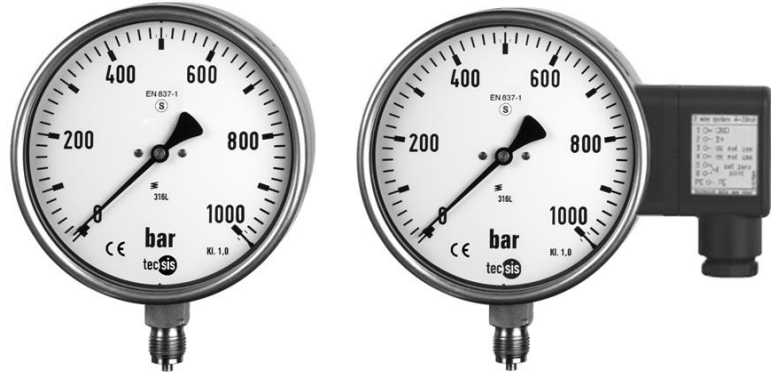


# All stainless steel safety pressure gauges according to EN 837-1/S3 with or without glycerine filling

## New: as multifunctional pressure instrument

and ANSI/ASME B 40.1

Nominal sizes ND 160



### Description

The all stainless steel pressure gauges are ideal for the hard conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable branches. Resistance to aggressive media and environments is achieved by using high-grade materials such as stainless steel both for the measuring system and the case.

The glycerine filling provides wear-protection for the measuring system through damping, should pulsating pressures and mechanical vibrations occur. The measuring system is of accuracy class 1.0, has over range protection amounting to 1.3 times the max. rating and can be loaded up to the full scale value.

The safety execution of the pressure gauges comprises a burst-proof solid front between bourdon tube and window, a laminated safety glass as well as a blow-out back (according to EN 837-1/S3).

Pressure gauges with glycerine filling are equipped with a compensation diaphragm. This diaphragm avoids a pressure rise in the case that is due to temperature bound volume expansion of the liquid filling, thus avoiding indicated errors.

If an output signal is expected by the measuring point, „the multifunctional instrument“ **P2117 NS 160** can be used.

It connects the pressure measurement without auxiliary energy with the possibility of a sensor signal for the remote transmission of the upcoming pressure values.

This instrument is particularly suitable for pressure control rather regulation.

### Features

- o Stainless steel measuring system
- o Resistant to chemicals
- o Rugged construction
- o Fulfills highest safety requirements
- o Solid front between measuring system and window
- o Case with and without glycerine filling

### Measuring ranges



0 ... 0.6 bar to 0 ... 1600 bar

### Applications

Chemical and petrochemical industry;  
 Plastics and paper industry;  
 Food and beverages industry; Plant construction;  
 Machine and apparatus construction;  
 Research and development;  
 High pressure test benches; Burst test benches,  
 Compressors

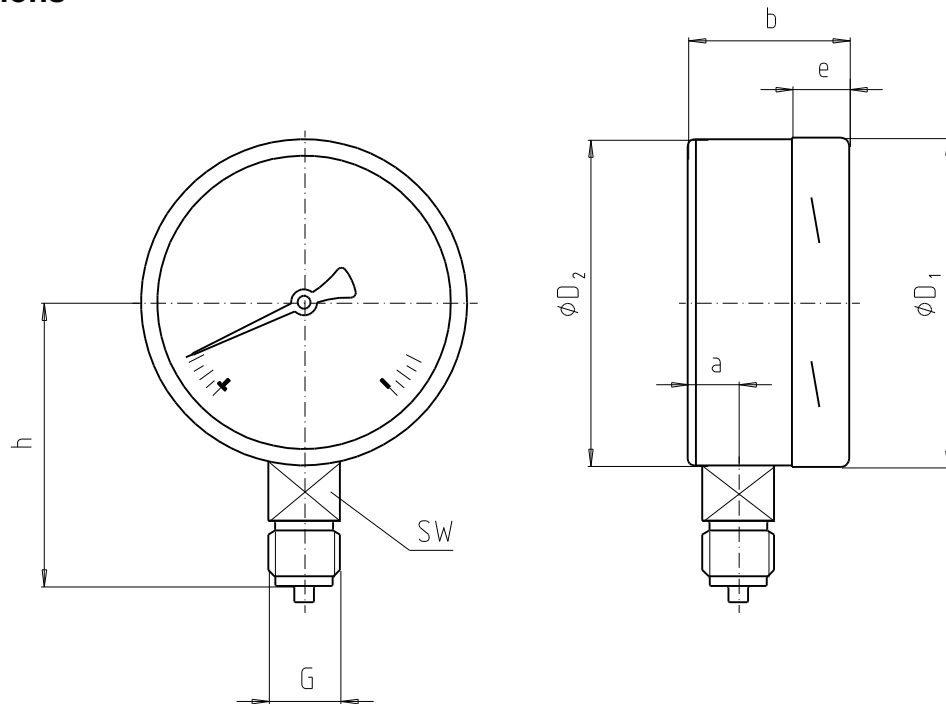
Models: **P2115, P2116, P2117**

## Technical data

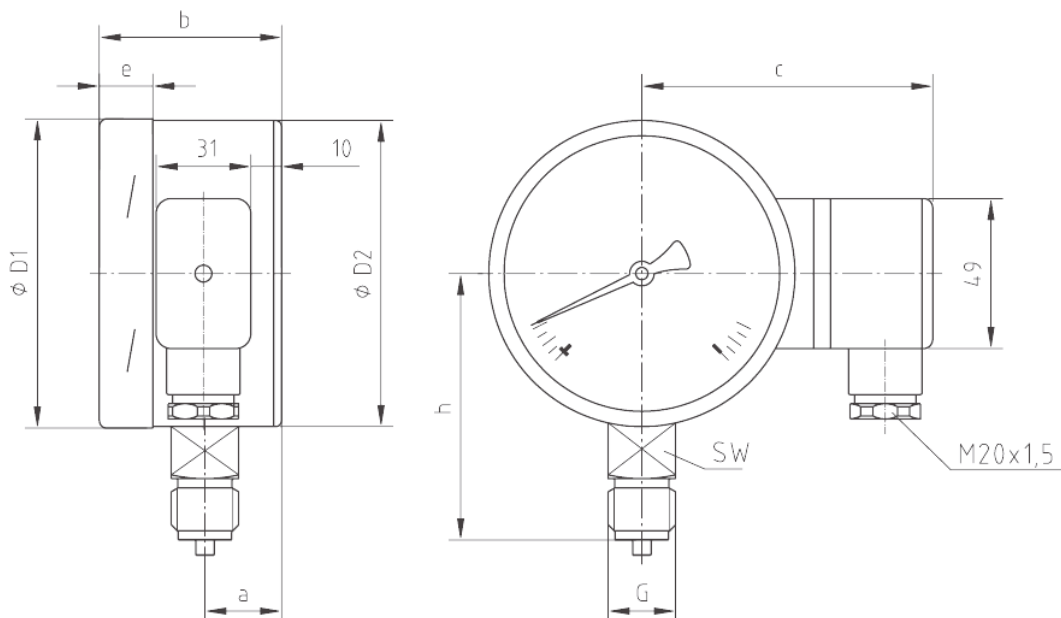
Models	P2115	P2116	P2117	Option
Nominal size	160			
Symbol				
Accuracy	1,0 acc. to EN 837-1			
Measuring ranges	0 ... 0,6 bar to 0 ... 1600 bar negative or positive / negative and positive gauge pressure			
Application	Constant load: up to full scale value Alternating load: up to 0,9 x full scale value Short-time: overload capacity 1.3			
Überdrucksicherheit				Model P2115/16: 1.5 to 2 x
Case	Stainless steel, 1.4301 with blow-out back, solid front			Model P2117:
- Underground cap	Scale ranges $\leq 0 \dots 16$ bar, with compensating valve to vent case			Rear mounting bracket, stainless steel
Bezel	Stainless steel, 1.4301 bayonet ring			
Surface mounting flange	without			Front flange, VA Front flange, VA polished .
Window	Laminated safety glass		Polycarbonate	Laminated safety glass
Dial	Al. white, scale and imprint black			Dual scale
Pointer	Al. black		Aluminium, black, adjustable	Marker pointer on dial
Movement	Stainless Steel		Brass	Model P2117: Monel or ss. 1.4571
Measuring element	Stainless steel 316L Bourdon tube up to 60 bar , helical tube above 100 bar			
Connection	Stainless Steel 316L Radial bottom G1/2 B			9/16-18 UNF 3B; G 3/8 B; 1/2 NPT; Protection cape for connection thread Other on request
Temperature	Tmin. -20°C...Tmax. 200°C - for unfilled instruments Tmin. -20°C...Tmax. 100°C - for filled instruments - Ambient Tmin. -40°C...Tmax. 60°C - for unfilled instruments Tmin. -20°C...Tmax. 60°C - for filled instruments			
Temperature drift	0,4%/10K if deviation from normal temperature 20°C			
Liquid filling	without	Glycerine / $\leq 6$ bar with inside pressure compensation	without	field fillable Model P2117: Silicone M50
Protection to	IP 65 EN 60 529/IEC 529			
Throttle	without			$\varnothing 0,8$ at standard connector
CE-Konformität	ATEX: 94/9			Model P2117: acc. to ATEX Ex ia IIC T4/T5/T6 rather Ex I M2 Ex ia I
Weight approx.	1.5 kg	2.5 kg	1.45 kg	
Accessories	without			Label of measuring point (1.4301)
Elektrical connection	-----		L-plug connector, 180 °C rotatable, max. 1.5 mm <sup>2</sup> , wire protector, cable gland M20 x 1.5, external cable diameter 7-13 mm, incl. strain relief	
Power supply UB	-----		12 < UB $\leq$ 30	
- Supply voltage effect	-----		$\leq 0,1$ % fsv/10 V <sup>1)</sup>	
- Permissible residual ripple	-----		$\leq 10$ % ss	
Output signal	-----		4 ... 20 mA, 2-wire, passiv, acc. to NAMUR NE 43	
Permissible max. load RA	-----		RA $\leq$ (UB - 12 V)/0.02 A mit RA in Ohm and UB in Volt, however max. 600 $\Omega$	
Effect of load	-----		$\leq 0,1$ % fsv <sup>1)</sup>	
Electrical zero point	-----		through a jumper across terminals 5 and 6 (see operating instructions)	
- Long-term stability of Electr.	-----		< 0,3 % fsv /a <sup>1)</sup>	
- Electr. output signal	-----		$\leq 1$ % of measuring span	
Linearity	-----		$\leq 1,0$ % of span (limit point calibration)	
Conformity specifications	-----		Ex - Variant	
Power supply	-----		14 ... 30 DC V	
Short circuit rating	-----		100 mA	
Rating	-----		1000 mW	
internal capacitance	-----		Ci $\leq 12$ nF	
internal inductance	-----		mH - negligible	
EMC- directive	2004/108/EG EC Interference emission (Limit Class B) and immunity to EN 61 326-1			

<sup>1)</sup> fsv = full scale value

## Dimensions



Model	Dimensions in mm							
	a	b	D1	D2	e	G	h ±1	SW
P2115, P2116	24	58	161	160	17.5	G1/2B	118	22



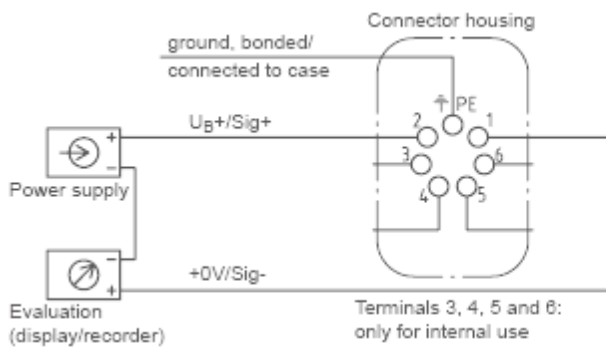
Model	Dimensions in mm								
	a	b	c	D1	D2	e	G	h ±1	SW
P2117	27	59.5	123.5	161	159	17.5	G1/2 B	118	22

## Terminal assignment

Terminals 1 and 2 are the terminals for the signal output and for the power supply. The terminal marked with PE (protective earth) is connected internally to the housing. The connections 3 to 6 or 4 to 6 (for the 3-wire version), must remain free and must not be used as connection points (also see Chapter 10 "Technical data").

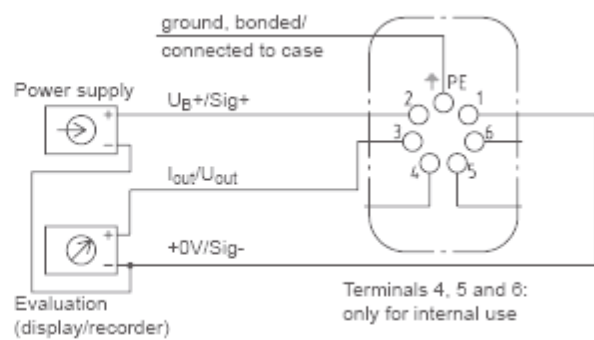
### 2-wire-design

i.e. 4 ... 20 mA



### 3-wire-design

i.e. 0 ... 20 mA / 0 ... 10 V



An unstabilised DC voltage, with a residual ripple of max. 10 % peak-to-peak in the range of the indicated supply voltage limits, is sufficient as a power supply. Make sure that the supply voltage applied exceeds the maximum required voltage by at least the value of the voltage drop across the external display or evaluation devices; i.e. the transmitter can operate using a non-stabilised supply voltage within the given limits, so long as the voltage available to the transmitter does not fall below 12 V, or below 14 V for the Ex-version.