

Bourdon tube pressure switch with infinitely variable switching pressure differential

RE 50051/06.12
Replaces: 10.10

1/8

Type HED 3

Component series 4X
Maximum operating pressure 400 bar
CCC



TB0008

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Features

- Indicator lamp, optional
- Electrical connection
 - Cable gland
 - Plug-in connector
- Lockable cap, optional

Ordering code

| | | | | | |
|-----------------|-----------|--|--|--|---|
| HED 3 OA | 4X | | | | * |
|-----------------|-----------|--|--|--|---|

Bourdon tube pressure switch

Component series 40 to 49
(40 to 49: unchanged installation and connection dimensions) = **4X**

Pressure range max. 25 bar = **25**
 Pressure range max. 63 bar = **63**
 Pressure range max. 100 bar = **100**
 Pressure range max. 200 bar = **200**
 Pressure range max. 400 bar = **400**

Further details in clear text

No code = Without lockable cap
Q = With lockable cap

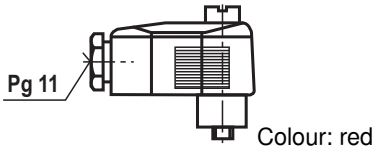
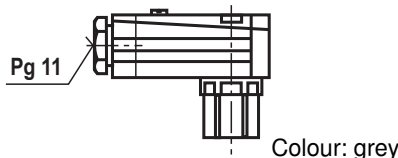
No code = Without Indicator lamp
L24 = Indicator lamp for 24 V (20 V to 35 V)
L110 = Indicator lamp for 110 V (90 V to 130 V)
L220 = Indicator lamp for 220 V (180 V to 220 V)

Electrical connection

No code = Cable gland
K¹⁾ = Plug-in connection 4-pin + PE
K6¹⁾ = Plug-in connection 6-pin + PE

¹⁾ Plug-in connectors, separate order, see below.

Plug-in connectors

| Plug-in connector 4-pin + PE | | Plug-in connector 6-pin + PE; EN 175201-804 | |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
|  <p>Pg 11 Colour: red</p> | |  <p>Pg 11 Colour: grey</p> | |
| for connection K | Material no. R900005538 | for connection K6 | Material no. R900002803 |

Function, section, symbol

Hydro-electric pressure switches of type HED 3 are Bourdon tube pressure switches.

They basically consist of housing (1), Bourdon tube (2) with actuating lever (3), micro-switch (4) and two adjustment elements (5).

Pressure switches assume the task of opening or closing an electrical circuit in dependence upon pressure. The pressure to be monitored acts on Bourdon tube (2). Bourdon tube (2) bends, and actuating lever (3) fixed to it transmits the movement of Bourdon tube (2) to micro-switch (4). This causes the electrical circuit to open or close depending on the circuit set-up. When the pressure continues to increase, Bourdon tube (2) bends further, which causes actuating lever (3) to operate the second micro-switch and to open or close the electrical circuit depending on the circuit set-up.

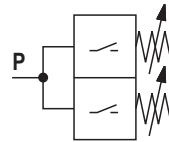
Adjustment of the switching pressure

The two switching pressures required, which are determined by the position of the micro-switches, can be adjusted separately and independently of each other on two adjustment elements (5).

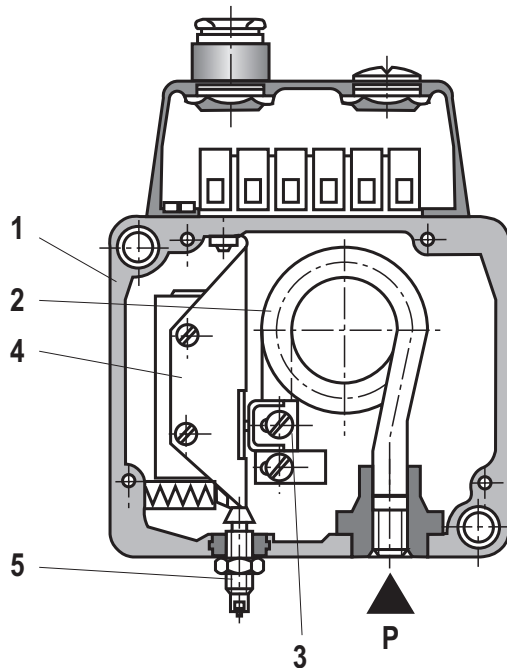
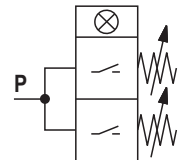
When a switching relay is used, the switching pressure differential is infinitely variable.

Symbols

Without Indicator lamp



With Indicator lamp



Technical data (for applications outside these parameters, please consult us!)**General**

| | | |
|---------------------------|-----|--------------------------------|
| Weight | kg | 0.8 |
| Installation position | | Optional |
| Ambient temperature range | °C | -30 to +50 (NBR seals) |
| Conformity | CCC | EN 61058-1:1993, IEC 60947-5-1 |

Hydraulic

| | | | | | | | |
|-----------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-----------|-----------|-----|
| Pressure range | | 25 | 63 | 100 | 200 | 400 | |
| Maximum operating pressure (briefly) | bar | 30 | 70 | 110 | 210 | 420 | |
| Switching pressure differential ¹⁾ | bar | 2 to 23.5 | 4 to 59 | 5 to 94 | 10 to 190 | 15 to 380 | |
| Falling pressure | minimum | bar | 1.5 | 4 | 6 | 10 | 20 |
| | maximum | bar | 25 | 63 | 100 | 200 | 400 |
| Increasing pressure | minimum | bar | 3.5 | 8 | 11 | 20 | 35 |
| | maximum | bar | 27 | 67 | 105 | 210 | 415 |
| Hydraulic fluid | | Mineral oil (HL, HLP) to DIN 51524; fast bio-degradable hydraulic fluids to VDMA 24568 (see also data sheet 90221); HETG (rape seed oil); other hydraulic fluids on enquiry | | | | | |
| Hydraulic fluid temperature range | °C | -30 to +80 (NBR seals) | | | | | |
| Viscosity range | mm ² /s | 10 to 800 | | | | | |
| Max. permissible degree of contamination of the hydraulic fluid - cleanliness class to ISO 4406 (c) | | Class 20/18/15 ²⁾ | | | | | |

Electrical

| | | | |
|------------------------------------|-----------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------|
| Contact assignment | AC voltage | V AC | 250 V; 3 A |
| | DC voltage | V DC | 40 V; 1 A In the case of DC voltage with inductive load, provide a spark suppressor to prolong the service life. |
| Maximum switching frequency | | 1/h | 1800 |
| Switching accuracy (repeatability) | | | aprox. ± 1 % of set pressure |
| Long-term drift of switching point | 50 000 load cycles | | aprox. +5 % of max. set pressure |
| | 100 000 load cycles ³⁾ | | aprox. +10 % of max. set pressure |
| Type of protection to EN 60529 | | | IP 65 with plug-in connector mounted and locked |
| Electrical connection | | | Cable gland Pg 11 Plug-in connector Pg 11 |
| Maximum cable cross-section | Cable gland | mm ² | 1.5 |
| | Plug-in connector | mm ² | 1.5 |

¹⁾ Constant over the entire adjustment range

²⁾ The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, prolongs the service life of components. For the selection of filters, see www.boschrexroth.com/filter.

³⁾ It is not possible to make any statements for long-term drift above 100 000 load cycles.

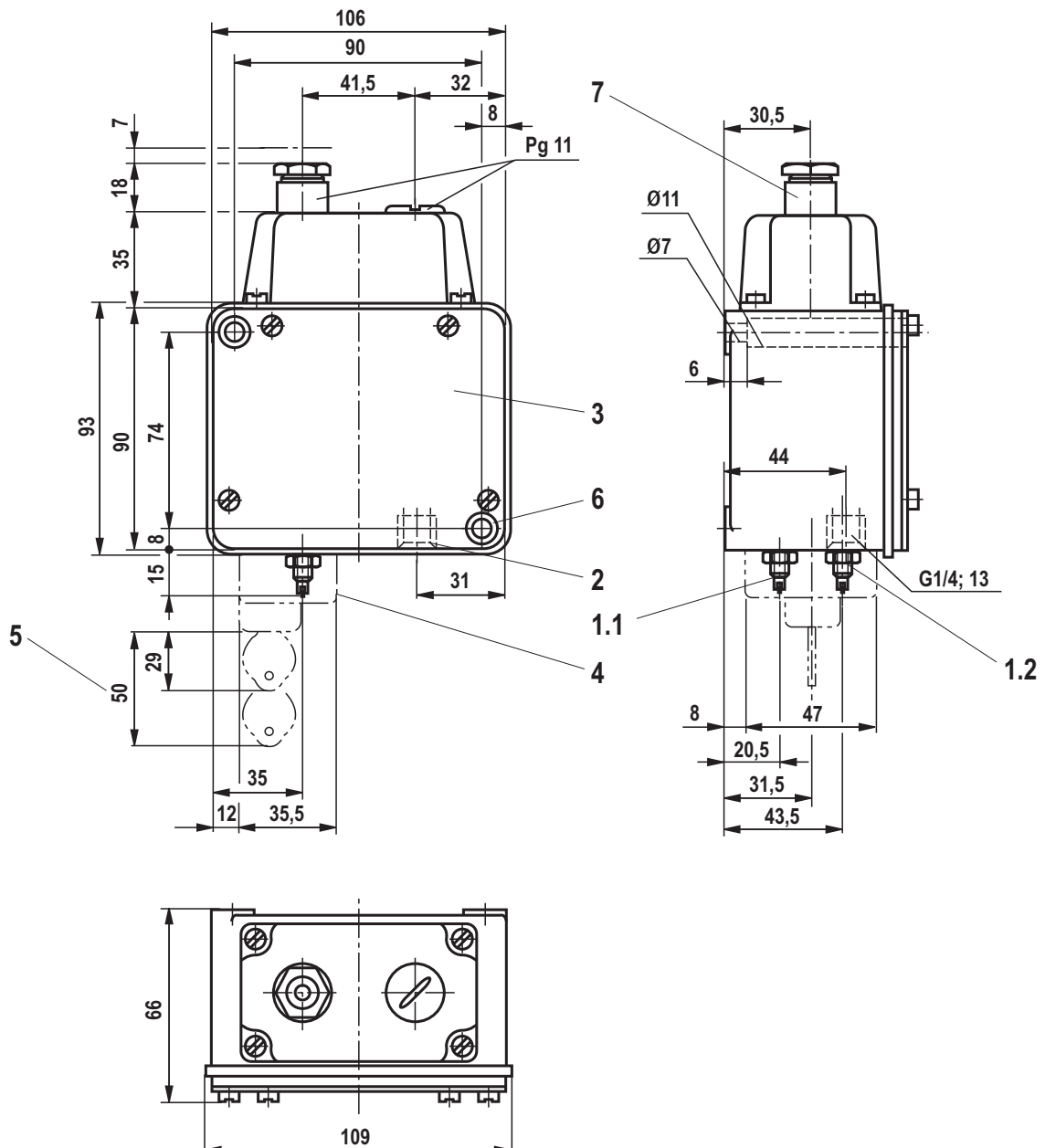
Notes:

- Use of the pressure switch
Bourdon tube pressure switches may only be exposed to dampened mechanical vibration (mounting with rubber

buffers). To compensate for pump pulsation, we recommend that the pressure switch be connected by means of minimes hoses (DN approx. 2 mm, min. length 1 meter).

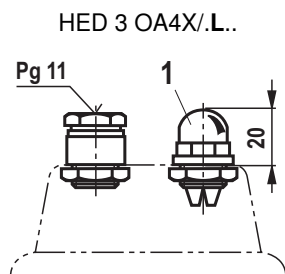
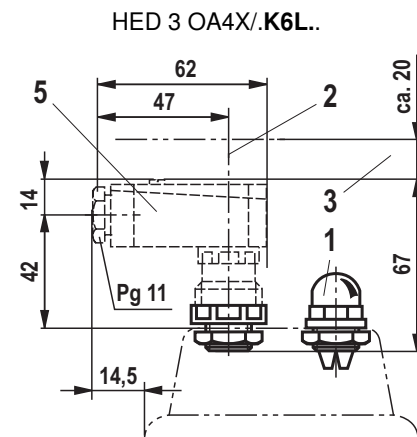
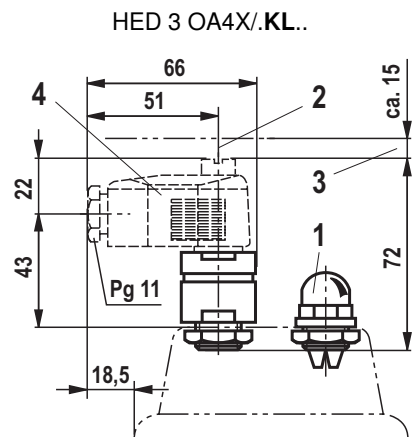
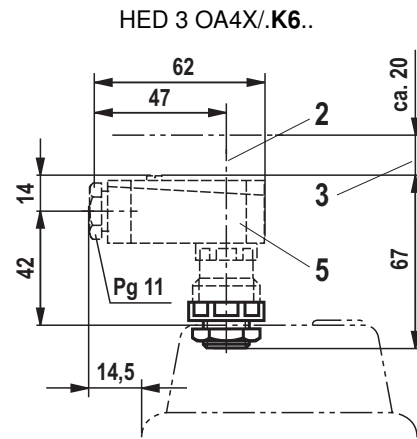
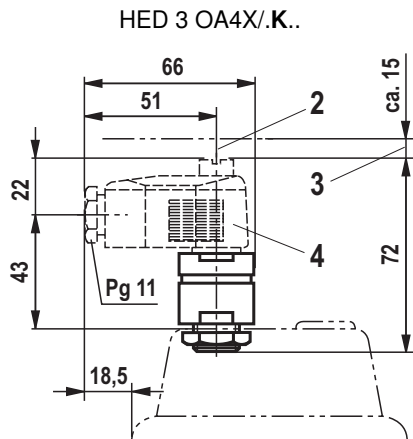
- Switching pressure differential
To ensure the reliability of the switching signal, the actual pressure differential obtained must be greater than the existing switching pressure differential of the pressure switch.
- Long-term drift of switching points
Because the set switching point may change over the lifetime, the pressure switch is not suitable for use in safety applications.

Unit dimensions (dimensions in mm)



- 1.1 Set screw, self-locking,
for switch 1 → minimum switching pressure
- 1.2 Set screw, self-locking,
for switch 2 → maximum switching pressure
- 2 Pressure port P
- 3 Nameplate
- 4 Lockable cap, optional
(spare key, material no. R900006980, separate order)
- 5 Space required to remove key
- 6 2 fixing holes
- 7 Electrical connection via cable gland Pg 11

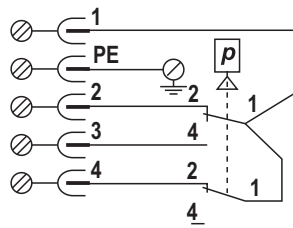
Unit dimensions: Electrical connection (dimensions in mm)



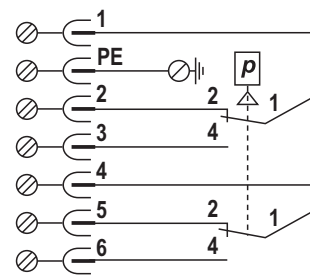
- 1 Indicator lamp
- 2 Can be rotated in 30° increments around the plug-in axis
- 3 Dimension to remove plug-in connector
- 4 Plug-in connector, red
- 5 Plug-in connector, grey

Pin assignment

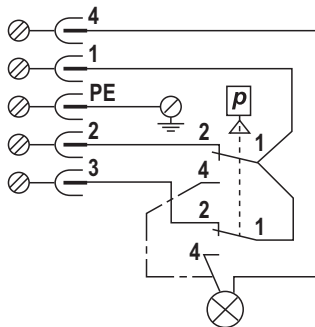
Connection "K"



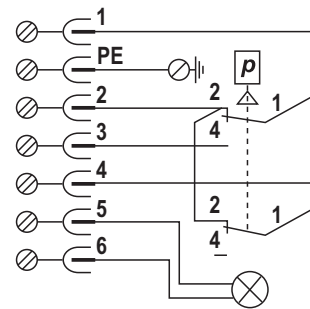
Connection "K6"



Connection "K" with indicator lamp "L..."

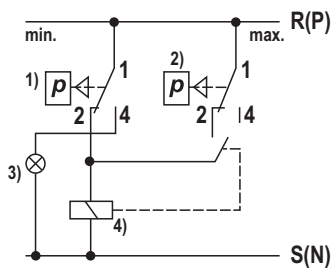


Connection "K6" with indicator lamp "L..."

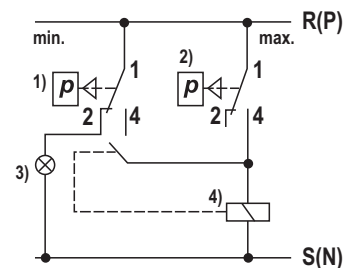


Connect indicator lamp according to the desired circuit

Circuit examples



Differential circuit with N/O contact (1 x HED 3)



Differential circuit with N/C contact (1 x HED 3)

- 1) Pressure switch 1
- 2) Pressure switch 2
- 3) Indicator lamp
- 4) Operating relay

Notes
