

# BDT30 – Contact pressure gauge 100 mm

## Product description

Badotherm pressure gauge with contact under the dial model BDT30 is manufactured according to the EN837-1 / DIN 16085 and is available in full stainless steel or Alloy 400 wetted parts. This pressure gauge is typically used for applications in the chemical, petro-chemical, oil & gas, power and utilities, machine building and general process industries. Safety comes first, with a blow-out feature, pressure elements made high quality tubes and the welded type connection construction. These gauges are designed to withstand the severest of operating conditions of the ambient environment and the process medium.

## Design standard

EN837-1; DIN 16085

## Dial sizes, ranges & accuracy

Possibilities in ranges and accuracies are led by the dial size. Accuracy class is based on dry gauges. Liquid filling can affect the accuracy.

Dial size	Ranges	Accuracy
100mm / 1 contact	0...1,6 to 0...1600 bar	1.0%
100mm / 1 contact	0...1 to 0... 1600 bar	1.6%
100mm / 2 contacts	0...2.5 to 0...1600 bar	1.0%
100mm / 2 contacts	0...1.6 to 0...1600 bar	1.6%

## Mounting variation

Not all gauges are suitable for some mounting variations. For the BDT18 series the mounting variations are below.

- **type A** (10) bottom connection, direct mounting
- **type C** (11) bottom connection, surface mounting (back)
- **type D** (30) Lower back connection, direct mounting
- **type E** (32) lower back connection, panel mounting (front)

More specifically per dial size:

Dial size	A	B	C	D	E	F
100mm	•		•	•	•	

## Process connection

Dial size	Standard thread	optionally	SW size
100mm	G ½ A or ½" NPT	M20x1.5	22mm

Other thread standards such as ISO 7-1 R (BSPT), or DIN 13-1 can be selected as well.

-> See datasheet "thread information" for specific thread details



## Materials of construction

	BDT30	BDT30...M
Case	AISI 304	AISI 316
Bezel		
Connection <sup>1</sup>	AISI 316	Alloy 400
Sensing element <sup>1</sup>	AISI 316	Alloy 400
Movement	Stainless steel	
Pointer	Aluminium	
Dial		
Window gasket	NBR	
Blow out		
Fill plug	NBR (HNBR for filled gauges)	
Mounting flanges	AISI 304	AISI 316
Window	Acrylic	
Cable terminal box	Polyamid 6	

\*1 wetted materials

## Pressure limitations

The gauge are built to withstand harsh environments however the EN 837 limits the use of a pressure gauge according below table.

Dial size	Steady	Fluctuating	Short time
100mm	FSV	0.9 x FSV	1.3 x FSV

FSV: full scale value

## Temperature limitations

The gauges can withstand ambient and process temperature up to a certain limit. The limitations on temperature are:

	Ambient	Medium
Dry	-40°C ... +60°C	-40°C ... +200°C
Filled	-20°C ... +60°C	-20°C ... +90°C

The variation of indication caused by the effect of temperature shall not exceed:  $\pm 0.4\% / 10K FSV$

## Pointer

Standard pointer is a fixed black painted aluminum pointer. Because of the contact mounting no options are available.

## Dial facing

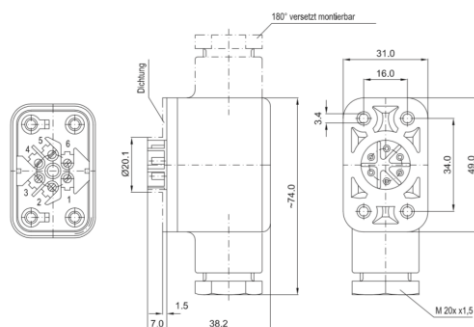
The dial plate is made from aluminum and coated with UV resistant white coating. The black dial markings, scale, numbering, and interval is according the EN 837. Options like colored dial, customer logo, or colored segments are possible as well. Scale interval and numbering is following the EN837.

## Limit stop

To prevent permanent damage after overpressure, or sudden vacuum and the gauge is protected by an internal limit stop on the movement that is set just below the minimum scale value and just outside the 130% maximum scale value. These gauges also have a free zero.

## Cable terminal box

For type A & C the cable terminal box is fitted on the circumference of the case, Type D & E have the terminal box on the back of the case. This terminal box houses the terminals for the external wiring. The connector can be removed by unloosen the Philips screw. The male and female connector are sealed by an NBR gasket. Standard this is an IP65 Universal Cable Box type B suitable for electrical cables 7...13mm in diameter.



## Window

Standard BDT30 gauges have an acrylic window. Optional glass windows are available.

## Degree of protection

The BDT30 has a standard degree of protection of IP65. The values are determined according the IEC/EN 60529.

## Contacts

The BDT30 is supplied with a contact. The contacts can be low action, magnetic, inductive, or electric. It can be supplied with single or double contacts.

## Usable range:

For all contacts except magnetic contacts the usable range is 10%...90% of the scale. For magnetic contacts 15%...85% of the scale. When using a double contact, the recommended minimum distance between the two setpoints is 15% to 30% of the scale.

## Case filling

The BDT30 gauges can be filled with a dielectric fluid. The BPF03 fill fluid is a dielectric fill silicone fluid.

## Restrictor Screw

All gauges can be executed with a restrictor of 0.8 or 0.3 orifice in AISI316. For the Alloy 400 internal the orifice is 0.8mm.

## Certification & Declaration

### Calibration

Gauges are full range calibrated as a factory standard. Optionally you can select a 5 points calibration certificate, and a 10 points calibration certificate for the 0.6% and 0.5% gauges.

### Pressure Equipment Directive - 2014\_68\_EU

PED approval is given according article 3.3 and is valid for ranges >200 bar. All gauges will be marked accordingly. A declaration of conformity can be supplied.

### ATEX 114 - 2014/68/EU

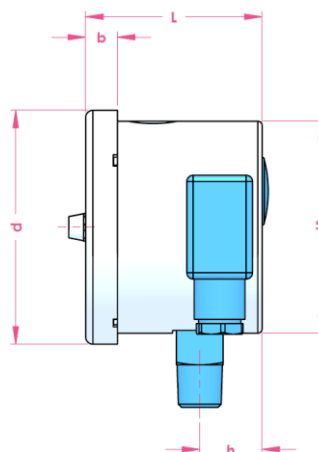
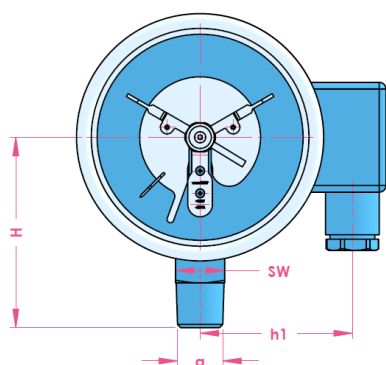
ATEX restrictions are explained in the IOM and in the ATEX background datasheet. Only Inductive contacts are having ATEX approval.

### EN 10204 material certificate

A material 3.1 certificate on the wetted parts can be supplied.

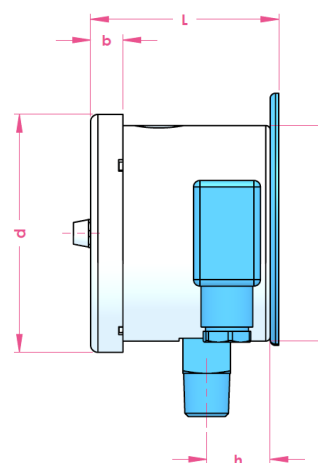
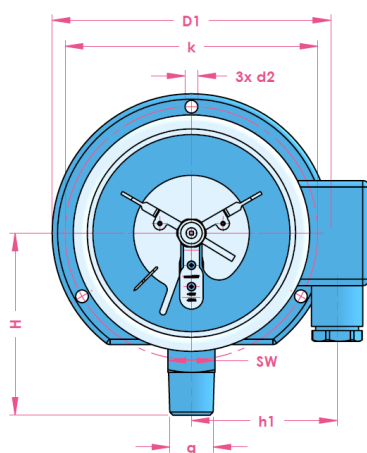
## Dimensions table

### Type A (10)



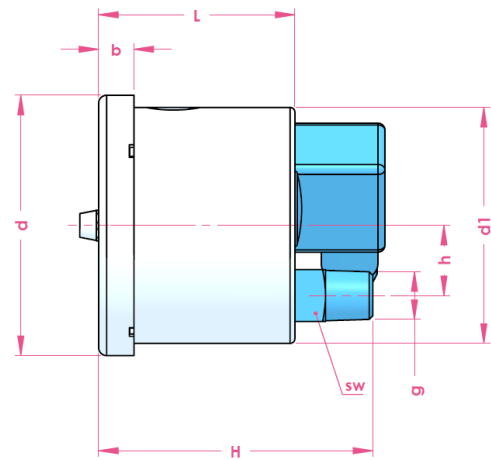
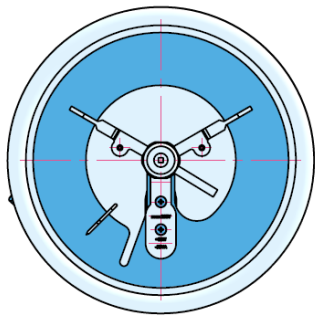
Dial size	d	d1	b	L	h	h1	g	SW	H	weight
100	110.0	100.0	15.0	83.0	15.8	77.0	½ NPT	22	88.0	0.5 kg

### Type C (11)



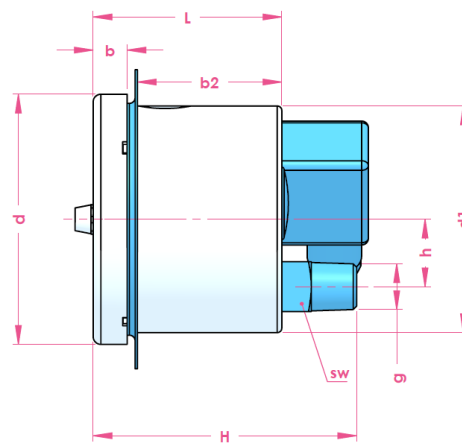
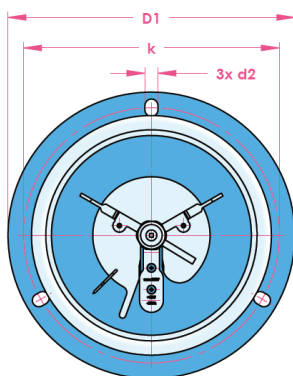
size	d	d1	b	L	h	h1	K	D1	d2	g	SW	H	weight
100	110.0	100.0	15.0	83.0	15.8	77.0	117.0	130.0	6.0	½ NPT	22	88.0	0.5 kg

### Type D (30)



Dial size	d	d1	b	L	h	H	g	SW	weight
100	110.0	100.0	15.0	83.0	30.0	116.0	½ NPT	22	0.5 kg

### Type E (32)



Dial size	d	d1	b	L	h	H	k	D1	g	SW	weight
100	110.0	100.0	15.0	83.0	30.0	116.0	117.6	132.0	½ NPT	22	0.5 kg

## Product code 100

Code	
Example code:	<b>BDT30</b> 100 A G12M S363 S304 A_ 0 G B50 10
<b>TYPE</b>	
100 mm ◀	100
<b>MOUNTING</b>	
Bottom connection - direct mounting (10) ◀	A
Bottom connection - surface mounting (11)	C
Lower back connection, direct mounting (30)	D
Lower back connection, panel mounting (front) (32)	E
<b>CONNECTION</b>	
G 3/8" A	G38M
G1/2 A ◀	G12M
1/2" NPT	N12M
R 1/2	R12M
M20x1.5	M20M
<b>TUBE &amp; SOCKET MATERIAL</b>	
AISI 316 ◀	S363
Alloy 400	A400
<b>CASE/BEZEL MATERIAL</b>	
AISI 304 ◀	S304
AISI 316	S300
<b>CONTACT</b>	
Contact device under the dial (see table 4)	A_
<b>LIQUID FILLING</b>	
Dry ◀	0
BPF 03 – Silicone Contact use	3
<b>WINDOW</b>	
Acrylic (SAN) ◀	A
Glass	G
<b>RANGE</b>	
See page table 1 and table 2	....
<b>ACCURACY</b>	
1.0 ◀	10
1,6	16

◀: is the sign for the standard pressure gauge

**Table 1: Pressure Range code**

bar		psi		MPa		kPa		kgf/cm2	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
C36	-1...0,6	C37	30Hg/15psi	N50	0...1,6	D36	-100...60	E36	-1...0,6
C38	-1...1,5	C39	30Hg/30psi	N54	0...2,5	D38	-100...150	E38	-1...1,5
C40	-1...3	C41	30Hg/60psi	N57	0...4	D40	-100...300	E40	-1...3
C42	-1...5	C44	30Hg/100psi	N58	0...6	D42	-100...500	E42	-1...5
C45	-1...9	C46	30Hg/150psi	N60	0...10	D45	-100...900	E45	-1...9
C50	-1...15	C50	30Hg/220psi	N62	0...16	D50	-100...1500	E50	-1...15
C54	-1...24	C53	30Hg/300psi	N65	0...25	D54	-100...2400	E54	-1...24
B01	-1...0	P32	NA	N69	0...40	L01	-100...0	K01	-1...0
B04	-0,6...0	P35	0...15	N71	0...60	L04	NA	K04	NA
B31	NA	P37	0...30	N73	0...100	L31	NA	K31	NA
B35	0...1	P40	0...60	N76	0...160	L35	0...100	K35	0...1
B36	0...1,6	P43	0...100			L36	0...160	K36	0...1,6
B38	0...2,5	P46	0...160			L38	0...250	K38	0...2,5
B40	0...4	P48	0...200			L40	0...400	K40	0...4
B42	0...6	P51	0...300			L42	0...600	K42	0...6
B45	0...10	P55	0...400			L45	0...1000	K45	0...10
B50	0...16	P56	0...500					K50	0...16
B54	0...25	P57	0...600					K54	0...25
B57	0...40	P58	0...800					K57	0...40
B58	0...60	P59	0...1000					K58	0...60
B60	0...100	P60	0...1500					K60	0...100
B62	0...160	P61	0...2000					K62	0...160
B65	0...250	P64	0...3000					K65	0...250
B69	0...400	P66	0...4000					K69	0...400
B71	0...600	P68	0...5000					K71	0...600
B73	0...1000	P69	0...6000					K73	0...1000
B76	0...1600	P72	0...10000					K76	0...1600
		P73	0...15000						
		P75	0...20000						

**Table 2: Secondary scale**

Dual scale option	code
PSI red	#PR
PSI black	#PB
PSI blue	#PBL
bar red	#BR
bar black	#BB
bar blue	#BBL

Add the code behind the pressure code  
(eg B45#PR for 0...10 bar/psi with red scale)


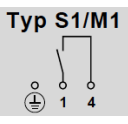
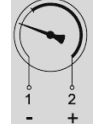
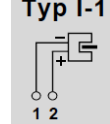
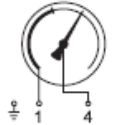
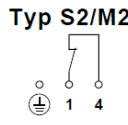
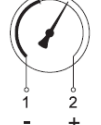
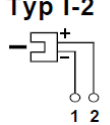

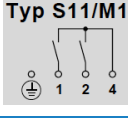
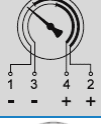
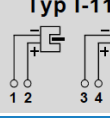
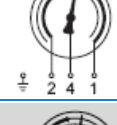
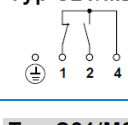
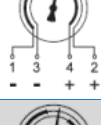
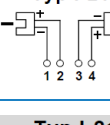
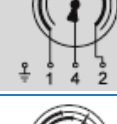
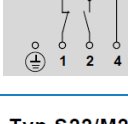
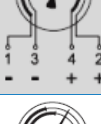
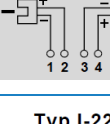

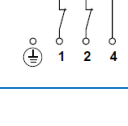
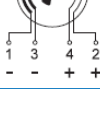
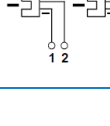
**Table 3: General option code**

Option (start options with X_)	code
Restrictor screw 0.8mm	_RS8
Restrictor screw 0.3mm	_RS3
Calibrated at 0°	C0
Calibrated at 180°	_C180
NACE ISO 15156 (MR 01 75) (alloy 400)	_N75
ATEX II2GDc-IM2c	_ATEX
3.1 material certificate	_IC31
Calibration certificate 5 points	_CC5
Adjusting key for contact	_AKC
Lead cable + Adjusting key for contact	_LCK

**Table 4: Contact option code**

Option (start options with X_)	code	
Snap-action	S1 (make contact)	_AS1
	S2 (break contact)	_AS2
	S3 (change-over contact SPDT)	_AS3
	S11 (make - make contact)	_AS11
	S12 (make - break contact)	_AS12
	S21 (break - make contact)	_AS21
	S22 (break - break contact)	_AS22
Magnetic contact	M1 (make contact)	_AM1
	M2 (break contact)	_AM2
	M3 (change-over contact SPDT)	_AM3
	M11 (make - make contact)	_AM11
	M12 (make - break contact)	_AM12
	M21 (break - make contact)	_AM21
Inductive contact	M22 (break - break contact)	_AM22
	I1 (make contact)	_AI1
	I2 (break contact)	_AI2
	I11 (make - make contact)	_AI11
	I12 (make - break contact)	_AI12
	I21 (break - make contact)	_AI21
	I22 (break - break contact)	_AI22
	I1 (make contact) SIL3	_AI1S
	I2 (break contact) SIL3	_AI2S
	I11 (make - make contact) SIL3	_AI11S
I12 (make - break contact) SIL3	_AI12S	
I21 (break - make contact) SIL3	_AI21S	
I22 (break - break contact) SIL3	_AI22S	
Electronic contact	E1 (make contact)	_AE1
	E2 (break contact)	_AE2
	E11 (make - make contact)	_AE11
	E12 (make - break contact)	_AE12
	E21 (break - make contact)	_AE21
E22 (break - break contact)	_AE22	

Contacts are without cable and adjusting key.

Single Contact	Make-contact, which is also called Normally Open (NO). The contact switch makes contact when the pointer reaches the set point in the clockwise position.		<b>Typ S1/M1</b> 		<b>Typ I-1</b> 
Single Contact	Break-contact, which is also called Normally Closed (NC). The contact switch breaks the contact when the pointer reaches the set point in the clockwise position.		<b>Typ S2/M2</b> 		<b>Typ I-2</b> 
Double Contact	Make-contact, which is also called Normally Open (NO). Both of the switch contacts 'makes' contact when the pointer reaches the set point in the clockwise direction.		<b>Typ S11/M11</b> 		<b>Typ I-11</b> 
Double Contact	Make/Break-contact. The 1st contact makes and the 2nd contact breaks when they reach their set point in clockwise direction.		<b>Typ S21/M21</b> 		<b>Typ I-21</b> 
Double Contact	Break/Make-contact. The 1st contact breaks and the 2nd makes when they reach their set point in clockwise direction.		<b>Typ S21/M21</b> 		<b>Typ I-21</b> 
Double Contact	Break-contact. Both of the contacts 'breaks' contact when the pointer reaches the set point in the clockwise direction.		<b>Typ S22/M22</b> 		<b>Typ I-22</b> 

## Change log

Date	Change
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Holland – Romania – India – Thailand – Dubai – USA

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