

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



### Application area

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

### Technical data

#### Constructional design / case

**Design:** High quality case with bayonet ring per EN 837-1 S1, material: stainless steel mat.-no.-Nr. 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)

### 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 bayonet 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
- EAC declaration (upon request)

### Options

- Approvals/Certificates
  - Explosion protection (ATEX) for mechanical devices
  - Certificate of measuring equipment for Russian Federation
  - Material certificate per EN 10204
  - Calibration certificate per EN 10204
- Electrical contact device, see data sheet D3-034
- Electronical angle-of-rotation sensor, see data sheet D6-020
- Extended temperature range
- Connection to Zone 0
- 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.

Nominal size: NS 100 or NS 160

Degree of protection per EN 60529:
 

- Without filling: IP 65
- With filling S1 case: IP 65
- With filling S3 case: IP 66

Case filling: Glycerine-water (optional)  
Further liquid fillings upon request.

Atmosph. pressure compensation: Standard case, filled, ≤ 10 bar: with ventilation valve  
> 10 bar: filling plug, material: PUR

Case seal:	Material gasket: NBR
Pressure chamber seal:	Material gasket: NBR
Window:	Non-splintering laminated glass. Option: Non-splintering plastic (Macrolon)
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) <sup>1</sup>
Media: <sup>2</sup>	-20...110 °C	-20...70 °C (60 °C) <sup>1</sup>
Storage:	-40...70 °C	-40...70 °C (-20...60 °C) <sup>1</sup>

Extended temperature range (optional):

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

<sup>1</sup> Safety case S3

<sup>2</sup> Nominal range  $\leq 1$  bar up to 110 °C

### Approvals/Certificates

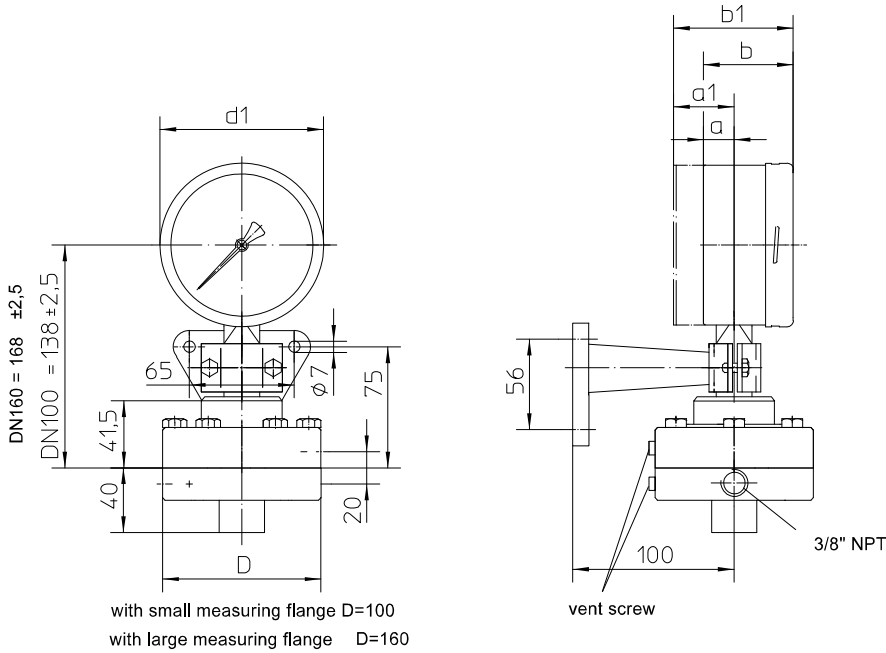
Explosion protection:	Ex-protection (ATEX) for mechanical devices ⊕ II 2G c TX ⊕ II 2D c TX
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Further details see Ex Safety Instruction XA\_005.

- EAC declaration (upon request)
- Certificate of measuring equipment for Russian Federation

**Information on other models see order details or upon request.**

## Dimensions

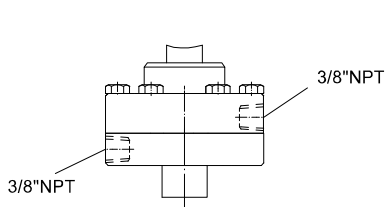


dimensions (mm)						
case	d1	a	b	safety case		
				b1	a1	h
NS 100	100	19	55,5	74	37	87
NS 160	160	19	55,5	84	47	117

## Connection types

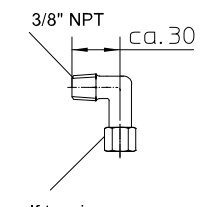
For different applications, our differential pressure gauges can be fitted with the following connections. We recommend the use of valve blocks which allow pressure compensation between the plus and minus chambers. The valve block allows zero control at all times during operating and, with correct use,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

direct connection

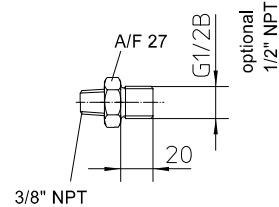


lateral threaded connection 3/8" NPT

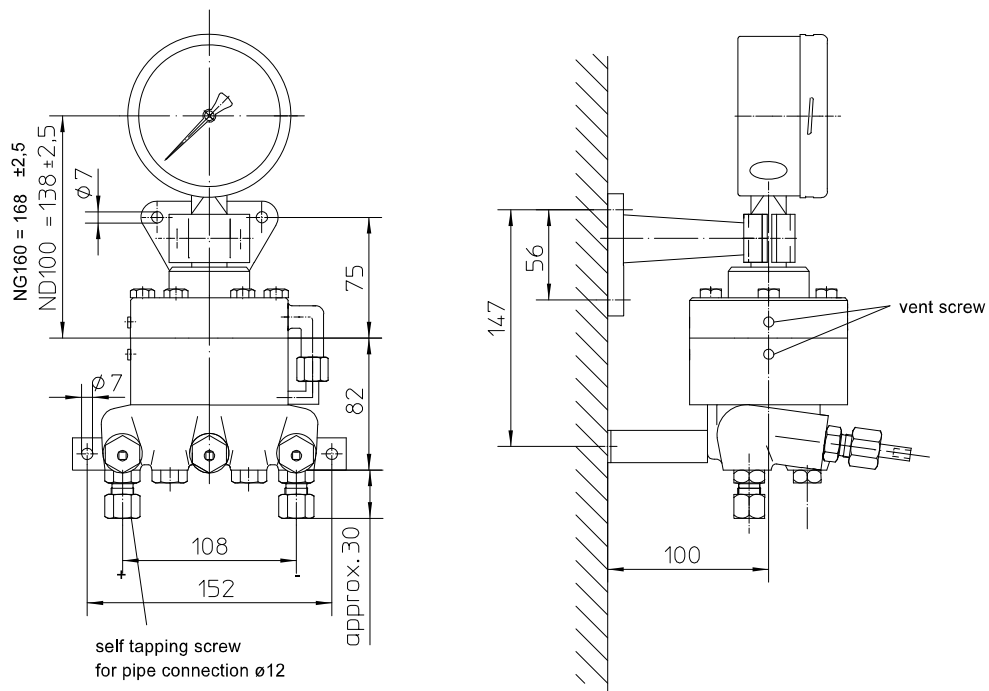
angular screw joint



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 ( $\geq 1.6$ bar meas. range)		
A2...		work. pr. 80 bar ( $\geq 2.5$ 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			-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		
			measuring flange $\varnothing$ 100 mm	

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) for mechanical devices <sup>1</sup>	⊕ II 2G c TX
		⊕ II 2D c TX
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 <sup>2</sup>
R13		Makrolon with adjustable reference pointer <sup>2</sup>
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
W2673	certificate of measuring equipment for Russian Federation	
W4090	extended temperature range	
PL1100	output signal	4...20 mA (20...4 mA) with electronic angle-of-rotation sensor (see data sheet D6-020)
Z1	connection to Zone 0 <sup>3</sup>	with Zone 0 adapter (coupling element KF6)

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

<sup>1</sup> for devices with non-splintering glass only

<sup>2</sup> not for devices with Ex-protection

<sup>3</sup> for devices with Ex-protection only