

Application

Instrument designed to measure and indicate differential pressure or measured variables derived from it · Suitable for gases and liquids · Measuring ranges between 0...40 and 0...3600 mbar · Static pressures up to 50 bar · Optionally with limit switches with three inductive alarm contacts



Optional measurements

- **Liquid level** in pressure tanks, especially for cryogenic, liquefied gases
- **Differential pressure** between flow and return pipe
- **Pressure drop** across valves and filters
- **Flow rate** acc. to the differential pressure method

Special features

- Suitable for liquids, gases and vapors
- Limit switch can be easily retrofitted
- Overloadable on one side up to the perm. static pressure
- Suitable for field (degree of protection IP 54) and panel mounting
- Zero adjustment on the front
- Adjustment of measuring span 1:2
- Housing of indicating unit with burst protection
- Directly connectable valve block (optional) with test connection to check the pressure in the tank and connection for pressure switch

Versions (Fig. 1)

Media 5 consists of:
Indicator NG 160 with pointer mechanism · Differential pressure cell made of CW617N (brass CuZn40Pb), PN 50 · Version free of oil and grease for oxygen · Measuring ranges from 40 to 3600 mbar · ECO measuring diaphragm · Zero adjustment on the front · Process medium connection G 3/8 A

Optionally equippable with:

- Scales · Scale from 0 to 100 % linear or square root graduation; scale according to DIN EN 837-3; detachable scales for different media; special scales
- Inductive limit switch with up to three alarm contacts A1/A2/A3 (proximity switches) · Version for hazardous locations
- Valve block which can be directly flange mounted onto Media 5 devices
- Pressure gauge
- Screw joints

Special versions available on request

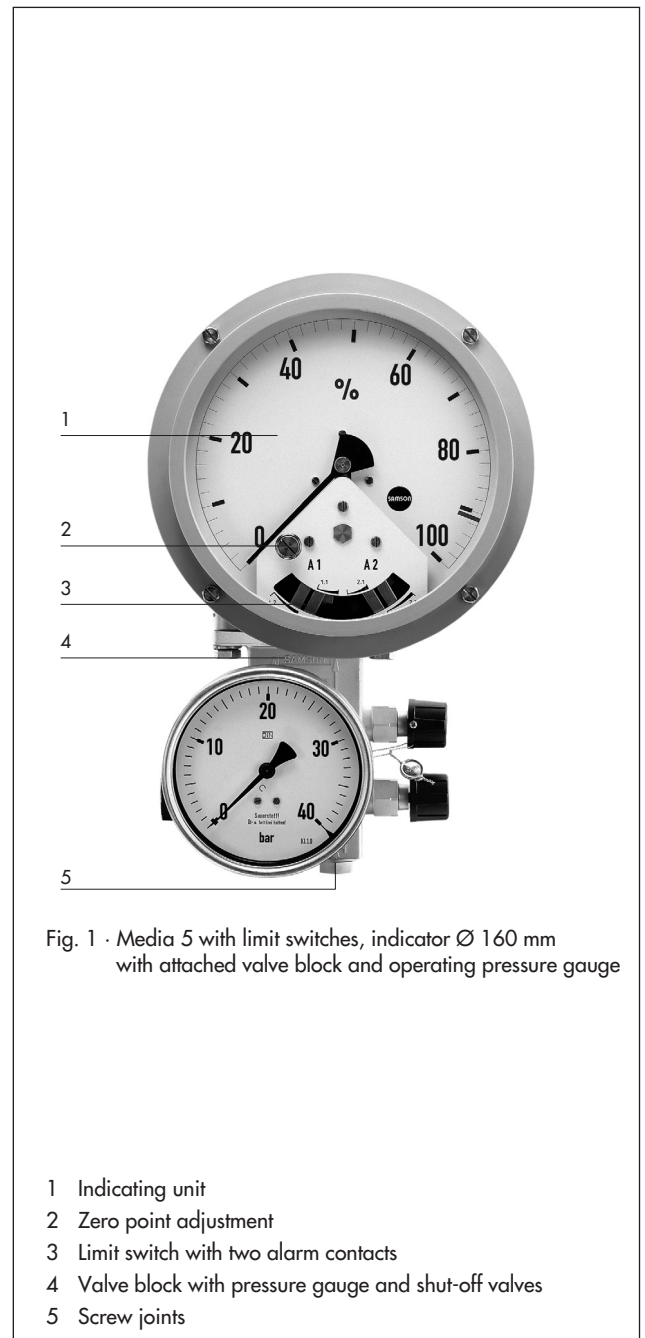


Fig. 1 · Media 5 with limit switches, indicator Ø 160 mm with attached valve block and operating pressure gauge

- 1 Indicating unit
- 2 Zero point adjustment
- 3 Limit switch with two alarm contacts
- 4 Valve block with pressure gauge and shut-off valves
- 5 Screw joints

Principle of operation

The differential pressure cell operates according to the deflection method and contains a ECO measuring diaphragm (1.5) which is designed to handle measuring spans from 40 to 3600 mbar. The diaphragm rod (1.7) is connected to a lever (1.8) and is supported and guided by the measuring springs. The lever leads the deflection of the measuring system out of the pressure chamber. The pressure chamber is sealed by means of a flexible disk (1.9). The range springs, which are connected to the housing, and the diaphragm ensure that the position of the lever is independent of the static pressure.

The differential pressure cell can be overloaded from one side, because the measuring diaphragm flexes against the housing wall whenever the measured values are out of range.

The differential pressure $\Delta p = p_1 - p_2$ produces a force on the diaphragm (1.5) which is balanced by the range springs (1.4). The deflection of the measuring diaphragm and the lever (1.8) is proportional to the differential pressure measured and is converted to pointer (2.4) position with the adjustable transmission element (2.1) and the pointer mechanism (2.2) having jewelled bearings.

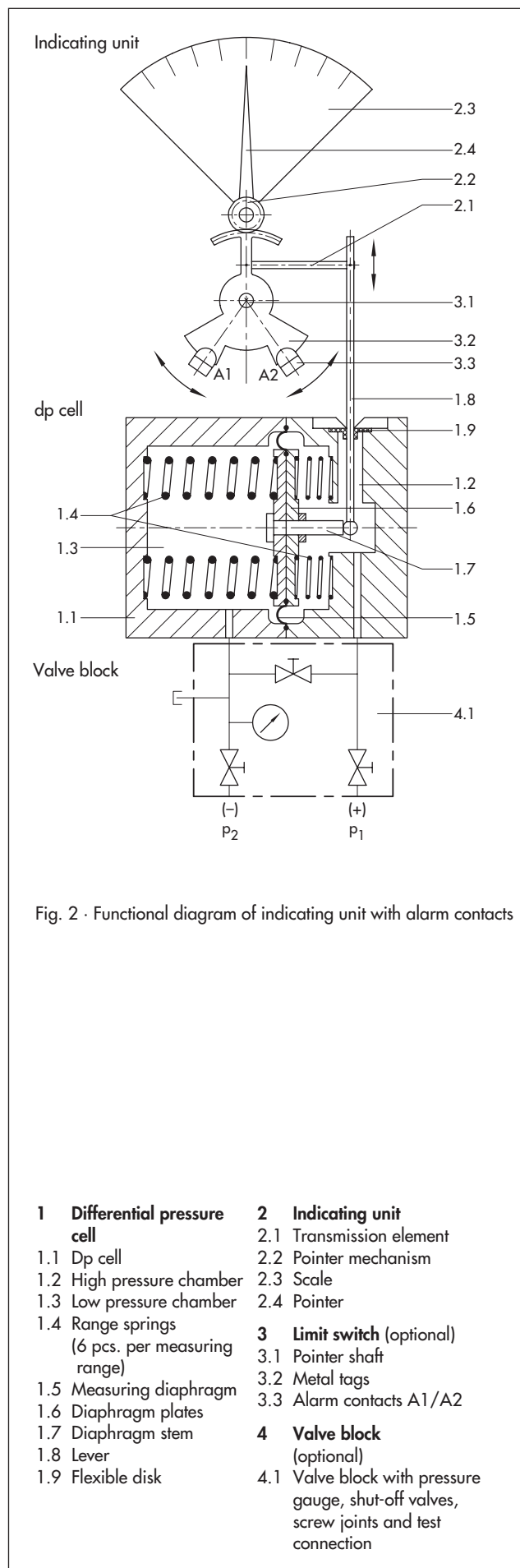
The range springs (1.4) installed in the differential pressure cell determine the lower and upper limit of the respective measuring span (measuring range limit) of the device (see Table 2 · "Technical data"). The span can be continuously adjusted within these limits of application according to the ratio 1:2 at the transmission element. This adjustment changes the transmission ratio between the lever (1.8) and the pointer mechanism (2.2).

The measuring unit shaft (3.1) carries the metal tags (3.2) and moves them according to the operating direction into the limit switch unit with the two alarm contacts (proximity switches) A1 and A2 (3.3).

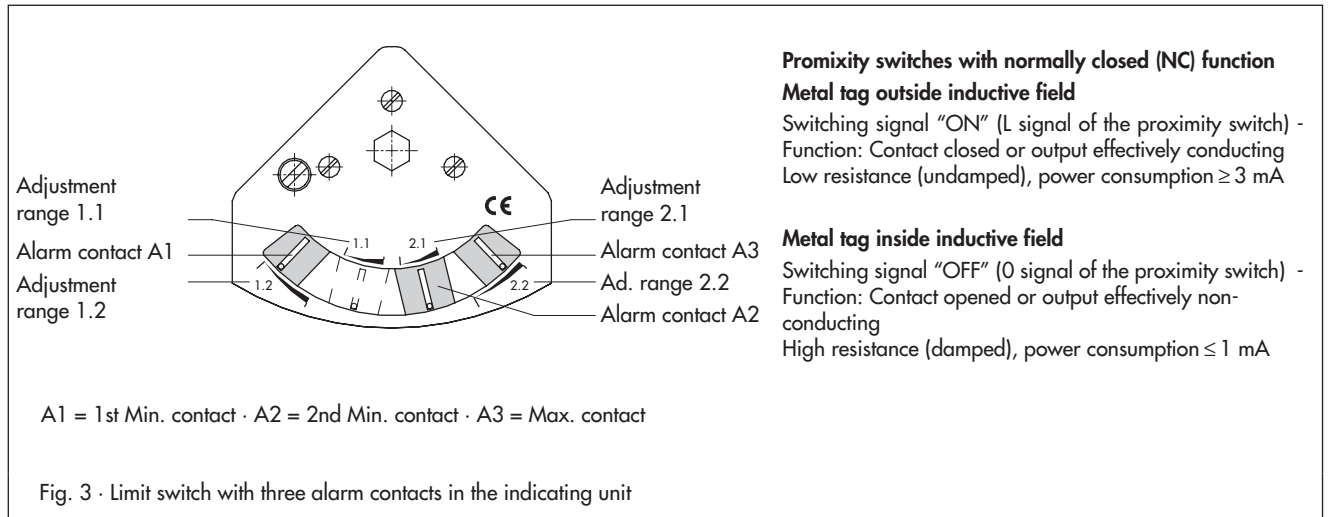
If a metal tag enters the inductive field of the associated proximity switch, the switch assumes a high resistance (contact open). If the tag leaves the inductive field, the proximity switch assumes a low resistance (contact closed). This function corresponds to that of a mechanical-type switching contact.

The proximity switches are adjustable independent of one another and according to any user requirement. They provide a signal when the differential pressure either increases or decreases and the metal tags enter or leave the inductive field of the switch. The proximity switches have a LED indicator, allowing the limit values to be adjusted on site without any problems.

Switching amplifiers conforming to EN 60947-5-6 must be connected in the output circuit of the inductive alarm contacts A1/A2 in such a way that they meet the operational requirements of any connected control and signaling equipment.



Limit switch - Alarm contacts A1, A2, and A3 -



Promixity switches with normally closed (NC) function

Metal tag outside inductive field

Switching signal "ON" (L signal of the proximity switch) -

Function: Contact closed or output effectively conducting
Low resistance (undamped), power consumption ≥ 3 mA

Metal tag inside inductive field

Switching signal "OFF" (0 signal of the proximity switch) -

Function: Contact opened or output effectively non-conducting
High resistance (damped), power consumption ≤ 1 mA

Table 1 · Functions of two alarm contacts A1, A2

Function	Adjustment range			
	Gas tapping - Min. contact -		Tank filling - Max. contact -	
Alarm contact	A1	A2	A1	A2
Metal tag inside field	1.2	2.1	1.1	2.2
Metal tag outside field	1.1	2.2	1.2	2.1

Table 2 · Functions of three alarm contacts A1, A2, A3

Function	Adjustment range		
	Gas tapping - Min. two contacts -		Tank filling - One max. contact -
Alarm contact	A1	A2	A3
Activation when metal tag inside field	1.2	2.1	2.2

Switching points

Min. contact when display reading drops

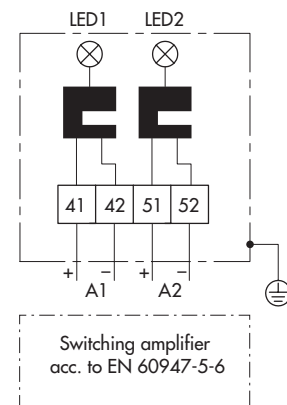
Max. contact when display reading increases

Table 3 · Technical data for limit switches in type of protection EEx ia IIC T6 (PTB 99 ATEX 2219 X)

Current circuit	Type 1			Type 2		
	U_i	16 V			16 V	
I_i	25 mA			25 mA		
P_i	34 mW			64 mW		
C_i	50 nF			50 nF		
L_i	250 μ H			250 μ H		
Temperature class	T6	T5	T4	T6	T5	T4
	73 °C	88 °C	100 °C	66 °C	81 °C	100 °C

Electrical connection of alarm contacts

Limit switches with **two** alarm contacts
- terminal assignment -



Limit switches with **three** alarm contacts
- terminal assignment -

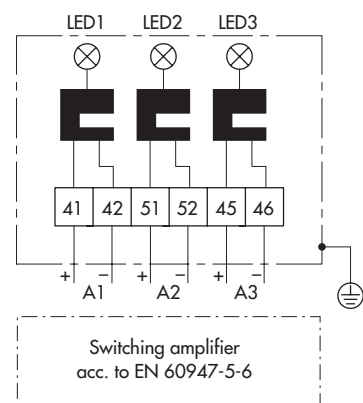


Fig. 4 · Terminal assignment of A1, A2, and A3

Table 4 · Technical data · All pressures in bar (gauge) or mbar

Media 5 Differential Pressure and Flow Meter											
Measuring range	mbar	0 to 60	0 to 100	0 to 160	0 to 250	0 to 400	0 to 600	0 to 1000	0 to 1600	0 to 2500	0 to 3600
Measuring span	Min.	40 to	50 to	80 to	125 to	200 to	300 to	500 to	800 to	1250 to	1800 to
	Max.	60	100	160	250	400	600	1000	1600	2500	3600
Nominal pressure	PN 50, overloadable on one side up to 50 bar										
Indicator	Ø 160 mm										
Performance	Reading linear to the differential pressure										
Conforming error	< ±2.5 %	< ±1.6 % (including hysteresis)									
Sensitivity	< ±0.5 %	< 0.25 %									
Effect of static pressure	< 0.03 %/1 bar										
Limit switches	Max. 3 alarm contacts A1/A2/A3 with inductive pick-up and LED (acc. to EN 60947-5-6)										
Control circuit	Rating according to the connected switching amplifier acc. to EN 60947-5-6, e.g. KFA6-SR2-Ex2.W										
Proximity switch	Type SJ3,5N-LED when used for hazardous areas corresponding to PTB 99 ATEX 2219 X										
Switching accuracy	< ±2 %										
Range of inversion, approx.	< 0.6 %										
Use of Media 5 with gaseous oxygen											
max. temperature	+60 °C										
max. oxygen pressure	30 bar										
Perm. ambient temperature range with oxygen	-40 to +80 °C -40 to +60 °C										
Perm. storage temperature range	-40 to +100 °C										
Degree of protection acc. to DIN 40050	IP 54										
Weight											
without valve block	Approx. 3.0 kg										
with valve block	Approx. 5.0 kg										

Note!

- All errors and deviations are specified in % of the adjusted measuring span.
- Refer to Data Sheet T 9550 EN for flow rate measurement.
- The technical data of the special versions remains unaltered compared to the standard version.
- The Media 5 Differential Pressure and Flow Meter without limit switches may be used to measure flammable gases and liquids in which hazardous area conditions of Zone 0 are to be expected. The relevant regulations on the measurement of flammable gases and liquids of Zone 0 must be observed.
- Refer to EB 9519 EN for more details.

Table 5 · Materials

Media 5 Differential Pressure and Flow Meter	
dp cell	Brass (CW617N) or CrNi steel
Measuring diaphragm and seals	ECO ¹⁾
Range springs	CrNi steel
Diaphragm plates and function parts	
Lever	
Housing of indicating unit	Polycarbonate

1) Other material on request

Mounting (see Fig. 5)

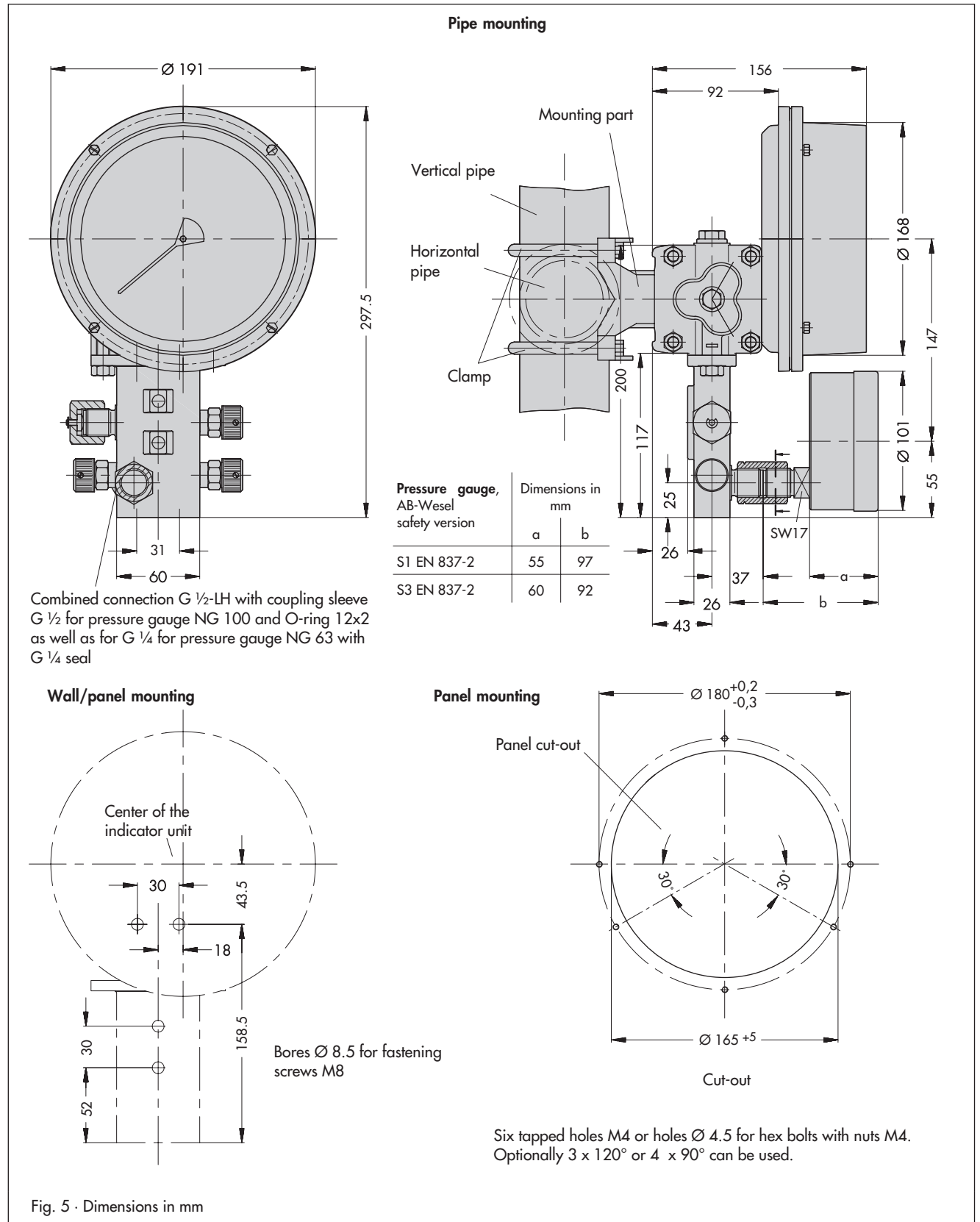
Pipe mounting · With mounting device and clamp for attachment to a vertical or horizontal 2" pipe.

Wall/panel mounting · Using two M8 tapped holes located at the rear of the dp cell or two Ø 8.3 mm holes in the valve block.

Panel mounting · Optionally using fillister head screws M4, M4 thread in the panel or hex bolts with hex nuts M4 (see Fig. 7/panel mounting).

Process medium connection: Tapped hole ISO 228 G 3/8.

Dimensions and installation



Ordering text

Differential Pressure and Flow Meter **Media 5**

Ordering code:

- Complete the order number with the order codes for the selected options -

Device version

Order no. 5005A-			-	-	-	-	-
Media 5, dp cell made of CW617N (brass, CuZn40Pb2)		0					
Media 5, dp cell made of 1.4581 (stainless steel)		1					
Standard version			0				
Free of oil and grease for oxygen acc. to Company Standard 1.34-2 Sh.	1		1				
Measuring range	Measuring span						
	min.	max.					
0 to 60 mbar	40 mbar	60 mbar	0	2			
0 to 100 mbar	50 mbar	100 mbar	0	3			
0 to 160 mbar	80 mbar	160 mbar	0	4			
0 to 250 mbar	125 mbar	250 mbar	0	5			
0 to 400 mbar	200 mbar	400 mbar	0	6			
0 to 600 mbar	300 mbar	600 mbar	0	7			
0 to 1000 mbar	500 mbar	1000 mbar	2	0			
0 to 1600 mbar	800 mbar	1600 mbar	2	1			
0 to 2500 mbar	1250 mbar	2500 mbar	2	2			
0 to 3600 mbar	1800 mbar	3600 mbar	2	3			
Zero point screw							
With zero correcting screw (standard version)						0	
With concealed zero correcting screw						1	
Limit switch unit ¹⁾							
Without alarm contact							0
With two inductive alarm contacts, Type SC3,5N-NO-BU							2
With three inductive alarm contacts, Type SC3,5N-NO-BU							3
Three-wire alarm contact, Type SB3,5-E2							6
With two inductive alarm contacts, Type SJ3,5-SN							7

Additionally required ordering specifications

		Alarm contacts					
		Contact A1		Contact A2		Contact A3	
Min. contacts = Measured value decreases	Metal tag is...	Inside	Outside	Inside	Outside	Inside	Outside
Max. contacts = Measured value increases	When measured value ...	Increases/ decreases	Increases/ decreases	Increases/ decreases	Increases/ decreases	Increases/ decreases	Increases/ decreases
	For switching value mbar		... mbar		... mbar	

¹⁾ Limit switch unit default setting; Standard: without settings

²⁾ Measured value default setting; Standard: 0 ... max. measured value

Accessories: Valve block, pressure gauges, screw joints (T 9555 EN) · Scales (T 9545 EN)

Specifications subject to change without notice.

