

Differential pressure gauge with diaphragm

per EN 837-3, NS 100/160

Type series BD2...



Application area

- Machinery construction
- Chemical and petrochemical industry
- General process technology
- Shipping

Features

- Differential pressure gauge with diaphragm
- Nominal ranges -40...0 mbar to -1...24 bar, 0...40 mbar to 0...25 bar
- High quality case with bajonet ring NS 100/160 per EN 837-3 S1
- Case and measuring flange of stainless steel, diaphragm of Duratherm
- Working pressure up to 80 bar
- Accuracy class 1.6 as per EN 837-3
- High overload protection
- Degree of protection IP 65

Options

- Approvals/Certificates
 - Explosion protection (ATEX/UKEX) for mechanical devices
 - Material certificate per EN 10204
 - Calibration certificate per EN 10204
- As per UKCA regulations
- Electrical contact device, see data sheet D3-034
- Electronical angle-of-rotation sensor, Type series PL1100, see data sheet D6-020
- Extended temperature range
- Connection to Zone 0 (upon request)
- 3-way valve block
- Safety case per EN 837-1 S3
- Case with liquid filling and degree of protection IP 66

Application

The differential pressure gauge is suitable for universal use in areas with special requirements for measuring gaseous, liquid and aggressive media. Application areas are level measuring, filter monitoring and flow measuring. Because of its robust design, the device is suitable for use in tough environments.

Technical data

Constructional design / case

Design:	High quality case with bayonet ring per EN 837-1 S1, material: stainless steel mat.-no.-1.4301 (304) ; with blow-out device, material: PUR, ventilation valve, material: PUR
	Alternative: Safety design with blow-out back and solid baffle wall per EN 837-1 S3, Material: Stainless steel 1.4301 (304)
Nominal size:	NS 100 or NS 160
Degree of protection per EN 60529:	<ul style="list-style-type: none">■ Without filling: IP 65■ With filling S1 case: IP 65■ With filling S3 case: IP 66
Case filling:	Option: Glycerine-water Further liquid fillings upon request.
Atmosph. pressure compensation:	Via ventilation valve.
Case seal:	Material gasket: NBR
Pressure chamber seal:	Material gasket: NBR
Window:	Non-splintering laminated glass. Option: Non-splintering plastic (Macro-lon)
Measuring element:	Diaphragm
Movement:	Stainless steel segment
Scale:	Pure aluminium, white with black inscription Optional with red marking or with fixed reference pointer. Special scale upon request
Pointer:	Pure aluminium, black, with micro adjustment for zero point correction
Mounting:	Via device holder per DIN 16281 from stainless steel, option: aluminium.
Weights:	NS 100: Flange Ø 100 without filling: approx. 3.2 kg Flange Ø 160 without filling: approx. 6.6 kg Flange Ø 100 with filling: approx. 3.4 kg Flange Ø 160 with filling: approx. 6.9 kg NS 160: Flange Ø 100 without filling: approx. 3.7 kg Flange Ø 160 without filling: approx. 7.1 kg Flange Ø 100 with filling: approx. 4.3 kg Flange Ø 160 with filling: approx. 7.7 kg

Process connection

Design:	Connection lateral 3/8" NPT, option: with straight or angular screw joint, for mounting on valve block.
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Material wetted parts

Measuring element:	Diaphragm: Duratherm (similar resistance as mat.-no. 1.4571 (316Ti)) Measuring flange: stainless steel mat.-no. 1.4571 (316Ti)
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Nominal range

See order details, further ranges upon request

Overload protection	Plus and minus sides up to max. working pressure. Other designs upon request.
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Accuracy

Accuracy class:	1.6 per EN 837-3
Temperature influence:	Max. $\pm 0.8\%$ / 10K of measuring span per EN 837-3.

Temperature ranges

	without filling	with filling
Ambient:	-20...70 °C	-20...70 °C (60 °C) ¹
Media: ²	-20...110 °C	-20...70 °C (60 °C) ¹
Storage:	-40...70 °C	-40...70 °C (-20...60 °C) ¹



Extended temperature range (optional):

	without filling	with filling
Ambient:	-40...100 °C	-40...80 °C (60 °C) ¹
Media: ²	-40...150 °C	-40...150 °C

¹ Safety case S3

² Nominal range ≤ 1 bar up to 110 °C

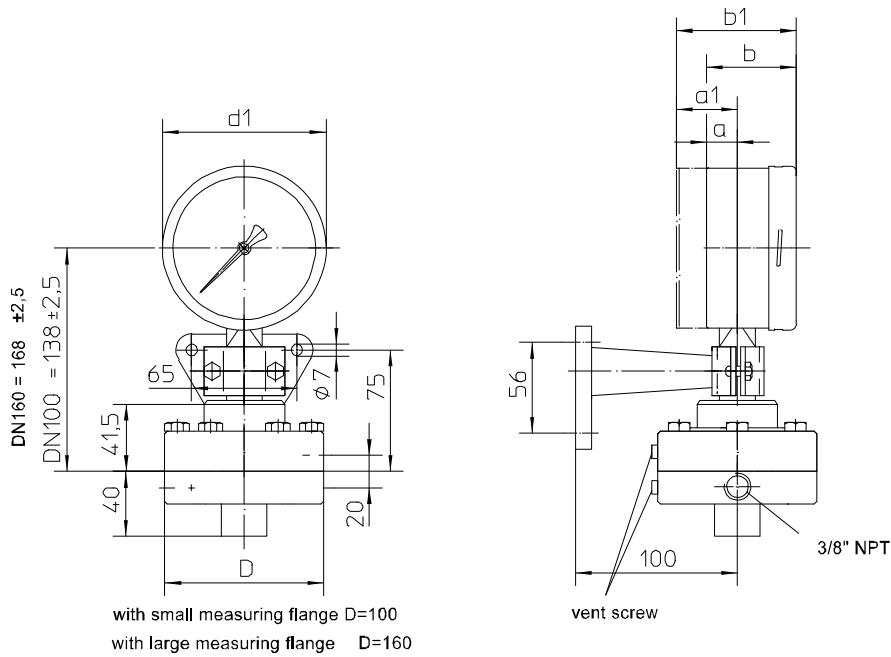
Tests and certificates

Explosion protection:	Ex-protection (ATEX/UKEX) for mechanical devices  
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Further details see Ex Instructions XA_005.

Information on other models see order details or upon request.

Dimensions

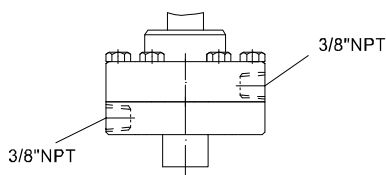


dimensions (mm)				safety case		
case	d1	a	b	b1	a1	h
NS 100	100	19	55,5	74	37	87
NS 160	160	19	55,5	84	47	117

Connection types

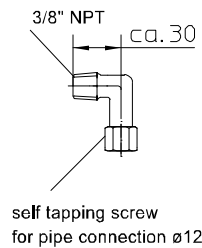
For different applications, our differential pressure gauges can be fitted with the following connections. We recommend the use of valve blocks which allow pressure compensation between the plus and minus chambers. The valve block allows zero control at all times during operating and, with correct use, prevents a one-sided overloading of the measuring system by the operating pressure.

direct connection



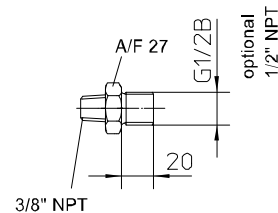
lateral threaded connection 3/8" NPT

angular screw joint

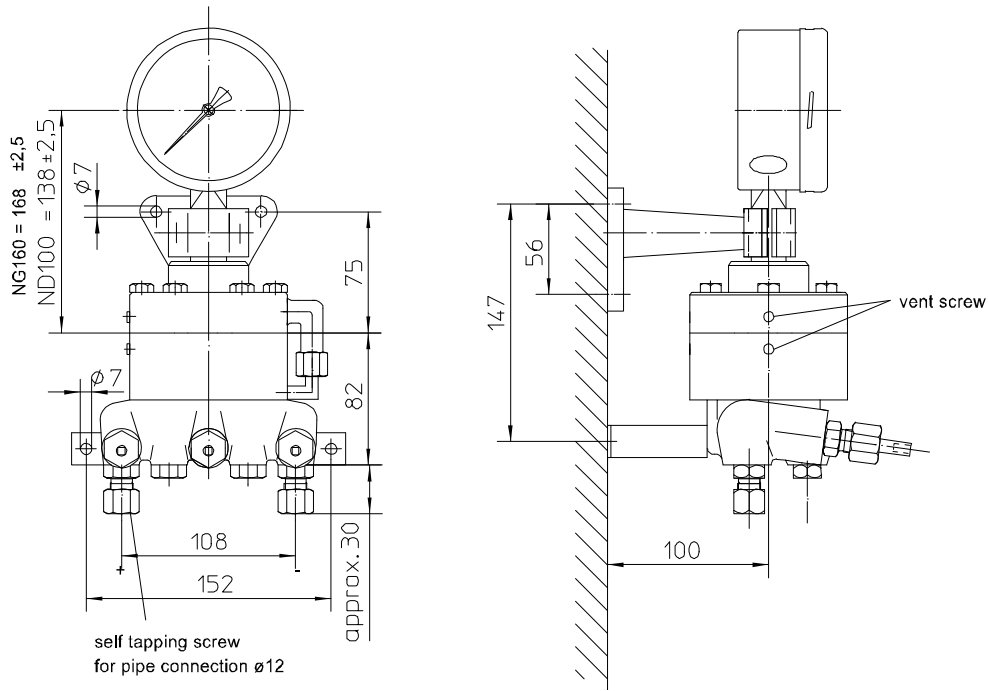


self tapping screw
for pipe connection $\phi 12$

straight screw joint



Design with 3-way valve block, flanged directly





Order details

Differential pressure gauge with diaphragm per EN 837-3, NS 100/160, Type series BD2...

Order details BD2...			
BD2200	case	NS 100	IP 65
BD2220			IP 65 with case filling
BD2300		NS 160	IP 65
BD2320			IP 65 with case filling
BD2500		NS 100 safety design	IP 65
BD2540			IP 66 with case filling
BD2600		NS 160 safety design	IP 65
BD2640			IP 66 with case filling
A6...	working pressure	work. pr. 25 bar (standard)	
A3...		work. pr. 2,5 bar	
A4...		work. pr. 6 bar	
A5...		work. pr. 10 bar	
A1...		work. pr. 40 bar (≥ 1.6 bar meas. range)	
A2...		work. pr. 80 bar (≥ 2.5 bar meas. range)	
023	nominal range	measuring flange \varnothing 160 mm	-40...0 mbar
024			-60...0 mbar
025			-100...0 mbar
026			-160...0 mbar
027			-250...0 mbar
006			0...40 mbar
007			0...60 mbar
008			0...100 mbar
009			0...160 mbar
010			0...250 mbar
028		measuring flange \varnothing 100 mm	-400...0 mbar
085			-0.6...0 bar
086			-1...0 bar
087			-1...0.6 bar
088			-1...1.5 bar
089			-1...3 bar
090			-1...5 bar
091			-1...9 bar
092			-1...15 bar
093			-1...24 bar
051	0...0.4 bar		
052	0...0.6 bar		
053	0...1 bar		
054	0...1.6 bar		
055	0...2.5 bar		
056	0...4 bar		
057	0...6 bar		
058	0...10 bar		
059	0...16 bar		
060	0...25 bar		

C1	overload protection	measuring flange Ø 100 mm (nominal range ≥ 400 mbar)	up to max. work. pr. plus- and min. sides
C2			up to max. work. pr. plus sides
C3			5 times range, plus sides, max. 80 bar
D1		measuring flange Ø 160 mm (nominal range ≤ 250 mbar)	up to max. work. pr. plus- and min. sides
D2			up to max. work. pr. plus sides
D3			1.3 times range, plus sides
01	process connection	lateral screwed connection 3/8 NPT female thread	
02		with angular screw joint for pipe - Ø 12 mm	
03		lateral, with straight screw joint G1/2	
04		lateral, with straight screw joint 1/2 NPT	
05		prepared for connection of valve block	
06		bottom with angular screw joint G1/2	
11		with flanged valve block of stainless steel for pipe - Ø 12 mm	

Additional features (to be indicated if required)			
S30	Ex-protection (ATEX/UKEX) for mechanical devices ¹	 II 2G Ex h IIC T1...T6 Gb X	
		 II 2D Ex h IIIC Txx°C Db X	
H2	device holder 100 mm	material aluminium	
H3		material stainless steel	
R2	window	non-splintering glass with maximum pointer	
R3		non-splintering glass with adjustable reference pointer	
R12		Makrolon with maximum pointer ²	
R13	Makrolon with adjustable reference pointer ²		
T2	marking	on scale (please specify)	
T3		fixed reference pointer (please specify)	
W1020	material certificate	per EN 10204-3.1, wetted parts	
W1204	calibration certificate	per EN 10204-3.1, 3 measuring points	
W1201		per EN 10204-3.1, 5 measuring points	
W2660	as per UKCA regulations		
W4090	extended temperature range		
PL1100	output signal	4...20 mA (20...4 mA) with electronic angle-of-rotation sensor (see data sheet D6-020)	

Order code (example): **BD2220 – A3007 – D302 - ...**

¹ for devices with non-splintering glass only

² not for devices with Ex-protection