

Application

A pressure gauge is an instrument used to measure and indicate the pressure of a medium.

As pneumatic accessories in valve engineering, they are used to measure and indicate the pressure applied to devices, such as positioners or supply pressure regulators.

Special features

- Integrated pressure compensation element to prevent condensation
- Nominal size 40
- Various indicating ranges
- Version according to
 - **EN 837-1** · Bourdon tube pressure gauges; dimensions, metrology, requirements and testing
 - **EN 837-2** · Selection and installation recommendations for pressure gauges
 - **EN 837-3** · Diaphragm and capsule pressure gauges; dimensions, metrology, requirements and testing

Measuring accuracy

The pressure gauges have the accuracy class 2.5¹⁾ according to EN 837-1. The permissible reading error over the entire span must not exceed 2.5 % according to this standard.

Example:

The permissible deviation for a pressure gauge scale from 0 to 6 bar: $2.5\% \times 6 \text{ bar} = 0.15 \text{ bar}$

As a result, the deviation is $\pm 0.15 \text{ bar}$:

- The actual pressure at a reading of 6 bar on the scale:
 $6 \text{ bar} \pm 0.15 \text{ bar}$: 5.85 to 6.15 bar
- The actual pressure at a reading of 0.4 bar on the scale:
 $0.4 \text{ bar} \pm 0.15 \text{ bar}$: 0.25 to 0.55 bar

¹⁾ The pressure gauges do not fall under the equipment category of measuring instruments. Therefore, metrological certification, such as PAC (Pattern Approval Certificate), is not issued for them.



Fig. 1: Supply pressure gauge with outer scale 0 to 6 bar and inner scale 0 to 90 psi



Fig. 2: Output pressure gauge with outer scale 0 to 6 kg/cm² and inner scale 0 to 0.6 MPa

General details on pressure gauges

NOTICE

Risk of damage to plants, pressure gauges and other components due to improper use of the pressure gauges.
Only use pressure gauges that are suitable for the operating conditions and that have been mounted properly.

Note

The pressure limit identifying mark on the dial applies as the upper pressure limit while testing the pressure of pipelines or tanks.

Operating conditions

- Observe the selection and installation recommendations specified in EN 837-2 (formerly DIN 16005, Parts 1 and 2) on selecting a pressure gauge suitable for a particular application.

Selection criteria

- Select the pressure gauge according to the following criteria:
 - Material compatibility with the process medium, atmosphere, and temperature
 - Overloading
 - Indicating range
- Make sure that the operating pressure to be expected is within the middle third of the indicating range.
- The type and location of the connecting thread (process fluid connection) must be considered.
- Observe the regulations that apply for a particular application and the specifications of EN 837-2.

Installation

NOTICE

Risk of malfunction and damage of the pressure gauge due to incorrect mounting position.

- Mount the pressure gauge with the pressure compensation element pointing down.
- Protect against direct sunlight.

Additional points that apply concerning the installation of pressure gauges:

- Pressure gauges must only be installed by properly trained staff.
- On installing or removing the pressure gauge, do not apply any force to the housing. Therefore, always use a suitable wrench at the wrench face of the connection.
- By mounting a lock nut at the threaded connection, the pressure gauge dial can be moved to the right position to allow the pressure to be read properly.
- Make sure that the joints are leak tight.
- Observe the maximum plant pressure as well as the medium and ambient temperature on selecting suitable seals.
- The specified steady pressure limit must not be exceeded.

Removal

- Take sufficient precautions before removing the pressure gauge.
- Before removing the pressure gauge from the pipeline, depressurize the relevant plant section. On doing so, be aware that residual medium in the pressure gauge can pose a risk to staff, equipment, and the environment.

Start-up and operation

- Avoid fast changes in temperature as well as pressure surges.
- Carefully open the upstream shut-off equipment.

Maintenance and repair

Pressure gauges are maintenance-free.

Repairs by the manufacturer are only permitted.

Table 1: Technical data

Pressure gauges according to	EN 837-1, EN 837-2, EN 837-3	
Application	For gases according to ISO 8573-1: Maximum particle size and density: Class 4, oil content: Class 3 Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected.	
Accuracy class	2.5	
Permissible ambient temperature	-40 to +80 °C / -60 to +80 °C ¹⁾	
Nominal size [mm]	40	
Degree of protection	IP 65	
Indicating range (see order numbers)	0 to 6 bar · 0 to 90 psi ³⁾	
	0 to 1.2 bar · 0 to 18 psi ³⁾	
	0 to 1.6 bar · 0 to 24 psi ³⁾	
	0 to 6 kg/cm ² · 0 to 0.6 MPa	
Inscription	Without inscription/In. Signal/Supply/Output	
Process fluid connection	ISO 228/1-G 1/8	
Additional electrical equipment	Pressure compensation element	
Materials	Standard	Stainless steel
Housing and external parts	1.4404/316L	1.4404/316L
Measuring element	Copper alloy	1.4404/316L
Connecting thread	Nickel-plated brass	1.4404/316L
Connection between housing and measuring unit	Glued ²⁾	Welded
Window and ring	Polycarbonate with EPDM seal	
Pointer	Black plastic	
Dial	Aluminum (white)	

¹⁾ Avoid frequent fluctuations in pressure when used down to -60 °C. The accuracy class may change as a result.

²⁾ Not free of substances that impair paint adhesion

³⁾ Conversion in kPa possible.

Dimensions in mm

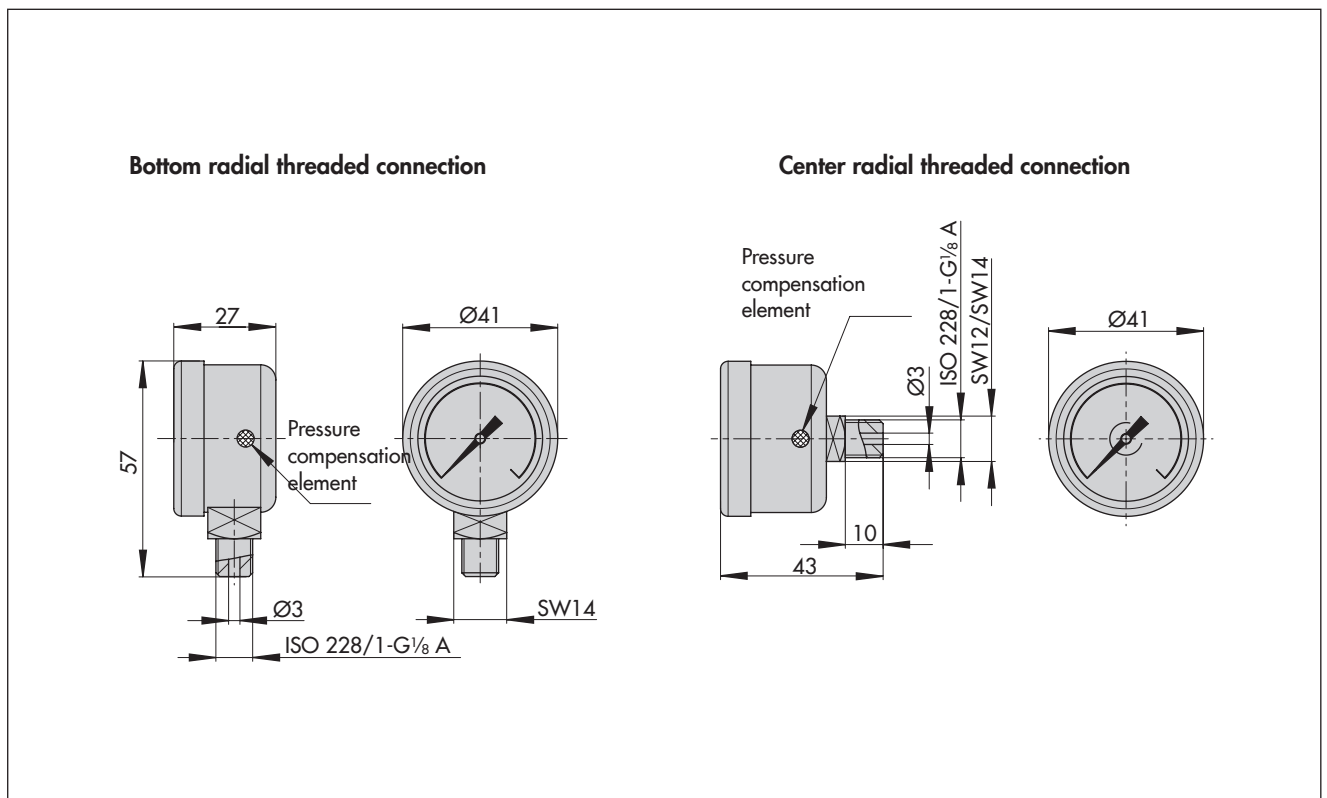


Table 2: Order numbers, center radial threaded connection

Inscription	Version	Indicating range	Order numbers
Supply	Standard	0 to 6 bar 0 to 90 psi	0080-0194
		0 to 6 kg/cm ² 0 to 0.06 MPa	0080-0200
	Stainless steel	0 to 6 bar 0 to 90 psi	0080-0197
Output	Standard	0 to 6 bar 0 to 90 psi	0080-0195
		0 to 6 kg/cm ² 0 to 0.06 MPa	0080-0199
	Stainless steel	0 to 6 bar 0 to 90 psi	0080-0198
In. Signal	Standard	0 to 1.2 bar 0 to 18 psi	0080-0193
	Stainless steel	0 to 1.2 bar 0 to 18 psi	0080-0196
Without	Standard	0 to 6 bar 0 to 90 psi	0089-0026
		0 to 1.6 bar 0 to 24 psi	0089-0028
	Stainless steel	0 to 6 bar 0 to 90 psi	0089-0025
		0 to 1.6 bar 0 to 24 psi	0089-0027

Table 3: Order numbers, bottom radial threaded connection

Inscription	Version	Indicating range	Order numbers	Suitable for Type		
				6116	6126	6134
Without	Standard	0 to 1.2 bar 0 to 18 psi	0080-0201	•	•	•
Output	Standard	0 to 6 bar 0 to 90 psi	0080-0186	•	•	•
Without	Standard	0 to 6 kg/cm ² 0 to 0.6 MPa	0080-0204	•	•	•

Table 4: Order numbers, sets of accessories for SAMSON positioners, reversing amplifiers, and limit switches

Version	Indicating range	Set of accessories consisting of:		Order numbers	Suitable for Type									
		Pressure gauges	Accessories		3710	3725	3730	3731	3766	3767	3768	4763	4765	
Standard	0 to 6 bar 0 to 90 psi	1x 0080-0194 (supply) 1x 0080-0195 (output)	2x Lock nuts	1402-0938		•	•	•	•	•	•	•	•	•
	0 to 6 kg/cm ² 0 to 0.06 MPa	1x 0080-0200 (supply) 1x 0080-0199 (output)	2x Lock nuts	1402-1231			•	•						
	0 to 6 bar 0 to 90 psi	1x 0080-0195 (output)	1x Lock nut	1402-1295			•		•	•				
	0 to 6 bar 0 to 90 psi	1x 0089-0026 (without inscription)	1x Lock nut	1402-1338	•									
Stainless steel	0 to 6 bar 0 to 90 psi	1x 0080-0197 (supply) 1x 0080-0198 (output)	2x Lock nuts	1402-0939		•	•	•	•	•	•	•	•	•
	0 to 6 bar 0 to 90 psi	1x 0089-0025 (without inscription)	1x Lock nut	1402-1337	•									

Table 5: Order number, pressure gauge for other applications

Application	Order number	Suitable for Type	
		4763	4765
Oxygen	8520-0031 ¹⁾	•	•

¹⁾ Without lock nut and without pressure compensation element

Table 6: Accessories

Accessories	Material	Order numbers
Lock nut	1.4404	0250-1949
Seal	NBR	0430-1102

Table 7: Order numbers, sets of accessories for discontinued models (pressure gauge without pressure compensation element) and associated successor models

Order numbers for old sets of accessories (without pressure compensation element)	Order numbers for new sets of accessories (with pressure compensation element)
1400-6950	1402-0938
1400-6951	1402-0939
1400-6900	1402-1295
1400-9945	1402-1337
1400-9946	1402-1338
1400-6794	1402-1231

Specifications subject to change without notice



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