

## Diaphragm pressure gauges for the chemical industry with electrical alarm contacts

with or without dampening

with magnetic snap-action contacts  
or inductive alarm contacts

Nominal sizes ND 100, 160

Connection position bottom, radial



### Description

The design principle and material selection of the diaphragm pressure gauges allow them to meet the stringent demands occurring above all in the chemicals and petrochemicals industries.

Special corrosion resistant materials protect the wetted parts in service with chemically aggressive media. Open process connections ensure that the gauges are easy to clean with highly viscous or crystallizing process media, thus guaranteeing process reliability.

The diaphragm system makes the gauges extensively insensitive to vibration or jarring, and produces a high level of overpressure protection and actuating force. As a result of the high actuating forces, diaphragm pressure gauges are particularly suitable for connection of electric alarm contacts. Electric alarm contacts open and close circuits in response to the position of the pressure gauge pointer.

Magnetic snap-action electric alarm contacts are predominantly used in adverse operating conditions. The high contact pressure and the selection of various contact materials result in reliable and cost-effective solutions, above all when high currents have to be switched. Signal output can however take place slightly in advance of or lagging slightly behind the motion of the actual value pointer.

**If the electrical switching capacities of the alarm contacts are exceeded or not reached (see DE 1231), a relay (DE 1230) is to be used to provide an appropriate current rating.**

Inductive electric alarm contacts have an almost unlimited service life, as the signal is switched without physical contact. Closing or opening takes place without any feedback effect on the measuring system, precluding any signal lead or lag. A corresponding control unit is always required for operation. Units with inductive contacts may be operated in areas with potentially explosive atmospheres, assuming compliance with existing specifications.

### Special features

- o Limit value signalling by magnetic snap-action or inductive contacts
- o With SVA-amplifier suitable for SPS control units
- o Up to four alarm contacts possible
- o Can be used under Ex-conditions with inductive alarm contacts
- o Liquid dampening provides vibration-free display
- o Up to 10-fold overload capacity
- o Measuring system stainless steel 1.4571 (ANSI 316 Ti)
- o Protection class IP 54 resp. IP 65

### Options / Measuring ranges


0 ... 25 mbar to 0 ... 40 bar

### Applications

Chemical and petrochemical industry,  
food and beverage industry,  
Mechanical engineering,  
plant and apparatus construction

Model : P2431, P2433, 2441, 2443,  
P2451, P2453, 2461, 2463

## Technical data

Models	P2431		P2433		P2451		P2453		Options
Nominal size	100				160				
Type									
Type of contacts	Magnetic snap-action contact		Inductive contact		Magnetic snap-action contact		Inductive contact		
Number of contacts *	1 to 4 depending on measuring range		1 to 3 depending on measuring range		1 to 4 depending on measuring range		1 to 3 depending on measuring range		
Liquid filling	---	Ester oil	---	Ester oil	---	Ester oil	---	Ester oil	
Electrical connection	Cable connector right hand side 6 screw terminals + PE, cross section of the conducting wire 2.5 mm <sup>2</sup> Screw type conduit fitting M20x1.5, outgoing downwards								back (without pressure relief opening)
Accuracy class	Class 1.6 according to En 837-3 Class 2.5 with liquid filling and ranges from 0..25 to 0..100 mbar								
Ranges	0...25 mbar to 0...250 mbar : flange Ø 160 mm 0...0.4 bar to 0... 40 bar : flange Ø 100 mm negative or positive or negative and positive gauge pressure								
Application	Constant load : up to full scale value Alternating load : 0.9 x full scale value								
Overload protection	5 x full scale value, max. 40 bar								overloadable: 10x full scale value, max. 40 bar. vacuum proof to -1 bar
Case and upper flange	Stainless steel, pure, with pressure relief								
Connection with lower flange - position - thread	Stainless steel 1.4571 bright  bottom, radial G1/2 B, SW 22								other threads or open flanges on request
Bezel	Stainless steel, bright, bayonet ring								
Window	Laminated safety glass								Plexiglass
Dial	Aluminium, white, scale and markings black								Dual scale
Pointer	Aluminium, black								
Movement	Stainless steel								
Elastic measuring element	≤ 0.25 bar : stainless steel 1.4571 > 0.25 bar : stainless steel ( Duratherm 600 )								
Seal to - pressure chamber - internal chamber	FPM (Seals made of Viton <sup>®</sup> ) <sup>1)</sup> NBR (Perbunan)								PTFE metal bellow (stainless steel)
Temperatures - medium - ambient	Tmin. -20°C , Tmax. 100° C Tmin. -20°C , Tmax. 60° C								
Temperature drift	0.5% / 10K deviation of normal temperature +20°C								
Protection EN 60 529 / IEC 529	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	
Components in contact with medium	see process connection with lower flange and elastic measuring element								Special materials on request
Orifice									ø0.4 ; ø0.8

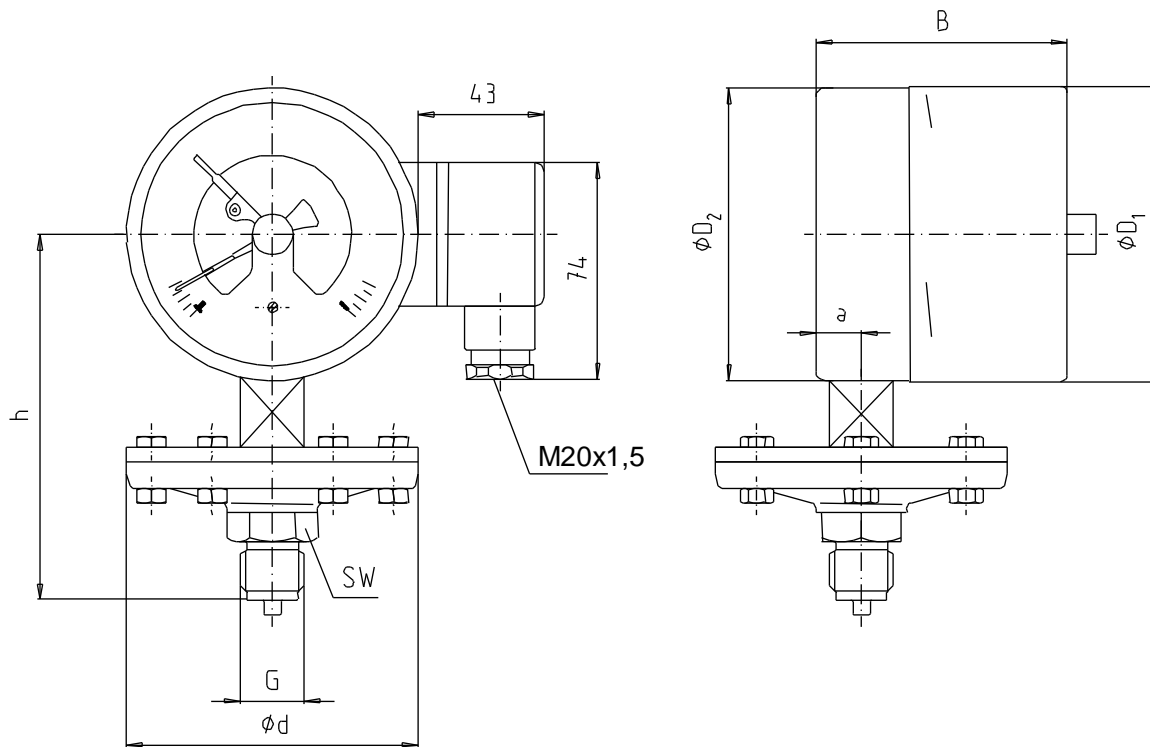
<sup>1)</sup> Viton<sup>®</sup> fluoroelastomer, a product of DuPont Dow Elastomers

### \* Max. number of contacts

Measuring range	Magnetic snap-action contact	Inductive contact
25 mbar	2	2
40 mbar to 250 mbar	3	3
above 400 mbar	4	3

See data sheet DE 1231 for electrical data.  
See data sheet DE 1230 for electrical accessories.

## Dimensions



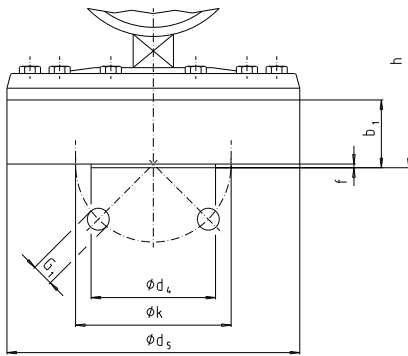
Size (mm)	Ranges [ bar ]	Ø d	a	Dimensions [ mm ]				G	h ± 2	SW
				B ± 1 with		D <sub>1</sub>	D <sub>2</sub>			
				1+2 cont.	3 cont.					
100	≤ 0,25	160	15,5	88	96	101	99	G	117	22
160				101	101	161	159		1/2B	149
100	≥ 0,40	100	15,5	88	96	101	99	G	117	22
160				101	101	161	159		1/2B	149

Size (mm)	Ranges [ bar ]	contact	weight [ kg ] approx	
			unfilled with	filled with
100	≤ 0,25	1+2 - contact	2,9	3,4
		3 - contact	3,0	3,5
160	≤ 0,25	1+2 - contact	3,5	5,1
		3 - contact	3,6	5,2
100	≥ 0,40	1+2 - contact	1,7	2,2
		3 - contact	1,8	2,3
160	≥ 0,40	1+2 - contact	2,3	3,9
		3 - contact	2,4	4,0

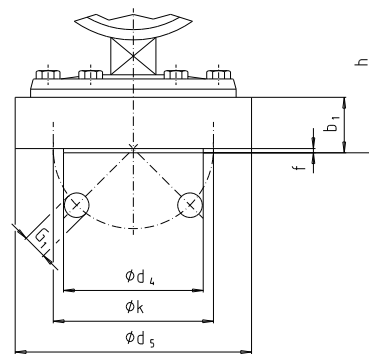
Thread to EN 837 -3

## Dimension

### Optional DIN-flange connection DN 25 , PN 10 to PN 40



Ranges 0 ... 25 to 0 ... 250 mbar

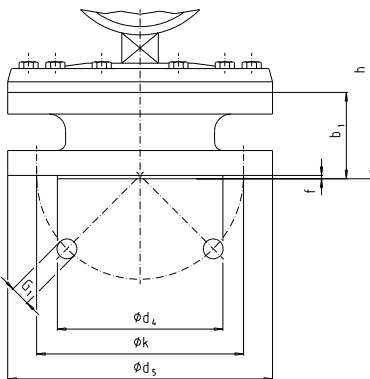


Ranges 0 ... 0.4 to 0 ... 40 bar

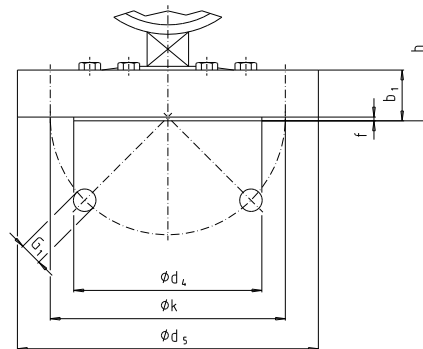
Size (mm)	flange DIN DN 25 PN 10 bis 40 1)	Dimension [ mm ]							Weight 2) [ kg ] approx
		d5	k	d4	b1	f	G1	h ± 2	
100	≤ 0,25 bar	165	125	102	54	3	4 x Ø 18	140	3,0
160								170	
100	≥ 0,40 bar	165	125	102	30	3	4 x Ø 18	106	2,5
160								136	

Other dimensions as standard version

### Optional DIN-flange connection DN 50, PN 10 to PN 40



Ranges 0 ... 25 to 0 ... 250 mbar



Ranges 0 ... 0.4 to 0 ... 40 bar

Size (mm)	flange DIN DN 50 PN 10 bis 40 1)	Dimension [ mm ]							Weight 2) [ kg ] approx
		d5	k	d4	b1	f	G1	h ± 2	
100	≤ 0,25 bar	165	125	102	54	3	4 x Ø 18	140	3,0
160								170	
100	≥ 0,40 bar	165	125	102	30	3	4 x Ø 18	106	2,5
160								136	

Other dimensions as standard version

- 1) Suitable for mounting to flange acc. to DIN, sealing face form D to DIN 2526.
- 2) The listed weights are additional mass, which must be added to the weight of the standard version (connection G 1/2 B acc. to EN 837-3)

Modifications reserved