

BDT20 – Safety process pressure gauge 63mm

Product description

Badotherm pressure gauge model BDT20 63mm is the solid front, safety pattern gauge according the highest class of the EN 837-1 / 9.7.2 and ANSI B 40.1. The BDT20 stainless steel safety gauge has a solid front baffle wall and a pressure relieve back. This pressure gauge is typically used for applications in the chemical, petrochemical, and oil & gas industry or anywhere where safety comes first. These gauges are designed to withstand the severest of operating conditions created by the ambient environment and the process medium

Design standard

EN837-1

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 |
|-----------|-----------------------|----------|
| 63mm | 0...1 to 0...1000 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 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 |
|-----------|---|---|---|---|---|---|
| 63mm | • | | | • | • | |



Process connection

| Dial size | Standard thread | optionally | SW size |
|-----------|---------------------|------------|---------|
| 63mm | G 1/4 B or 1/4" NPT | 1/8" | 14mm |

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

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

Materials of construction

| | BDT20 | BDT20...M |
|------------------------------|------------------------------|-----------|
| Case | AISI 304 (optionally 316) | |
| Bezel | | |
| Connection ¹ | AISI 316 | Alloy 400 |
| Sensing element ¹ | AISI 316 | Alloy 400 |
| Movement | Stainless steel | |
| Pointer | | |
| Dial | Aluminium | |
| Window gasket | NBR | |
| Blow out | | |
| Fill plug | NBR (HNBR for filled gauges) | |
| Mounting flanges | AISI 304 | |
| Window | Laminated safety glass | |

*1 wetted materials

Pressure limitations

The gauges 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 |
|-----------|------------|-------------|------------|
| 63mm | 0.75 x FSV | 0.67 x FSV | 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: $\pm 0.4\% / 10K FSV$

Window

Standard BDT20 63mm gauge has a laminated safety window.

Pointer

Standard pointer is a fixed black painted aluminum pointer.

The optional pointer is an adjustable slotted pointer

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 the gauge is protected by a stop pin on the dial.

Degree of protection

The BDT20 has a standard degree of protection of IP65. The values are determined according the IEC/EN 60529.

Case filling

The gauges can be filled with different kind of fill fluids. The fill fluids available are:

- BPF01 – Glycerine 86%
- BPF02 – Silicon
- BPF04 - Foaming service
- BPF05 - ECTFE inert fluid for oxygen service
- BPF06 – Glycerine 99.5%

Restrictor Screw

All gauges can be executed with a restrictor of 0.8 orifice in AISI316.

Special service

The gauges can be supplied cleaned for oxygen use. This means the gauge is assembled and tested in a special area free of oil. The gauges are individually packed in a plastic bag with marking. The symbol:



Certification & Declaration

Calibration

Gauges are full range calibrated as a factory standard. Optionally you can select a 5 points calibration certificate.

[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](#)

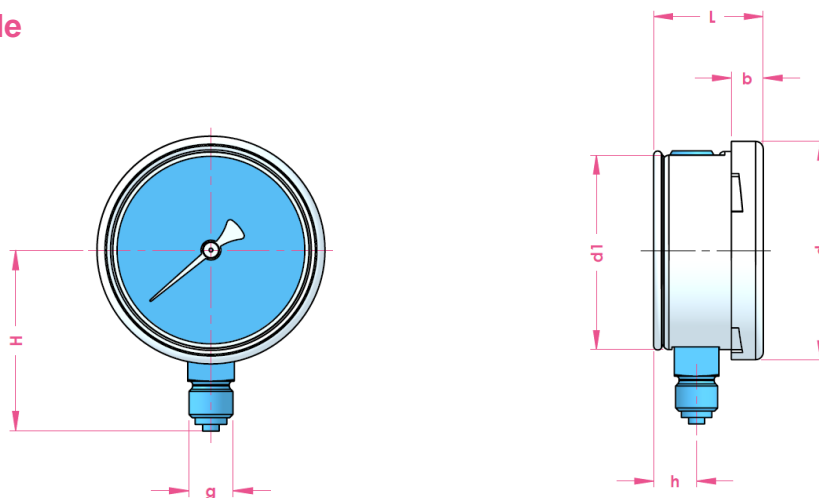
ATEX restrictions are explained in the IOM and in the ATEX background datasheet.

[EN 10204 material certificate](#)

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

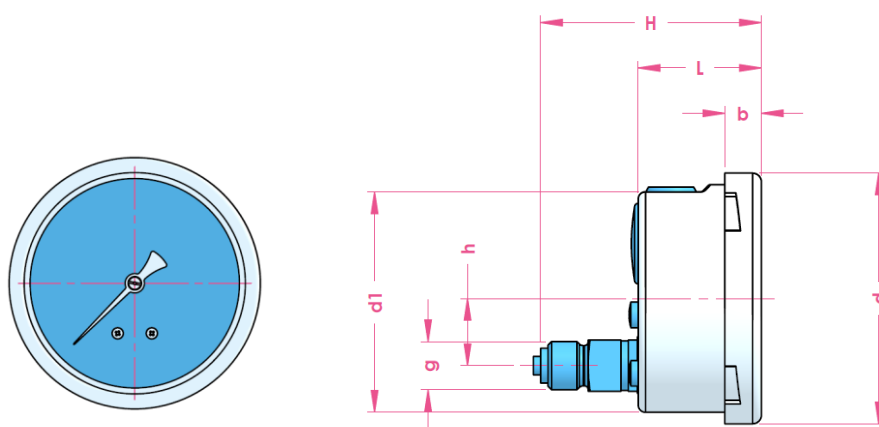
Dimensions table

Type A (10)



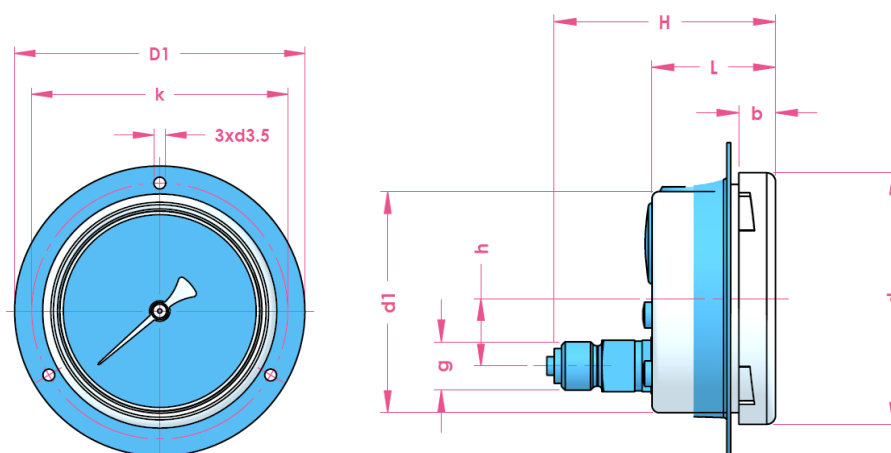
| Dial size | d | d1 | b | L | h | g | SW | H | weight |
|-----------|------|------|------|------|------|--------|----|------|-----------|
| 63 | 68.0 | 63.0 | 10.0 | 35.0 | 13.5 | G 1/4" | 14 | 54.0 | 0.2 / 0.3 |

Type D (30)



| Dial size | d | d1 | b | L | h | g | SW | H | weight |
|-----------|------|------|------|------|------|--------|----|------|-----------|
| 63 | 68.0 | 63.0 | 10.0 | 35.0 | 18.5 | G 1/4" | 14 | 58.0 | 0.2 / 0.3 |

Type E (32)



| Dial size | d | d1 | b | b2 | L | h | K | D1 | g | SW | H | weight |
|-----------|------|------|------|------|------|------|------|------|--------|----|------|-----------|
| 63 | 68.0 | 63.0 | 10.0 | 13.7 | 35.0 | 18.5 | 75.0 | 85.0 | G 1/4" | 14 | 56.5 | 0.2 / 0.3 |

Product code 63 mm

| | | Code | | | | | | | | | | |
|---|--|-------|----|---|------|------|------|---|---|---|-----|----|
| Example code: | | BDT20 | 63 | A | G14M | S363 | S304 | F | 0 | L | B50 | 16 |
| TYPE | | | | | | | | | | | | |
| 63 mm ◀ | | 63 | | | | | | | | | | |
| MOUNTING*1 | | | | | | | | | | | | |
| Bottom connection - direct mounting (10) ◀ | | A | | | | | | | | | | |
| Lower back connection. - direct mounting (30) | | D | | | | | | | | | | |
| Lower back connection.- panel mount (32) | | E | | | | | | | | | | |
| CONNECTION | | | | | | | | | | | | |
| G 1/8" B | | G18M | | | | | | | | | | |
| 1/8" NPT | | N18M | | | | | | | | | | |
| G1/4 ◀ | | G14M | | | | | | | | | | |
| 1/4" NPT | | G18M | | | | | | | | | | |
| TUBE & SOCKET MATERIAL | | | | | | | | | | | | |
| AISI 316 ◀ | | S363 | | | | | | | | | | |
| Alloy 400 | | A400 | | | | | | | | | | |
| CASE/BEZEL MATERIAL | | | | | | | | | | | | |
| AISI 304 ◀ | | S304 | | | | | | | | | | |
| AISI 316 | | S300 | | | | | | | | | | |
| POINTER | | | | | | | | | | | | |
| Fixed pointer ◀ | | F | | | | | | | | | | |
| Adjustable slotted pointer | | A | | | | | | | | | | |
| LIQUID FILLING | | | | | | | | | | | | |
| Dry ◀ | | 0 | | | | | | | | | | |
| BPF 01 - Glycerine filled 1,23 (86%) | | 1 | | | | | | | | | | |
| BPF 06 - Glycerine filled 1,26 (99,5%) | | 6 | | | | | | | | | | |
| BPF 02 - Silicone filled | | 2 | | | | | | | | | | |
| BPF 04 - Foaming service | | 4 | | | | | | | | | | |
| BPF 05 - Oxygen service | | 5 | | | | | | | | | | |
| WINDOW*2 | | | | | | | | | | | | |
| Laminated glass (S1) ◀ | | L | | | | | | | | | | |
| RANGE | | | | | | | | | | | | |
| See page table 1 and table 2 | | | | | | | | | | | | |
| ACCURACY | | | | | | | | | | | | |
| 1,6 ◀ | | 16 | | | | | | | | | | |

◀: is the sign for the standard pressure gauge

Tabel 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 | 0...10 | N69 | 0...40 | L01 | -100...0 | K01 | -1...0 |
| B04 | -0,6...0 | P35 | 0...15 | N71 | 0...60 | L04 | -60...0 | K04 | -0,6...0 |
| B31 | 0...0,6 | P37 | 0...30 | N73 | 0...100 | L31 | 0...60 | K31 | 0...0,6 |
| B35 | 0...1 | P40 | 0...60 | | | 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 |
| | | P72 | 0...10000 | | | | | | |
| | | P73 | 0...15000 | | | | | | |

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 |
| Calibrated at 0° | C0 |
| Calibrated at 180° | _C180 |
| Cleaned for Oxygen use | _CFO |
| NACE ISO 15156 (MR 01 75) (alloy 400) | _N75 |
| ATEX II2GDc-IM2c | _ATEX |
| 3.1 material certificate | _IC31 |
| Calibration certificate 5 points | _CC5 |

Change log

| Date | Change |
|-----------|--|
| 25-8-2020 | Added text "Optionally 316 in MOC table Clarified tube material in coding table |

Holland – Romania – India – Thailand – Dubai – USA

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