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PRESSURE SWITCH **type B174**

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1. SECURITY INSTRUCTION

1.1. Application

Pressure switch type b174 was designed for disconnected electric circuits at brake of setting at measured pressure value. It may be used in control and regulation automation as two-term pressure switch or as automatic switch of critical state (e.g. in pumps protecting systems before working "on dry").

1.2. Instructions and warnings

Body damage and/or serious material damages might be formed if user doesn't keep of instructions and warnings. Servicing staff have to be instructed and acquaint with whole safety instructions and warnings.

For well and safe switch's working there has to be assured right transport, storage, assembly, starting and conservation's instruction.

Main attentions of safety in mentioned operation and maintenance manual were marked as pictograms:

	This sign means: Pointer. „Pointer” indicates on action or any process important for well-working of product. Material damages might be formed if user doesn't keep of instructions.
	This sign means: Warning. „Warning ” indicates on action or any process, which might be danger for staff or makes material damages if those aren't made correctly.

2. PRODUCT'S DENOTATION

TABLE OF VERSIONS

Catalogue number	Conductor at length 600 mm	Connector's thread (dimension A*)	Cable bush of conductor	Electric gland from above	Electric gland from the side
B174 A001	X	G 1/4"	X	---	---
B174 A002	X		---	X	---
B174 A003	---		---	---	X
B174 A004	X	R 1/4"	X	---	---
B174 A005	X		X	---	---
B174 A006	X	R 1/8"	X	---	---

* LOOK AT DRAWING NO. 1

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3. TECHNICAL DATA

TYP B174	Catalogue number	
	B174-A001...A004	B174-A005 i A006
Pressure of switch (setting by the User. In case the User doesn't give information about pressure of switch, the manufacturer sets the max. of pressure)	10÷30 kPa	35÷45 kPa
setting accuracy of switching of pressure	±0.8 kPa	±1 kPa
Hysteresis zone (un-setting)	5÷20 kPa	20÷40 kPa
Additional errors:		
- at ambient temperature changes (at max working pressure)	0,5 kPa/10°C	0,8 kPa/10°C
- at vibrations in range 10...60Hz, amplitude <0,35mm 60...500Hz, hurrying 5g		
• for horizontal position	1,0 kPa	2,0 kPa
• for vertical position	1,6 kPa	2,5 kPa
Operation conditions:		
Measuring medium	gas or liquid, couldn't in chemical reaction on copper alloy	
Ambient temperature	-25°C... + 70°C	
Temperature of measuring medium	-25°C... +120°C	
Acceptable sinusoidal vibrations: 10...60 Hz / amplitude <0,3 5 mm 60...500Hz, hurrying 5g	PN-EN 60654 – 3:2000 class V.H.6.	
Load contacts capacity	~230 V / 2,5 A	~380 V / 6 A
Protection degree of housing	IP 54 acc. to PN-EN 60529:2003	
Max working pressure	1,0 MPa	
Working position of pressure switch connector	vertical or horizontal	
Influence of changing position	0,4 kPa / 90 °C	
Mass	0,3 kg	0,5 kg

4. CONSTRUCTION AND OPEARTION RULES

4.1. Construction

Diagrams of mentioned versions of pressure switch were shown on drawing no. 1.

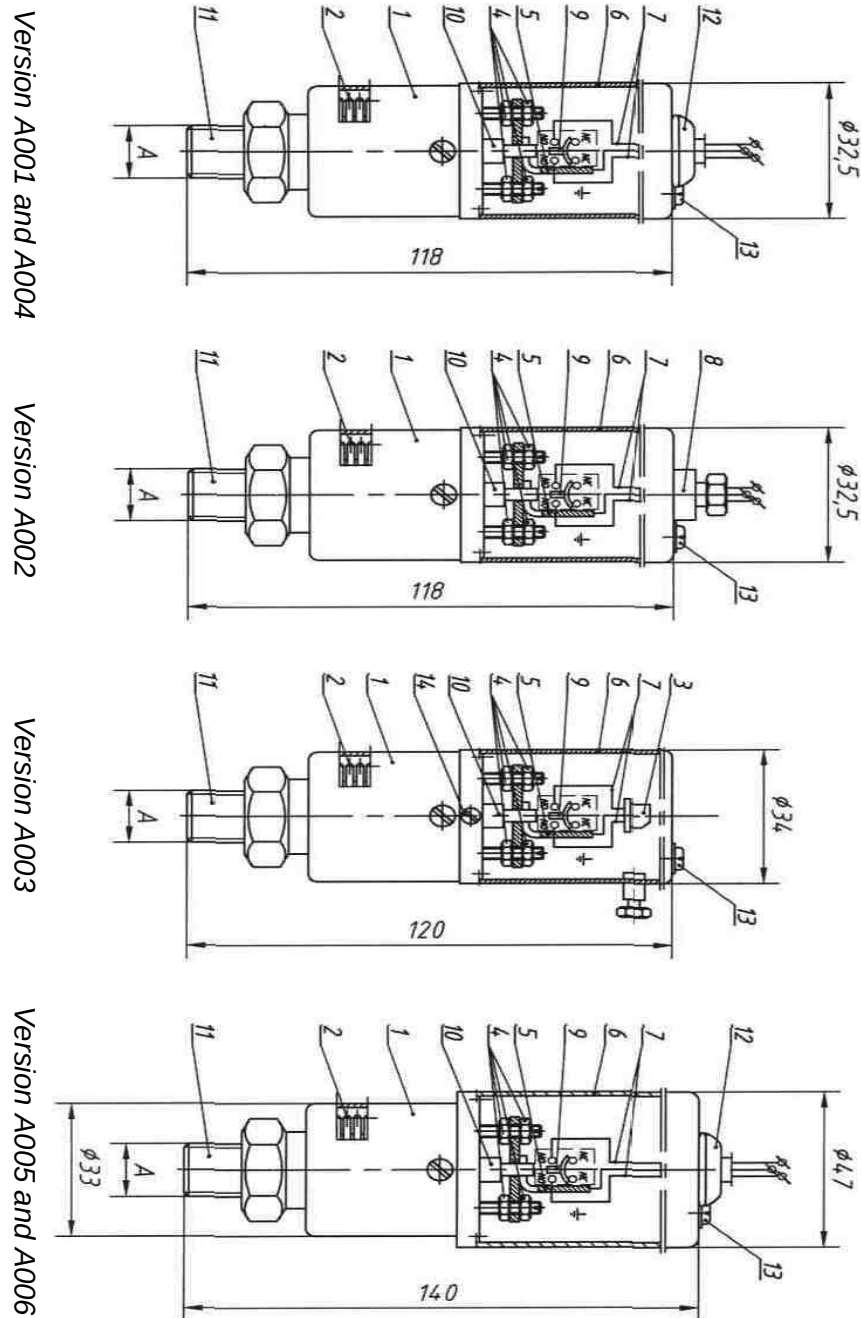
The construction of the pressure switch has two functional units: measuring and signaling.

The measuring unit, which main elements are bellows unit (2) and pusher stable connected with the bellows unit (10), is closed into leak-proof casing. The signaling unit is miniature switch (9) put on slidable bracket's unit (5). In versions: A001, A002, A004...A006 to the miniature switch the electric wire (7) is switched, this wire is put by cable bush(12) and leak-proof casing (6) – version A001, A004...A006 or electric gland (8) – version A002. In version A003 the miniature switch is connected with electric chip (3) by electric wires (7). Nuts (4) stabilize the position of bracket's unit (5) and make possible the regulation of pressure switch-off.

4.2. Operation rules

The pressure of measuring medium by connector (11) is supplied to the casing (1) and for bellows unit (2). Bellows deflection (2) making by the pusher (10) is relayed on miniature switch (9) makes switching of his contacts.

Contacts switching makes the connect the electric circuit for control system.



Drawing no. 1

5. SWITCH'S PRESSURE REGULATION

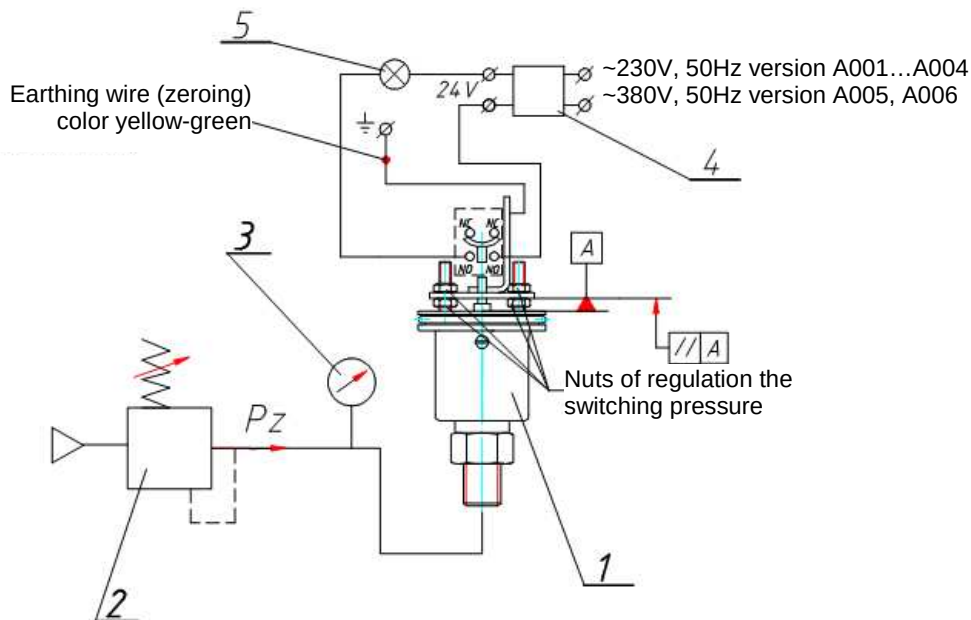
In case of setting required value of switching pressure one should be done:

- turn-on: the screw (13) – acc. to all versions; and three screws (14) – acc. to version A003 – look at drawing no. 1
- take off the casing (6) - look at drawing no. 1,
- connect the pressure switch with measuring range acc. to drawing no. 2,
- set the supplying pressure p_z at value corresponds to setting switching pressure,
- in case the light bulb shines, the bracket's unit has to be increased for position when the light bulb turns off /first loosen the upper nuts, after underline lower nuts and again tighten up upper nuts/
- If after setting the pressure at value as in point "d)" the light bulb doesn't shine, the bracket's unit has to be decreased for position when the light bulb turns on /in this situation functions are reverse than in increasing/.



The optical parallelism (acc. to drawing no. 2) should be kept after each change of bracket's unit position

- One stabilize the $p_z = 0$ kPa, and next set $p_z = 100$ kPa,
- Decrease the supply pressure for value, when the light bulb turns off. Value of pressure p_z should correspond at pressure like in point „d)". If p_z has value different as mentioned before the correction of switching pressure should be make has to be done by accurate bracket's moving and making actions like in points "f)" and "g)".



- 1 – pressure switch
- 2 – pressure inter-feeder
- 3 – manometer type Wallace
- 4 – electric feeder
- 5 – light bulb

Drawing no. 2

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6. ASSEMBLY INSTRUCTION

Pressure switches type B174 may be assembled in closed rooms or at least in rooms protected before influence of atmospheric conditions: rain, snow, and others and free of excessive amount of aggressive vapours, which may provide excessive corrosion. Working position of pressure switch: vertical or horizontal. Pressure switches are equipped with pressure connecting end with thread G1/4", R1/4", R1/8".

7. OPERATION INSTRUCTION

7.1. Start-up

After assembly the pressure switch the electric assembly should be done, checking before if the current and voltage not exceed permissible values.

In situation of using the switch in pumps as protecting systems before working "on dry", the electric wires color brown and blue should be accurate connect in clamp box of motor.

The wire color yellow-green is earthing /zeroing/ wire.

During standard pump operation the contact's "NO" will be shorted – look at drawing no. 1.

Contacts NO" are opening while the switch's setting pressure decreases, in this way supply circuit of pump's motor is shut. When the value increases for set value and the value is increased by hysteresis zone, the switch turn off himself and contacts "NC" are shorting,

7.2. Service

After assembly the pressure switch and connect electric circuit and after checking the good working of electric system, pressure switches don't need other service.

7.3. Conservation

The conservation should be made once a year; range of conservation: leak-proof of pressure connector and condition of isolation on electric wires. The condition of threaded connectors should be checked too (the Manufacturer recommends this).

7.4. Safety requirements

The staff who will make the assembly of pressure switches on the objects should know general rules of industrial safety and of this Technical Product Documentation.

8. REPAIR



ATTENTION: All repairs should be performed by producer or authorized service company. In case of repairs performed by unauthorized persons producer bears no responsibility for safety and proper product operation.

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9. STORAGE AND TRANSPORT INSTRUCTION

Delivered products has to be storage in rooms free from any chemical vapours and at temperature from 5°C to 35 °C.

The transport should be done in packages.

Pay attention, that during the transport pressure switches should be disable.

10. SCOPE OF DELIVERY

- Pressure switch
- Technical Product Documentation
- Acceptable certificate
- Package