Bourdon tube pressure switch with infinitely variable switching pressure differential

RE 50051/06.12 1/8
Replaces: 10.10

Type HED 3

TB0008

Component series 4X
Maximum operating pressure 400 bar
CCC

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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**

[1] Plug-in connectors, separate order, see below.

Further details in clear text

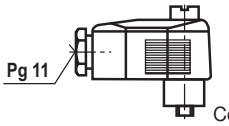
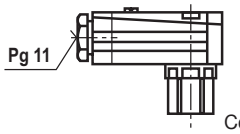
No code = **Without** lockable cap
Q = **With** lockable cap

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
K [1] **=** Plug-in connection 4-pin + PE
K6 [1] **=** Plug-in connection 6-pin + PE

Plug-in connectors

Plug-in connector 4-pin + PE		Plug-in connector 6-pin + PE; EN 175201-804	
 Colour: red		 Colour: grey	
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.

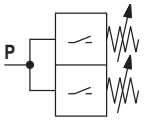
Adjustment of the switching pressure

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).

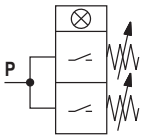
When a switching relay is used, the switching pressure differential is infinitely variable.

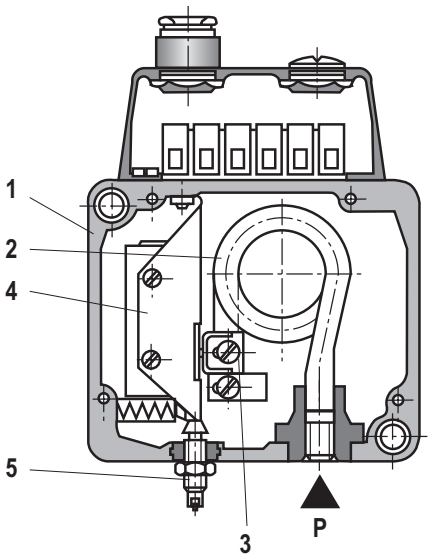
Symbols

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			approx. +5 % of max. set pressure
100 000 load cycles [3]			approx. +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.

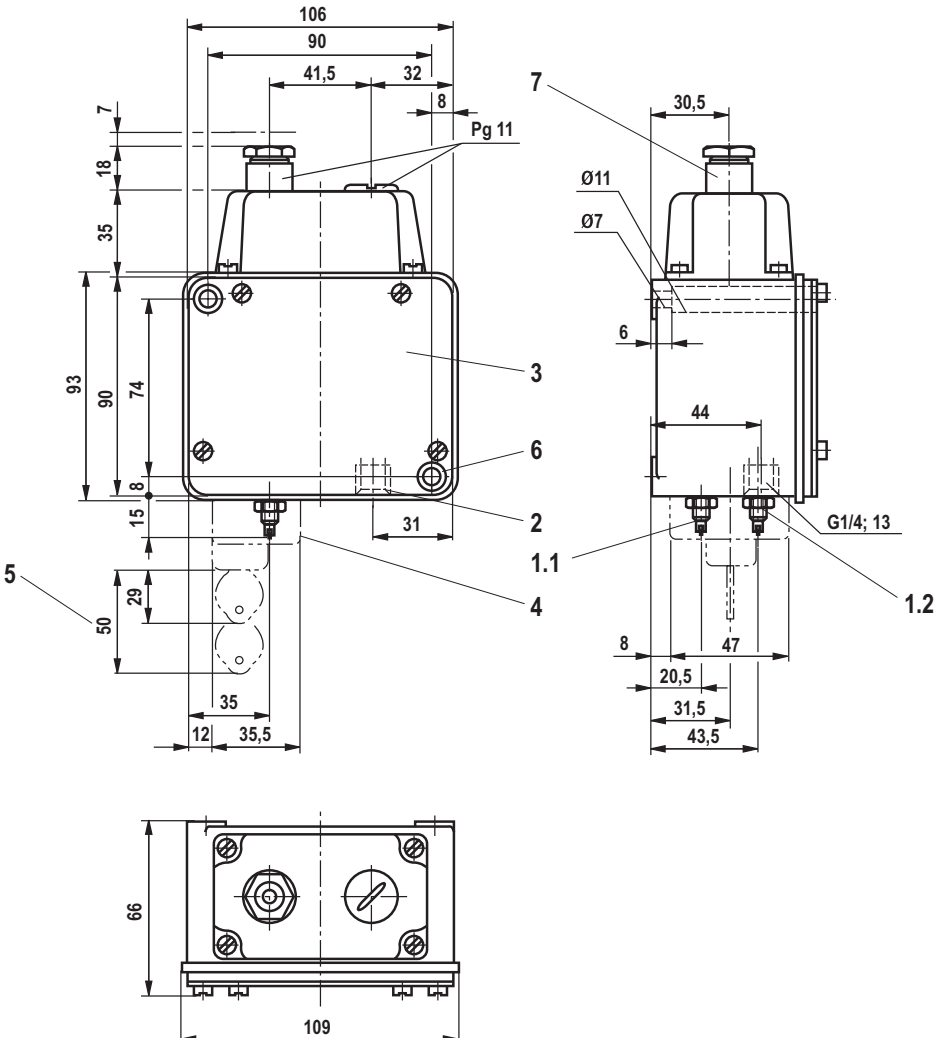
Notes:

– Use of the pressure switch
Bourdon tube pressure switches may only 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 minimess 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)

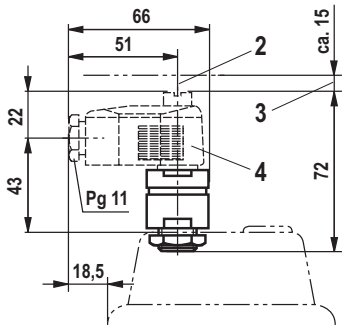
5 Space required to remove key

6 2 fixing holes

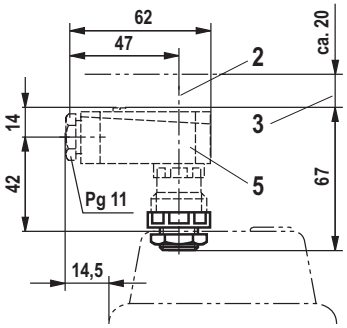
7 Electrical connection via cable gland Pg 11

Unit dimensions: Electrical connection (dimensions in mm)

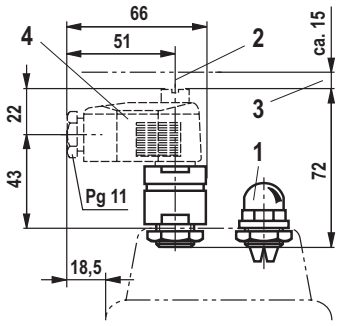
HED 3 OA4X/.**K**..



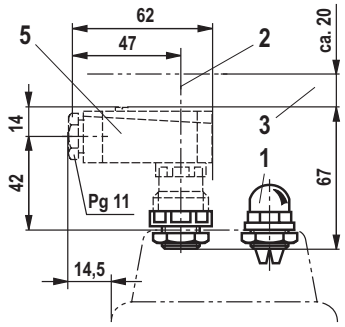
HED 3 OA4X/.**K6**..



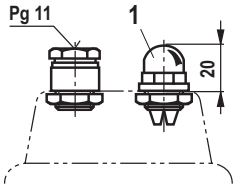
HED 3 OA4X/.**KL**..



HED 3 OA4X/.**K6L**..



HED 3 OA4X/.**L**..



1 Indicator lamp

2 Can be rotated in 30° increments around the plug-in axis

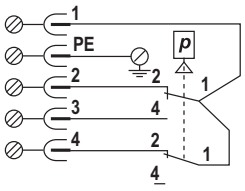
3 Dimension to remove plug-in connector

4 Plug-in connector, red

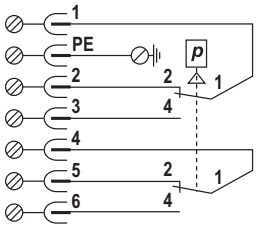
5 Plug-in connector, grey

Pin assignment

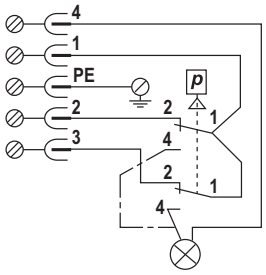
Connection "K"



Connection "K6"

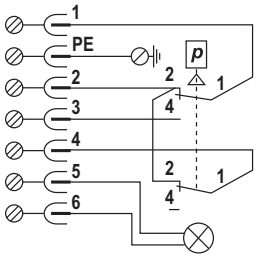


Connection "K" with indicator lamp "L..."

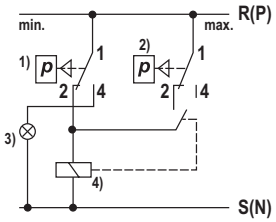


Connect indicator lamp according to the desired circuit

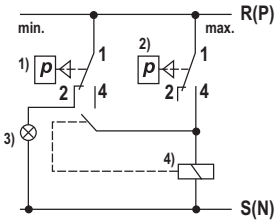
Connection "K6" with indicator lamp "L..."



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