40 bar (600 psi)	■ TD 1:1 to TD 10:1: ±0.15 % ■ TD >10:1 to TD 20:1: ±0.20 %	■ TD 1:1 to TD 10:1: ±0.075 % ■ TD > 10:1 to TD 20:1: ±0.1 %
100 bar (1500 psi)	■ TD 1:1 to TD 10:1: ±0.15 % ■ TD >10:1 to TD 20:1: ±0.20 %	■ TD 1:1 to TD 10:1: ±0.075 % ■ TD > 10:1 to TD 13:1: ±0.1 %
400 bar (6000 psi)	■ TD 1:1 to TD 5:1: ±0.15 % ■ TD >5:1: ±0.03 % x TD	■ TD 1:1 to TD 5:1: ±0.15 % ■ TD >5:1: ±0.03 % x TD

1) Only PMP51, PMP55 with direct diaphragm seal mounting

Total performance – PMP51

The "Total performance" specification comprises the non-linearity including hysteresis, non-reproducibility as well as the thermal change in the zero point. All specifications apply to the temperature range –10 to +60°C (+14 to +140°F) and Turndown 1:1.

Measuring cell	PMP51	PMP51 with gold/rhodium-coated process isolating diaphragm
	% of URL	
400 mbar (6 psi)	±0.34	±1.25
1 bar (15 psi)		±0.75
2 bar (30 psi)		±0.45
4 bar (60 psi)	±0.30	±0.3
10 bar (150 psi), 40 bar (600 psi), 100 bar (1500 psi)	±0.25	±0.25
400 bar (6000 psi)	±0.4	±0.4

Total error - PMP51

The total error comprises the long-term stability and the total performance. All specifications apply to the temperature range –10 to +60°C (+14 to +140°F) and Turndown 1:1.

Measuring cell	% of URL/year
400 mbar (6 psi)	±0.44
≥1 bar to 100 bar (15 psi to 1500 psi)	±0.35
400 bar (6000 psi)	±0.5

Thermal change in the zero output and the output span – PMP51 and PMP55

Note!
When using a PMP55, the influence from the respective diaphragm seal must also be taken into account (→ 🖹 58 ff "Planning instructions for diaphragm seal systems").

PMP51 and PMP55 (basic device)

The data refer to the calibrated span.

Measuring cell	**–10 to +60 °C (+14 to +140°F)**	**–40 to –10°C, +60 to +85°C (–40 to +14°F, +140 to +185°F)**
400 mbar (6 psi), 1 bar (15 psi), 2 bar (30 psi), 4 bar (60 psi), 10 bar (150 psi), 40 bar (600 psi), 100 bar (1500 psi)	±(0.34 + 0.15 x TD)	±(0.4 + 0.25 x TD)
400 bar (6000 psi)	±(0.3 + 0.35 x TD)	±(0.3 + 0.7 x TD)

Operating conditions (installation)

General installation instructions

- The position-dependent zero point shift can be corrected:
  – directly at the device via operating keys on the electronic insert
  – directly at the device via operating keys on the display (except analog electronics)
  – via digital communication if the cover is not open (except analog electronics)
  Note!
  In hazardous areas, comply strictly with the safety instructions when the housing cover is closed and open.
- Endress+Hauser offers a mounting bracket for installing the device on pipes or walls.
  See also → 19, "Wall and pipe mounting" section.
- Use flushing rings for flange and cell diaphragm seals if medium buildup or clogging can be expected at the diaphragm seal connection. The flushing ring can be inserted between the process connection and the diaphragm seal. Thanks to the two lateral flushing bore holes, material buildup in front of the process isolating diaphragm can be rinsed away and the pressure chamber can be ventilated.

Measuring arrangement for devices without diaphragm seal – PMC51, PMP51

Cerabar M transmitters without diaphragm seals are mounted as per the norms for a manometer (DIN EN 837-2). We recommend the use of shutoff devices and siphons. The orientation depends on the measuring application.

Pressure measurement in gases

- Mount Cerabar M with shutoff device above the tapping point so that any condensate can flow into the process.

Pressure measurement in steams

- Mount Cerabar M with siphon below the tapping point.
- Fill the siphon with liquid before commissioning.
  The siphon reduces the temperature to almost the ambient temperature.

Pressure measurement in liquids

- Mount Cerabar M with shutoff device below or at the same level as the tapping point.

Level measurement

- Mount Cerabar M below the lowest measuring point (zero point of the measurement).
- Do not mount the device at the following positions: In the filling curtain, in the tank outlet or at a point in the container which could be affected by pressure pulses from an agitator or a pump.
- The calibration and functional test can be carried out more easily if you mount the device downstream of a shutoff device.

Measuring arrangement for devices with diaphragm seal – PMP55

- → 58, "Planning instructions for diaphragm seal systems" section.

Wall and pipe mounting

Endress+Hauser offers a mounting bracket for installing the device on pipes or walls.
→ 63 ff, feature 620, "Accessory enclosed", version "PA" or as a separate accessory (part number: 71102216).
For the dimensions, see → 52.

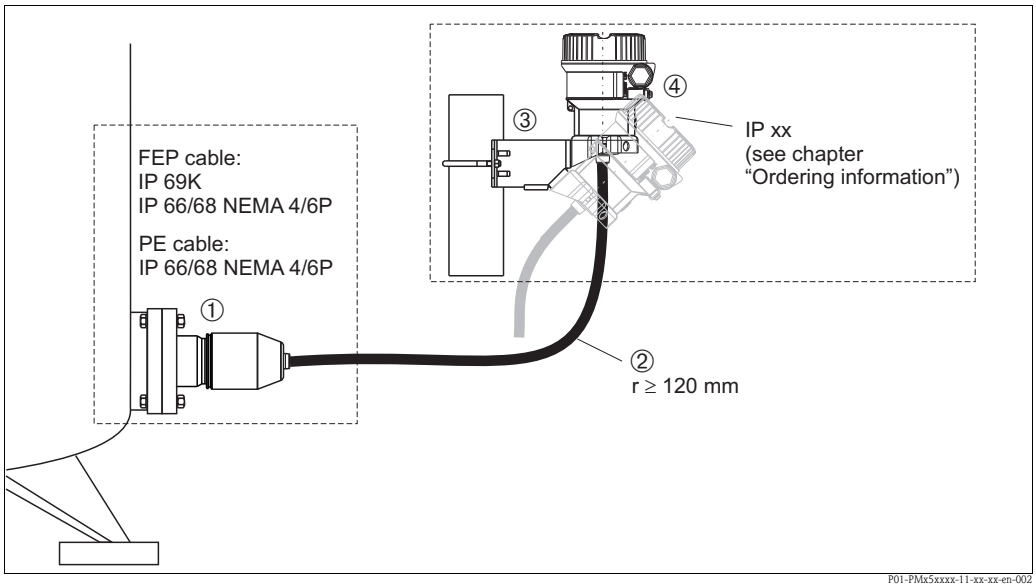
"Separate housing" version

With the "separate housing" version, you are able to mount the housing with the electronics insert at a distance from the measuring point. This version allows for trouble-free measurement:
- Under particularly difficult measuring conditions (at installation locations that are cramped or difficult to access)
- If extreme cleaning of the measuring point is required
- If the measuring point is exposed to vibrations
- For space-saving installations

You can choose between different cable versions:
- PE (2 m (6.6 ft), 5 m (16 ft) and 10 m (33 ft))
- FEP (5 m (16 ft)).

→ 63 ff, feature 600, "Separate housing".

For the dimensions, → 52.



In the case of the "separate housing" version, the sensor is delivered with the process connection and cable ready mounted. The housing and a mounting bracket are enclosed as separate units. The cable is provided with a socket at both ends. These sockets are simply connected to the housing and the sensor.

1 Process connection with sensor
2 Cable, both ends are fitted with a socket
3 Mounting bracket provided, suitable for pipe and wall mounting
4 Housing with electronic insert

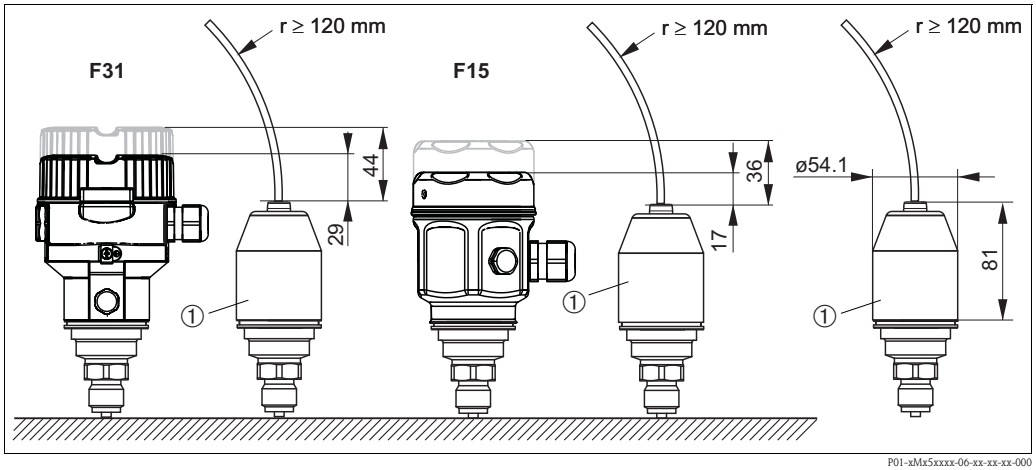
Degree of protection for the process connection and sensor when using:
- FEP cable:
  - IP 69K
  - IP 66/68 NEMA 4/6P
- PE cable:
  - IP 66/68 NEMA 4/6P

Technical data of the PE and FEP cable:
- Minimum bending radius: 120 mm (4.72 in)
- Cable extraction force: max. 450 N (101 lbf)
- Resistance to UV light

Use in hazardous area:
- Intrinsically safe installations (Ex ia/IS)
- FM/CSA IS: for Div.1 installation only

Reduction in installation height

If the separate housing is used, the mounting height of the process connection is reduced compared to the dimensions of the standard version (see graphic).



Oxygen applications

Oxygen and other gases can react explosively to oils, grease and plastics. As a result, the following are some of the precautions that must be taken:
– All components of the system, such as measuring devices, must be cleaned in accordance with the BAM (DIN 19247) requirements.
– Depending on the materials used, a certain maximum temperature and maximum pressure must not be exceeded for oxygen applications.

The devices suitable for gaseous oxygen applications are listed in the following table with the specification p_{max}.

Ordering information for devices cleaned for oxygen applications	**p_{max} for oxygen applications**	**T_{max} for oxygen applications**
PMC51 [1] – devices with sensors, nominal value < 10 bar (150 psi)	Over pressure limit (OPL) of sensor[2, 3]	60°C (140°F)
PMC51 [1] – devices with sensors, nominal value ≥ 10 bar (150 psi)	40 bar (600 psi)	60°C (140°F)
PMP51 PMP55 [1]	Depends on the lowest-rated element, with regard to pressure, of the selected components: over pressure limit (OPL) of sensor [2], process connection (1.5 x PN) or fill fluid (160 bar (2320 psi))	85°C (185°F)

1) Feature 570 "Service" version "HB"

2) → 🖹 63 ff "Ordering information", feature 70 "Sensor range"

3) PMC51 with PVDF thread or PVDF flange p_{max} = 15 bar (225 psi)

Silicone-free applications

Special cleaning of the transmitter to remove paint-wetting substances, for use in paint shops
→ 🖹 66 feature 570 "Service", version "HC".

Ultrapure gas applications

Endress+Hauser also provides devices which have been cleaned of oil and grease for special applications, such as for ultrapure gas. No special restrictions regarding the process conditions apply to these devices.

→ 🖹 63 ff, "Ordering information PMC51", feature 570 "Service" version "HA".
→ 🖹 68 ff, "Ordering information PMP51", feature 570 "Service" version "HA".

Applications with hydrogen

With regard to materials in which hydrogen formation takes place, hydrogen atoms can diffuse through the metal process isolating diaphragm. This can result in incorrect measurement results.
Endress+Hauser offers process isolating diaphragms with a gold/rhodium coating for such instances.

→ 🖹 67 ff "Ordering information PMP51" and → 🖹 71 ff "Ordering information PMP55", feature 170 "Membrane Material" version "M".

Operating conditions (environment)

Ambient temperature range

Version	PMC51	PMP51	PMP55
Without LCD display	–40°C to +85°C (–40°F to +185°F)		
With LCD display [1)]	–20°C to +70°C (–4°F to +158°F)		
With M12 plug , elbowed	–25°C to +85°C (–13°F to +185°F)		
With separate housing	–20°C to +60°C (–4°F to +140°F) (installation without insulation)		—
Diaphragm seal systems	—	—	→ 58

1) Extended temperature application range (–40°C to +85°C (–40°F to +185°F)) with restrictions in optical properties such as display speed and contrast

Note!
For high-temperature applications, either a PMP55 with a temperature isolator or with a capillary can be used. If vibrations also occur in the application, Endress+Hauser recommends you use a PMP55 with a capillary. If a PMP55 with a temperature isolator or capillary is used, we recommend a suitable bracket for mounting (see "Wall and pipe mounting" section on → 19).
For devices for use in hazardous areas, see Safety Instructions, Installation or Control Drawing. (→ 77 ff, "Safety Instructions" and "Installation/Control Drawings" sections)

Storage temperature range

Version	PMC51	PMP51	PMP55
Without LCD display	–40°C to +90°C (–40°F to +194°F)		
With LCD display	–40°C to +85°C (–40°F to +185°F)		
With M12 plug , elbowed	–25°C to +85°C (—13°F to +185°F)		
With separate housing	–40°C to +60°C (–40°F to +140°F)		—
Diaphragm seal systems	—	—	→ 58

Degree of protection

- → 63 ff, feature 50 "Electrical connection".
- Separate housing (→ 20)

Climate class

Class 4K4H (air temperature: –20 to 55°C (–4 to +131°F), relative humidity: 4 to 100%) satisfied as per DIN EN 60721-3-4 (condensation possible. In the case of the PMC51, condensate in the device must be avoided.)

Vibration resistance

Device/Additional option	Test standard	Vibration resistance
PMC51, PMP51, PMP55	GL VI-7-2 ■ Part 7: Guidelines for the Performance of Type Approvals ■ Chapter 2: Test Requirements for Electrical / Electronic Equipment and Systems	guaranteed for 3 to 18 Hz: ±4 mm (0.16 in); 25 to 500 Hz: 5 g in all 3 planes
with mounting bracket	IEC 61298-3 IEC 60068-2-6	guaranteed for 10 to 58 Hz: ±0.15 mm (0.01 in); 58 to 500 Hz: 2 g in all 3 planes

Note!
For high-vibration applications, either a PMC51/PMP51 with a separate housing or a PMP55 with a capillary can be used. We recommend a suitable bracket for mounting (see "Wall and pipe mounting" section on → 19).

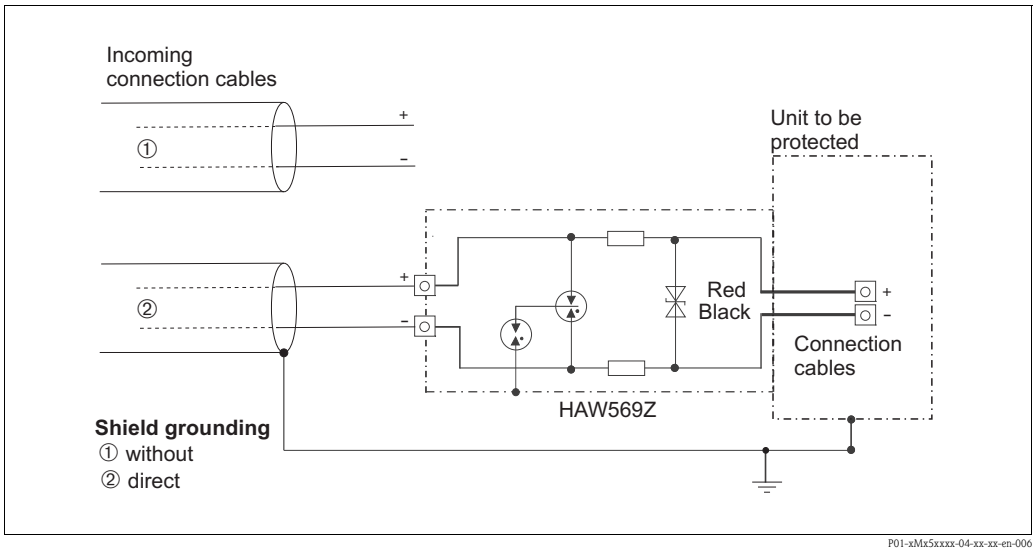
Electromagnetic compatibility

- Electromagnetic compatibility as per all the relevant requirements of the EN 61326 series and NAMUR Recommendation EMC (NE21). Details can be found in the Declaration of Conformity (in the Download area of "www.de.endress.com", "search area - Approvals and Certificates", "Manufact. Declaration").
- Maximum deviation: < 0.5 % of span

Overvoltage protection (optional)

NAThe device can be fitted with overvoltage protection, see → 63 ff "Ordering information" feature 610 "Accessory mounted:" version "NA". The overvoltage protection is mounted at the factory on the housing thread (M20x1.5) for the cable gland and is approx. 70 mm (2.76 in) in length (take additional length into account when installing). The device is connected as illustrated in the following graphic.
For details refer to TI103R/09/EN, XA036R/09/A3 and KA161R/09/A6.

Wiring



P01-xMx5xxxx-04-xx-xx-en-006

Operating conditions (process)

Process temperature limits

PMC51 (with ceramic process isolating diaphragm)

- –20 to +100 °C (–4 to +212°F)
- Observe the process temperature range of the seal. See also the following table.

Version for feature 190 in the order code	Seal	Process temperature range
A	FKM Viton	-20 to +125°C (-4 to +257°F)
A [1)]	FKM Viton, cleaned for O2 application	-5 to +60°C (+23 to +140°F)
B	FKM Viton, FDA	-20 to +125°C (-4 to +257°F)
F	NBR	-10 to +100°C (-14 to +212°F)
G	HNBR, FDA, 3A Class II, KTW, AFNOR, BAM	-25 to +125°C (-13 to +257°F)
J	EPDM	-20 to +125°C (-4 to +257°F)
K	EPDM, FDA, 3A Class II, USP Class VI, DVGW, KTW, W270, WRAS, ACS, NSF61	-20 to +125°C (-4 to +257°F)

1) With feature 570 "Service", version "HB - Cleaned for oxygen service"

Physical limitations

Extreme jumps in temperature can result in temporary measuring errors. Temperature compensation takes effect after several minutes. Internal temperature compensation is faster the smaller the jump in temperature and the longer the time interval involved.
For further information please contact your local Endress+Hauser Sales Center.

PMP51 (with metal process isolating diaphragm)

Description	Temperature operating range
Process connections with internal process isolating diaphragm	-40 to +125°C (-40 to +257°F)
Process connections with flush-mounted process isolating diaphragm, G 1 A, G 1 1/2 A, G 2 A, 1 NPT, 1 1/2 NPT, 2 NPT, M 44 x 1.25, EN/DIN, ANSI and JIS flanges	-40 to +100°C (-40 to +212°F)
Process connections with flush-mounted process isolating diaphragm, G 1/2 A, M 20x1.5	-20 to +85°C (-4 to +185°F)

PMP55 (with diaphragm seal)

- Depending on the diaphragm seal and filling oil from -70°C (-94°F) up to +400°C (+752°F). Observe the temperature application limits → 58.

Note!
- Do not use diaphragm seals with 0.09 mm (0.0035 in) PTFE foil on AISI 316L for vacuum applications, upper temperature limit +204°C (+399°F).
- For oxygen applications, observe → 21, "Oxygen applications" section.

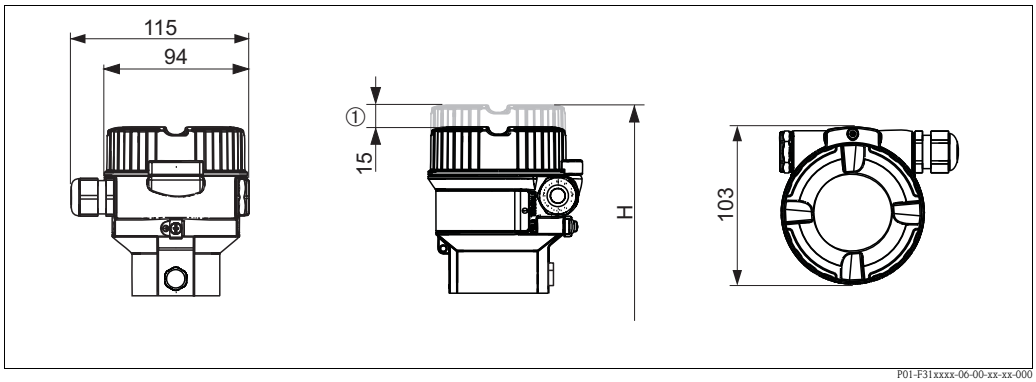
Pressure specifications

- The maximum pressure for the measuring device depends on the lowest-rated element with regard to pressure.
  See the following sections:
  – → 🖹 7 ff, "Measuring range" section
  – "Mechanical construction" section.
  The MWP (maximum working pressure) is specified on the nameplate. This value refers to a reference temperature of +20°C (68°F), or 100°F (38°C) for ANSI flanges, and may be applied to the device for an unlimited time. Observe temperature dependency of the MWP.
- The pressure values permitted at higher temperatures can be found in the following standards:
  – EN 1092-1: 2001 Tab. 18 [1]
  – ASME B 16.5a – 1998 Tab. 2-2.2 F316
  – ASME B 16.5a – 1998 Tab. 2.3.8 N10276
  – JIS B 2220.
- The test pressure corresponds to the over pressure limit of the device (over pressure limit OPL = 1.5 x MWP [2]) and may be applied for only a limited time period in order to avoid permanent damage.
- The Pressure Equipment Directive (EC Directive 97/23/EC) uses the abbreviation "PS". The abbreviation "PS" corresponds to the MWP (maximum working pressure) of the measuring device.
- In the case of sensor range and process connection combinations where the OPL (over pressure limit) of the process connection is smaller than the nominal value of the sensor, the device is set at the factory, at the very maximum, to the OPL value of the process connection. If you want to use the entire sensor range, select a process connection with a higher OPL value (1.5 x PN; PN = MWP).
- In oxygen applications, the values for "p_{max} and T_{max} for oxygen applications" as per → 🖹 21, "Oxygen applications" may not be exceeded.

1) With regard to their stability-temperature property, the materials 1.4435 and 1.4404 are grouped together under 13EO in EN 1092-1 Tab. 18. The chemical composition of the two materials can be identical.
2) The equation does not apply for PMP51 and PMP55 with a 40 bar (600 psi) - or a 100 bar (1500 psi) - measuring cell.

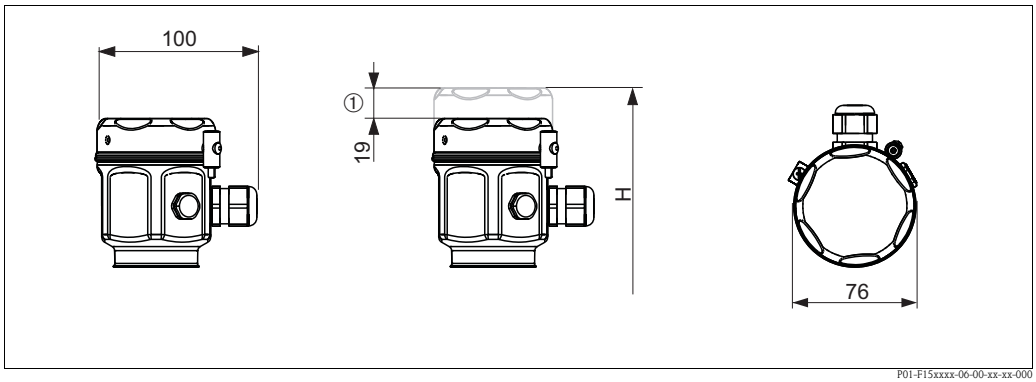
Mechanical construction

F31 aluminum housing dimensions



Front view, left-hand side view, top view
① The cover with viewing window is 15 mm (0.59 in) higher than the cover without viewing window.
→ For installation height H for housing with viewing window, see the specific process connection. Housing weight → 52

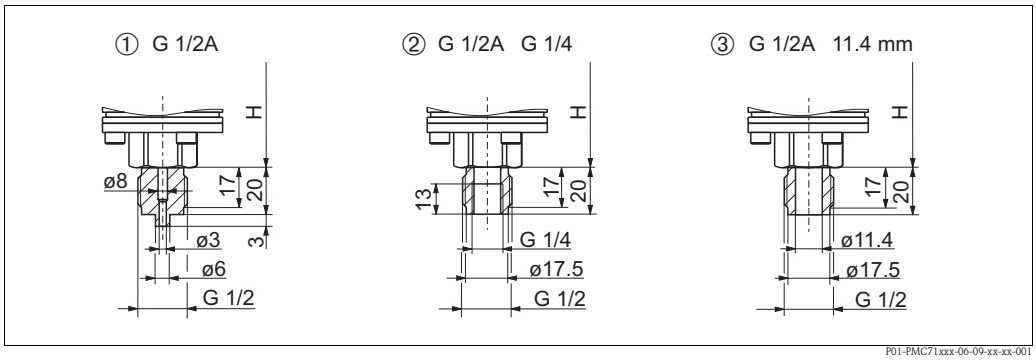
F15 stainless steel housing dimensions (hygienic)



Front view, top view.
① The cover with viewing window is 19 mm (0.75 in) higher than the cover without viewing window.
→ For installation height H for housing with viewing window, see the specific process connection. Housing weight → 52

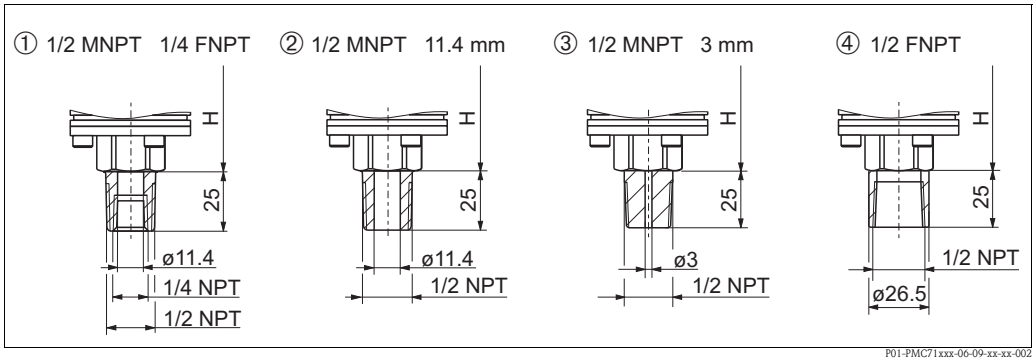
Process connections PMC51 (with ceramic process isolating diaphragm)

Thread, internal process isolating diaphragm



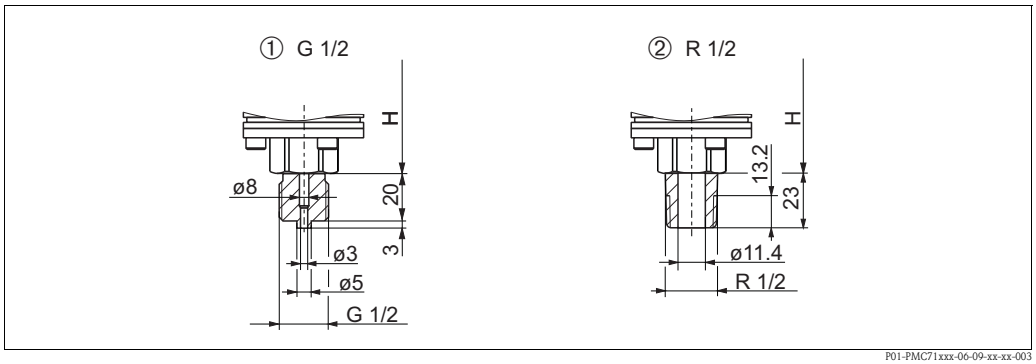
Process connections PMC51, thread ISO 228
Installation height H → 27.

1 Thread ISO 228 G 1/2 A EN 837;
Material version GCJ: AISI 316L, version GCC: Alloy C276
Version GCF: PVDF (max.: 15 bar (217.5 psi), –10 to +60 °C (+14 to +140 °F)), mount version"GCF" with a mounting bracket only (→ 19); weight: 0.63 kg (1.39 lbs)
2 Thread ISO 228 G 1/2 A G 1/4 (female);
Material version GLJ: AISI 316L, version GLC: Alloy C276; weight: 0.63 kg(1.39 lbs)
3 Thread ISO 228 G 1/2 A hole 11.4 mm (0.45 in);
Material version GMJ: AISI 316L, version GMC: Alloy C276; weight: 0.63 kg(1.39 lbs)



Process connections PMC51, thread ANSI
Installation height H → 🖹 27.

1 Thread ANSI 1/2 MNPT 1/4 FNPT;
Material version RLJ: AISI 316L, version RLC: Alloy C276; weight: 0.63 kg (1.39 lbs)
2 Thread ANSI 1/2 MNPT hole 11.4 (0.45 in);
Material version RKJ: AISI 316L; version RKC: Alloy C276; weight: 0.63 kg(1.39 lbs)
3 Thread ANSI 1/2 MNPT hole 3 mm (0.12 in);
Material version RJF: PVDF (max.: 15 bar (225 psi), –10 to +60 °C (+14 to +140 °F)) mount with mounting bracket only (→ 🖹 19); weight: 0.63 kg (1.39 lbs)
4 Thread ANSI FNPT 1/2
Material version R1J: AISI 316L, version R1C: Alloy C276; weight: 0.63 kg(1.39 lbs)



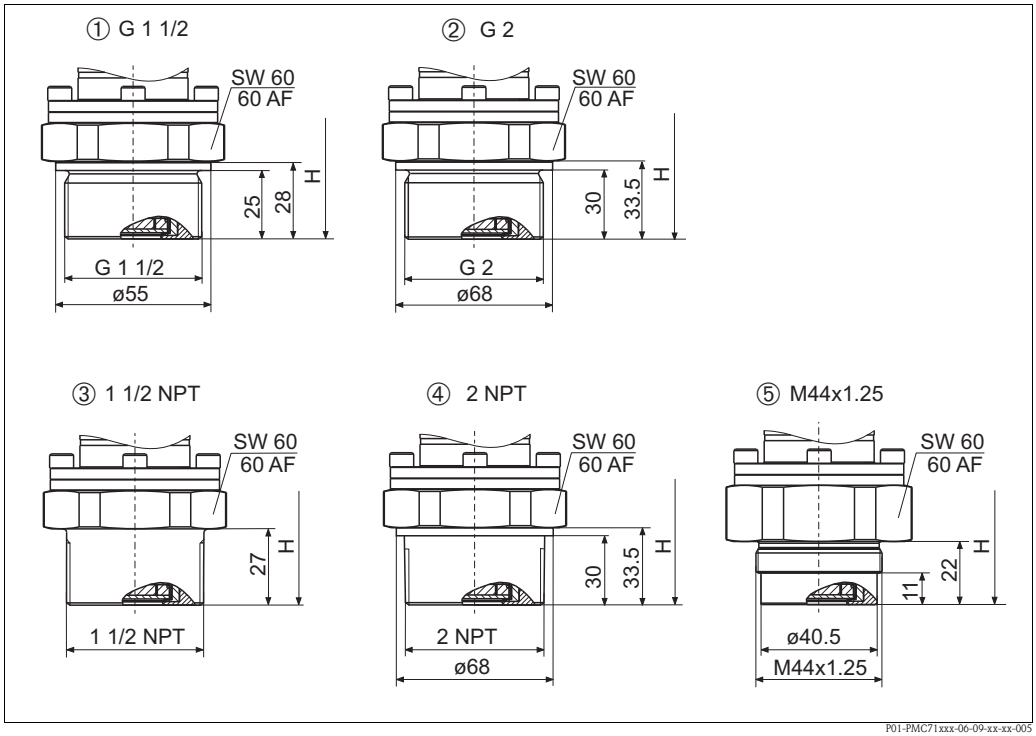
Process connections PMC51, thread JIS
Installation height H → 🖹 27.

1 Version GNJ: thread JIS B0202 G 1/2 (male), material: AISI 316L; weight: 0.63 kg (1.39 lbs)
2 Version GOJ: thread JIS B0203 R 1/2 (male), material: AISI 316L; Weight: 0.63 kg (1.39 lbs)

Installation height H for devices with threaded connection and internal process isolating diaphragm

F31 housing	F15 housing
154 mm (6.06 in)	146 mm (5.75 in)

Thread, flush-mounted process isolating diaphragm



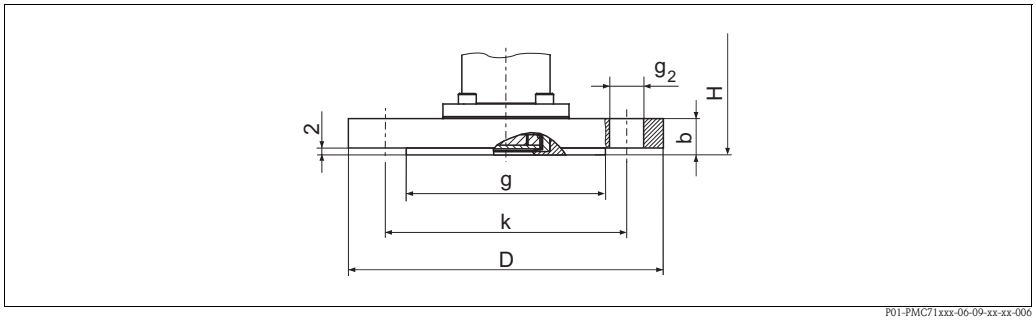
Process connections PMC51,
→ Installation height, see table below.

1 Thread ISO 228 G 1 1/2 A;
Material version GVJ: AISI 316L; weight: 0.63 kg (1.39 lbs)
2 Thread ISO 228 G 2 A;
Material version GWJ: AISI 316L; weight: 0.63 kg (1.39 lbs)
3 Thread ANSI 1 1/2 MNPT;
Material version U7J: AISI 316L; weight: 0.63 kg (1.39 lbs)
4 Thread ANSI 2 MNPT;
Material version U8J: AISI 316L; weight: 0.63 kg (1.39 lbs)
5 Thread DIN 13 M 44x1.25;
Material version G4J: AISI 316L; weight: 0.63 kg (1.39 lbs)

Installation height H for devices with threaded connection and flush-mounted process isolating diaphragm

F31 housing	F15 housing
201 mm (7.91 in)	193 mm (7.6 in)

EN/DIN flanges, connection dimensions as per EN 1092-1/DIN 2527



Process connection PMC51, EN/DIN flange with raised face (flush-mounted process isolating diaphragm)
Installation height H → 31.

	Flange							Boltholes			
Version	**Material**	**Nominal diameter**	**Nominal pressure**	**Shape** [1]	**Diameter** **D** [mm]	**Thickness** **b** [mm]	**Raised face** **g** [mm]	**Quantity**	**Diameter** **g_2** [mm]	**Hole circle** **k** [mm]	**Flange weight** [2] [kg]
CNJ	AISI 316L	DN 25	PN 10-40	B1 (D)	115	18	68	4	14	85	1.4
CPJ	AISI 316L	DN 32	PN 10-40	B1 (D)	140	18	78	4	18	100	2.0
CQJ	AISI 316L	DN 40	PN 10-40	B1 (D)	150	18	88	4	18	110	2.4
CXJ	AISI 316L	DN 50	PN 10-40	B1 (D)	165	20	102	4	18	125	3.2
CFF	PVDF [3]	DN 50	PN 10-16	B1 (D)	165	18	102	4	18	125	2.9
CRP	ECTFE [4]	DN 50	PN 25-40	B1 (D)	165	20	102	4	18	125	3.2
CZJ	AISI 316L	DN 80	PN 10-40	B1 (D)	200	24	138	8	18	160	5.5
CSP	ECTFE [4]	DN 80	PN 25-40	B1 (D)	200	24	138	8	18	160	5.5

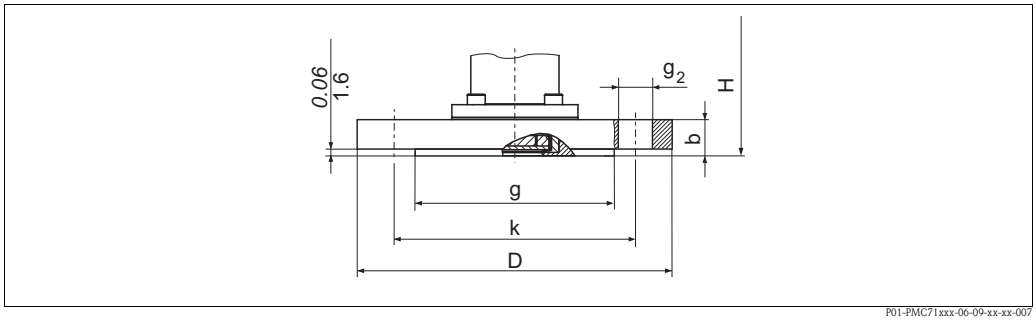
1) Designation as per DIN 2527 in brackets

2) Housing weight → 52

3) OPL.: 15 bar (225 psi)
Process temperature range: –10 to +60 °C (+14 to +140 °F)

4) ECTFE coating on AISI 316L/1.4435. When operating in hazardous areas, avoid electrostatic charging of the plastic surfaces.

ANSI flanges, connection dimensions as per ANSI B 16.5, raised face RF



Process connection PMC51, ANSI flange with raised face RF (flush-mounted process isolating diaphragm)
Installation height H → 🖹 31.

	Flange						Boltholes			
Version	**Material**	**Nominal diameter**	**Class**	**Diameter** **D**	**Thickness** **b**	**Raised face** **g**	**Quantity**	**Diameter** **g_2**	**Hole circle** **k**	**Flange weight [1]**
		[in]	[lb./sq.in]	[in] / [mm]	[in] / [mm]	[in] / [mm]		[in] / [mm]	[in] / [mm]	[kg]
ACJ	AISI 316/316L [2]	1	150	4.25 / 108	0.56 / 14.2	2 / 50.8	4	0.62 / 15.7	3.12 / 79.2	0.9
ANJ	AISI 316/316L [2]	1	300	4.88 / 123.9	0.69 / 17.2	2 / 50.8	4	0.75 / 19	3.5 / 88.9	1.4
AEJ	AISI 316/316L [2]	1 1/2	150	5 / 127	0.69 / 17.5	2.88 / 73.2	4	0.62 / 15.7	3.88 / 98.6	1.0
AQJ	AISI 316/316L [2]	1 1/2	300	6.12 / 155.4	0.81 / 20.6	2.88 / 73.2	4	0.88 / 22.4	4.5 / 114.3	2.6
AFJ	AISI 316/316L [2]	2	150	6 / 152.4	0.75 / 19.1	3.62 / 91.9	4	0.75 / 19.1	4.75 / 120.7	2.4
AFN	ECTFE [3]	2	150	6 / 152.4	0.75 / 19.1	3.62 / 91.9	4	0.75 / 19.1	4.75 / 120.7	2.4
AFF	PVDF [4]	2	150	6 / 152.4	0.75 / 19.1	3.62 / 91.9	4	0.75 / 19.1	4.75 / 120.7	0.5
ARJ	AISI 316/316L [2]	2	300	6.5 / 165.1	0.88 / 22.4	3.62 / 91.9	8	0.75 / *19.1*	5 / 127	3.2
AGJ	AISI 316/316L [2]	3	150	7.5 / 190.5	0.94 / 23.9	5 / 127	4	0.75 / 19.1	6 / 152.4	4.9
AGN	ECTFE [3]	3	150	7.5 / 190.5	0.94 / 23.9	5 / 127	4	0.75 / 19.1	6 / 152.4	4.9
AGF	PVDF [4]	3	150	7.5 / 190.5	0.94 / 23.9	5 / 127	4	0.75 / 19.1	6 / 152.4	0.9
ASJ	AISI 316/316L [2]	3	300	8.25 / 209.5	1.12 / 28.4	5 / 127	8	0.88 / 22.4	6.62 / 168.1	6.8
AHJ	AISI 316/316L [2]	4	150	9 / 228.6	0.94 / 23.9	6.19 / 157.2	8	0.75 / 19.1	7.5 / 190.5	7.1
AHN	ECTFE [3]	4	150	9 / *228.6*	0.94 / 23.9	6.19 / 157.2	8	0.75 / 19.1	7.5 / 190.5	7.1
ATJ	AISI 316/316L [2]	4	300	10 / 254	1.25 / 31.8	6.19 / 157.2	8	0.88 / 22.4	7.88 / 200.2	11.6

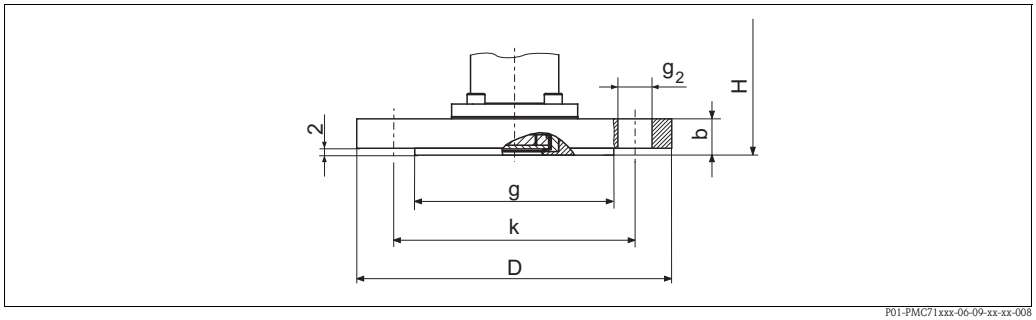
1) Housing weight → 🖹 52

2) Combination of AISI 316 for required pressure resistance and AISI 316L for required chemical resistance (dual rated)

3) ECTFE coating on AISI 316L/1.4435. When operating in hazardous areas, avoid electrostatic charging of the plastic surfaces.

4) OPL.: 15 bar (225 psi)
Process temperature range: –10 to +60 °C (+14 to +140 °F)

JIS flanges, connection dimensions as per JIS B 2220 BL, raised face RF



Process connection PMC51, JIS flange with raised face RF (flush-mounted process isolating diaphragm), material: AISI 316L → Installation height H, see table below.

	Flange					Boltholes			
Version	**Nominal diameter**	**Nominal pressure**	**Diameter** **D** [mm]	**Thickness** **b** [mm]	**Raised face** **g** [mm]	**Quantity**	**Diameter** **g_2** [mm]	**Hole circle** **k** [mm]	**Flange weight** [1] [kg]
KFJ	50 A	10 K	155	16	96	4	19	120	2.0
KGJ	80 A	10 K	185	18	127	8	19	150	3.3
KHJ	100 A	10 K	210	18	151	8	19	175	4.4

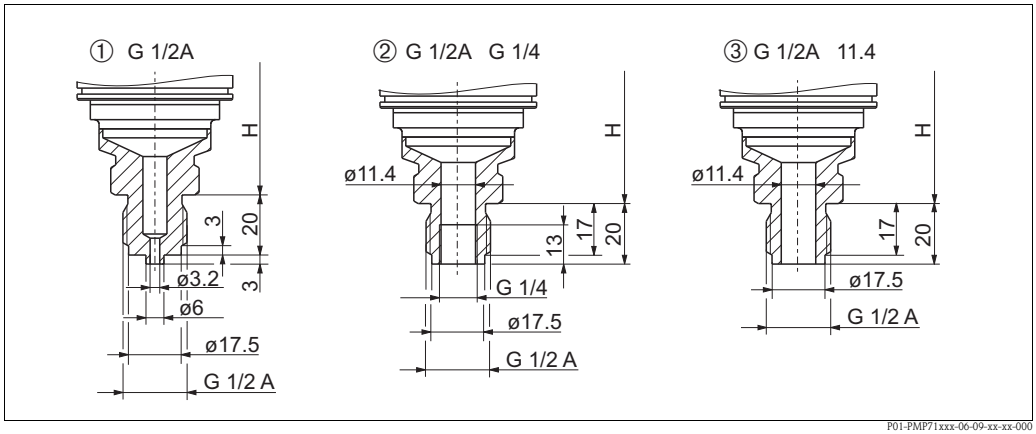
1) Housing weight, see → 🖹 52

Installation height H for devices with flange

F31 housing	F15 housing
201 mm (7.91 in)	193 mm (7.6 in)

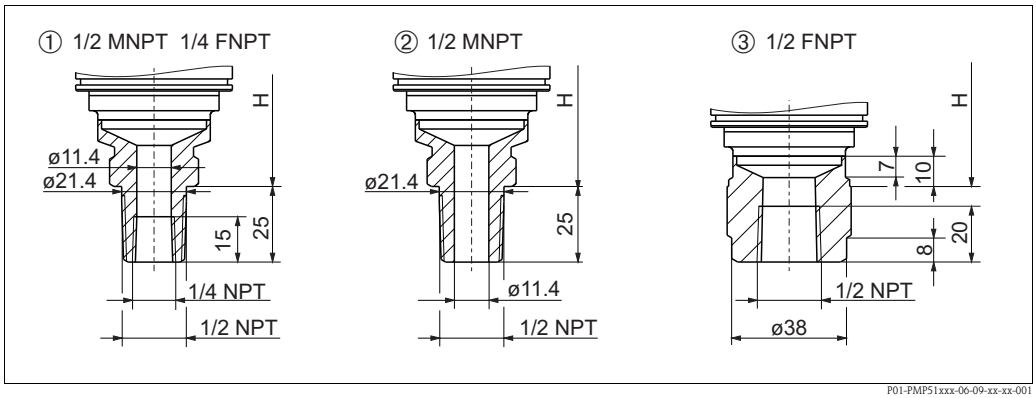
Process connections PMP51 (with metal process isolating diaphragm)

Thread, internal process isolating diaphragm



Process connections PMP51, thread ISO 228
Installation height H → 🖹 32.

1 Thread ISO 228 G 1/2 A EN 837;
Material version GCJ: AISI 316L, version GCC: Alloy C276; weight: 0.6 kg (1.32 lbs)
2 Thread ISO 228 G 1/2 A G 1/4 (female);
Material version GLJ: AISI 316L, version GLC: Alloy C276; weight: 0.6 kg (1.32 lbs)
3 Thread ISO 228 G 1/2 A hole 11.4 mm (0.45 in);
Material version GMJ: AISI 316L, version GMC: Alloy C276; weight: 0.6 kg (1.32 lbs)



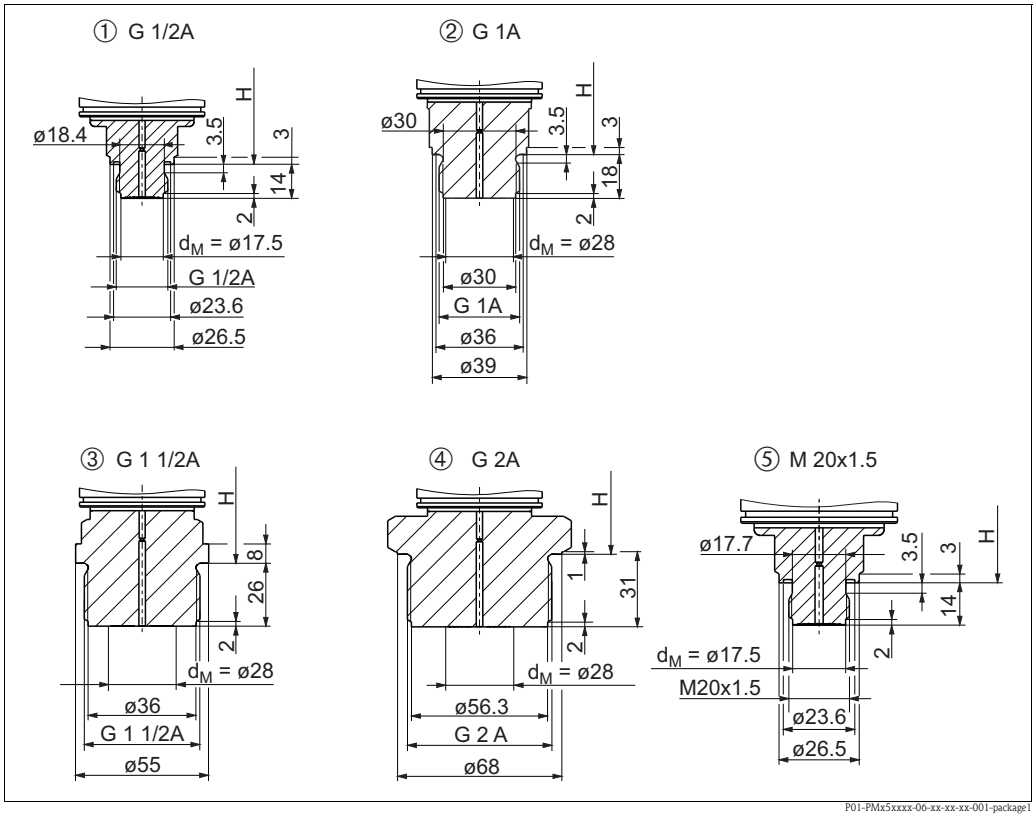
Process connections PMP51, thread ANSI
Installation height H → 🖹 32.

1 Thread ANSI 1/2 MNPT 1/4 FNPT;
Material version RLJ: AISI 316L, version RLC: Alloy C276; weight: 0.6 kg (1.32 lbs)
2 Thread ANSI 1/2 MNPT hole: 400 bar (6000 psi) = 11.4 mm (0.45 in)
Material version RKJ: AISI 316L, version RKC: Alloy C276; weight: 0.6 kg (1.32 lbs)
3 Thread ANSI 1/2 FNPT;
Material version R1J: AISI 316L, version R1C: Alloy C276/2.4819; Weight: 0.7 kg (1.54 lbs)

Installation height H for devices with threaded connection and internal process isolating diaphragm

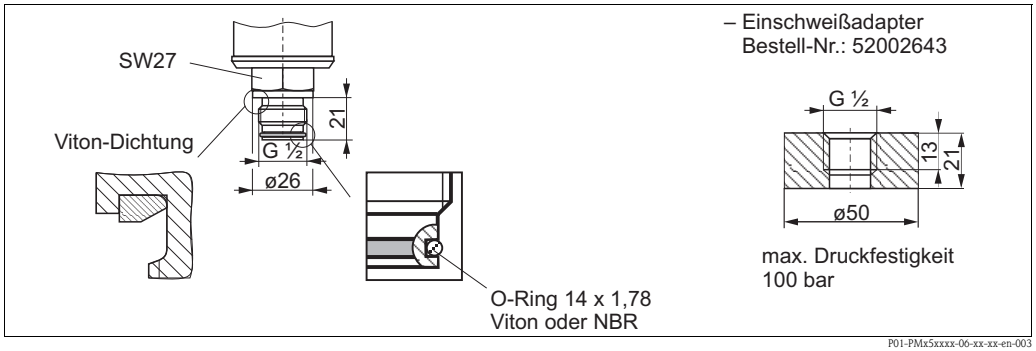
	F31 housing	**F15 housing**
Height H	169 mm (6.65 in)	150 mm (5.91 in)

Thread, flush-mounted process isolating diaphragm

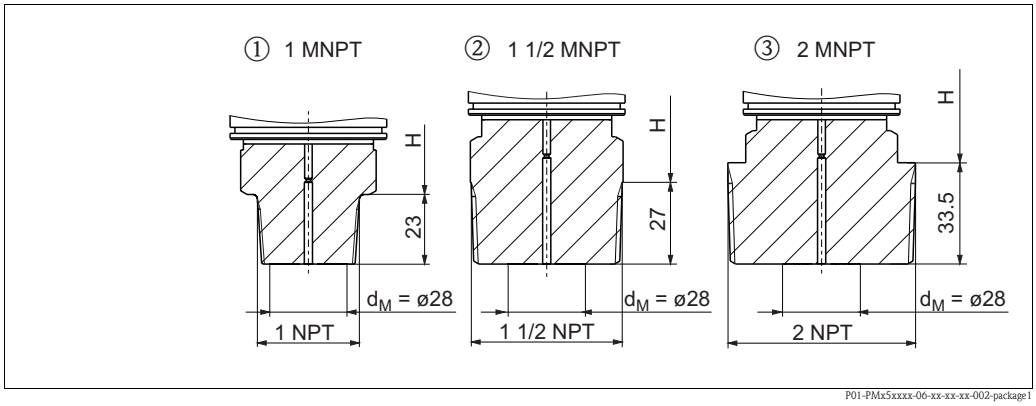


Thread ISO 228
Installation height H → 📄 34.

1 Thread ISO 228 G 1/2 A DIN 3852 (viton seal included);
Material version GRJ: AISI 316L, version GRC: : Alloy C276; weight: 0.4 kg (0.88 lbs)
2 Thread ISO 228 G 1 A (viton seal included);
Material version GTJ: AISI 316L; weight: 0.7 kg (1.54 lbs)
3 Thread ISO 228 G 1 1/2 A
Material version GVJ: AISI 316L; weight: 1.1 kg (2.43 lbs)
4 Thread ISO 228 G 2 A
Material version GWJ: AISI 316L; weight: 1.5 kg (3.31 lbs)
5 Thread DIN13 M20x1.5
Material version G1J: AISI 316L; weight 0.4 kg (0.88 lbs)



Version G0J: Thread ISO 228 G1/2; weight: 0.4 kg (0.88 lbs)



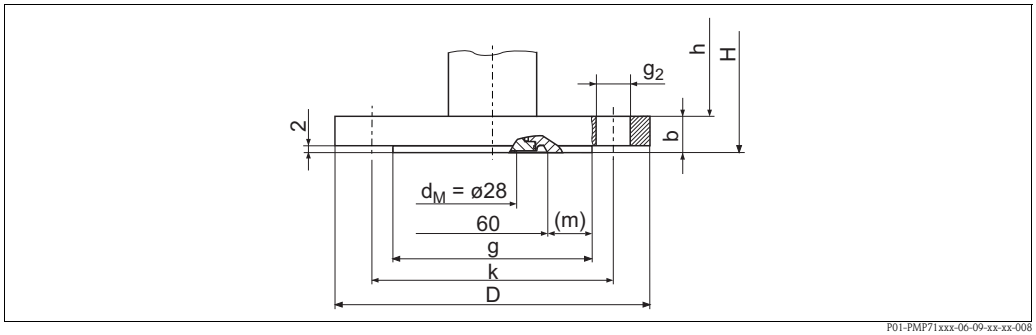
Process connections PMP51 thread ANSI
Installation height H see following table.

1 Thread ANSI 1 MNPT;
Material version U5J: AISI 316L; weight: 0.7 kg (1.54 lbs)
2 Thread ANSI 1 1/2 MNPT;
Material version U7J: AISI 316L; weight: 1.0 kg (2.21 lbs)
3 Thread ANSI 2 MNPT
Material version U8J: AISI 316L; weight: 1.3 kg (2.86 lbs)

Installation height H for devices with threaded connection and flush-mounted process isolating diaphragm

Description	F31 housing	F15 housing
G 1/2	163 mm (6.42 in)	148 mm (5.83 in)
G 1	167 mm (6.57 in)	152 mm (5.98 in)
G 1 1/2 A	163 mm (6.42 in)	148 mm (5.83 in)
G 2 A	162 mm (6.38 in)	147 mm (5.79 in)
1 MNPT	162 mm (6.38 in)	147 mm (5.79 in)
1 1/2 MNPT	169 mm (6.65 in)	150 mm (5.91 in)
2 MNPT	199 mm (7.83 in)	144 mm (5.67 in)
M 20x1.5	163 mm (6.42 in)	148 mm (5.83 in)

EN/DIN flanges, connection dimensions as per EN 1092-1/DIN 2527



Process connection PMP51, EN/DIN flange with raised face, material AISI 316L

H: device height = height of device without flange h + flange thickness b
Height H → 🖹 36.

	Flange [1]							Boltholes			
Version	**Nominal diameter**	**Nominal pressure**	**Shape [2]**	**Dia-meter** **D** [mm]	**Thic-kness** **b** [mm]	**Raised face** **g** [mm]	**Width of the raised face** **(m)** [mm]	**Quantity**	**Diameter** **g_2** [mm]	**Hole circle** **k** [mm]	**Flange weight [3]** [kg]
CNJ	DN 25	PN 10-40	B1 (D)	115	18	68 [4]	4	4	14	85	1.2
CPJ	DN 32	PN 10-40	B1 (D)	140	18	78 [4]	8.5	4	18	100	1.9
CQJ	DN 40	PN 10-40	B1 (D)	150	18	88 [4]	-	4	18	110	2.2
CXJ	DN 50	PN 25/40	B1 (D)	165	20	102	-	4	18	125	3.0
CZJ	DN 80	PN 10-40	B1 (D)	200	24	138	-	8	18	160	5.5

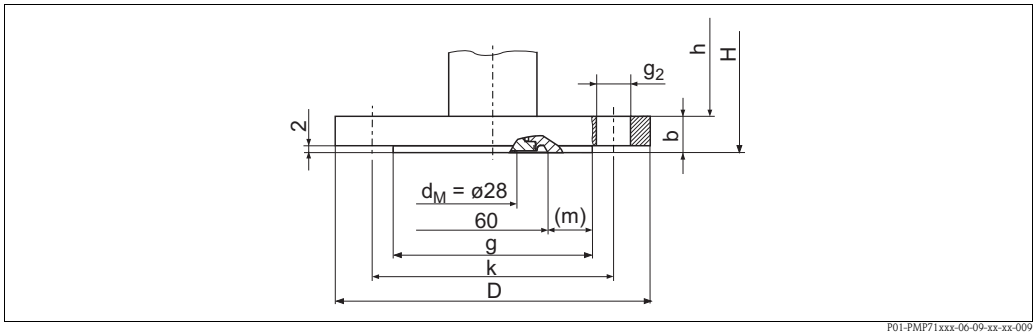
1) The roughness of the surface in contact with the medium is R_a 0.8 µm (31.5 µin). Lower surface roughness available on request.

2) Designation as per DIN 2527 in brackets

3) Housing weight → 🖹 52

4) With these process connections the sealing surface is smaller than described in the standard. Due to a smaller sealing surface a special seal must be used. Contact a seal manufacturer or your local Endress+Hauser Sales Center.

ANSI flanges, connection dimensions as per ANSI B 16.5, raised face RF



Process connection PMP51, ANSI flange with raised face RF (see table below)

H: device height = height of device without flange h + flange thickness b.. For height H → *📄 36.*

	Flange [1]							Boltholes			
Version	**Material**	**Nominal diameter**	**Class/ Nominal pressure**	**Diameter** **D**	**Thickness** **b**	**Diameter of raised face** **g**	**Width of the raised face** **(m)**	**Quantity**	**Diameter** **g_2**	**Hole circle** **k**	**Flange weight [2]**
		[in]		[in] / [mm]	[in] / [mm]	[in] / [mm]	[in] / [mm]		[in] / [mm]	[in] / [mm]	[kg]
ANSI flanges											
ANJ	AISI 316/316L [3]	1	300 lb./sq.in	4.88 / 124	0.69 / 17.5	2.76 [4] / 50.8	0.2 / 5	4	0.75 / 19.1	3.5 / 88.9	1.3
AEJ	AISI 316/316L [3]	1 1/2	150 lb./sq.in	5 / 127	0.69 / 17.5	2.88 [4] / 73.2	0.52 / 6.6	4	0.62 / 15.7	3.88 / 98.6	1.5
AQJ	AISI 316/316L [3]	1 1/2	300 lb./sq.in	6.12 / 155.4	0.81 / 20.6	2.88 [4] / 73.2	0.52 / 6.6	4	0.88 / 22.4	4.5 / 114.3	2.6
AFJ	AISI 316/316L [3]	2	150 lb./sq.in	6 / 152.4	0.75 / 19.1	3.62 / 91.9	-	4	0.75 / 19.1	4.75 / 120.7	2.4
ARJ	AISI 316/316L [3]	2	300 lb./sq.in	7.5 / 190.5	0.88 / 22.3	3.62 / 91.9	-	8	0.75 / 19.1	5 / 127	3.2
AGJ	AISI 316/316L [3]	3	150 lb./sq.in	7.5 / 190.5	0.94 / 23.9	5 / 127	-	4	0.75 / 19.1	6 / 152.4	4.9
ASJ	AISI 316/316L [3]	3	300 lb./sq.in	8.25 / 209.5	1.12 / 28.4	5 / 127	-	8	0.88 / 22.4	6.62 / 168.1	6.7
AHJ	AISI 316/316L [3]	4	150 lb./sq.in	9 / 228.6	0.94 / 23.9	6.19 / 157.2	-	8	0.75 / 19.1	7.5 / 190.5	7.1
ATJ	AISI 316/316L [3]	4	300 lb./sq.in	10 / 254	1.25 / 31.8	6.19 / 157.2	-	8	0.88 / 22.4	7.88 / 200.2	11.6

1) The roughness of the surface in contact with the medium is R_a 0.8 µm (31.5 µin). Lower surface roughness available on request.

2) Housing weight → 📄 52

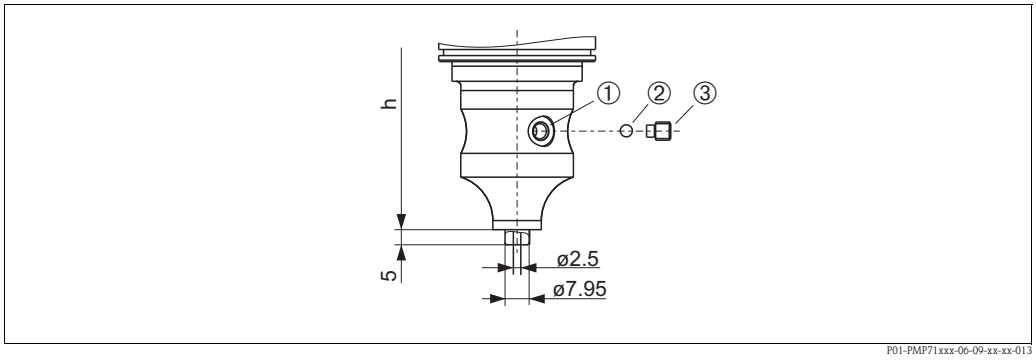
3) Combination of AISI 316 for required pressure resistance and AISI 316L for required chemical resistance (dual rated)

4) With these process connections the sealing surface is smaller than described in the standard. Due to a smaller sealing surface a special seal must be used. Contact a seal manufacturer or your local Endress+Hauser Sales Center.

Height H for devices with flange

	F31 housing	F15 housing
Height H	165 mm (6.5 in)	150 mm (5.91 in)

Prepared for diaphragm seal mount

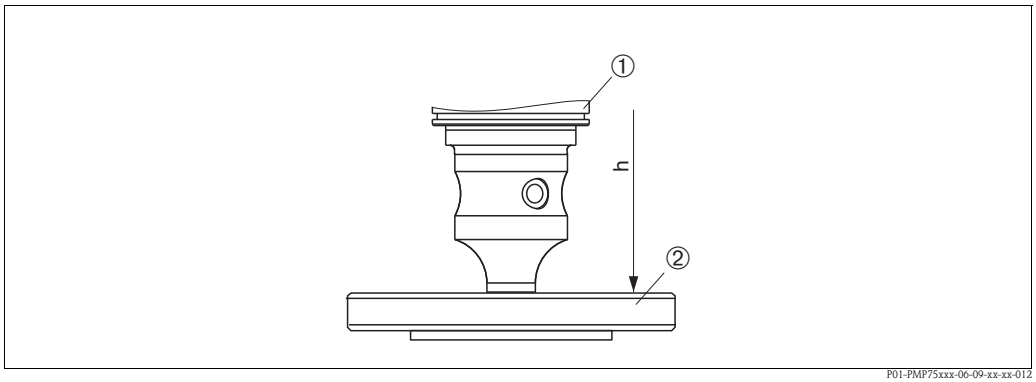


Version XSJ: prepared for diaphragm seal mount

1 Hole for fill fluid
2 Bearing
3 Setscrew with a hexagonal recess 4 mm (0.16 in)

	F31 housing	**F15 housing**
Height H	190 mm (7.48 in)	175 mm (6.89 in)

PMP55 basic device



PMP55 basic device with diaphragm seal

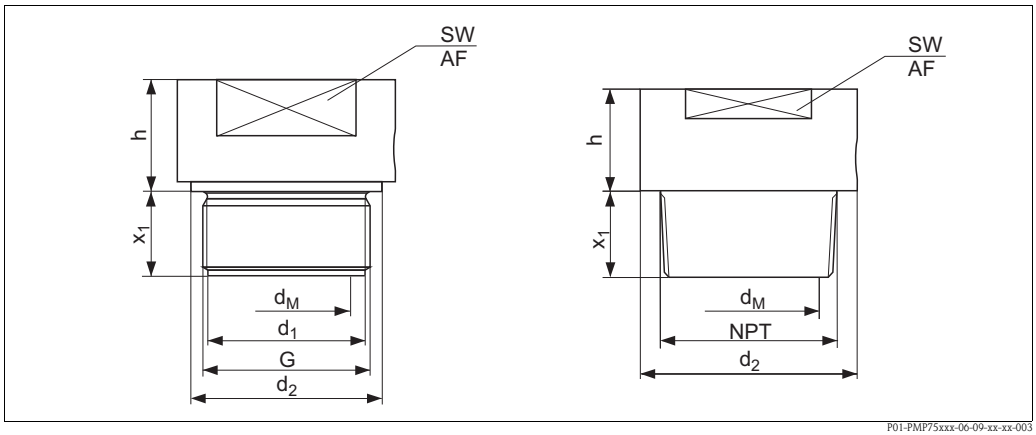
1 PMP55 basic device
2 Diaphragm seal, here e.g. flange diaphragm seal

	F31 housing	**F15 housing**
Height H	190 mm (7.48 in)	175 mm (6.89 in)

Process connections PMP55 (with diaphragm seal)

Note!
- The weights of the diaphragm seals are given in the tables. See → 52 for the weight of the housing.
- The following drawings are schematic diagrams. In other words, the dimensions of a diaphragm seal supplied may deviate from the dimensions given in this document.
- When using high-temperature oils the design can deviate significantly.
- Observe the information in the "Planning instructions for diaphragm seal systems" section → 58 ff.
- For further information please contact your local Endress+Hauser Sales Center.

Thread, flush-mounted process isolating diaphragm

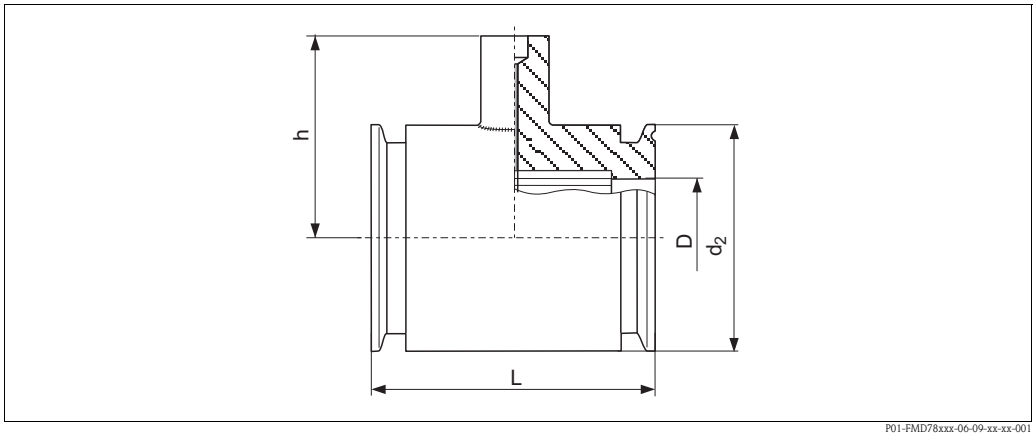


Process connections PMP55, left: thread ISO 228, right: thread ANSI

Threaded connection								Diaphragm seal		
Version	**Material**	**Thread**	**Nominal pressure** PN	**Diameter** d_1 [mm]	**Diameter** d_2 [mm]	**Screw-in length** x_1 [mm]	**Across flats** SW/AF	**Max. diaphragm diameter** d_M [mm]	**Height** h [mm]	**Diaphragm seal weight** [kg]
GTJ	316L	G1	400	30	39	21[1]	41	30	19	0.4
GVJ		G1 1/2 A	400	44	55	30	50	42	20	0.9
GWJ		G2	400	56	68	30	65	50	20	1.9
U5J		1 MNPT	400	-	48	28	41	24	37	0.6
U7J		1 1/2 MNPT	400	-	52	30	46	36	20	0.9
U8J		2 MNPT	400	-	78	30	65	38	35	1.8

1) 28 mm (1.1 in) in conjunction with high-temperature oil

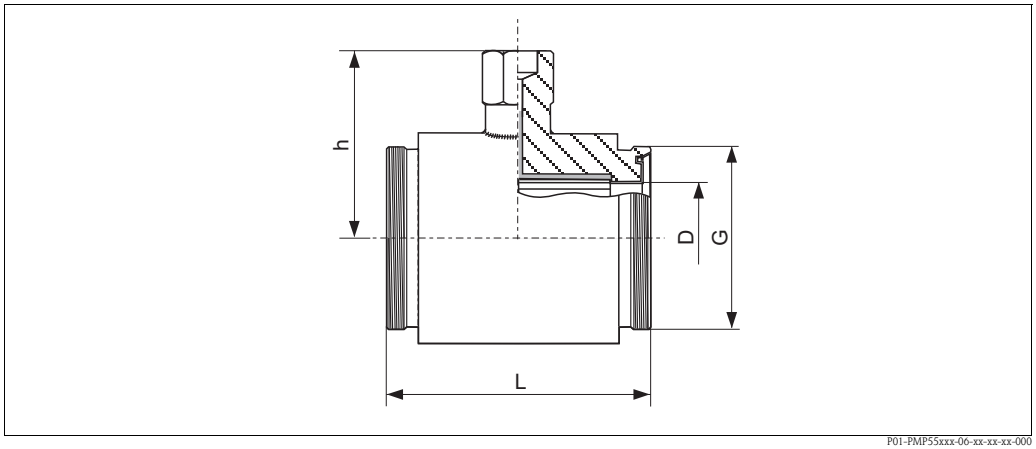
Pipe diaphragm seal (RDM) as per ISO2852



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium $R_a \leq 0.8$ µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter ISO2852	Nominal diameter	Diameter D [in]	Diameter d_2 [mm]	Height h [mm]	Face-to-face length L [mm]	Diaphragm seal weight [kg]
SBJ	DN 25	1"	22.5	50.5	67	126	1.7
SCJ	DN 38	1 1/2"	35.5	50.5	67	126	1.0
SDJ	DN 51	2"	48.6	64	79	100	1.7
SIJ	DN 10	3/4"	—	—	—	—	—
SJJ	DN 16	3/4"	—	—	—	—	—

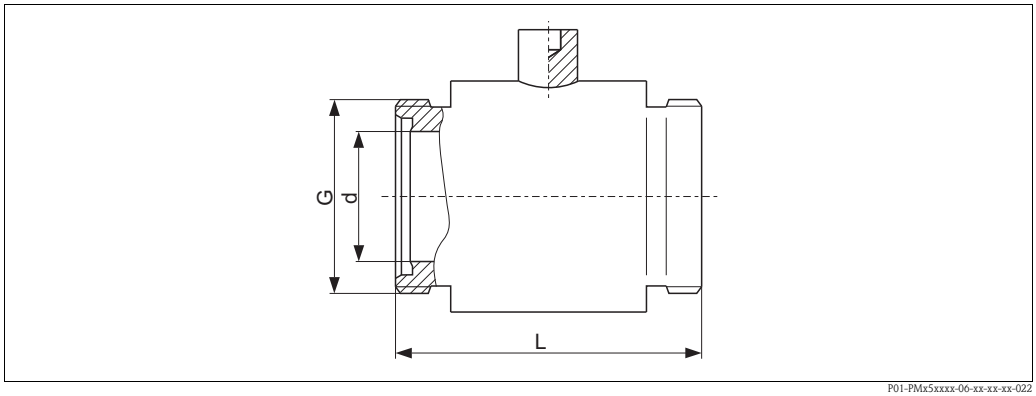
Pipe diaphragm seal (RDM) as per DIN 11851, Threaded adapter



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium $R_a \leq 0.8$ µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter DIN11851	Nominal pressure	Diameter D [in]	Thread G [mm]	Height h [mm]	Face-to-face length L [mm]	Diaphragm seal weight [kg]
SSJ	DN 25	PN40	26	Rd 52 x 1/6	65	114	1.0
STJ	DN 32	PN40	32	Rd 58 x 1/6	68	126	1.3
SUJ	DN 40	PN40	38	Rd 65 x 1/6	75	146	1.9
SZJ	DN 50	PN25	50	Rd 78 x 1/6	78	156	2.8

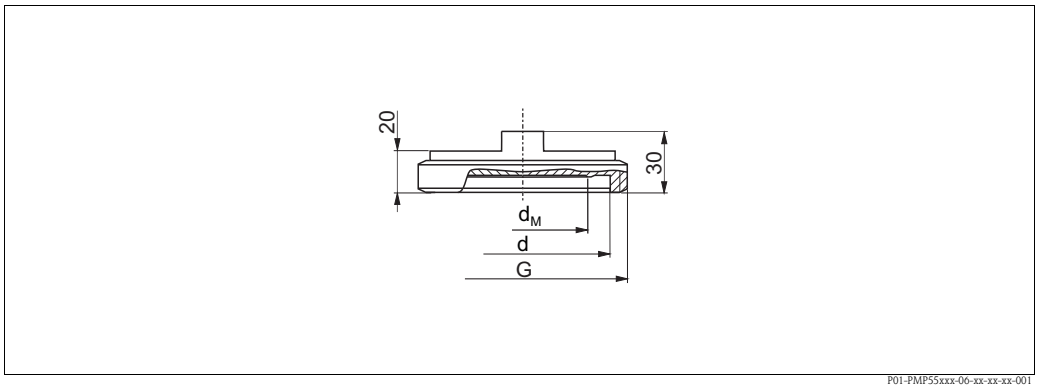
Pipe diaphragm seal (RDM) as per DIN11864-1



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter DIN11864-1	Nominal pressure	Diameter d [in]	Thread G [mm]	Face-to-face length L [mm]	Diaphragm seal weight [kg]
VAJ	DN 25	PN40	26	Rd 52 x 1/6	128	1.3
VCJ	DN 40	PN40	38	Rd 65 x 1/6	160	2.0
VDJ	DN 50	PN25	50	Rd 78 x 1/6	170	3.0

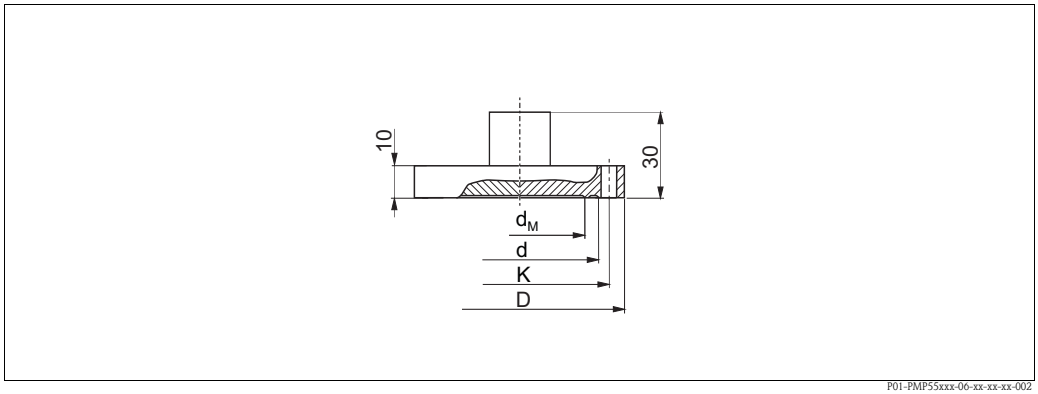
Aseptic pipe fitting, DIN 11864-1 Form A; pipe DIN 11866-1



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

	Threaded adapter				Diaphragm seal	
Version	Nominal diameter	Nominal pressure	Diameter d [mm]	Thread G	Max. diaphragm diameter d_M [mm]	Weight Diaphragm seal [kg]
NCJ	DN 40	PN 16	55	Rd 65 x 1/6	35	1.5
NDJ	DN 50		67	Rd 78 x 1/6	45	2.3

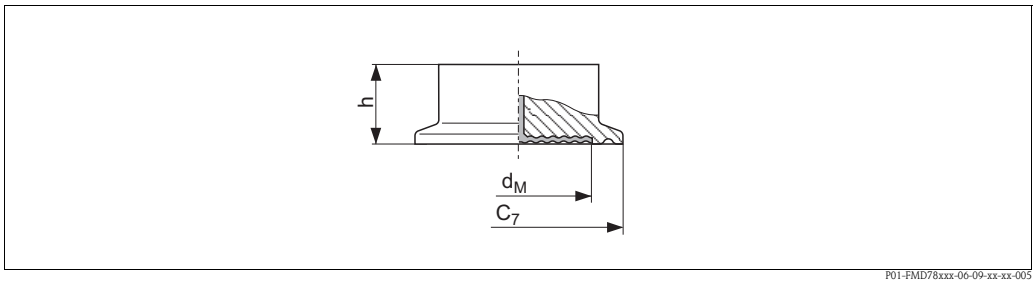
Aseptic flange connection, DIN 11864-2 Form A; pipe DIN 11866-1



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

	Collar flange					Diaphragm seal	
Version	**Nominal diameter**	**Nominal pressure**	**Hole circle diameter** **K** [mm]	**Seal diameter** **d** [mm]	**Outer diameter** **D** [mm]	**Max. diaphragm diameter** **d_M** [mm]	**Diaphragm seal weight** [kg]
NFJ	DN 32	PN 16	59	47.7	76	25	1.5
NXJ	DN 40		65	53.7	82	35	1.7
NZJ	DN 50		77	65.7	94	45	2.2

Tri-Clamp ISO 2852

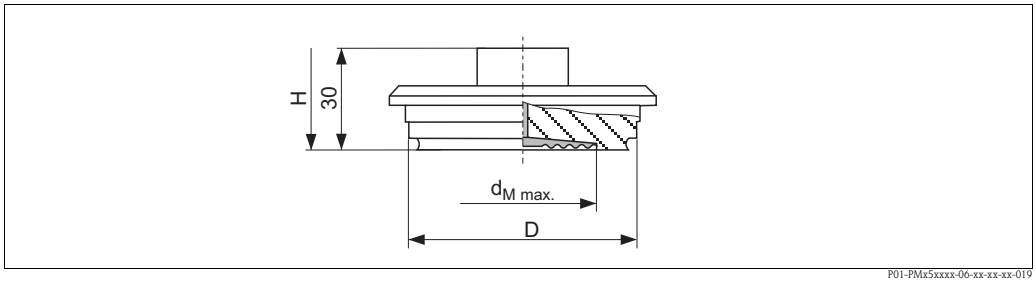


Process connection PMP55, material: AISI 316L, surface roughness of the surfaces in contact with the medium R_a≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	**Nominal diameter ISO 2852**	**Nominal diameter DIN 32676**	**Nominal diameter** **[in]**	**Diameter** **C_7 [mm]**	**Max. diaphragm diameter** **d_M [mm]**	**Height** **h [mm]**	**Diaphragm seal weight** **[kg]**
TCJ	DN 25	DN 25	1	50.5	24	37	0.32
TJJ [1]	DN 38	DN 40	1 1/2	50.5	34	30	1.0
TDJ [1]	DN 51	DN 50	2	64	48	30	1.1
TFJ	DN 76.1	–	3	91	73	30	1.2

1) Diaphragm seal versions optionally in conformity with ASME-BPE for use in biochemical processes, wetted surfaces R_a ≤ 0.38 µm (15 µin), electropolished; to be ordered using feature 570 "Service", version "HK" in the order code.

Varivent N for pipes



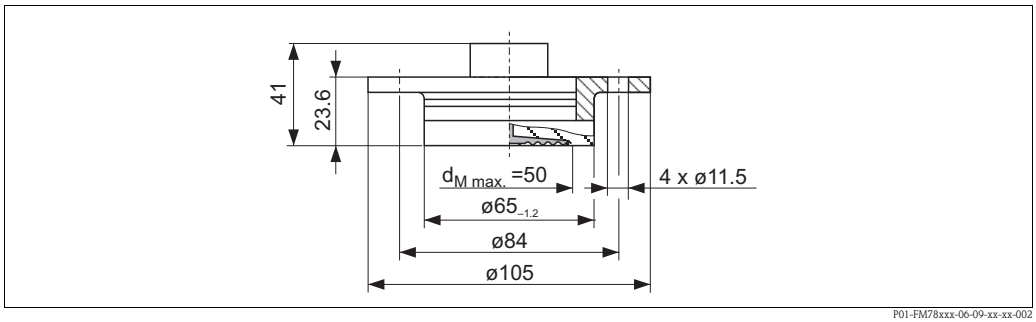
P01-PMx5xxxx-06-xx-xx-xx-019

Process connection PMP55, material AISI 316, 3A, surface roughness of the surfaces in contact with the medium $R_a \leq 0.8$ µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Description	Nominal pressure [bar]	Diameter **D** [mm]	Max. diaphragm diameter **d_M** [mm]	Max. installation height **H** [mm]	Diaphragm seal weight [kg]
TQJ	Type F for tubes DN 25 - DN 32	PN 40	50	30	250	0.6
TRJ [1]	Type N for tubes DN 40 - DN 162		68	64		0.8

1) Diaphragm seal versions optionally in conformity with ASME-BPE for use in biochemical processes, wetted surfaces $R_a \leq 0.38$ µm (15 µin), electropolished; to be ordered using feature 570 "Service", version "HK" in the order code.

DRD DN50 (65 mm)

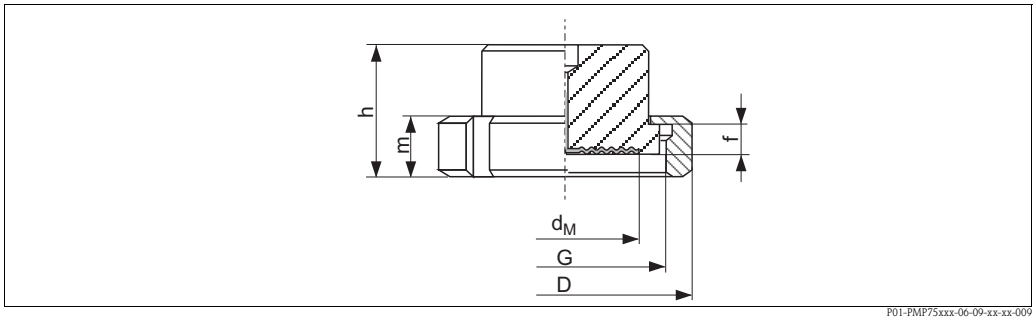


P01-FM78xxx-06-09-xx-xx-002

Process connection PMP55, surface roughness of the surfaces in contact with the medium $R_a \leq 0.8$ µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Material	Nominal pressure	Diaphragm seal weight [kg]
TIJ	AISI 316L	PN 25	0.75

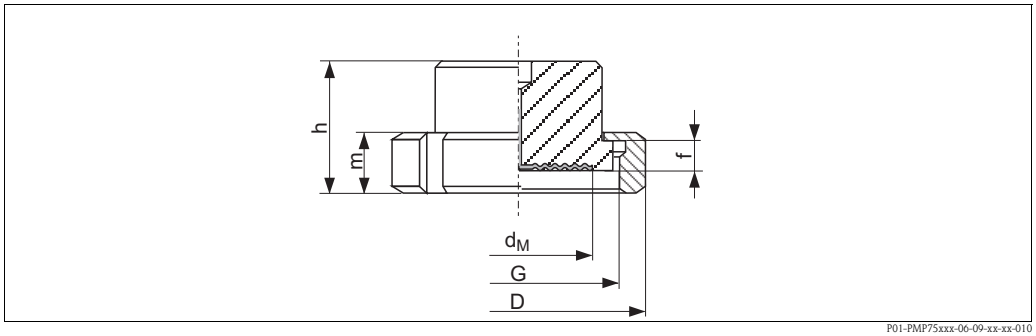
SMS nozzles with coupling nut



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter	Nominal pressure	Diameter	Adapter height	Thread	Height	Height	Max. diaphragm diameter	Diaphragm seal weight
			D	**f**	**G**	**m**	**h**	**d_M**	
	[in]	[bar]	[mm]	[mm]		[mm]	[mm]	[mm]	[kg]
T6J	1	PN 25	54	3.5	Rd 40 – 1/6	20	42.5	24	0.25
T7J	1 1/2	PN 25	74	4	Rd 60 – 1/6	25	57	36	0.65
TXJ	2	PN 25	84	4	Rd 70 – 1/6	26	62	48	1.05

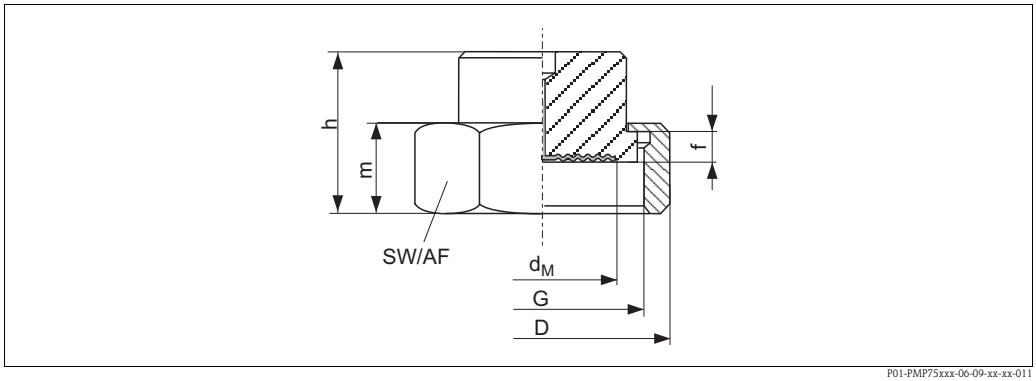
APV-RJT nozzles with coupling nut



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter	Nominal pressure	Diameter	Adapter height	Thread	Height	Height	Max. diaphragm diameter	Diaphragm seal weight
		PN	**D**	**f**	**G**	**m**	**h**	**d_M**	
	[in]	[bar]	[mm]	[mm]		[mm]	[mm]	[mm]	[kg]
T0J	1	PN 40	77	6.5	1 13/16 – 1/8"	22	42.6	21	0.45
T1J	1 1/2	PN 40	72	6.4	2 5/16 – 1/8"	22	42.6	28	0.75
T2J	2	PN 40	86	6.4	2 7/8 – 1/8"	22	42.6	38	1.2

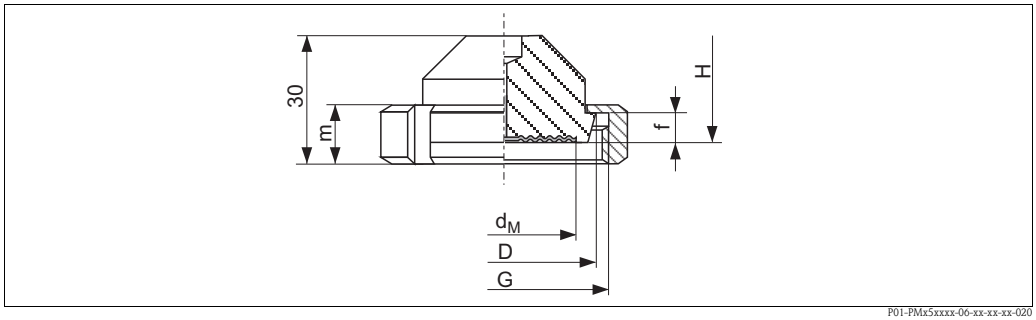
APV-ISS nozzles with coupling nut



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

Version	Nominal diameter [in]	Nominal pressure [bar]	Diameter D [mm]	Adapter height f [mm]	Thread G	Height m [mm]	Across flats AF	Height h [mm]	Max. diaphragm seal d_M [mm]	Diaphragm seal weight [kg]
T3J	1	PN 40	54.1	4	1 1/2" – 1/8"	30	46.8	50	24	0.4
T4J	1 1/2	PN 40	72	4	2" – 1/8"	30	62	50	34	0.6
T5J	2	PN 40	89	4	2 1/2" – 1/8"	30	77	50	45	1.1

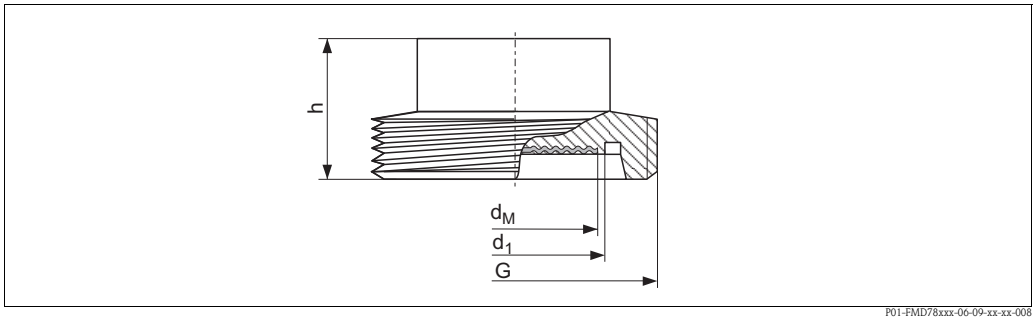
Taper adapter with coupling nut, DIN 11851



Process connection PMP55, material AISI 316L, 3A, surface roughness of the surfaces in contact with the medium R_a ≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

	Taper adapter				Slotted nut		Diaphragm seal		
Version	Nominal diameter	Nominal pressure	Diameter D [mm]	Adapter height f [mm]	Thread G	Height m [mm]	Max. diaphragm diameter d_M [mm]	Max. installation height H [mm]	Diaphragm seal weight [kg]
MIJ	DN 32	PN 40	50	10	Rd 58 x 1/6"	21	32	250	1.9
MZJ	DN 40	PN 40	56	10	Rd 65 x 1/6"	21	38		2.0
MRJ	DN 50	PN 25	68.5	11	Rd 78 x 1/6"	22	52		1.1
MSJ	DN 65	PN 25	86	12	Rd 95 x 1/6"	35	66		2.0
MTJ	DN 80	PN 25	100	12	Rd 110 x 1/4"	30	81		2.55

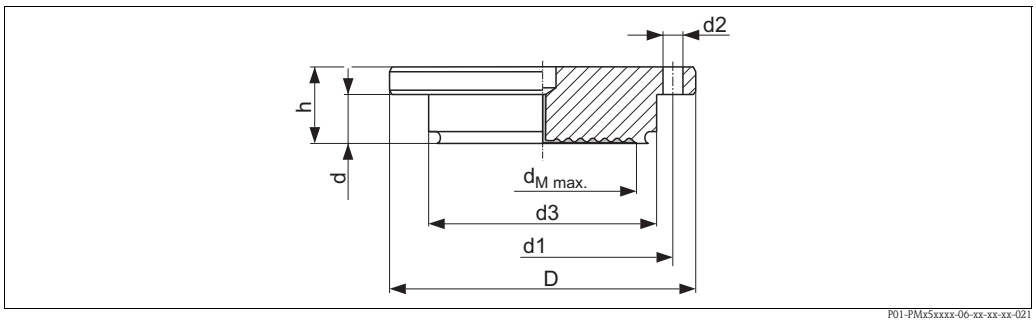
Threaded adapter, DIN 11851



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

	Threaded adapter					Diaphragm seal	
Version	**Nominal diameter**	**Nominal pressure**	**Diameter** d_1 [mm]	**Thread** G	**Height** h [mm]	**Max. diaphragm diameter** d_M [mm]	**Diaphragm seal weight** [kg]
NKJ	DN 50	PN 25	54	Rd 78 x 1/6"	35	52	0.9
NLJ	DN 65	PN 25	71	Rd 95 x 1/6"	40	66	1.7
NMJ	DN 80	PN 25	85	Rd 110 x 1/4"	40	81	2.0

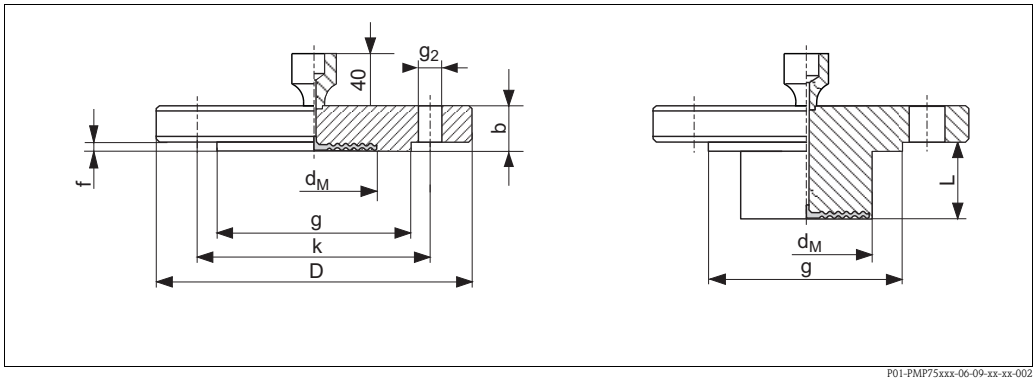
NEUMO BioControl



Process connection PMP55, material AISI 316L, surface roughness of the surfaces in contact with the medium Ra≤ 0.8 µm (31.5 µin) as standard. Lower surface roughness, see feature 570 "Service" version HK.

	Threaded adapter							Diaphragm seal	
Version	**Nominal diameter**	**Nominal pressure**	**Diameter diameter** D [mm]	**Hole circle** d_1 [mm]	**Diameter** d_2 [mm]	**Diameter** d_3 [mm]	**Height** h [mm]	**Max. diaphragm diameter** d_M [mm]	**Diaphragm seal weight** [kg]
S4J	DN 50	PN 16	90	70	4 x ∅ 9	50	27	40	1.1

EN/DIN flanges, connection dimensions as per EN 1092-1/DIN 2527 and DIN 2501-1



Process connection PMP55, EN/DIN flange with flush-mounted process isolating diaphragm, material AISI 316L

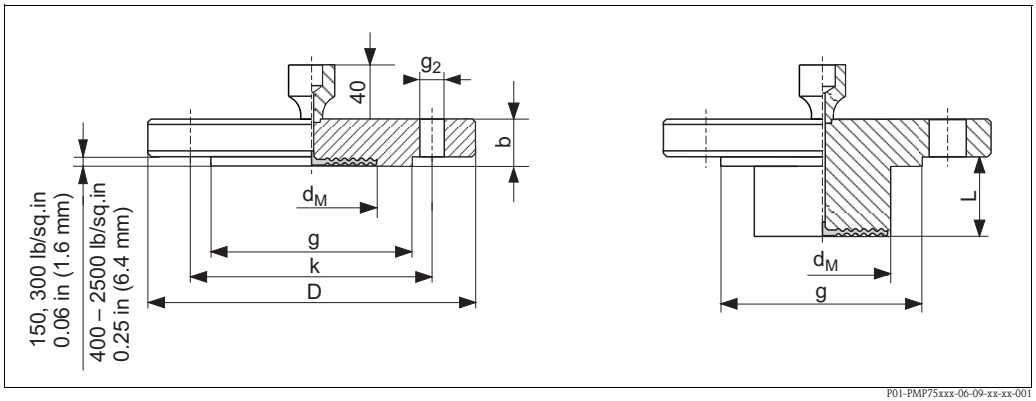
	Flanges							Boltholes			Diaphragm seal	
Version	**Nominal diameter**	**Nominal pressure**	**Shape** [1]	**Diameter**	**Thick ness**	**Raised face**		**Quantity**	**Diameter**	**Hole circle**	**Max. diaphragm diameter**	**Diaphragm seal weight**
				D	**b**	**g**	**f**		**g_2**	**k**	**d_M**	
				[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[kg]
CNJ	DN 25	PN 10-40	B1 (D)	115	18	66	3	4	14	85	32	2.1
QIJ	DN 25	PN 63-160	E	140	24	68	2	4	18	100	28	2.5
QJJ	DN 25	PN 250	E	150	28	68	2	4	22	105	28	3.7
QSJ	DN 25	PN 400	E	180	38	68	2	4	26	130	28	7.0
CPJ	DN 32	PN 10-40	B1 (D)	140	18	77	2.6	4	18	100	34	1.9
CQJ	DN 40	PN 10-40	B1 (D)	150	18	87	2.6	4	18	110	48	2.2
CXJ	DN 50	PN 10-40	B1 (D)	165	20	102	3	4	18	125	59	3.0
PDJ	DN 50	PN 63	B2 (E)	180	26	102	3	4	22	135	59	4.6
QOJ	DN 50	PN 100-160	E	195	30	102	3	4	26	145	59	6.2
QMJ	DN 50	PN 250	E	200	38	102	3	8	26	150	59	7.7
QVJ	DN 50	PN 400	E	235	52	102	3	8	30	180	59	14.7
CZJ	DN 80	PN 10-40	B1 (D)	200	24	138	3.5	8	18	160	89	5.3
PPJ	DN 80	PN 100	B2 (E)	230	32	138	4	8	24	180	89	8.9
PQJ	DN 100	PN 100	B2 (E)	265	36	175	5	8	30	210	89	13.7
FDJ [2]	DN 50	PN 10-40	B1 (D)	165	20	102	3	4	18	125	47	[2]
FEJ [2]	DN 80	PN 10-40	B1 (D)	200	24	138	3.5	8	18	160	72	[2]

1) Designation as per DIN 2527 in brackets

2) Available with 50 mm (1.97 in), 100 mm (3.94 in) or 200 mm (7.87 in) extended diaphragm seal, for extended diaphragm seal diameter and weight see the following table

Version	**Nominal diameter**	**Nominal pressure**	**Extended diaphragm seal length**	**Extended diaphragm seal diameter d_3**	**Diaphragm seal weight**
			[mm]	[mm]	[kg]
FDJ	DN 50	PN 10-40	50 / 100 / 200	48.3	3.2 / 3.8 / 4.4
FEJ	DN 80	PN 10-40	50 /100 / 200	76	6.2 / 6.7 / 7.8

ANSI flanges, connection dimensions as per ANSI B 16.5, raised face RF



Process connection PMP55, ANSI flange with and without extended diaphragm seal

	Flange						Boltholes			Diaphragm seal	
Version	**Material** [1]	**Nominal diameter**	**Class**	**Dia-meter**	**Thick-ness**	**Raised face**	**Quantity**	**Diameter**	**Hole circle**	**Max. diaphragm diameter**	**Diaphragm seal weight**
				D	**b**	**g**		**g_2**	**k**	**d_M**	
		[in]	[lb./ sq.in]	[in] / [mm]	[in] / [mm]	[in] / [mm]		[in] / [mm]	[in] / [mm]	[in] / [mm]	[kg]
ACJ	AISI 316/ 316L	1	150	4.25 / 108	0.56 / 14.2	2 / 50.8	4	0.62 / 15.7	3.12 / 79.2	1.26 / 32	1.2
ANJ	AISI 316/ 316L	1	300	4.88 / 124	0.69 / 17.5	2 / 50.8	4	0.75 / 19.1	3.5 / 88.9	1.26 / 32	1.3
A0J	AISI 316/ 316L	1	400/ 600	4.88 / 124	0.69 / 17.5	2 / 50.8	4	0.75 / 19.1	3.5 / 88.9	1.26 / 32	1.4
A2J	AISI 316/ 316L	1	900/ 1500	5.88 / 149.4	1.12 / 28.4	2 / 50.8	4	1 / 25.4	4 / 101.6	1.26 / 32	3.2
A4J	AISI 316/ 316L	1	2500	6.25 / 158.8	1.38 / 35.1	2 / 50.8	4	1 / 25.4	4.25 / 108	1.26 / 32	4.6
AEJ	AISI 316/ 316L	1 1/2	150	5 / 127	0.69 / 17.5	2.88 / 73.2	4	0.62 / 15.7	3.88 / 96.6	1.89 / 48	1.5
AQJ	AISI 316/ 316L	1 1/2	300	6.12 / 155.4	0.81 / 20.6	2.88 / 73.2	4	0.88 / 22.4	4.5 / 114.3	1.89 / 48	2.6
AFJ	AISI 316/ 316L	2	150	6 / 152.4	0.75 / 19.1	3.62 / 91.9	4	0.75 / 19.1	4.75 / 120.7	2.32 / 59	2.2
FMJ [2]	AISI 316/ 316L	2	150	6 / 152.4	0.75 / 19.1	3.62 / 91.9	4	0.75 / 19.1	4.75 / 120.7	1.85 / 47	[2]
ARJ	AISI 316/ 316L	2	300	6.5 / 165.1	0.88 / 22.4	3.62 / 91.9	8	0.75 / 19.1	5 / 127	2.32 / 59	3.4
A1J	AISI 316/ 316L	2	400/ 600	6.5 / 165.1	1 / 25.4	3.62 / 91.9	8	0.75 / 19.1	5 / 127	2.32 / 59	4.3
A3J	AISI 316/ 316L	2	900/ 1500	8.5 / 215.9	1.5 / 38.1	3.62 / 91.9	8	1 / 25.4	6.5 / 165.1	2.32 / 59	10.3
A5J	AISI 316/ 316L	2	2500	9.25 / 235	2 / 50.8	3.62 / 91.9	8	1.12 / 28.4	6.75 / 171.5	2.32 / 59	15.8
AGJ	AISI 316/ 316L	3	150	7.5 / 190.5	0.94 / 23.9	5 / 127	4	0.75 / 19.1	6 / 152.4	3.50 / 89	5.1
ASJ	AISI 316/ 316L	3	300	8.25 / 209.5	1.12 / 28.4	5 / 127	8	0.75 / 19.1	6 / 152.4	3.50 / 89	7.0

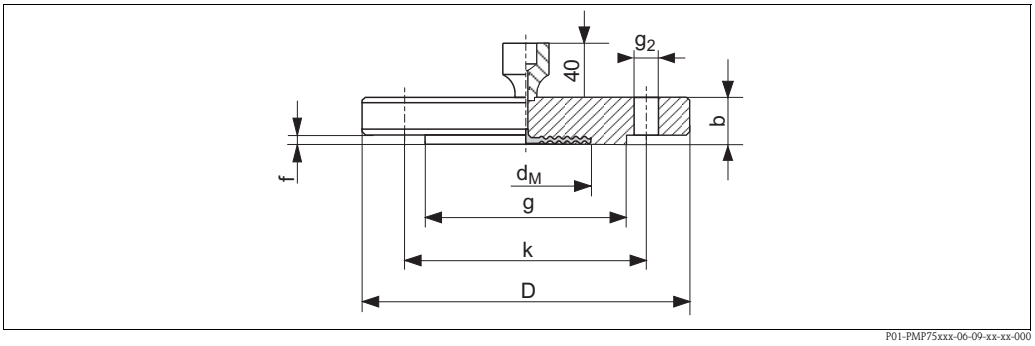
	Flange						Boltholes			Diaphragm seal	
Version	**Material** [1]	**Nominal diameter** [in]	**Class** [lb./ sq.in]	**Dia-meter** **D** [in] / [mm]	**Thick-ness** **b** [in] / [mm]	**Raised face** **g** [in] / [mm]	**Quantity**	**Diameter** g_2 [in] / [mm]	**Hole circle** **k** [in] / [mm]	**Max. diaphragm diameter** d_M [in] / [mm]	**Diaphragm seal weight** [kg]
FNJ [2]	AISI 316/ 316L	3	150	7.5 / 190.5	0.94 / 23.9	5 / 127	4	0.75 / 19.1	6 / 152.4	2.83 / 72	[2]
FWJ [2]	AISI 316/ 316L	3	300	8.25 / 209.5	1.12 / 28.4	5 / 127	8	0.88 / 22.4	6.62 / 168.1	2.83 / 72	[2]
AHJ	AISI 316/ 316L	4	150	9 / 228.6	0.94 / 23.9	6.19 / 157.2	8	0.75 / 19.1	7.5 / 190.5	3.50 / 89	7.2
ATJ	AISI 316/ 316L	4	300	10 / 254	1.25 / 31.8	6.19 / 157.2	8	0.88 / 22.4	7.88 / 200.2	3.50 / 89	11.7
FOJ [2]	AISI 316/ 316L	4	150	9 / 228.6	0.94 / 23.9	6.19 / 157.2	8	0.75 / 19.1	7.5 / 190.5	3.50 / 89	[2]
FXJ [2]	AISI 316/ 316L	4	300	10 / 254	1.25 / 31.8	6.19 / 157.2	8	0.88 / 22.4	7.88 / 200.2	3.50 / 89	[2]

1) Combination of AISI 316 for required pressure resistance and AISI 316L for required chemical resistance (dual rated)

2) Available with 2 in, 4 in, 6 in or 8 in extended diaphragm seal, for extended diaphragm seal diameter and weight see the following table

Version	**Nominal diameter** [in]	**Class** [lb./sq.in]	**Extended diaphragm seal length (L)** [in] / [mm]	**Extended diaphragm seal diameter d_3** [in] / [mm]	**Diaphragm seal weight** [kg]
FMJ	2	150	2 / 50.8	1.9 / 48.3	3.0
			4 / 101.6		3.4
			6 / 152.4		3.9
			8 / 203.2		4.4
FNJ	3	150	2 / 50.8	2.99 / 75.9	6.0
			4 / 101.6		6.6
			6 / 152.4		7.1
			8 / 203.2		7.8
FWJ	3	300	2 / 50.8	2.99 / 75.9	7.9
			4 / 101.6		8.5
			6 / 152.4		9.0
			8 / 203.2		9.6
FOJ	4	150	2 / 50.8	3.7 / 94	8.6
			4 / 101.6		9.9
			6 / 152.4		11.2
			8 / 203.2		12.4
FXJ	4	300	2 / 50.8	3.7 / 94	13.1
			4 / 101.6		14.4
			6 / 152.4		15.7
			8 / 203.2		16.9

JIS flanges, connection dimensions as per JIS B 2220 BL, raised face RF



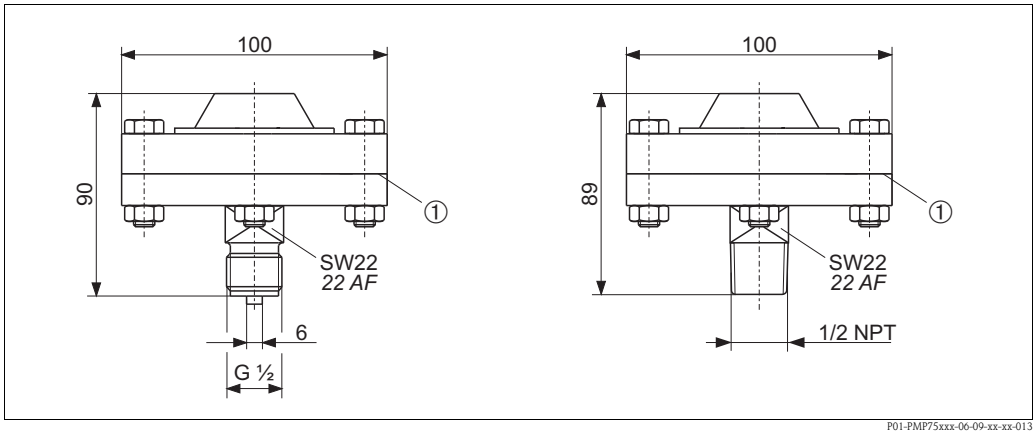
Process connection PMP55, JIS flange with raised face RF, material AISI 316L

	Flange [1]						Boltholes			Diaphragm seal	
Version	**Nominal diameter**	**Nominal pressure**	**Diameter** **D** [mm]	**Thickness** **b** [mm]	**Diameter of raised face** **g** [mm]	**Height of raised face** **f** [mm]	**Quantity**	**Diameter** **g_2** [mm]	**Hole circle** **k** [mm]	**Max. diaphragm diameter** **d_M** [mm]	**Diaphragm seal weight[2]** [kg]
KCJ	25 A	10 K	125	14	67	1	4	19	90	32	1.5
KEJ	40 A	10 K	140	16	81	2	4	19	105	48	2.0
KFJ	50 A	10 K	155	16	96	2	4	19	120	59	2.3
KGJ	80 A	10 K	185	18	127	2	8	19	150	89	3.3
KHJ	100 A	10 K	210	18	151	2	8	19	175	89	4.4

1) The roughness of the surface in contact with the medium, including the raised face of the flanges (all standards) made of Hastelloy C, Monel or tantalum, is Ra 0.8 μm. Lower surface roughness available on request.

2) Housing weight → 🗎 52

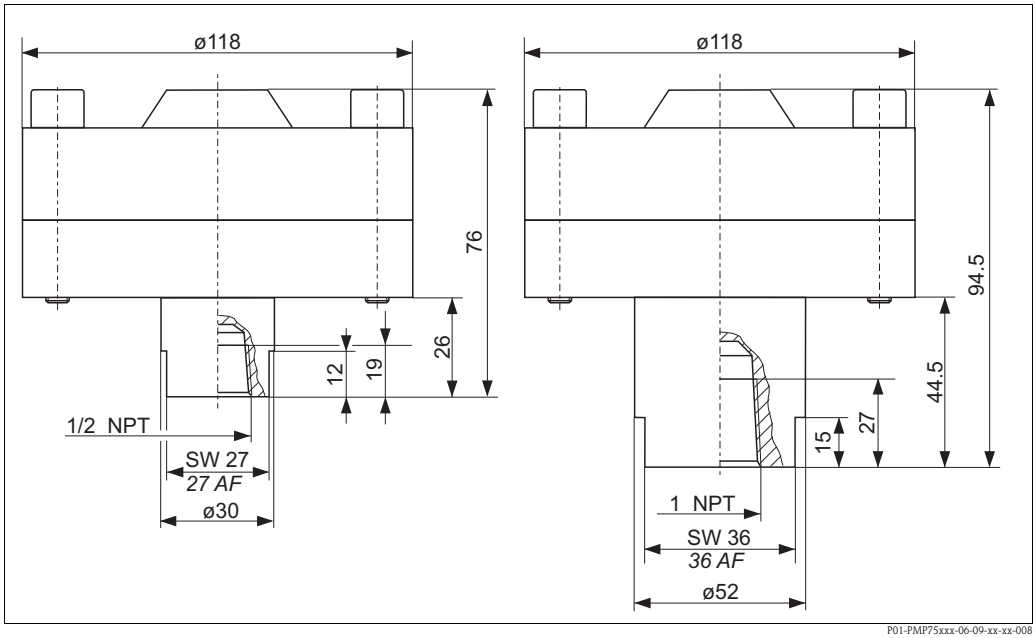
Thread 1/2 NPT and 1 NPT, separator



Process connection PMP55, left version "UDJ" threaded, with threaded connection ISO 228 G 1/2 B, right version "UEJ" with threaded connection ANSI 1/2 MNPT

1 PTFE seal as standard max. 260°C (500°F) (higher temperatures on request)

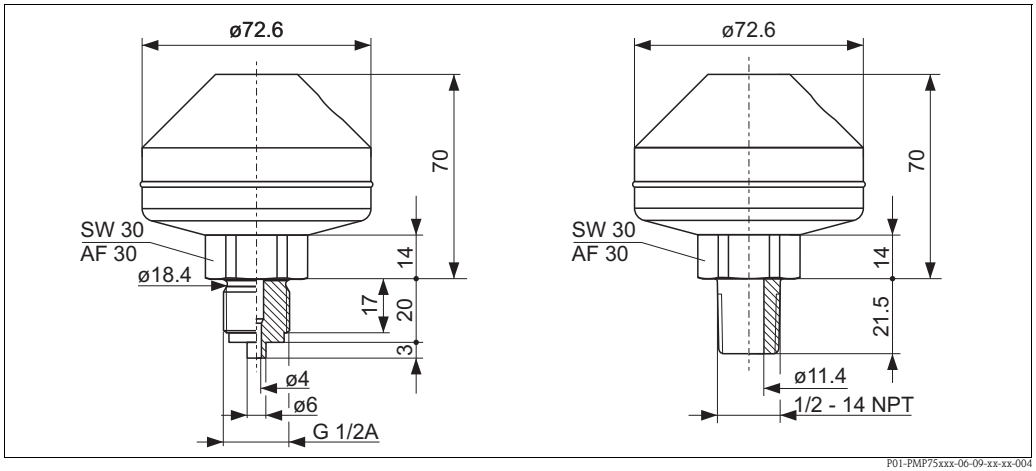
Version	Measuring range	Description	Nominal pressure	Diaphragm seal weight [kg]
UDJ	≤ 40 bar	ISO 228 G 1/2 B	PN 40	1.43
UEJ	≤ 40 bar	ANSI 1/2 MNPT	PN 40	1.43



Process connection PMP55, version "UGJ" and "UHJ", threaded, material AISI 316L, seal Viton

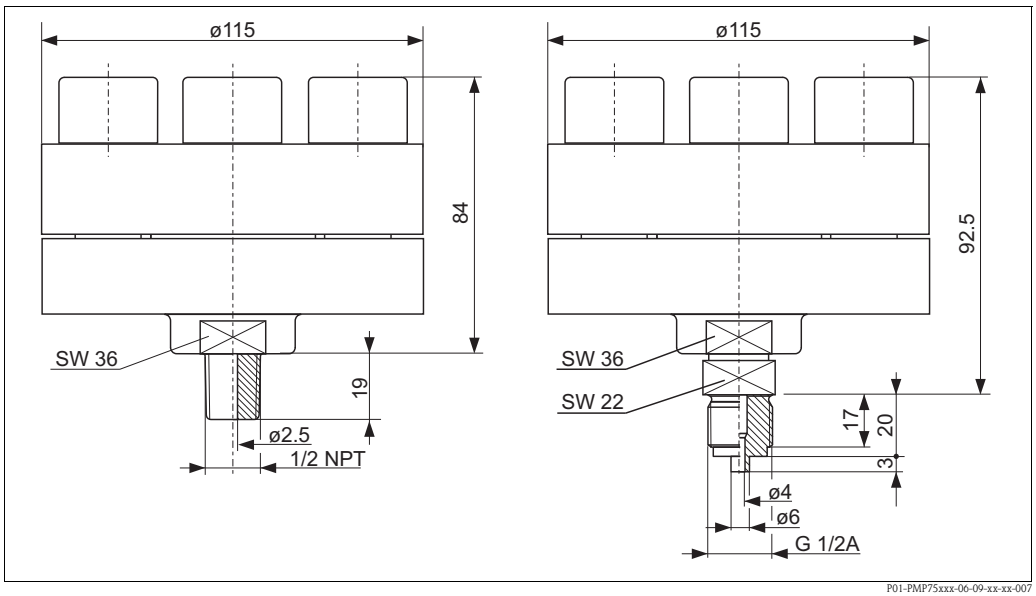
Version	Description	Nominal pressure	Diaphragm seal weight [kg]
UGJ	1/2 NPT	PN 250	4.75
UHJ	1 NPT	PN 250	5.0

Thread ISO 228 G 1/2 A and ANSI 1/2 MNPT, separator



Process connection PMP55, version "UBJ" and "UCJ", welded, material AISI 316L

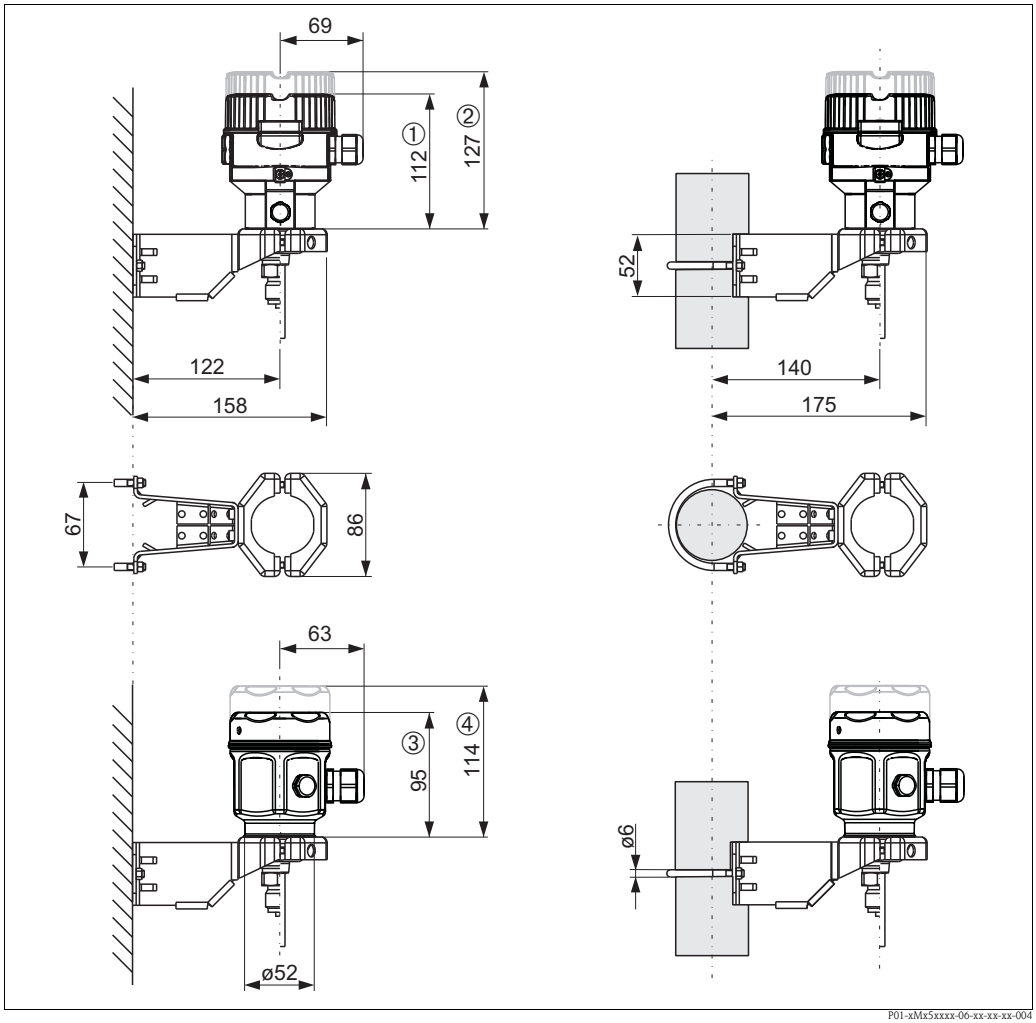
Version	Description	Nominal pressure	Diaphragm seal weight [kg]
UBJ	ISO 228 G 1/2 A	PN 160	1.43
UCJ	ANSI 1/2 MNPT	PN 160	1.43



Process connection PMP55, version "UBJ" and "UCJ", threaded, with integrated seal lip, material AISI 316L

Version	Measuring range	Description	Nominal pressure	Diaphragm seal weight [kg]
UBJ	> 40 bar	ISO 228 G 1/2 A	PN 400	4.75
UCJ	> 40 bar	ANSI 1/2 MNPT	PN 400	4.75

Wall and pipe mounting with mounting bracket



F31 housing dimensions. Housing weight → 52. ① Cover without viewing window. ② Cover with viewing window.

F15 housing dimensions. Housing weight → 52. ③ Cover without viewing window. ④ Cover with viewing window.

Weight

Housing

	F31 (aluminum)	F15 (stainless steel)	Separate housing
With electronic insert and local display	1.1 kg (2.43 lbs)	0.8 kg (1.76 lbs)	Weight of housing + 0.5 kg (1.10 lbs). Weight of sensor + 0.5 kg (1.10 lbs).
With electronic insert without local display	1.0 kg (2.21 lbs)	0.7 kg (1.54 lbs)	

Process connections

- Process connections PMC51 (with ceramic process isolating diaphragm): → 26 ff
- Process connections PMP51 (with metal process isolating diaphragm): → 32 ff
- Process connections PMP55 (with diaphragm seal): → 38 ff

Material

F31 housing:
- F31 housing, optionally:
  – Die-cast aluminum with protective powder-coating on polyester base: RAL 5012 (blue), cover: RAL 7035 (gray)
- Sight glass: mineral glass
- Cable gland M20 x 1.5: polyamide (PA) or CuZn nickel-plated
- Pressure compensation filter: PA6 GF10

- Cable entry blind plug:
  - G ½": PBT-GF30 FR, for Dust Ex, Ex d, FM XP and CSA XP: AISI 316L (1.4435)
  - NPT ½": PBT-GF30 FR, for Dust Ex, Ex d, FM XP and CSA XP: AISI 316L (1.4435)
- Seals:
  - Cable gland and blind plug: EPDM
  - Pressure compensation filter O-ring: silicone (VMQ)
  - Cover: EPDM
  - Sight glass: silicone (VMQ)
- Nameplates: plastic

F15 housing:
- Housing and cover: stainless steel AISI 316L
- Sight glass:
  - Version for non-hazardous areas, ATEX Ex ia, NEPSI Zone 0/1 Ex ia, IECEx Zone 0/1 Ex ia, FM NI, FM IS, CSA IS: polycarbonate (PC)
  - ATEX 1/2 D, ATEX 1/3 D, ATEX 1 GD, ATEX 1/2 GD, ATEX 3 G, FM DIP, CSA Dust Ex: mineral glass
- Cable gland M20 x 1.5: polyamide PA, for Dust-Ex: CuZn nickel-plated
- Pressure compensation filter: PA6 GF10
- Blind plug: PBT-GF30 FR, for Dust Ex: AISI 316L
- Seals:
  - Cable gland and blind plug: NBR
  - Pressure compensation filter O-ring: silicone (VMQ)
  - Cover: silicone with PTFE coating
  - Sight glass: silicone (VMQ)
- Nameplates: lasered

Process connections

- "Threaded connection" and "DIN/EN flanges" (see also "Ordering information" section): stainless steel AISI 316L
- With regard to their stability-temperature property, the materials 1.4435 and 1.4404 are grouped together under 13EO in EN 1092-1 Tab. 18. The chemical composition of the two materials can be identical.

Cable for separate housing:

- PE cable:
  Abrasion-proof cable with strain-relief Dynema members; shielded using aluminum-coated foil; insulated with polyethylene (PE-LD), black; copper wires, twisted, UV-resistant
- FEP cable:
  Abrasion-proof cable; shielded using galvanized steel wire mesh; insulated with fluorinated ethylene propylene (FEP), black; copper wires, twisted, UV-resistant

TSE Certificate of Suitability

The following applies to all process wetted device components:
- They do not contain any materials derived from animals.
- No auxiliaries or operating materials derived from animals are used in production or processing.

Note!
The wetted device components are listed in the "Mechanical construction" (→ 📄 26) and "Ordering information" (→ 📄 63 ff) sections.

Miscellaneous:

- Process isolating diaphragm PMC51: Al_2O_3 aluminum-oxide ceramic, Ceraphire® (FDA 21CFR186.1256, USP
  Class VI), ultrapure 99.9 % (→ see also www.endress.com/ceraphire)
- Mounting accessories: mounting kit with screws AISI 304
- Diaphragm seal capillary: AISI 316 Ti
- Protective hose for diaphragm seal capillary: AISI 304

→ For process connections, process isolating diaphragms, seals and filling oils see ordering information, → 📄 63 ff.

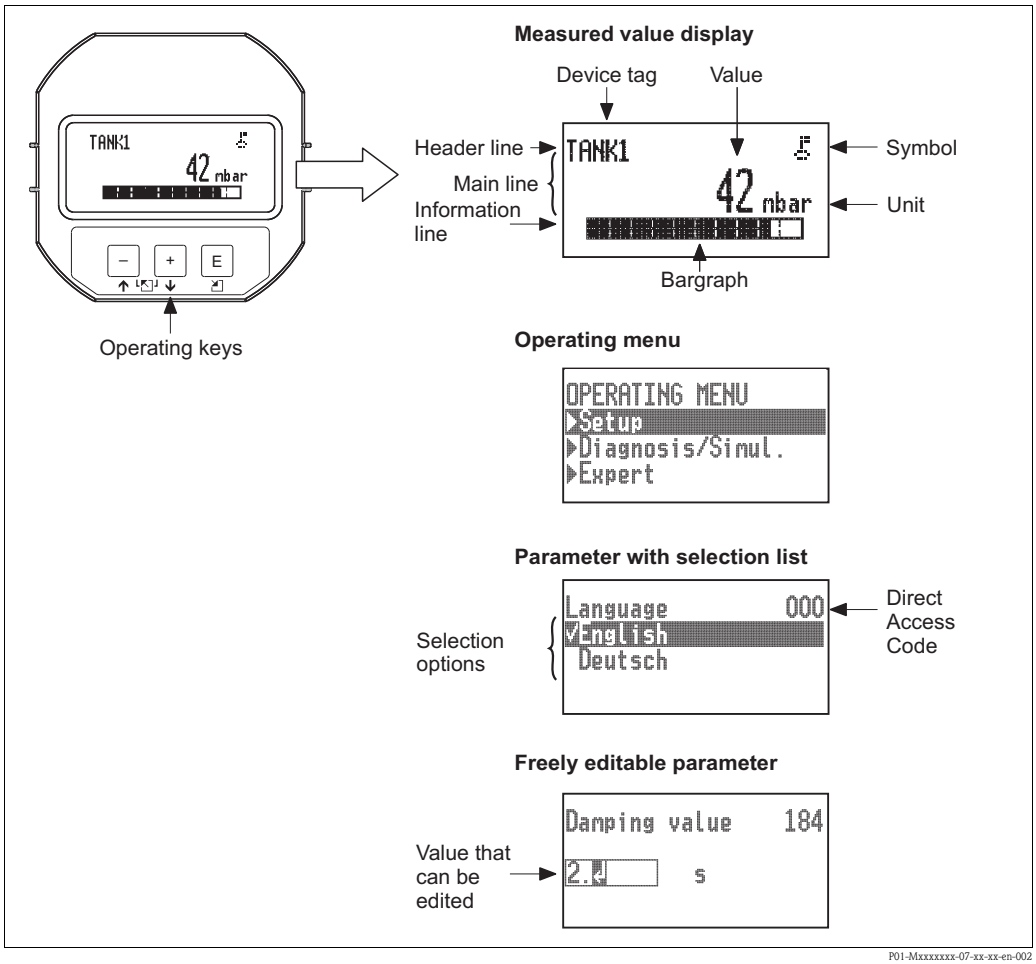
Human interface

Operating elements

Local display (optional) for devices with HART electronics

A 4-line liquid crystal display (LCD) is used for display and operation. The local display shows measured values, dialog texts as well as fault and notice messages in plain text, thereby supporting the user at every stage of operation. The liquid crystal display of the device can be turned in 90° stages.
Depending on the orientation of the device, this makes it easy to operate the device and read the measured values.

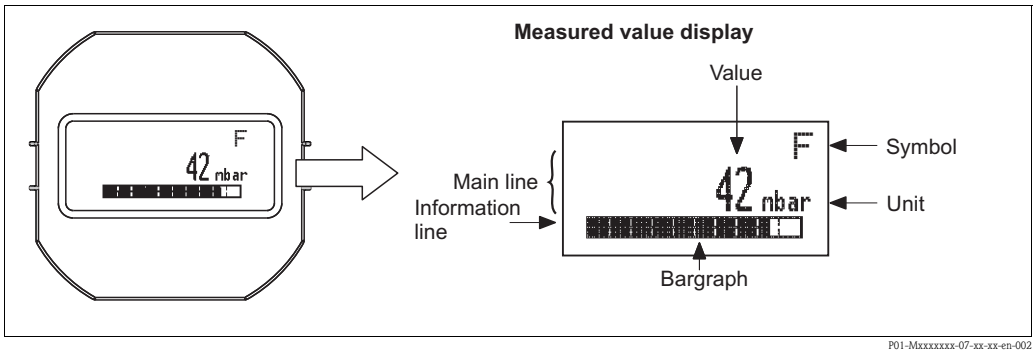
Functions:
- 8-digit measured value display including sign and decimal point, bar graph for 4 to 20 mA HART as current display
- Three keys for operation
- Simple and complete menu guidance as parameters are split into several levels and groups
- Each parameter is given a 3-digit ID number for easy navigation
- Possibility of configuring the display to suit individual requirements and preferences, such as language, alternating display, contrast setting, display of other measured values such as sensor temperature etc.
- Comprehensive diagnostic functions (fault and warning message etc.)



Local display (optional) for devices with analog electronics

A 4-line liquid crystal display (LCD) is used. The local display shows measured values, fault messages and notice messages. The liquid crystal display of the device can be turned in 90° stages.
Depending on the orientation of the device, this makes it easy to operate the device and read the measured values.

Functions:
- 8-digit measured value display including sign and decimal point, bar graph for 4 to 20 mA as current display.
- Diagnostic functions (fault and warning message etc.)



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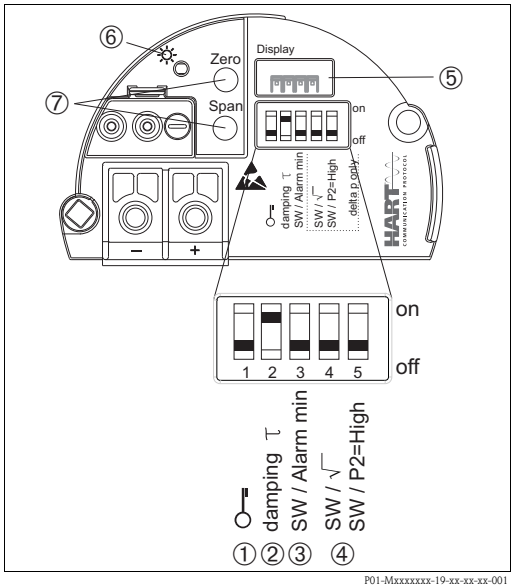
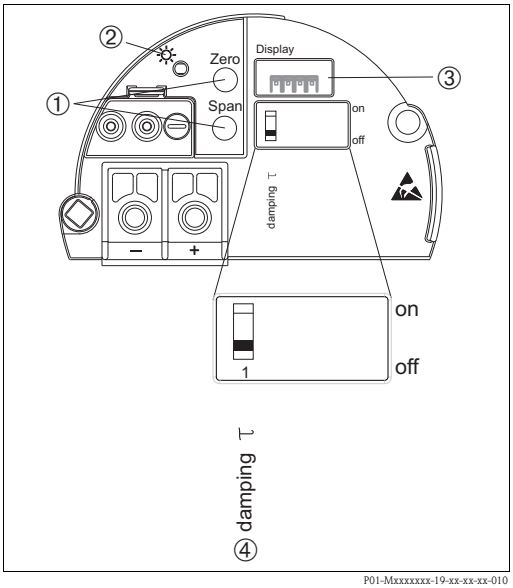
Operating keys and elements located on the electronic insert



P01-Mxxxxxxx-19-xx-xx-xx-001

HART electronic insert

1 *DIP switch for locking/unlocking parameters relevant to the measured value*
2 *DIP switch for switching damping on/off*
3 *DIP switch for alarm current SW / Alarm Min (3.6 mA)*
4 *DIP switch only for Deltabar M*
5 *Slot for optional local display*
6 *Green LED to indicate successful operation*
7 *Operating keys for lower range value (zero) and upper range value (span)*



P01-Mxxxxxxx-19-xx-xx-xx-010

Analog electronic insert

1 *Operating keys for lower range value (zero) and upper range value (span)*
2 *Green LED to indicate successful operation*
3 *Slot for optional local display*
4 *DIP switch for switching damping on/off*

Onsite operation

Function	Operation with operating keys and operating elements on the electronic insert		Operation via display	
	Analog	HART	Analog	HART
Position adjustment (zero point correction)	X	X	–	X
Setting lower range value and upper range value – reference pressure present at the device	X	X	–	X
Device reset	X	X	–	X
Locking and unlocking parameters relevant to the measured value	–	X	–	X
Value acceptance indicated by the green LED	X	X	–	–
Switching damping on and off	X	X	–	X

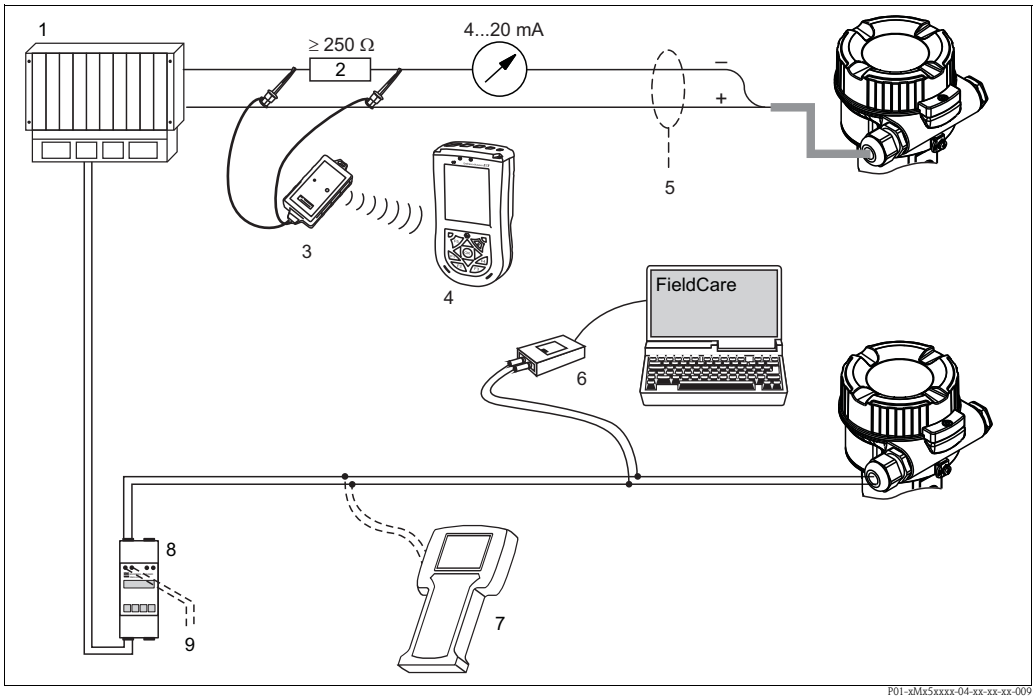
Remote operation

All software parameters are accessible depending on the position of the write protection switch on the device.

HART

Remote operation via:

- Field Communicator 375 handheld terminal. Use the handheld terminal to set all parameters all along the bus cable via menu operation.
- Field Xpert: Field Xpert is an industrial PDA with integrated 3.5" touchscreen from Endress+Hauser based on Windows Mobile. It communicates via wireless with the optional VIATOR Bluetooth modem connected to a HART device point-to-point or wireless via WiFi and Endress+Hauser's Fieldgate FXA520. Field Xpert also works as a stand-alone device for asset management applications. For details refer to BA060S/04/EN.
- FieldCare: FieldCare is an Endress+Hauser asset management tool based on FDT technology. With FieldCare, you can configure all Endress+Hauser devices.
  - FieldCare supports the following functions:
    - Configuration of transmitters in offline and online mode
    - Loading and saving device data (upload/download)
    - Documentation of the measuring point
  - Connection options:
    - By means of the Commubox FXA191 for intrinsically safe HART communication with FieldCare via the RS232C interface of a computer. For details refer to TI237F/00/EN.
    - By means of the Commubox FXA195 for intrinsically safe HART communication with FieldCare via the USB port of a computer. For details refer to TI404F/00/EN.



1 PLC
2 Resistor for HART communication
3 VIATOR Bluetooth Modem with connection cable
4 Field Xpert (Industrial PDA)
5 Screening
6 Commubox FXA191 (RS232), FXA195 (USB)
7 Handheld terminal DXR375/FC375
8 Transmitter power supply unit RMA422 or RN221N (with integrated communication resistor)
9 Conection for:
- Commubox FXA191 (RS232), FXA195 (USB)
- Handheld terminal DXR375/FC375

Note!
For further information please contact your local Endress+Hauser Sales Center.

Planning instructions for diaphragm seal systems

Note!
The performance and the permitted applications for a diaphragm seal system depend on the process isolating diaphragm used, the filling oil, the coupling, the design and the process and ambient conditions at the place of operation.
To help you select suitable diaphragm seal systems for your individual application,
Endress+Hauser provides a free "Applicator Sizing Diaphragm Seal" selection tool. This tool is available for download online at "www.endress.com/applicator", or is available offline on a CD.
For further details, or for information on an optimum diaphragm seal solution, please contact your local Endress+Hauser Sales Center.

Applications

Diaphragm seal systems should be used if the process and the device need to be separated. Diaphragm seal systems offer clear advantages in the following instances:
- In the case of extreme process temperatures
- For aggressive media
- If extreme measuring point cleaning is necessary, or in the event of very damp mounting locations
- If the measuring point is exposed to severe vibrations
- For mounting locations that are difficult to access

Function and design

Diaphragm seals separate the measuring system from the process.

A diaphragm seal system consists of:
- A diaphragm seal
- A capillary tube or a temperature isolator if necessary
- Fill fluid
- A pressure transmitter

The process pressure acts via the process isolating diaphragm of a diaphragm seal on the liquid-filled system, which transfers the process pressure to the sensor of the pressure transmitter.
Endress+Hauser delivers all diaphragm seal systems as welded versions. The system is hermetically sealed, which ensures greater reliability.

The diaphragm seal determines the application range of the system on the basis of
- The diameter of the process isolating diaphragm
- The process isolating diaphragm: stiffness and material
- The design (oil volume)

Diameter of the process isolating diaphragm

The greater the diameter of the process isolating diaphragm (less stiff), the smaller the temperature effect on the measurement result.

Stiffness of the process isolating diaphragm

The stiffness depends on the diameter of the process isolating diaphragm, the material, any existing coating, the thickness of the process isolating diaphragm and the shape. The thickness of the process isolating diaphragm and the shape are determined by the design. The stiffness of a process isolating diaphragm of a diaphragm seal influences the temperature application range and the measuring error caused by temperature effects.

Capillary

Capillaries with an internal diameter of 1 mm (0.04 in) are used as standard.
As a result of its length and internal diameter, the capillary tube influences the thermal change, the ambient temperature application range and the response time of a diaphragm seal system.

Filling oil

When selecting the filling oil, the medium temperature and ambient temperature, as well as the process pressure, are of crucial importance. Observe the temperatures and pressures during commissioning and cleaning. A further selection criterion is the compatibility of the filling oil with the requirements of the medium. For example, only filling oils that do not present a health hazard are used in the food industry, e.g. vegetable oil or silicone oil.
→ See also the following section "Diaphragm seal filling oils".
The filling oil used influences the thermal change, the temperature application range of a diaphragm seal system and the response time. A temperature change results in a volume change in the filling oil. The volume change depends on the thermal expansion coefficient of the filling oil and on the volume of the fill fluid at calibration temperature (constant in the range: +21 to +33°C (+70 to 91°F)).
For example, the filling oil expands in the event of a temperature increase. The additional volume presses against the process isolating diaphragm of a diaphragm seal. The stiffer a process isolating diaphragm is, the greater its return force, which counteracts a volume change and acts together with the process pressure on the measuring cell, thus shifting the zero point.

Pressure transmitter

The pressure transmitter influences the temperature application range, the thermal change and the response time as a result of its volume change. The volume change is the volume that has to be shifted in order to pass through the complete measuring range.
Pressure transmitters from Endress+Hauser are optimized with regard to minimum volume change.

Diaphragm seal filling oils

Ver sion[1]	Filling oil	Permissible temperature range [2] at 0.05 bar (0.725 psi) ≤ p_{abs} ≤ 1 bar (14.5 psi)	Permissible temperature range[2] at p_{abs} ≥ 1 bar (14.5 psi)	Density [g/cm³] / [SGU]	Viscosity [mm²/s] / [cSt] at 25°C (77°F)	Thermal expansion coefficient [1/K]	Note
1	Silicone oil	–40 to +180°C (–40 to +356°F)	–40 to +250°C (–40 to +482°F)	0.96	100	0.00096	Suitable for foods FDA 21 CFR 175.105
2	Inert oil	–40 to +80°C (–40 to +176°F)	–40 to +175°C (–40 to +347°F)	1.87	27	0.000876	For ultrapure gas and oxygen applications
4	Vegetable oil	–10 to +120°C (+14 to +248°F)	–10 to +200°C (+14 to +392°F)	0.94	9.5	0.00101	Suitable for foods FDA 21 CFR 172.856
5	High-temperature oil [3]	–10 to +200°C (+14 to +392°F)	–10 to +400°C (+14 to +752°F)	1.07	37	0.0007	High temperatures
6	Low-temperature oil[4]	–70 to +80°C (–94 to +176°F)	–70 to +180°C (–94 to +349°F)	0.92	4.4	0.00108	Low temperatures

1) Version for feature 180 in the order code (→ 🖹 71 ff)

2) Observe temperature limits of the device (→ 🖹 24) and of the system (→ 🖹 58).

3) When simultaneously applying the diaphragms seal at high process temperatures and low absolute pressures, Endress+Hauser recommends the vacuum service (Feature 570 "Service" version "HG").

4) Please refer to the "Applicator Sizing Diaphragm Seal" tool for the thermal change of the diaphragm seal and other important technical features.

Operating temperature range

The operating temperature range of a diaphragm seal system depends on the fill fluid, capillary length and internal diameter, process temperature and oil volume of the diaphragm seal.
The range of application can be extended by using a fill fluid with a smaller expansion coefficient and a shorter capillary.

Installation instructions

Diaphragm seal systems

- Endress+Hauser offer flushing rings as accessory to clean process isolating diaphragms without taking the transmitters out of process.
  For further information please contact your local Endress+Hauser Sales Center.
- A diaphragm seal together with the transmitter form a closed, calibrated system, which is filled through openings in the diaphragm seal and in the transmitter's measurement system. These openings are sealed and must not be opened.
- In the case of devices with diaphragm seals and capillaries, the zero point shift caused by the hydrostatic pressure of the filling liquid column in the capillaries must be taken into account when selecting the measuring cell. If a measuring cell with a small measuring range is selected, a position adjustment can cause range violation.
- For devices with a temperature isolator or capillary, a suitable fastening device (mounting bracket) is recommended.
- When using diaphragm seal systems with a capillary, sufficient strain relief must be ensured in order to prevent the capillary bending down (bending radius ≥ 100 mm (3.94 in)).

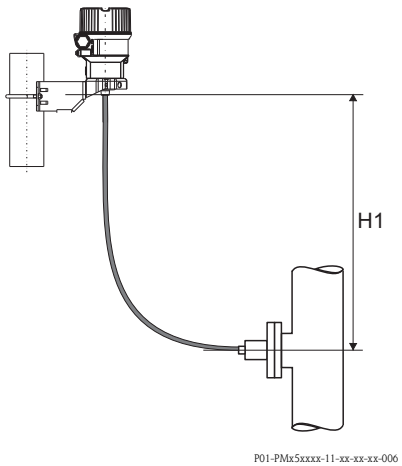
Capillary

In order to obtain more precise measurement results and to avoid a defect in the device, mount the capillaries as follows:
- Vibration–free (in order to avoid additional pressure fluctuations)
- Not in the vicinity of heating or cooling lines
- Insulate if the ambient temperature is below or above the reference temperature
- With a bending radius of ≥ 100 mm (3.94 in).

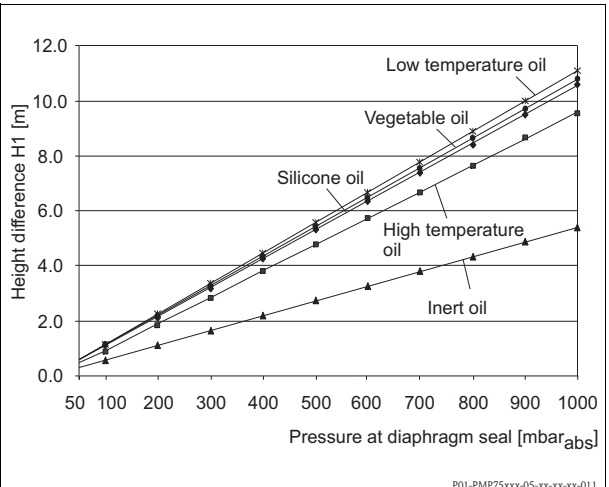
Vacuum applications

For applications under vacuum, Endress+Hauser recommends mounting the pressure transmitter below the diaphragm seal. This prevents vacuum loading of the diaphragm seal caused by the presence of fill fluid in the capillary.

When the pressure transmitter is mounted above the diaphragm seal, the maximum height difference H1 in accordance with the illustration below must not be exceeded. The maximum height difference depends on the density of the filling oil and the smallest ever pressure that is permitted to occur at the diaphragm seal (empty container), see illustration below right.
When simultaneously applying the diaphragm seal systems at high process temperatures and low absolute pressures, Endress+Hauser recommends the vacuum service (Feature 570 "Service" version "HG").



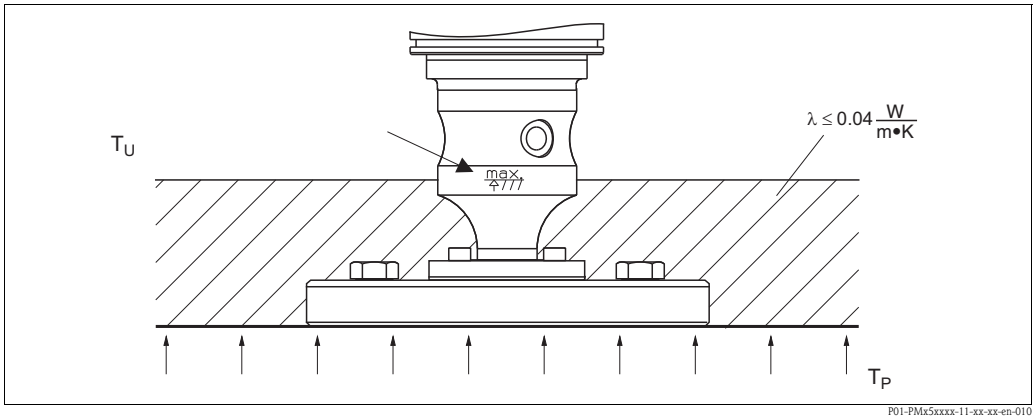
Installation above the diaphragm seal



Maximum installation height above the diaphragm seal for vacuum applications

Thermal insulation

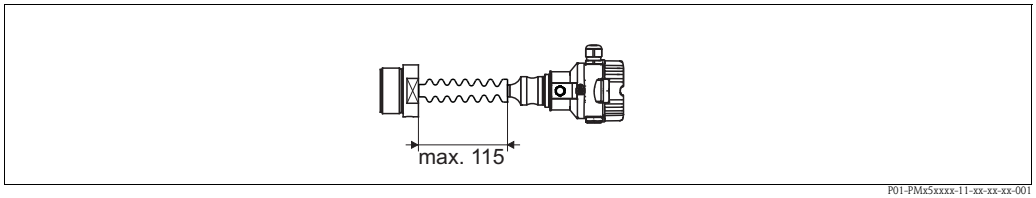
The PMP55 may only be insulated up to a certain height. The maximum permitted insulation height is indicated on the devices and applies to an insulation material with a heat conductivity ≤ 0.04 W/(m x K) and to the maximum permitted ambient and process temperature. The data were determined under the most critical application "quiescent air".



Maximum permitted insulation height, here indicated on a PMP55 with a flange

Mounting with temperature isolator

Endress+Hauser recommends the use of temperature isolators in the event of constant extreme medium temperatures which lead to the maximum permissible electronics temperature of +85°C (+185°F) being exceeded.
Depending on the filling oil used, diaphragm seal systems with temperature isolators can be used for maximum temperatures of up to
260 °C (+500 °F). → For the temperature application limits, see → 📄 59, "Diaphragm seal filling oils" section.
To minimize the influence of rising heat, Endress+Hauser recommends the device be mounted horizontally or with the housing pointing downwards.
The additional installation height also brings about a maximum zero point shift of 21 mbar (0.315 psi) due to the hydrostatic column in the temperature isolator. You can correct this zero point shift at the device.



PMP55 with temperature isolator

Certificates and approvals

CE mark

The device meets the legal requirements of the relevant EC directives.
Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.

Ex approvals

- ATEX
- IECEx
- FM
- CSA
- Also combinations of different approvals

All explosion protection data are given in separate documentation which is available upon request. The Ex documentation is supplied as standard with all devices approved for use in explosion hazardous areas.
→ 77 ff, "Safety Instructions" and "Installation/Control Drawings" sections.

Suitability for hygienic processes

The Cerabar M is suitable for use in hygienic processes.
Overview of suitable process connections → 26 ff.
Many versions meet the requirements of 3A-Sanitary Standard No. 74 and are certified by the EHEDG.
Suitable fittings and seals must be used for hygienic design in accordance with 3A and EHEDG specifications.

Note!
Gap-free connections can be cleaned without residue using the usual cleaning methods.

Pressure Equipment Directive (PED)

The devices PMC51, PMP51 and PMP55 correspond to Article 3 (3) of the EC directive 97/23/EC (Pressure Equipment Directive) and have been designed and manufactured according to good engineering practice.

The following also applies:
– PMP51/PMP55 with threaded connection and internal process isolating diaphragm PN > 200:
  Suitable for stable gases in group 1, category I
– PMP55 with pipe diaphragm seal ≥ 1.5"/PN40:
  Suitable for stable gases in group 1, category II
– PMP55 with separators PN400:
  Suitable for stable gases in group 1, category I

Standards and guidelines

DIN EN 60770 (IEC 60770):
Transmitters for use in industrial process control systems
Part 1: Methods for inspection and routine testing

DIN 16086:
Electrical pressure measuring instruments, pressure sensors, pressure transmitters, pressure measuring instruments,
concepts, specifications on data sheets

EN 61326 series:
EMC product family standard for electrical equipment for measurement, control and laboratory use.

Ordering information

PMC51

This overview does not mark options which are mutually exclusive.

10	**Approval:**	
	AA	For non-hazardous areas
	BA	ATEX II 1/2G Ex ia IIC T6
	BD	ATEX II 3G Ex nA IIC T6
	BE	ATEX II 2G Ex ia IIC T6
	BF	ATEX II 1/2D Ex ia IIIC
	BG	ATEX II 3G Ex ic IIC T6
	B1	ATEX II 1/2G Ex ia IIC T6 + ATEX II 1/2D Ex iaD
	8C	ATEX II Ex ia + FM/CSA IS ATEX II 1/2G Ex ia IIC T6+ FM/CSA IS Cl.I Div. 1 Gr. A-D FM/CSA: zone0,1,2
	IA	IEC Ex ia IIC T6 Ga/Gb
	IE	IEC Ex ic IIC T6 Gc
	IF	IEC Ex ia IIIC Da/ Db
	I1	IEC Ex ia IIC T6 Ga/Gb+Ex ia IIIC Da/Db
	CA	CSA C/US IS Cl.I,II,III Div.1 Gr. A-G, CSA C/US IS Cl.I Div.2 Gr. A-D, Ex ia
	CD	CSA General Purpose
	FA	FM IS Cl.I,II,III Div.1 Gr.A-G, AEx ia FM NI Cl.I Div.2 Gr.A-D FM IS: Zone 0,1,2,20,21,22/FM NI: Zone 2
	FD	FM NI Cl.I Div.2 Gr.A-D
	99	Special version
20	**Output:**	
	1	4-20mA Analog
	2	4-20mA HART
	9	Special version
30	**Display, operation:**	
	1	LCD, push buttons
	2	W/o LCD, push buttons
	9	Special version
40	**Housing:**	
	I	F31 aluminum
	J	F31 aluminum, glass window
	Q	F15 Stainless Steel Hygiene
	R	F15 Stainless Steel Hygiene, glass window
	S	F15 Stainless Steel Hygiene, plastic window
	Y	Special version
50	**Electrical connection:**	
	A	Gland M20, IP66/68 NEMA4X/6P
	B	Thread M20, IP66/68 NEMA4X/6P
	C	Thread G1/2, IP66/68 NEMA4X/6P
	D	Thread NPT1/2, IP66/68 NEMA4X/6P
	I	Connector M12, IP66/68, NEMA4X/6P
	M	Connector 7/8", IP66/68, NEMA4X/6P
	P	Connector Han7D, 90deg, IP65
	S	Cable 5m, IP66/68 NEMA4X/6P + pressure compensation via cable
	V	Valve connector ISO4400 M16, IP64
	Y	Special version

PMC51 (continued)

70	Sensor range:	
	1C	100mbar/10kPa/1.5psi relative, 1mH2O/3ftH2O/40inH2O Overload: 4bar/400kPa/60psi
	1E	250mbar/25kPa/3.75psi relative, 2.5mH2O/7.5ftH2O/100inH2O Overload: 5bar/500kPa/75psi
	1F	400mbar/40kPa/6psi relative, 4mH2O/13ftH2O/160inH2O Overload: 8bar/800kPa/120psi
	1H	1bar/100kPa/15psi relative, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	1K	2bar/200kPa/30psi relative, 20mH2O/67ftH2O/800inH2O Overload: 18bar/1.8MPa/270psi
	1M	4bar/400kPa/60psi relative, 40mH2O/133ftH2O/1600inH2O Overload: 25bar/2.5MPa/375psi
	1P	10bar/1MPa/150psi relative, 100mH2O/333ftH2O/4000inH2O Overload: 40bar/4MPa/600psi
	1S	40bar/4MPa/600psi relative, 400mH2O/1334ftH2O/16000inH2O Overload: 60bar/6MPa/900psi
	2C	100mbar/10kPa/1.5psi abs, 1mH2O/3ftH2O/40inH2O Overload: 4bar/400kPa/60psi
	2E	250mbar/25kPa/3.75psi abs, 2.5mH2O/7.5ftH2O/100inH2O Overload: 5bar/500kPa/75psi
	2F	400mbar/40kPa/6psi abs, 4mH2O/13ftH2O/160inH2O Overload: 8bar/800kPa/120psi
	2H	1bar/100kPa/15psi abs, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	2K	2bar/200kPa/30psi abs, 20mH2O/67ftH2O/800inH2O abs Overload: 18bar/1.8MPa/270psi
	2M	4bar/400kPa/60psi abs, 40mH2O/133ftH2O/1600inH2O abs Overload: 25bar/2.5MPa/375psi
	2P	10bar/1MPa/150psi abs, 100mH2O/333ftH2O/4000inH2O abs Overload: 40bar/4MPa/600psi
	2S	40bar/4MPa/600psi abs, 400mH2O/1334ftH2O/16000inH2O abs Overload: 60bar/6MPa/900psi
	99	Special version

80	Reference accuracy:	
	D	Platinum
	G	Standard
	Y	Special version

90	Calibration; Unit:	
	A	Sensor range; %
	B	Sensor range; mbar/bar
	C	Sensor range; kPa/MPa
	D	Sensor range; mm/mH2O
	E	Sensor range; inH2O/ftH2O
	F	Sensor range; psi
	J	Customized pressure; see additional spec.
	K	Customized level; see additional spec.
	Y	Special version

PMC51 (continued)

110	Process connection:
	ANSI flanges
ACJ	1" 150lbs RF, 316/316L, flange ANSI B16.5
AEJ	1-1/2" 150lbs RF, 316/316L, flange ANSI B16.5
AFF	2" 150lbs RF, PVDF, flange ANSI B16.5
AFJ	2" 150lbs RF, 316/316L, flange ANSI B16.5
AFN	2" 150lbs, ECTFE>316/316L, flange ANSI B16.5
AGF	3" 150lbs RF, PVDF, flange ANSI B16.5
AGJ	3" 150lbs RF, 316/316L, flange ANSI B16.5
AGN	3" 150lbs, ECTFE>316/316L, flange ANSI B16.5
AHJ	4" 150lbs RF, 316/316L, flange ANSI B16.5
AHN	4" 150lbs, ECTFE>316/316L, flange ANSI B16.5
ANJ	1" 300lbs RF, 316/316L, flange ANSI B16.5
AQJ	1-1/2" 300lbs RF, 316/316L, flange ANSI B16.5
ARJ	2" 300lbs RF, 316/316L, flange ANSI B16.5
ASJ	3" 300lbs RF, 316/316L, flange ANSI B16.5
ATJ	4" 300lbs RF, 316/316L, flange ANSI B16.5
	EN flanges
CNJ	DN25 PN10-40 B1, 316L, flange EN1092-1
CPJ	DN32 PN10-40 B1, 316L, flange EN1092-1
CQJ	DN40 PN10-40 B1, 316L, flange EN1092-1
CXJ	DN50 PN10-40 B1, 316L, flange EN1092-1
CFF	DN50 PN10/16 B1, PVDF, flange EN1092-1
CRP	DN50 PN25/40, ECTFE>316L, flange EN1092-1
CZJ	DN80 PN10-40 B1, 316L, flange EN1092-1
CSP	DN80 PN25/40, ECTFE>316L, flange EN1092-1
	JIS flanges
KFJ	10K 50 RF, 316L, flange JIS B2220
KGJ	10K 80 RF, 316L, flange JIS B2220
KHJ	10K 100 RF, 316L, flange JIS B2220
	Threaded connection
GCC	Thread ISO228 G1/2, AlloyC
GCF	Thread ISO228 G1/2, PVDF
GCJ	Thread ISO228 G1/2, 316L
GLC	Thread ISO228 G1/2 G1/4 female, AlloyC
GLJ	Thread ISO228 G1/2 G1/4 female, 316L
GMC	Thread ISO228 G1/2 hole 11.4mm, AlloyC
GMJ	Thread ISO228 G1/2 hole 11.4mm, 316L
GOJ	Thread JIS B0203 R1/2 male, 316L
GNJ	Thread JIS B0202 G1/2 male, 316L
GVJ	Thread ISO228 G1-1/2, 316L, flush-mounted
GWJ	Thread ISO228 G2, 316L, flush-mounted
G4J	Thread DIN13 M44x1.25, 316L, flush-mounted
	Threaded connection as per ANSI
RJF	Thread ANSI MNPT1/2 hole 3mm, PVDF
RKC	Thread ANSI MNPT 1/2 hole, 11.4mm, Alloy C
RKJ	Thread ANSI MNPT1/2 hole 11.4mm, 316L
RLC	Thread ANSI MNPT1/2 FNPT1/4, AlloyC
RLJ	Thread ANSI MNPT1/2 FNPT1/4, 316L
R1C	Thread ANSI FNPT 1/2, Alloy C
R1J	Thread ANSI FNPT 1/2, 316L
U7J	Thread ANSI MNPT1-1/2, 316L, flush-mounted
U8J	Thread ANSI MNPT2, 316L, flush-mounted
YYY	Special version

190	Seal:
A	FKM Viton
B	FKM Viton, FDA
G	HNBR, FDA, 3A Class II, KTW, AFNOR, BAM
F	NBR
J	EPDM
K	EPDM, FDA, 3A Class II, USP Class VI, DVGW, KTW, W270, WRAS, ACS, NSF61
Y	Special version

PMC51 (continued)

Additional ordering information (optional)

500	**Operating language:**	
	AA	English
	AB	German
	AC	French
	AD	Spanish
	AE	Italian
	AF	Dutch
	AK	Chinese
	AL	Japanese
550	**Calibration:**	
	F1	Factory calibration certificate, 5-point
	F2	DKD calibration certificate 10-point
570	**Service:**	
	HA	Oil and grease removed
	HB	Cleaned for oxygen service
	HC	Cleaned for silicone-free applications
	IA	Configured min alarm current
	IB	Configured HART Burst Mode PV
	I9	Special version
580	**Test, certificate:**	
	JA	EN10204-3.1 process connection material, inspection certificate
	JB	NACE MR0175 process connection
	KD	EN10204-3.1 helium leak test, inspection certificate
	KE	EN10204-3.1 pressure test, inspection certificate
	K9	Special version,
600	**Separate housing:**	
	MA	Cable PE, 2m/80in + housing mounting bracket, wall/pipe, 304
	MB	Cable PE, 5m/200in + housing mounting bracket, wall/pipe, 304
	MC	Cable PE, 10m/400in + housing mounting bracket, wall/pipe, 304
	MH	Cable FEP, 5m/200in IP69K + housing mounting bracket, wall/pipe, 304
610	**Accessory mounted:**	
	NA	Overvoltage protection
620	**Accessory enclosed**	
	PA	Mounting bracket, wall/pipe, 304
	P2	Shutoff valve (PZAV), see additional spec
		-R1A1 PZAV-R1A1 Shutoff valve, G1/2, C22.8
		-R1A2 PZAV-R1A2 Shutoff valve, G1/2, 316Ti
		-R1D1 PZAV-R1D1 Shutoff valve, NPT1/2, C22.8
		-R1D2 PZAV-R1D2 Shutoff valve, NPT1/2, 316Ti
		-B1A2 PZAV-B1A2 Shutoff valve, G1/2, 316Ti, 3.1
		-B1D2 PZAV-B1D2 Shutoff valve, NPT1/2, 316Ti, 3.1
	P4	Siphon (PZW), see additional spec
		-RA21 PZW-RA21 Siphon G1/2 vertical, C22.8
		-RA22 PZW-RA22 Siphon G1/2 vertical, 316Ti
		-RC11 PZW-RC11 Siphon G1/2 x weld. horiz. C22.8
		-RD11 PZW-RD11 Siphon NPT1/2 x weld. horiz. C22.8
		-BB22 PZW-BB22 Siphon NPT1/2 vertical, 316Ti, 3.1
		-BA22 PZW-BA22 Siphon NPT1/2x weld.vert.316Ti 3.1
	QJ	Welding neck G1-1/2, 316L
	QK	Welding neck G1-1/2, 316L, 3.1, EN10204-3.1 material, inspection certificate
	QL	Weld-in tool adapter G1-1/2, brass
	RL	Plug-in jack M12
	RM	Plug-in jack M12, 90deg
	RN	Plug-in jack M12, 90deg+5m cable
850	**Software version:**	
	78	01.00.zz, HART, DevRev01
895	**Identification:**	
	Z1	Measuring point (TAG)
	Z2	Bus address

PMP51

This overview does not mark options which are mutually exclusive.

10	**Approval:**	
	AA	For non-hazardous areas
	BA	ATEX II 1/2G Ex ia IIC T6
	BB	ATEX II 1/2D Ex t IIIC
	BC	ATEX II 2G Ex d IIC T6
	BD	ATEX II 3G Ex nA IIC T6
	BE	ATEX II 2G Ex ia IIC T6
	BG	ATEX II 3G Ex ic IIC T6
	B1	ATEX II 1/2G Ex ia IIC T6 + ATEX II 1/2D
	B2	ATEX II 1/2G Ex ia IIC T6 + ATEX II 2G
	IA	IEC Ex ia IIC T6 Ga/Gb
	IB	IEC Ex d IIC T6 Gb
	ID	IEC Ex t IIIC Da/Db
	IE	IEC Ex ic IIC T6 Gc
	I1	IEC Ex ia IIC T6 Ga/Gb+Ex ia IIIC Da/Db
	CA	CSA C/US IS Cl.I,II,III Div.1 Gr.A-G, CSA C/US IS Cl.I Div.2 Gr.2 Gr.A-D, Ex ia, zone 0,1,2
	CB	CSA C/US XP Cl.I, II Div.1 Gr.B-G, Ex d (factory sealed), zone 1,2
	CC	CSA C/US Cl.II, III Div.1 Gr.E-G
	CD	CSA General Purpose
	C1	CSA C/US IS/XP Cl.I, II Div.1 Gr.A-G/B-G
	FA	FM IS Cl.I,II,III Div.1 Gr.A-G, AEx ia FM NI Cl.I Div.2 Gr.A-D FM IS: Zone 0,1,2,20,21,22/FM NI: Zone 2
	FB	FM XP Cl.I, II Div.1 Gr.A-D, AEx d (Factory sealed) zone 1,2
	FC	FM DIP Cl.II, III Div.1 Gr.A-D Zone 21,22
	FD	FM NI Cl.I Div.2 Gr.A-D
	F1	FM IS/XP Cl.I, II Div.1 Gr.A-G, Zone 1,2
	99	Special version
20	**Output:**	
	1	4-20mA Analog
	2	4-20mA HART
	9	Special version
30	**Display, operation:**	
	1	LCD, push buttons
	2	W/o LCD, push buttons
	9	Special version
40	**Housing:**	
	I	F31 aluminum
	J	F31 aluminum, glass window
	Q	F15 Stainless Steel Hygiene
	R	F15 Stainless Steel Hygiene, glass window
	S	F15 Stainless Steel Hygiene, plastic window
	Y	Special version
50	**Electrical connection:**	
	A	Gland M20, IP66/68 NEMA4X/6P
	B	Thread M20, IP66/68 NEMA4X/6P
	C	Thread G1/2, IP66/68 NEMA4X/6P
	D	Thread NPT1/2, IP66/68 NEMA4X/6P
	I	Connector M12, IP66/68, NEMA4X/6P
	M	Connector 7/8", IP66/68, NEMA4X/6P
	P	Connector Han7D, 90deg, IP65
	S	Cable 5m, IP66/68 NEMA4X/6P + pressure compensation via cable
	V	Valve connector ISO4400 M16, IP64
	Y	Special version

PMP51 (continued)

70	Sensor range:	
	1F	400mbar/40kPa/6psi relative, 4mH2O/13ftH2O/160inH2O Overload: 6bar/600kPa/90psi
	1H	1bar/100kPa/15psi relative, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	1K	2bar/200kPa/30psi relative, 20mH2O/67ftH2O/800inH2O Overload: 20bar/2MPa/300psi
	1M	4bar/400kPa/60psi relative, 40mH2O/133ftH2O/1600inH2O Overload: 28bar/2.8MPa/420psi
	1P	10bar/1MPa/150psi relative, 100mH2O/333ftH2O/4000inH2O Overload: 40bar/4MPa/600psi
	1S	40bar/4MPa/600psi relative, 400mH2O/1334ftH2O/16000inH2O Overload: 160bar/16MPa/2400psi
	1U	100bar/10MPa/1500psi relative, 1000mH2O/3330ftH2O/40000inH2O Overload: 400bar/40MPa/6000psi
	1W	400bar/40MPa/6000psi relative, 4000mH2O/13340ftH2O/160000inH2O Overload: 600bar/60MPa/9000psi
	2F	400mbar/40kPa/6psi abs, 4mH2O/13ftH2O/160inH2O Overload: 6bar/600kPa/90psi
	2H	1bar/100kPa/15psi abs, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	2K	2bar/200kPa/30psi abs, 20mH2O/67ftH2O/800inH2O Overload: 10bar/1MPa/150psi
	2M	4bar/400kPa/60psi abs, 40mH2O/133ftH2O/1600inH2O abs Overload: 28bar/2.8MPa/420psi
	2P	10bar/1MPa/150psi abs, 100mH2O/333ftH2O/4000inH2O abs Overload: 40bar/4MPa/600psi
	2S	40bar/4MPa/600psi abs, 400mH2O/1334ftH2O/16000inH2O abs Overload: 160bar/16MPa/2400psi
	2U	100bar/10MPa/1500psi abs, 1000mH2O/3330ftH2O/40000inH2O abs Overload: 400bar/40MPa/6000psi
	2W	400bar/40MPa/6000psi abs, 4000mH2O/13340ftH2O/160000inH2O abs Overload: 600bar/60MPa/9000psi
	99	Special version

80	Reference accuracy:	
	D	Platinum
	G	Standard
	Y	Special version

90	Calibration; Unit:	
	A	Sensor range; %
	B	Sensor range; mbar/bar
	C	Sensor range; kPa/MPa
	D	Sensor range; mm/mH2O
	E	Sensor range; inH2O/ftH2O
	F	Sensor range; psi
	J	Customized pressure; see additional spec.
	K	Customized level; see additional spec.
	Y	Special version

PMP51 (continued)

110	Process connection:
	ANSI flanges
AEJ	1-1/2" 150lbs RF, 316/316L, flange ANSI B16.5
AFJ	2" 150lbs RF, 316/316L, flange ANSI B16.5
AGJ	3" 150lbs RF, 316/316L, flange ANSI B16.5
AHJ	4" 150lbs RF, 316/316L, flange ANSI B16.5
ANJ	1" 300lbs RF, 316/316L, flange ANSI B16.5
AQJ	1-1/2" 300lbs RF, 316/316L, flange ANSI B16.5
ARJ	2" 300lbs RF, 316/316L, flange ANSI B16.5
ASJ	3" 300lbs RF, 316/316L, flange ANSI B16.5
ATJ	4" 300lbs RF, 316/316L, flange ANSI B16.5
	EN flanges
CNJ	DN25 PN10-40 B1, 316L, flange EN1092-1
CPJ	DN32 PN10-40 B1, 316L, flange EN1092-1
CQJ	DN40 PN10-40 B1, 316L, flange EN1092-1
CXJ	DN50 PN25/40 B1, 316L flange EN1092-1
CZJ	DN80 PN25/40 B1, 316L, flange EN1092-1
	Threaded connection
GCC	Thread ISO228 G1/2, AlloyC
GCJ	Thread ISO228 G1/2, 316L
GLC	Thread ISO228 G1/2 G1/4 female, AlloyC
GLJ	Thread ISO228 G1/2 G1/4 female, 316L
GMC	Thread ISO228 G1/2 hole 11.4mm, AlloyC
GMJ	Thread ISO228 G1/2 hole 11.4mm, 316L
GRC	Thread ISO228 G1/2, AlloyC, flush-mounted
GRJ	Thread ISO228 G1/2, 316L, flush-mounted
GTJ	Thread ISO228 G1, 316L, flush-mounted
GVJ	Thread ISO228 G1-1/2, 316L, flush-mounted
GWJ	Thread ISO228 G2, 316L, flush-mounted
G0J	Thread ISO228 G1/2 seal O-ring, fm= flush-mounted, 316L, adapter 52002643
G1J	Thread DIN13 M20x1.5, 316L
	Threaded connection as per ANSI
RKC	Thread ANSI MNPT1/2 hole 11.4mm, AlloyC
RKJ	Thread ANSI MNPT1/2 hole 11.4mm, 316L
RLC	Thread ANSI MNPT1/2 FNPT1/4, AlloyC
RLJ	Thread ANSI MNPT1/2 FNPT1/4, 316L
R1C	Thread ANSI FNPT 1/2, Alloy C
R1J	Thread ANSI FNPT 1/2, 316L
U5J	Thread ANSI MNPT1, 316L, flush-mounted
U7J	Thread ANSI MNPT1-1/2, 316L, flush-mounted
U8J	Thread ANSI MNPT2, 316L, flush-mounted
XSJ	Prepared for diaphragm seal mount, 316L
YYY	Special version

170	Material of the process isolating diaphragm:
A	316L
B	AlloyC
M	Rhodium>gold>316L
Y	Special version

180	Fill fluid:
1	Silicone oil
2	Inert oil
9	Special version

Additional ordering information (optional)

500	Operating language:
AA	English
AB	German
AC	French
AD	Spanish
AE	Italian
AF	Dutch
AK	Chinese
AL	Japanese

PMP51 (continued)

550	**Calibration:**	
	F1	Factory calibration certificate, 5-point
	F2	DKD calibration certificate 10-point
570	**Service:**	
	HA	Oil and grease removed
	HB	Cleaned for oxygen service
	HC	Cleaned for silicone-free applications
	IA	Configured min alarm current
	IB	Configured HART Burst Mode PV
	I9	Special version
580	**Test, certificate:**	
	JA	EN10204-3.1 wetted material, inspection certificate
	JB	NACE MR0175 wetted
	JF	EN10204-3.1 wetted material + AD2000 pressurized
	KB	EN10204-3.1 wetted material + Ra, Ra= surface roughness, dimensional check, inspection certificate
	KD	EN10204-3.1 helium leak test, inspection certificate
	KE	EN10204-3.1 pressure test, inspection certificate
	KG	EN10204-3.1 PMI test (PMI = positive material identification), inspection certificate
	K9	Special version
600	**Separate housing:**	
	MA	Cable PE, 2m/80in + housing mounting bracket, wall/pipe, 304
	MB	Cable PE, 5m/200in + housing mounting bracket, wall/pipe, 304
	MC	Cable PE, 10m/400in + housing mounting bracket, wall/pipe, 304
	MH	Cable FEP, 5m/200in IP69K + housing mounting bracket, wall/pipe, 304
610	**Accessory mounted:**	
	NA	Overvoltage protection
620	**Accessory enclosed**	
	PA	Mounting bracket, wall/pipe, 304
	P2	Shutoff valve (PZAV), see additional spec
		-R1A1 PZAV-R1A1 Shutoff valve, G1/2, C22.8
		-R1A2 PZAV-R1A2 Shutoff valve, G1/2, 316Ti
		-R1D1 PZAV-R1D1 Shutoff valve, NPT1/2, C22.8
		-R1D2 PZAV-R1D2 Shutoff valve, NPT1/2, 316Ti
		-B1A2 PZAV-B1A2 Shutoff valve, G1/2, 316Ti, 3.1
		-B1D2 PZAV-B1D2 Shutoff valve, NPT1/2, 316Ti, 3.1
	P4	Siphon (PZW), see additional spec
		-RA21 PZW-RA21 Siphon G1/2 vertical, C22.8
		-RA22 PZW-RA22 Siphon G1/2 vertical, 316Ti
		-RC11 PZW-RC11 Siphon G1/2 x weld. horiz. C22.8
		-RD11 PZW-RD11 Siphon NPT1/2 x weld. horiz. C22.8
		-BB22 PZW-BB22 Siphon NPT1/2 vertical, 316Ti, 3.1
		-BA22 PZW-BA22 Siphon NPT1/2x weld.vert.316Ti 3.1
	QA	Welding neck G1/2, 316L,
	QB	Welding neck G1/2, 316L, 3.1, EN10204-3.1 material, inspection certificate
	QC	Weld-in tool adapter G1/2, brass
	QG	Weld-in tool adapter G1, brass, metal sealing taper
	QJ	Welding neck G1-1/2, 316L
	QK	Welding neck G1-1/2, 316L, 3.1, EN10204-3.1 material, inspection certificate
	QL	Weld-in tool adapter G1-1/2, brass
	RL	Plug-in jack M12
	RM	Plug-in jack M12, 90deg
	RN	Plug-in jack M12, 90deg+5m cable
850	**Software version:**	
	78	01.00.zz, HART, DevRev01
895	**Identification:**	
	Z1	Measuring point (TAG)
	Z2	Bus address

PMP55

This overview does not mark options which are mutually exclusive.

10	Approval:	
	AA	For non-hazardous areas
	BA	ATEX II 1/2G Ex ia IIC T6
	BB	ATEX II 1/2D Ex t IIIC
	BC	ATEX II 2G Ex d IIC T6
	BD	ATEX II 3G Ex nA IIC T6
	BE	ATEX II 2G Ex ia IIC T6
	BG	ATEX II 3G Ex ic IIC T6
	B1	ATEX II 1/2G Ex ia IIC T6 + ATEX II 1/2D
	B2	ATEX II 1/2G Ex ia IIC T6 + ATEX II 2G
	8A	ATEX II Ex ia/Ex d + FM/CSA IS + XP ATEX II 1/2G Ex ia IIC T6+ ATEX II 2G Ex d IIC T6+ FM/CSA IS + XP Cl.I, II Div.1 Gr. A-G/B-G, zone 1,2
	8B	FM/CSA IS + XP Cl.I, II Div.1 Gr.A-D/B-G FM IS/FM XP Cl.I, II Div.1 Gr.A-G+ CSA IS/XP Cl.I, II Div.1 Gr.A-G, Zone 1,2
	IA	IEC Ex ia IIC T6 Ga/Gb
	IB	IEC Ex d IIC T6 Gb
	ID	IEC Ex t IIIC Da/Db
	IE	IEC Ex ic IIC T6 Gc
	I1	IEC Ex ia IIC T6 Ga/Gb+Ex ia IIIC Da/Db
	CA	CSA C/US IS Cl.I,II,III Div.1 Gr.A-G, CSA C/US IS Cl.I Div.2 Gr.2 Gr.A-D, Ex ia, zone 0,1,2
	CB	CSA C/US CP Cl.I, II Div.1 Gr.B-G, Ex d (factory sealed) zone 1,2
	CC	CSA C/US Cl.II, III Div.1 Gr.E-G, Zone 21,22
	CD	CSA General Purpose
	C1	CSA C/US IS/XP CL.I, II Div.1 Gr.A-G/B-G, Zone 1,2
	FA	FM IS Cl.I,II,III Div.1 Gr.A-G, AEx ia FM NI Cl.I Div.2 Gr.A-D FM IS: Zone 0,1,2,20,21,22/FM NI: Zone 2
	FB	FM XP Cl.I, II Div.1 Gr.A-G, AEx d (factory sealed) zone 1,2
	FC	FM DIP Cl.II, III Div.1 Gr.A-G, zone 21,22
	FD	FM NI Cl.I Div.2 Gr.A-D
	F1	FM IS/XP Cl.I, II Div.1 Gr.A-G, Zone 1,2
	99	Special version

20	Output:	
	1	4-20mA Analog
	2	4-20mA HART
	9	Special version

30	Display, operation:	
	1	LCD, keys on display/electronics
	2	Without LCD, keys on electronics
	9	Special version

40	Housing:	
	I	F31 aluminum
	J	F31 aluminum, glass window
	Q	F15 Stainless Steel Hygiene
	R	F15 Stainless Steel Hygiene, glass window
	S	F15 Stainless Steel Hygiene, plastic window
	Y	Special version

50	Electrical connection:	
	A	Gland M20, IP66/68 NEMA4X/6P
	B	Thread M20, IP66/68 NEMA4X/6P
	C	Thread G1/2, IP66/68 NEMA4X/6P
	D	Thread NPT1/2, IP66/68 NEMA4X/6P
	I	Connector M12, IP66/68, NEMA4X/6P
	M	Connector 7/8", IP66/68, NEMA4X/6P
	P	Connector Han7D, 90deg, IP65
	S	Cable 5m, IP66/68 NEMA4X/6P + pressure compensation via cable
	V	Valve connector ISO4400 M16, IP64
	Y	Special version

PMP55 (continued)

70	Sensor range:	
	1F	400mbar/40kPa/6psi relative, 4mH2O/13ftH2O/160inH2O Overload: 6bar/600kPa/90psi
	1H	1bar/100kPa/15psi relative, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	1K	2bar/200kPa/30psi relative, 20mH2O/67ftH2O/800inH2O Overload: 20bar/2MPa/300psi
	1M	4bar/400kPa/60psi relative, 40mH2O/133ftH2O/1600inH2O Overload: 28bar/2.8MPa/420psi
	1P	10bar/1MPa/150psi relative, 100mH2O/333ftH2O/4000inH2O Overload: 40bar/4MPa/600psi
	1S	40bar/4MPa/600psi relative, 400mH2O/1334ftH2O/16000inH2O Overload: 160bar/16MPa/2400psi
	1U	100bar/10MPa/1500psi relative, 1000mH2O/3330ftH2O/40000inH2O Overload: 400bar/40MPa/6000psi
	1W	400bar/40MPa/6000psi relative, 4000mH2O/13340ftH2O/160000inH2O Overload: 600bar/60MPa/9000psi
	2F	400mbar/40kPa/6psi abs, 4mH2O/13ftH2O/160inH2O Overload: 6bar/600kPa/90psi
	2H	1bar/100kPa/15psi abs, 10mH2O/33ftH2O/400inH2O Overload: 10bar/1MPa/150psi
	2K	2bar/200kPa/30psi abs, 20mH2O/67ftH2O/800inH2O abs Overload: 20bar/2MPa/300psi
	2M	4bar/400kPa/60psi abs, 40mH2O/133ftH2O/1600inH2O abs Overload: 28bar/2.8MPa/420psi
	2P	10bar/1MPa/150psi abs, 100mH2O/333ftH2O/4000inH2O abs Overload: 40bar/4MPa/600psi
	2S	40bar/4MPa/600psi abs, 400mH2O/1334ftH2O/16000inH2O abs Overload: 160bar/16MPa/2400psi
	2U	100bar/10MPa/1500psi abs, 1000mH2O/3330ftH2O/40000inH2O abs Overload: 400bar/40MPa/6000psi
	2W	400bar/40MPa/6000psi abs, 4000mH2O/13340ftH2O/160000inH2O abs Overload: 600bar/60MPa/9000psi
	99	Special version

80	Reference accuracy:	
	D	Platinum
	G	Standard
	Y	Special version

90	Calibration; Unit:	
	A	Sensor range; %
	B	Sensor range; mbar/bar
	C	Sensor range; kPa/MPa
	D	Sensor range; mm/mH2O
	E	Sensor range; inH2O/ftH2O
	F	Sensor range; psi
	J	Customized pressure; see additional spec.
	K	Customized level; see additional spec.
	Y	Special version

PMP55 (continued)

110	Process connection:
	ANSI flanges
ACJ	1" 150lbs RF, 316/316L, flange ANSI B16.5
AEJ	1-1/2" 150lbs RF, 316/316L, flange ANSI B16.5
AFJ	2" 150lbs RF, 316/316L, flange ANSI B16.5
AGJ	3" 150lbs RF, 316/316L, flange ANSI B16.5
AHJ	4" 150lbs RF, 316/316L, flange ANSI B16.5
ANJ	1" 300lbs RF, 316/316L, flange ANSI B16.5
AQJ	1-1/2" 300lbs RF, 316/316L, flange ANSI B16.5
ARJ	2" 300lbs RF, 316/316L, flange ANSI B16.5
ASJ	3" 300lbs RF, 316/316L, flange ANSI B16.5
ATJ	4" 300lbs RF, 316/316L, flange ANSI B16.5
A0J	1" 400/600lbs RF, 316/316L, flange ANSI B16.5
A1J	2" 400/600lbs RF, 316/316L, flange ANSI B16.5
A2J	1" 900/1500lbs RF, 316/316L, flange ANSI B16.5
A3J	2" 900/1500lbs RF, 316/316L, flange ANSI B16.5
A4J	1" 2500lbs RF, 316/316L, flange ANSI B16.5
A5J	2" 2500lbs RF, 316/316L, flange ANSI B16.5
FMJ	2" 150lbs RF, 316/316L, 2/4/6/8" extended diaphragm seal, flange ANSI B16.5, see additional spec.
FNJ	3" 150lbs RF, 316/316L, 2/4/6/8" extended diaphragm seal, flange ANSI B16.5, see additional spec.
FOJ	4" 150lbs RF, 316/316L, 2/4/6/8" extended diaphragm seal, flange ANSI B16.5, see additional spec.
FWJ	3" 300lbs RF, 316/316L, 2/4/6/8" extended diaphragm seal, flange ANSI B16.5, see additional spec.
FXJ	4" 300lbs RF, 316/316L, 2/4/6/8" extended diaphragm seal, flange ANSI B16.5, see additional spec.
	EN flanges
CNJ	DN25 PN10-40 B1, 316L, flange EN1092-1
CPJ	DN32 PN10-40 B1, 316L, flange EN1092-1
CQJ	DN40 PN10-40 B1, 316L, flange EN1092-1
CXJ	DN50 PN10-40 B1, 316L, flange EN1092-1
CZJ	DN80 PN10-40 B1, 316L, flange EN1092-1
	JIS flanges
KCJ	10K 25 RF, 316L, flange JIS B2220
KEJ	10K 40 RF, 316L, flange JIS B2220
KFJ	10K 50 RF, 316L, flange JIS B2220
KGJ	10K 80 RF, 316L, flange JIS B2220
KHJ	10K 100 RF, 316L, flange JIS B2220
	DIN flanges
QIJ	DN25 PN63-160 E, 316L, flange DIN2501
QJJ	DN25 PN250 E, 316L, flange DIN2501
QMJ	DN50 PN250 E, 316L, flange DIN2501
QOJ	DN50 PN100-160 E, 316L, flange DIN2501
QSJ	DN25 PN400 E, 316L, flange DIN2501
QVJ	DN50 PN400 E, 316L, flange DIN2501
FDJ	DN50 PN10-40 B1, 316L, 50/100/200mm extended diaphragm seal, flange EN1092-1, see additional spec.
FEJ	DN80 PN10-40 B1, 316L, 50/100/200mm extended diaphragm seal, flange EN1092-1, see additional spec.
PDJ	DN50 PN63 B2, 316L, flange EN1092-1
PPJ	DN80 PN100 B2, 316L, flange EN1092-1
PQJ	DN100 PN100 B2, 316L, flange EN1092-1
	Threaded connection
GTC	Thread ISO228 G1, AlloyC, flush-mounted
GTJ	Thread ISO228 G1, 316L, flush-mounted
GVC	Thread ISO228 G1-1/2, AlloyC, fm= flush-mounted
GVJ	Thread ISO228 G1-1/2, 316L, flush-mounted
GWC	Thread ISO228 G2, AlloyC, flush-mounted
GWJ	Thread ISO228 G2, 316L, flush-mounted
UBJ	Thread ISO228 G1/2, PN160.316L, separator, EN837, welded
UCJ	Thread ANSI MNPT1/2,PN160.316L,separator, welded
UDJ	Thread ISO228 G1/2, 316L, separator, EN837, threaded
UEJ	Thread ANSI MNPT1/2, 316L, separator, threaded
UGJ	Thread FNPT1/2, PN250, 316L, separator, threaded
UHJ	Thread FNPT1, PN250, 316L, separator, threaded
U5C	Thread ANSI MNPT1, AlloyC, flush-mounted
U5J	Thread ANSI MNPT1, 316L, flush-mounted
U7C	Thread ANSI MNPT1-1/2, AlloyC, fm=flush-mounted
U7J	Thread ANSI MNPT1-1/2, 316L, flush-mounted
U8C	Thread ANSI MNPT2, AlloyC, flush-mounted
U8J	Thread ANSI MNPT2, 316L, flush-mounted

PMP55 (continued)

110	Process connection:
	Pipe diaphragm seal
SIJ	Tri-Clamp ISO2852 DN10 (3/4") RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal
SJJ	Tri-Clamp ISO2852 DN16 (3/4") RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal
SBJ	Tri-Clamp ISO2852 DN25 (1") RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal
SCJ	Tri-Clamp ISO2852 DN38 (1-1/2") RDM, EHEDG, 3A, 316L, PED Cat.II, RDM = pipe diaphragm seal 3.1 material + pressure test PED Cat.II
SDJ	Tri-Clamp ISO2852 DN51 (2") RDM, 316L, EHEDG, 3A, PED Cat.II, RDM = pipe diaphragm seal 3.1 material + pressure test PED Cat.II
SSJ	DIN11851 DN25 PN40, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
STJ	DIN11851 DN32 PN40, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
SUJ	DIN11851 DN40 PN40, RDM, 316L, EHEDG, 3A, 3.1 material + pressure test PED Cat.II, RDM = pipe diaphragm seal, threaded adapter
SZJ	DIN11851 DN50 PN25, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
S4J	NEUMO BioControl D50 PN16, 316L, EHEDG
VAJ	DIN11864-1 A DN25 PN40, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
VCJ	DIN11864-1 A DN40 PN40, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
VDJ	DIN11864-1 A DN50 PN25, RDM, 316L, EHEDG, 3A, RDM = pipe diaphragm seal, threaded adapter
	Hygienic connections
MIJ	DIN11851 DN32 PN40 cap-nut, 316L, EHEDG, 3A
MRJ	DIN11851 DN50 PN25 cap-nut, 316L, EHEDG, 3A
MSJ	DIN11851 DN65 PN25 cap-nut, 316L, EHEDG, 3A
MTJ	DIN11851 DN80 PN25 cap-nut, 316L, EHEDG, 3A
MZJ	DIN11851 DN40 PN40 cap-nut, 316L, EHEDG, 3A
NKJ	DIN11851 DN50 PN25 threaded adapter, 316L, EHEDG, 3A
NLJ	DIN11851 DN65 PN25 threaded adapter, 316L, EHEDG, 3A
NMJ	DIN11851 DN80 PN25 threaded adapter, 316L, EHEDG, 3A
NCJ	DIN11864-1 A DN40 PN16 tube DIN11866-A, threaded connection, 316L, EHEDG, 3A
NDJ	DIN11864-1 A DN50 PN16 tube DIN11866-A, threaded connection, 316L, EHEDG, 3A
NFJ	DIN11864-2 A DN32 PN16 tube DIN11866-A, 316L, EHEDG, 3A
NXJ	DIN11864-2 A DN40 PN16 tube DIN11866-A, 316L, EHEDG, 3A
NZJ	DIN11864-2 A DN50 PN16 tube DIN11866-A, 316L, EHEDG, 3A
S4J	NEUMO BioControl D50 PN16, 316L, EHEDG
TCJ	Tri-Clamp ISO2852 DN25 (1"), 316L, DIN32676 DN25, EHEDG, 3A, ASME-BPE
TJJ	Tri-Clamp ISO2852 DN38 (1-1/2"), 316L, DIN32676 DN40, EHEDG, 3A, ASME-BPE
TDJ	Tri-Clamp ISO2852 DN51 (2"), 316L, DIN32676 DN50, EHEDG, 3A, ASME-BPE
TFJ	Tri-Clamp ISO2852 DN76.1 (3"), 316L, EHEDG, 3A, ASME-BPE
TIJ	DRD DN50 65mm PN25, 316L
TQJ	Varivent F pipe DN25-32 PN40, 316L, EHEDG, 3A
TRJ	Varivent N pipe DN40-162 PN40, 316L, EHEDG, 3A
T0J	APV-RJT 1" PN40, 316L
T1J	APV-RJT 1-1/2" PN40, 316L
T2J	APV-RJT 2" PN40, 316L
T3J	APV-ISS 1" PN40, 316L
T4J	APV-ISS 1-1/2" PN40, 316L
T5J	APV-ISS 2" PN40, 316L
T6J	SMS 1" PN25, 316L, EHEDG, 3A
T7J	SMS 1-1/2" PN25, 316L, EHEDG, 3A
TXJ	SMS 2" PN25, 316L, EHEDG, 3A
YYY	Special version

170	Material of the process isolating diaphragm:
A	316L
B	AlloyC
C	Monel
D	Tantalum
M	Rhodium>gold>316L
R	0.09mm PTFE>316L, not for vacuum
S	0.25mm PTFE>316L, not for vacuum
Y	Special version

PMP55 (continued)

180	Fill fluid:
1	Silicone oil
2	Inert oil
4	Vegetable oil, FDA
5	High-temperature oil
6	Low-temperature oil
9	Special version

200	Diaphragm seal connection:
A	Direct
B	Temperature isolator
D	..... m capillary
E	..... ft capillary
Y	Special version

Additional ordering information (optional)

500	Operating language:
AA	English
AB	German
AC	French
AD	Spanish
AE	Italian
AF	Dutch
AK	Chinese
AL	Japanese

550	Calibration:
F1	Factory calibration certificate, 5-point
F2	DKD calibration certificate 10-point

570	Service:
HA	Oil and grease removed
HB	Cleaned for oxygen service
HC	Cleaned for silicone-free applications
HG	Diaphragm seal vacuum service
HK	Surface quality Ra<0.38um electropolished (wetted)
IA	Configured min alarm current
IB	Configured HART Burst Mode PV
I9	Special version

580	Test, certificate:
JA	EN10204-3.1 wetted material, inspection certificate
JB	NACE MR0175 wetted
JF	EN10204-3.1 wetted material + AD2000 pressurized
KB	EN10204-3.1 wetted material + Ra, (Ra= surface roughness), dimensional check, inspection certificate
KD	EN10204-3.1 helium leak test, inspection certificate
KE	EN10204-3.1 pressure test, inspection certificate
KF	EN10204-3.1 measurement Delta ferrite content, inspection certificate
KG	EN10204-3.1 PMI test (PMI = positive material identification), inspection certificate
K9	Special version

590	Other approvals:
LW	CoC Certificate of Compliance

600	Separate housing:
MA	Cable PE, 2m/80in + housing mounting bracket, wall/pipe, 304
MB	Cable PE, 5m/200in + housing mounting bracket, wall/pipe, 304
MC	Cable PE, 10m/400in + housing mounting bracket, wall/pipe, 304
MH	Cable FEP, 5m/200in IP69K + housing mounting bracket, wall/pipe, 304

610	Add-on mounted:
NA	Overvoltage protection

PMP55 (continued)

620	**Accessory enclosed**		
	PA	Mounting bracket, wall/pipe, 304	
	P2	Shutoff valve (PZAV), see additional spec	
		-R1A1	PZAV-R1A1 Shutoff valve, G1/2, C22.8
		-R1A2	PZAV-R1A2 Shutoff valve, G1/2, 316Ti
		-R1D1	PZAV-R1D1 Shutoff valve, NPT1/2, C22.8
		-R1D2	PZAV-R1D2 Shutoff valve, NPT1/2, 316Ti
		-B1A2	PZAV-B1A2 Shutoff valve, G1/2, 316Ti, 3.1
		-B1D2	PZAV-B1D2 Shutoff valve, NPT1/2, 316Ti, 3.1
	P4	Siphon (PZW), see additional spec	
		-RA21	PZW-RA21 Siphon G1/2 vertical, C22.8
		-RA22	PZW-RA22 Siphon G1/2 vertical, 316Ti
		-RC11	PZW-RC11 Siphon G1/2 x weld. horiz. C22.8
		-RD11	PZW-RD11 Siphon NPT1/2 x weld. horiz. C22.8
		-BB22	PZW-BB22 Siphon NPT1/2 vertical, 316Ti, 3.1
		-BA22	PZW-BA22 Siphon NPT1/2x weld.vert.316Ti 3.1
	QA	Welding neck G1/2, 316L,	
	QB	Welding neck G1/2, 316L, 3.1, EN10204-3.1 material, inspection certificate	
	QC	Weld-in tool adapter G1/2, brass	
	QJ	Welding neck G1-1/2, 316L	
	QK	Welding neck G1-1/2, 316L, 3.1, EN10204-3.1 material, inspection certificate	
	QL	Weld-in tool adapter G1-1/2, brass	
	QP	Welding flange DRD DN50 65mm, 316L	
	QR	Welding fl. DRD DN50 65mm, 316L 3.1, EN10204-3.1 material, inspection certificate	
	QS	Weld-in tool flange DRD DN50 65mm, brass	
	RL	Plug-in jack M12	
	RM	Plug-in jack M12, 90deg	
	RN	Plug-in jack M12, 90deg+5m cable	
850	**Software version:**		
	78	01.00.zz, HART, DevRev01	
895	**Identification:**		
	Z1	Measuring point (TAG)	
	Z2	Bus address	

Documentation

Technical Information

- EMC test procedures TI241F/00/EN
- Deltabar M: TI434P/00/EN
- Deltapilot M: TI437P/00/EN

Operating Instructions

4 to 20 mA Analog:
- Cerabar M: BA385P/00/EN

4 to 20 mA HART:
- Cerabar M, Deltabar M, Deltapilot M: BA382P/00/EN

Field Xpert: BA060S/04/en

Brief Operating Instructions

4 to 20 mA Analog:
- KA1036P/00/EN

4 to 20 mA HART:
- KA1030P/00/EN

Safety Instructions

Authorities	Version in the order code	Approval	Category	Type	Housing		Electronics	Documentation
					F31	F15		
ATEX	BA	Ex ia IIC	II 1/2 G	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA464P
	BB	Ex t IIC	II 1/2 D	PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA466P
	BC	Ex d	II 2 G	PMP51, PMP55	X	—	– 4 to 20 mA HART	– XA467P
	BD	Ex nA	II 3 G	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA469P
	BE	Ex ia IIC	II 2 G	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA464P
	BF	Ex ia IIC	II 1/2 D	PMC51	X	X	– 4 to 20 mA HART	– XA465P
	BG	Ex ic IIC	II 3 G	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA489P
	B1	Ex ia Ex ia IIIC	II 1/2 G II 1/2 D	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA468P
	B2	Ex ia IIC	II 2 G II 1/2 G	PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA468P
	8A	Ex d IIC Ex ia IIC	II 2 G II 1/2 G	PMP51, PMP55	X	—	– 4...20 mA HART	– XA504P

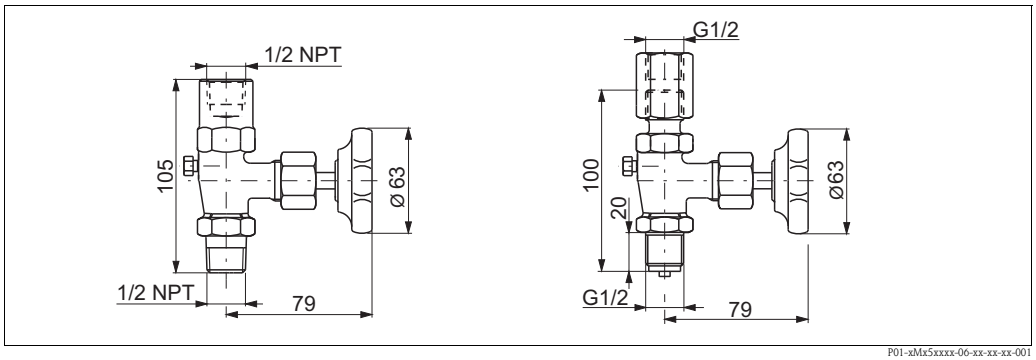
Authorities	Version in the order code	Approval	EPL	Type	Housing		Electronics	Documentation
					F31	F15		
IECEx	IA	Ex ia IIC	Ga/Gb	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA470P
	IB	Ex d IIC	Gb	PMP51, PMP55	X	—	– 4 to 20 mA HART	– XA471P
	ID	Ex t IIIC	Da/Db	PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA472P
	IE	Ex ic	Gc	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA488P
	IF	Ex ia IIIC	Da/Db	PMC51	X	X	– 4 to 20 mA HART	– XA487P
	I1	Ex ia IIC Ex ia IIIC	Ga/Gb Da/Db	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– XA473P

Installation/Control Drawings

Authori-ties	Version in the order code	Approval	Type	Housing		Electronics	Documentation
				F31	F15		
FM	FA	FM IS Cl.I,II,III Div.1 Gr.A-G, AEx ia FM NI Cl.I Div.2 Gr.A-D FM IS: Zone 0,1,2,20,21,22/FM NI: Zone 2	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– ZD235P
	FB	FM XP Cl.I, II Div.1 Gr.A-D, AEx d (Factory sealed) Zone 1,2	PMP51, PMP55	X	—	– 4 to 20 mA HART	– In preparation
	FC	FM DIP Cl.II, III Div.1 Gr.A-D Zone 21,22	PMP51, PMP55	X	X	– 4 to 20 mA HART	– In preparation
	F1	FM IS/XP Cl.I, II Div.1 Gr.A-G, Zone 1,2	PMP51, PMP55	X		– 4 to 20 mA HART	– ZD248P
CSA	CA	C/US IS Cl.I,II,III Div.1 Gr.A-G, C/US IS Cl.I Div.2 Gr.A-D, Ex ia	PMC51, PMP51, PMP55	X	X	– 4 to 20 mA HART	– ZD238P
	CB	CSA C/US CP Cl.I, II Div.1 Gr.B-G, Ex d (factory sealed) Zone 1,2	PMP51, PMP55	X	—	– 4 to 20 mA HART	– In preparation
	CC	CSA C/US Cl.II, III Div.1 Gr.E-G, Zone 21,22	PMP51, PMP55	X	X	– 4 to 20 mA HART	– In preparation
	C1	CSA C/US IS/XP CL.I, II Div.1 Gr.A-G/B-G, Zone 1,2	PMP51, PMP55	X	—	– 4 to 20 mA HART	– ZD251P
FM CSA	8B	FM/CSA IS + XP Cl.I, II Div.1 Gr.A-D/B-G FM IS/FM XP Cl.I, II Div.1 Gr.A-G+ CSA IS/XP Cl.I, II Div.1 Gr.A-G, Zone 1,2	PMP55	X	—	– 4 to 20 mA HART	– In preparation

Accessories

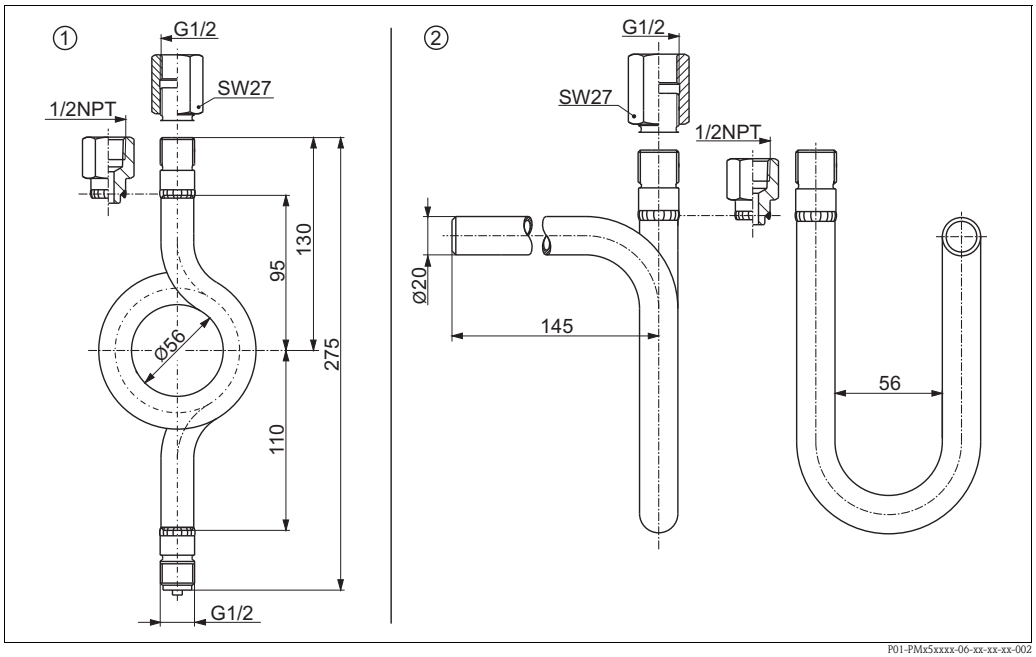
Shutoff valve



Max. working pressure [bar (psi)]	Connection thread [d]	Material	Version in the order code [1]
400 (5800)	G1/2	C22.8	R1A1
		316Ti	R1A2, B1A2
	NPT1/2	C22.8	R1D1
		316Ti	R1D2, B1D2

1) See also → 63 ff, feature 620, "Accessory enclosed", version "P2".

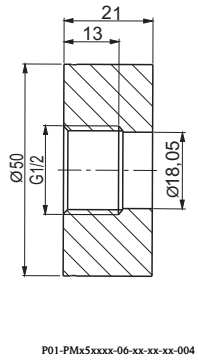
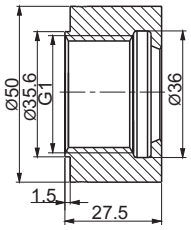
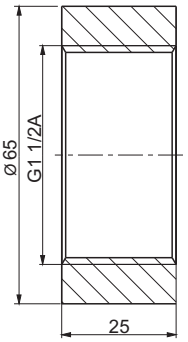
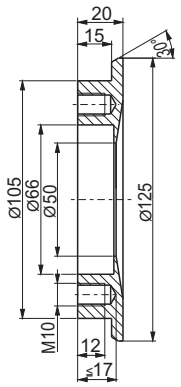
Siphon



No	Max. working pressure [bar (psi)]	Connection thread [d]	Material	Version in the order code [1]
1	100 (1500)	G1/2	C22.8	RA21
			316Ti	RA22, BA22
		NPT1/2	316Ti	BB22
2		G1/2	C22.8	RC11
		NPT1/2	C22.8	RD11
Max. operating temperature 120°C (248°F) in front of the siphon				

1) See also → 63 ff, feature 620, "Accessory enclosed", version "P4".

Welding necks and Weld-in tool flanges

	 P01-PMx5xxxx-06-xx-xx-xx-004	 P01-PMx5xxxx-06-xx-xx-xx-006	 P01-PMx5xxxx-06-xx-xx-xx-005	 P01-PMx5xxxx-06-xx-xx-xx-010
Type	**G1/2, flush mounted**	**G1, flush mounted (metal sealing taper)**	**G1-1/2, flush mounted**	**DRD DN50**
Material	316L			
Order	→ 63 ff, feature 620, "Accessory enclosed", versions see following table rows			
PMC51	—	—	QJ / QK	—
PMP51	QA / QB	QE / QF	QJ / QK	—
PMP55	QA / QB	—	QJ / QK	QP / QR
	Weld-in tool adapters			
Material	brass			
PMC51	—	—	QL	—
PMP51	QC	QG	QL	—
PMP55	QC	—	QL	QS

Mounting bracket for wall and pipe mounting

→ 19 ff

M12 connector

→ 13 ff

Configuration data sheet (HART electronics)

Level

The following configuration data sheet has to be filled in and included with the order if the version "K – Customized level" has been selected in feature 90 "Calibration; Unit" in the product structure.

Pressure Engineering Unit

- ☐ mbar
- ☐ bar
- ☐ psi
- ☐ mmHg
- ☐ kgf/cm²
- ☐ mmH₂O
- ☐ mH₂O
- ☐ ftH₂O
- ☐ inH₂O
- ☐ Pa
- ☐ kPa
- ☐ MPa

Output Unit (Scaled unit)

- ☐ %
- ☐ m
- ☐ dm
- ☐ cm
- ☐ mm
- ☐ inch
- ☐ ft
- ☐ l
- ☐ hl
- ☐ m³
- ☐ gal
- ☐ Igal
- ☐ ft³
- ☐ in³
- ☐ kg
- ☐ t
- ☐ lb

Empty pressure (a)
Low pressure value (empty) _____ [pres. eng. unit]

Empty calibration (a)
Low level value (empty) _____ [Scaled Unit]

Full pressure (b)
High pressure value (full) _____ [pres. eng. unit]

Full calibration (b)
High level value (full) _____ [Scaled Unit]

Display Information

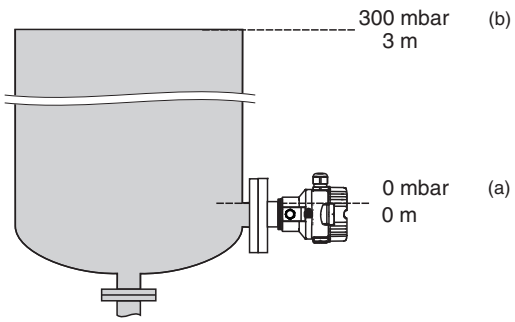
1st Value Display
Measured Value (PV)

2nd Value Display
- ☐ none (factory setting)
- ☐ Pressure
- ☐ Current [mA]
- ☐ Temperature
- ☐ Measured value (%)

Damping

Damping: ____ sec (Default 2 sec)

Example



P01-PMX5xxxx-16-xx-xx-en-000

Pressure

The following configuration data sheet has to be filled in and included with the order if the version "J – Customized pressure" has been selected in feature 90 "Calibration; Unit" in the product structure.

Pressure Engineerung Unit

□ mbar	□ mmH_2O	□ mmHg	□ Pa
□ bar	□ mH_2O		
	□ ftH_2O		□ kPa
□ psi	□ inH_2O	□ kgf/cm^2	□ MPa

Calibration Range / Output

Low range value (LRV):_____ [pressure engineering unit]
Upper range value (URV):_____ [pressure engineering unit]

Display Information

1st Value Display
Main Value

2nd Value display
□ none (default)
□ Pressure
□ Current [mA]
□ Temperature
□ Measured value (%)

Damping

Damping: ____ sec (Default 2 sec)

P01-xxxxxxxx-16-xx-xx-en-001

Note!
Smallest span (factory calibration) → 🖹 7 ff.

Configuration data sheet (analog electronics)

Pressure

The following configuration data sheet has to be filled in and included with the order if the version "J – Customized pressure" has been selected in feature 90 "Calibration; Unit" in the product structure.

Pressure Engineerung Unit

□ mbar	□ mmH_2O	□ mmHg	□ Pa
□ bar	□ mH_2O		
	□ ftH_2O		□ kPa
□ psi	□ inH_2O	□ kgf/cm^2	□ MPa

Calibration Range / Output

Low range value (LRV):_____ [pressure engineering unit]
Upper range value (URV):_____ [pressure engineering unit]

Display Information

1st Value Display	2nd Value display	
Main Value	☑ none	(default, not editable)

Damping

Damping: 2 sec (default, not editable)

P01-xxxxxxxx-16-xx-xx-en-002

Note!
Smallest span (factory calibration) → 🖹 7 ff.

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