



Application

Device for measuring and indicating the differential pressure or measured variables derived from it · Suitable for gases or liquids · Measuring spans between 0 to 40 and 0 to 3600 mbar · Static pressures up to 50 bar · Optionally with limit switch with max. two inductive alarm contacts

Measurement tasks

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

Special features

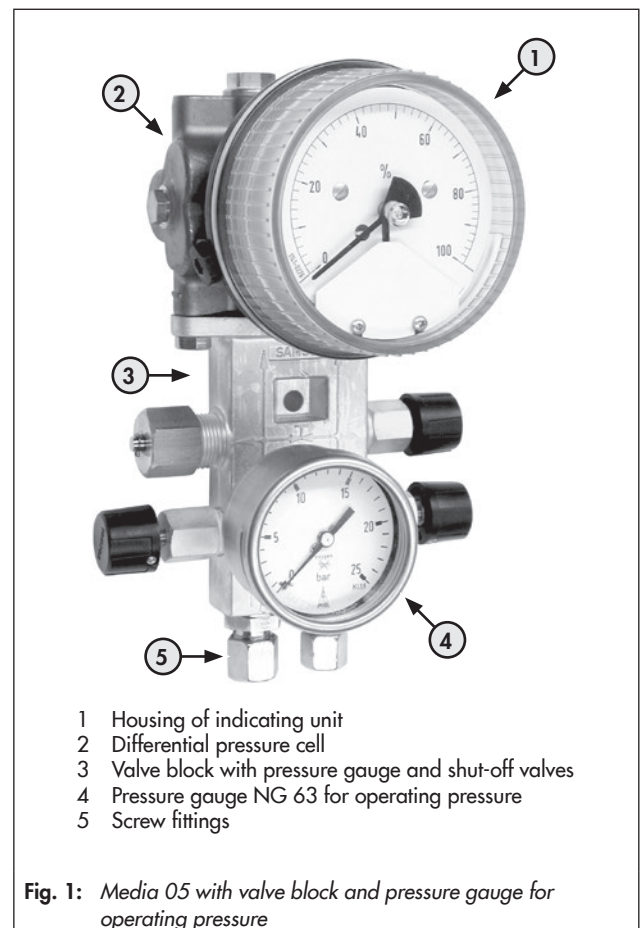
- Suitable for liquids, gases or vapors
- Limit switch (optional) with max. two alarm contacts can be subsequently installed
- Adjustment of measuring span 1:1.6
- Overloadable on one side up to the permissible static pressure
- Housing of indicating unit with burst protection
- Housing with degree of protection IP 54
- Pressure rating PN 50
- Housing suitable for field and panel mounting
- Directly connectable (flange) valve block (optional) with connection to monitor the tank pressure and with connection for pressure switch

Versions (Fig. 1)

- **Media 05** · Indicator NG 100 with pointer mechanism · dp cell made of CW617N (brass), PN 50 · Free of oil and grease for oxygen · Measuring ranges from 40 to 3600 mbar · ECO measuring diaphragm · Zero adjustment at the front · Process connections G 3/8 A

Options available:

- Dials · Scale 0 to 100 % linear or square root graduation, dial plates according to DIN EN 837-3, detachable dial plates for different media, special dial plates



- Inductive limit contact with max. two alarm contacts A1/ A2 (proximity switches) · Version for hazardous locations
- Valve block which can be directly mounted onto Media 05 devices
- Screw fittings
- Pressure gauge

Special versions on request

Principle of operation (see Fig. 3)

The meter consists of a dp cell (1.1) with a measuring diaphragm (1.5), range springs (1.4) designed to match the span and an indicating unit with pointer mechanism (2.2) and dial plate (2.3).

The differential pressure $\Delta p = p_1 - p_2$ (or the differential pressure of the orifice plate) causes a deflection of the diaphragm stem (1.7) at the measuring diaphragm (1.5) supported by the range springs (1.4). The change in travel, which is proportional to the differential pressure, is transmitted by a lever (1.8) and the flexible disk (1.9) out of the pressure chamber to the pointer mechanism (2.2). The differential pressure is shown linear on the dial plate and the flow rate is shown as a square root graduation.

The range springs (1.4) installed in the dp cell determine the upper and lower limit of each measuring span (measuring span limit) of the device (see Table 1). The span can be continuously adjusted within these limits in the ratio of 1:1.6 at the transmission element. This adjustment changes the transmission ratio between the lever (1.8) and the pointer mechanism (2.2).

Version with limit switch

Maximum two alarm contacts (A1, A2) can be installed. The gear segment (2.1) supports the metal tags (3.2) and activates the limit switch unit by moving the metal tags into the adjustable proximity switches (3.3).

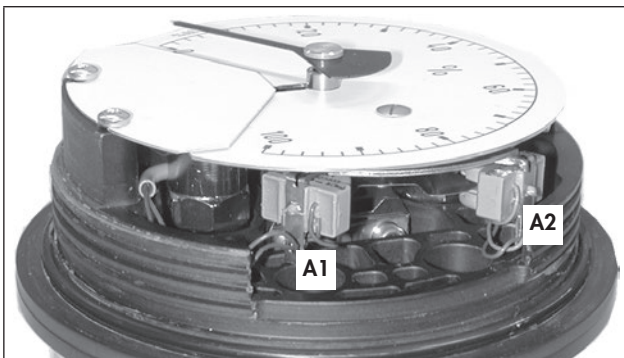
When the metal tag enters the inductive field of the associated proximity switch, it assumes a high resistance (contact open). When the metal tag leaves the inductive field, it assumes a low resistance (contact closed). The switching function is triggered when the metal tag leaves or enters the proximity switches, depending on the setting of the contacts.

Limit switch with alarm contacts A1/A2

– Media 05, version with limit switch –

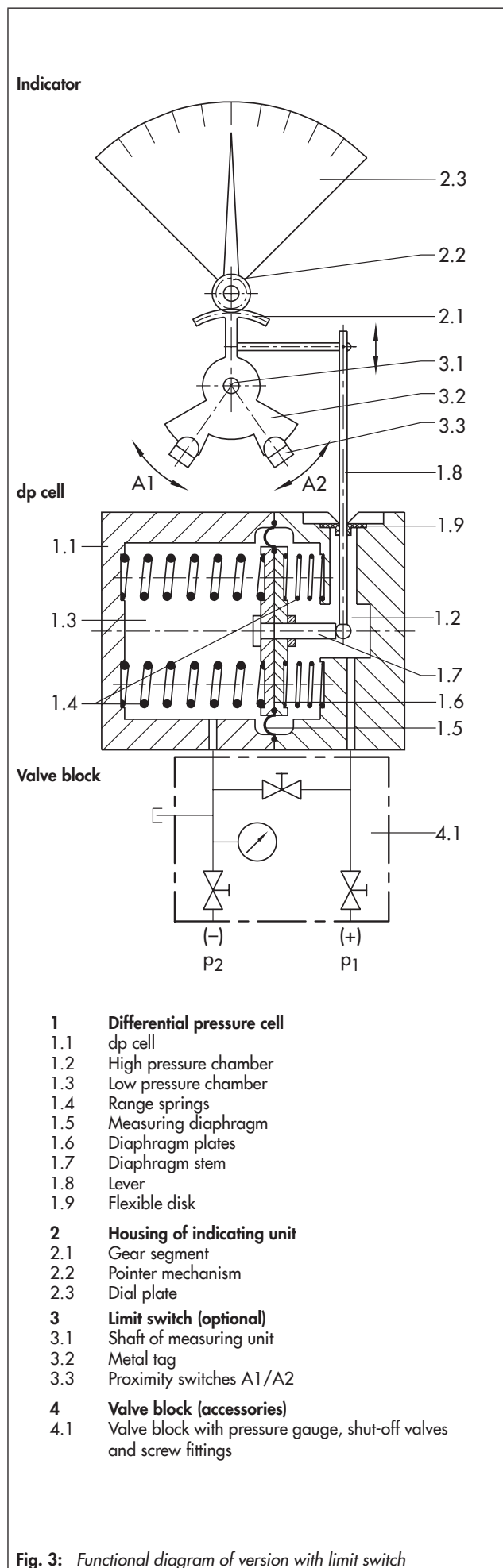
The inductive alarm contacts A1/A2 can be adjusted over the whole measuring range as required. They provide a signal when the differential pressure either increases or decreases and the metal tags enter or leave the inductive field of the switch.

The contacts can be pushed manually to the required switching position. Isolating switch amplifiers conforming to EN 60947-5-6 must be connected in the output circuit of the inductive alarm contacts to ensure they meet the operational requirements of any connected control and signaling equipment.



Location of alarm contacts A1/A2, dial plate cover removed

Fig. 2: Alarm contacts in the housing of the indicating unit



1 Differential pressure cell

- 1.1 dp cell
- 1.2 High pressure chamber
- 1.3 Low pressure chamber
- 1.4 Range springs
- 1.5 Measuring diaphragm
- 1.6 Diaphragm plates
- 1.7 Diaphragm stem
- 1.8 Lever
- 1.9 Flexible disk

2 Housing of indicating unit

- 2.1 Gear segment
- 2.2 Pointer mechanism
- 2.3 Dial plate

3 Limit switch (optional)

- 3.1 Shaft of measuring unit
- 3.2 Metal tag
- 3.3 Proximity switches A1/A2

4 Valve block (accessories)

- 4.1 Valve block with pressure gauge, shut-off valves and screw fittings

Fig. 3: Functional diagram of version with limit switch

Table 1: Technical data · All pressure stated as gauge pressure

Media 05 Differential Pressure and Flow Meter											
Measuring range in 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 in mbar	min. max.	40 to 60	60 to 100	100 to 160	160 to 250	250 to 400	400 to 600	600 to 1000	1000 to 1600	1600 to 2500	2500 to 3600
Nominal pressure	PN 50, overloadable on one side up to 50 bar										
Indicator	Ø100 mm										
Characteristic	Output and reading linear to the differential pressure										
Deviation from terminal-based linearity	<±2.5 % including hysteresis ¹⁾										
Sensitivity	<±0.5 %	<0.25 %									
Effect of static pressure	<0.03 %/1 bar										
Use of Media 05 with gaseous oxygen											
Max. temperature	+60 °C										
max. oxygen pressure	30 bar										
Permissible ambient temperature range	-40 to +80 °C										
For oxygen	-40 to +60 °C										
Perm. storage temperature range	-40 to +100 °C										
Degree of protection according to DIN 40050	IP 54										
Weight											
Without SAMSON valve block	Approx. 2.6 kg										
with SAMSON valve block	Approx. 4.6 kg										
Limit switch (option)											
Principle of operation	Max. 2 inductive alarm contacts A1 and A2 acc. to EN 60947-5-6 (limit contacts)										
Control circuit	Values corresponding to connected isolating switch amplifier e.g. KFA6-SR2-Ex2.W										
Proximity switch	SJ2-SN, for hazardous areas according to PTB 00 ATEX 2049 X										
Switching accuracy	<±2 %										
Dead band, approx.	<±0.6 %										

¹⁾ Based on upper measuring range value

Note

- All errors and deviations are specified in % of the adjusted measuring span.
- Refer to Data Sheet ► T 9550 for flow rate measurement.
- A correction of the measuring span is possible by changing the ratio in the limits of approx. 1:1.6.
- The Media 05 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.
- Oxygen service: When the device is used for oxygen service, make sure that the dp cell and any SAMSON accessories (e.g. valve block) only come into contact with gaseous oxygen.
- Refer to ► EB 9520 for more details.

Table 2: Materials

Media 05 Differential Pressure and Flow Meter	
dp cell	CW617N (brass) or CrNi steel
Measuring diaphragm and seals	ECO ¹⁾
Springs, diaphragm plates and functional parts, lever	CrNi steel
Housing of indicating unit	Polycarbonate

¹⁾ Other on request

Terminal assignment

– Only for version with inductive limit contact –

Electrical connection

The device can be equipped with maximum two alarm contacts. The alarm contacts A1 and A2 of the indicator must be connected to an isolating switch amplifier for power supply connection. We recommend using isolating switch amplifiers from Pepperl + Fuchs, e.g. KFA6-SR2-Ex2.W and for one contact, KFA6-SR2-Ex1.W.

Switching characteristic of the proximity switches with normally closed function

Metal tag outside inductive field · Switching signal "ON" (L signal)

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

Metal tag inside inductive field · Switching signal "OFF" (0 signal)

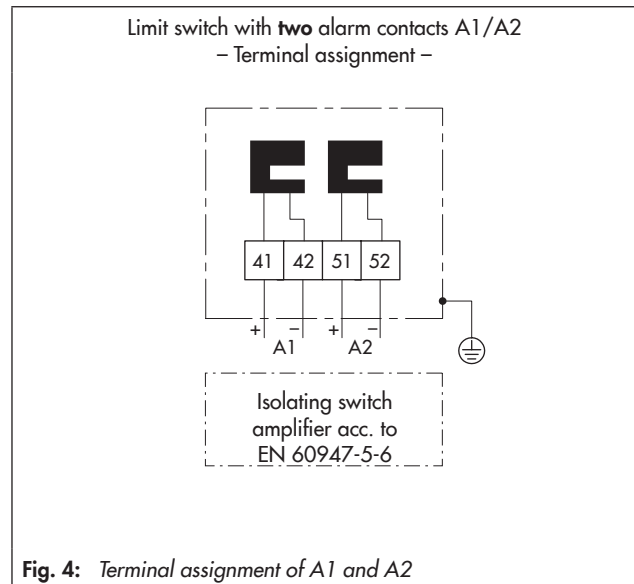
Function: Contact opened or output effectively non-conducting. High resistance (damped), power consumption ≥ 1 mA

The listed maximum values in the table apply concerning the connection of proximity switches to certified intrinsically safe circuits in the type of protection Ex ia IIC T6 (PTB 00 ATEX 2049 X):

Table 3: Connection values for intrinsically safe circuits

Circuit	Type 1			Type 2		
	T6	T5	T4	T6	T5	T4
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



Installation

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

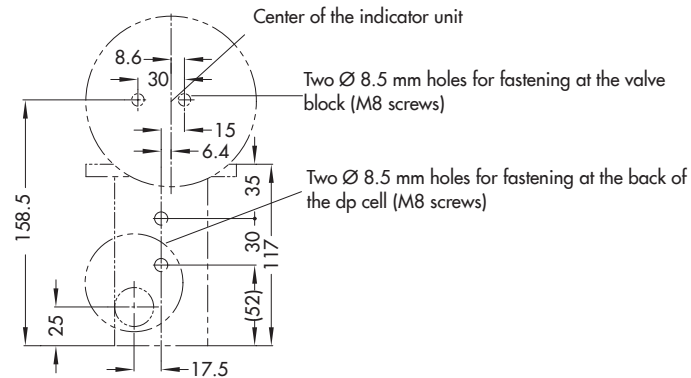
Pipe mounting with mounting part and clamp for attachment to a vertical or horizontal 2" pipe.

Housing with burst protection in the rear wall of the indicator unit.

Process medium connection: Tapped hole ISO 228 G $\frac{3}{8}$

Dimensions in mm

Drill pattern for wall/panel mounting



Pipe mounting

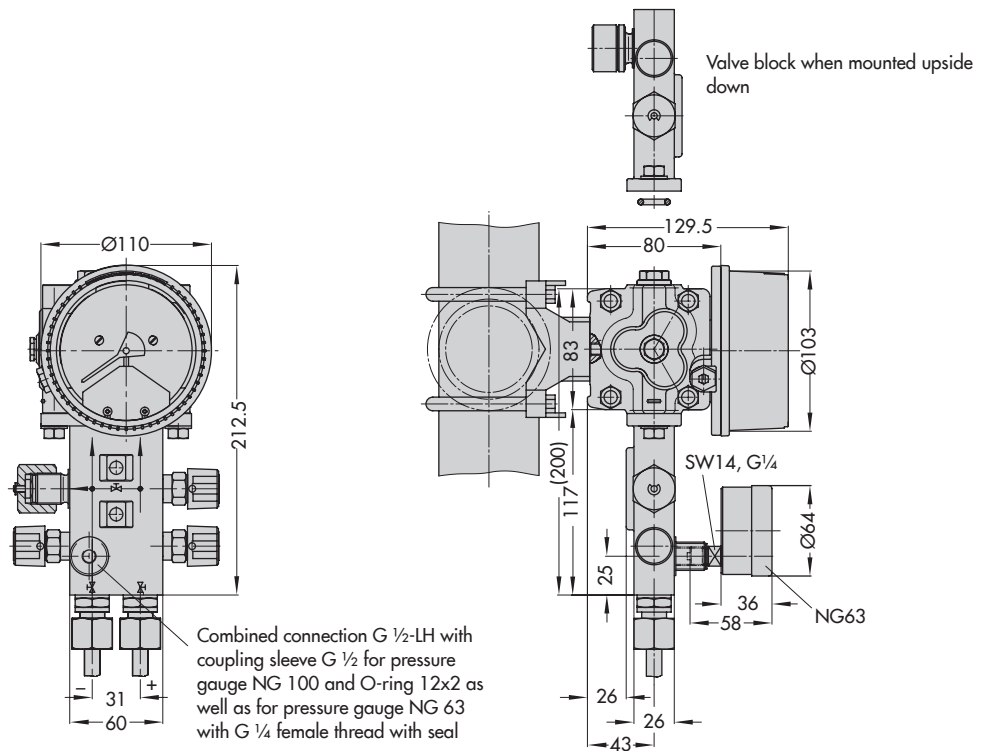


Fig. 5: Dimensional drawing

Accessories

The SAMSON product range includes a wide assortment of accessories (e.g valve blocks, pressure gauges, high-pressure valves, condensation chambers, screw joints with restrictions, contact retrofit kits, range springs etc.) for the Media series.

Refer to Data Sheet ▶ T 9555 for further details.

Refer to Data Sheet ▶ T 9545 for a description of dial plates available at SAMSON.

Article code

Media 05 Differential Pressure and Flow Meter	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Version														
Indicator Ø100 mm	5													
Material														
Brass		0												
Stainless steel		1												
Measuring range														
60 mbar			0	2										
100 mbar			0	3										
160 mbar			0	4										
250 mbar			0	5										
400 mbar			0	6										
600 mbar			0	7										
1000 mbar			0	8										
1600 mbar			0	9										
2500 mbar			1	0										
3600 mbar			1	1										
Diaphragm														
FPM: 0 to +80 °C					1									
NBR: -30 to +80 °C					2									
EPDM: -30 to +80 °C					3									
ECO: -40 to +80 °C					4									
Version														
Standard						0	0							
Cryogenic gases according to DIN EN 12300, free of oil and grease						1	1							
Oxygen according to DIN EN 12300 - O ₂ , free of oil and grease						1	2							
Zero adjustment screw														
Standard (accessible from the outside)								0						
Concealed (inside the body)								1						
Options														
Without									0					
1 min. limit contact (SJ2-SN) according to ATEX										3				
1 min. and 1 max. limit contact (SJ2-SN) according to ATEX											4			
2 min. limit contacts (SJ2-SN) according to ATEX												5		
Special versions														
Without											0	0	0	
Mounted upside down											0	4	0	

Accessories

We recommend the following accessories for the Media 05 device (Fig. 6):

Pos.	Accessories	Order specifications
1	Valve block	Valve block: [yes/no]
2	Pressure gauge	Pressure gauge: [yes/no] + specify measuring range (e.g. 25 bar)
3	Screw plugs	Screw plugs: [yes/no]
4	Screw fittings for process connections	Screw fittings for process connections: [yes/no] + specify pipe diameter [6/8/10/12 mm]

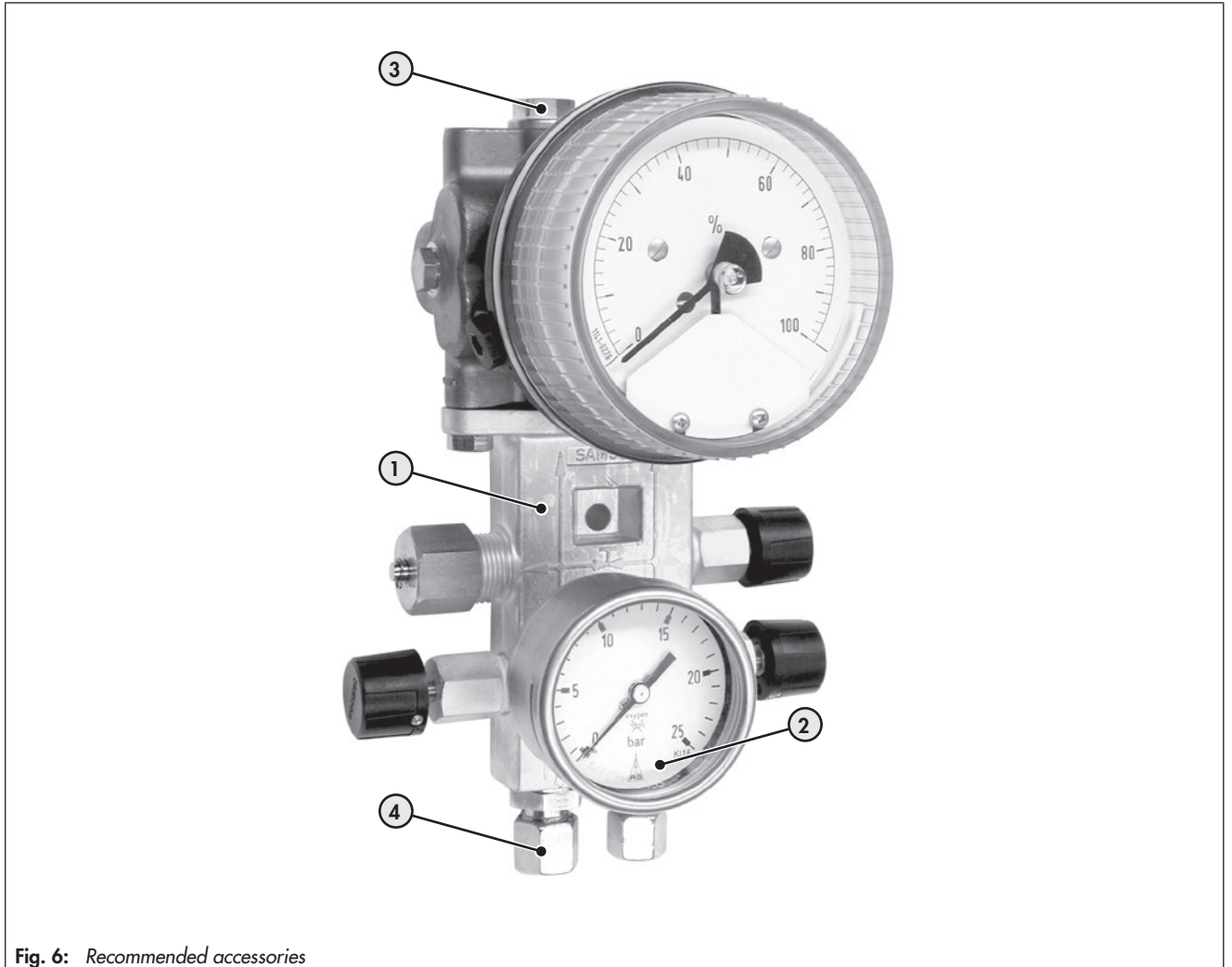


Fig. 6: Recommended accessories

→ Details and further accessories listed in the Information Sheet ▶ T 9555

→ List of dial plates ▶ T 9545

Additionally required ordering specifications

- Measured value setting ¹⁾: alarm contact set to 0 to ...mbar

¹⁾ With default settings of measured value: 0 to upper measuring range value

Additionally required ordering specifications (only for limit switch)

		Contact A1		Standard
A1 Min. contact = Value decreases	Metal tag is ...	Inside/outside ³⁾	at ... mbar	22 ₋₂ %
		Contact A2		
A2 Min. contact = Value decreases	Metal tag is ...	Inside/outside ³⁾	at ... mbar	42 ₋₂ %
A2 Max. contact = Value increases	Metal tag is ...	Outside/Inside ³⁾	at ... mbar	93 ⁺² %

¹⁾ When delivered with installed limit switch. Standard: without setting

²⁾ With default settings of measured value: 0 to max. measured value

³⁾ Delete specification that does not apply

Certificates and approvals

- CE compliance
- Registered by the metrological service of the federal agency for technical regulation and metrology for use in the Russian Federation
- Oxygen service, test report No. 2012/R249a based on DIN EN ISO 7291

Ordering text

- Media 05 Differential Pressure and Flow Meter
- Order no.: Type 5005-... (see article code)
- Special version ...