Rexroth
Bosch Group

Bourdon tube pressure switch as an overload warning device

RE 50063/10.12 1/4
Replaces: 01.08

Type HED 2 ...SO1


TB0122

Component series 3X
Maximum operating pressure 400 bar

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Features

- Adjustment range from 54 to 360 bar
- Pressure adjustment linear over the entire adjustment range
- Electrical connection as screwed cable gland

Ordering code

HED 2 OA	3X/400	SO1	*

Bourdon tube pressure switch

Component series 30 to 39 **= 3X**
(30 to 39: unchnaged installation and connection dimensions)

Maximum operating pressure 400 bar **= 400**

Further details in clear text

Function, section, symbol

Hydraulic-electrical pressure switches of type HED 2…SO1 are Bourdon tube pressure switches.

They basically consist of housing (1), Bourdon tube (2), eccentric (3), micro switch (4) and actuating lever with roller (5).

For crane work with excavators, a warning device is prescribed, which signals a risk of tipping acoustically or visually in due course. For these overload warning devices, a Bourdon tube pressure switch is used. It is used for making or breaking an electric circuit in dependence on pressure.

The pressure prevailing in the boom cylinder acts on the Bourdon tube (2) of the pressure switch. When the set value is reached, micro switch (4) is operated by the spring travel of the Bourdon tube lever and triggers a visual or acoustic warning device.

While on excavators and cranes with straight boom and rope operation the load is moved along a vertical straight line, with hydraulic excavators, the load movement follows a curve shape. The motion sequence is composed of several curves depending on the boom sections. To determine the load pressures in the various boom positions, a cam disc must be provided at the foot of the boom, on which the roller of the actuating lever (5) is guided.

Actuating lever (5) is connected to an eccentric cam (3) in the pressure switch. Depending on the lever position, the eccentric cam changes the zero position of micro switch (4) in relation to the starting position of Bourdon tube (2) so that the Bourdon tube spring travel becomes accordingly longer or shorter. In analogy to the Bourdon tube spring travel, the permissible load pressure in the boom cylinder can also become higher or lower. Each lever position on the pressure switch is therefore assigned a certain pressure, which, when exceeded, causes micro switch (4) to be operated and the warning device to be switched on.

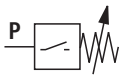
Note on the adjustment of the switching pressure:

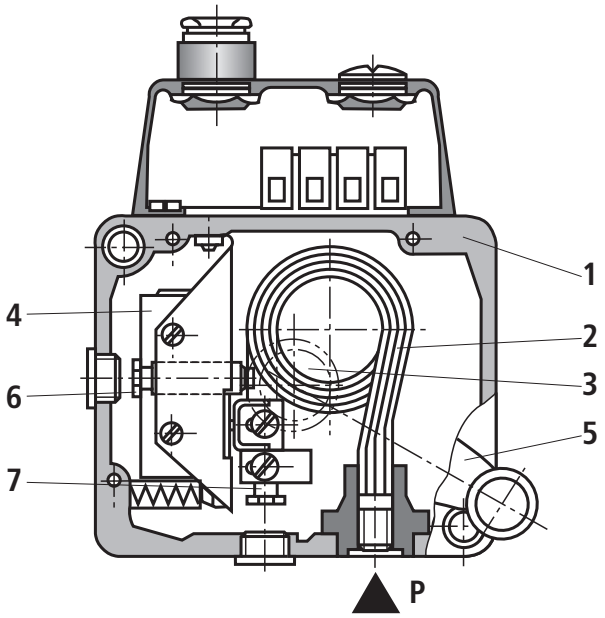
The switching pressure is adjusted via access bores on the setscrews (6) (lower switching pressure) and setscrew (7) (upper switching pressure).

To re-adjust or change the adjustment of the Bourdon tube pressure switch on setscrews (6) and (7), proceed as follows:

1. Adjust the lower switching point on setscrew (6) (***p*** > clockwise; ***p*** < counter-clockwise)
2. Adjust the upper switching point on setscrew (7) (***p*** < clockwise; ***p*** > counter-clockwise)
3. Re-adjust the lower switching point

Symbol





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

General

Weight		kg	1.0
Installation position			Optional
Ambient temperature range		°C	–30 to +50 (NBR seals)

Hydraulic

Maximum operating pressure		bar	400
Switching pressure differential		bar	ca. 6 (constant over the entire adjustment range)
Adjustment range		bar	54 to 360
Falling pressure	Minimum	bar	54
	Maximum	bar	354
Rising pressure	Minimum	bar	60
	Maximum	bar	360
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 request
Hydraulic fluid temperature range		°C	–30 to +80 (NBR seals)
Viscosity range		mm^2/s	10 to 800
Permissible max. degree of contamination of the hydraulic fluid - cleanliness class to ISO 4406 (c)			Class 20/18/15 [1)]

Electrical

Contact load	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.
Maximum switching frequency		1/h	1800
Switching accuracy (repeatability)			< ±1 % of set pressure
Type of protection to EN 60529			IP 65
Electrical connection			Screwed cable gland
Maximum cable cross-section		mm^2	1.5

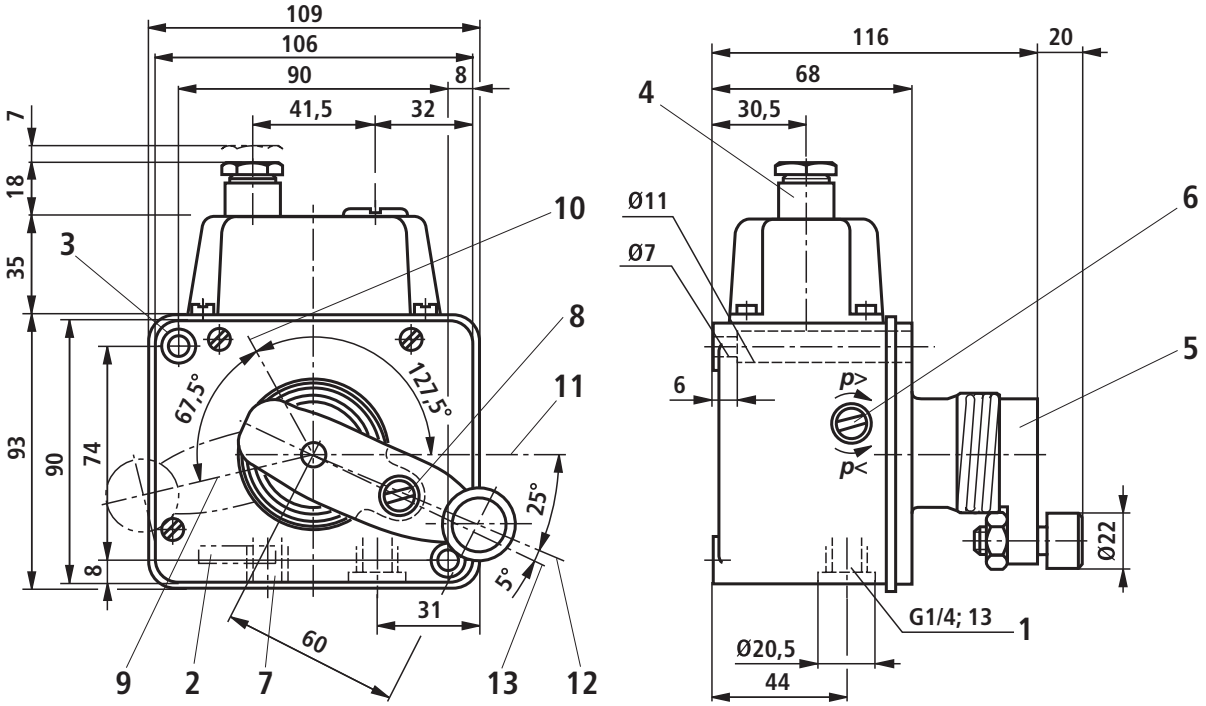
[1)] The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, prolongs the service life of components.

For the selection of filters, see www.boschrexroth.com/filter.

Note:

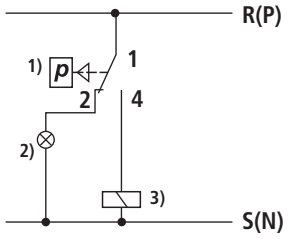
- Use of pressure switches
  Bourdon tube pressure switches may only be exposed to dampened mechanical percussion (mounting on rubber shock absorbers). To compensate for pump pulsation, we recommend that the pressure switch be connected to the line using minimess hoses (DN ca. 2 mm, min. 1 meter long).
- Switching pressure differential
  To ensure the availability of the switching signal, the pressure differential actually run through must be greater than the available switching pressure differential of the pressure switch.

Unit dimensions (dimensions in mm)



1 Pressure port P
2 Type designation
3 2 mounting bores
4 Electrical connection via screwed cable gland
5 Actuating lever with roller
6 Setscrew for lower switching pressure
7 Setscrew for upper switching pressure (360 bar)
8 Locking pin
9 Minimum position
10 150 bar position
11 320 bar position
12 Locking position (353 bar)
13 Maximum position

Circuit example



Simple circuit

1) Pressure switch
2) Check lamp
3) Working relay

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