

	<b>TECHNICAL PRODUCT DOCUMENTATION</b>	ER5-045
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## **ELECTRIC PRESSURE SWITCHES**

**type ERP-01**

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## 1. INTRODUCTION

### 1.1 SECURITY INSTRUCTIONS

#### 1.1.1 Application

Electric pressure switches are designed for on – off adjustment of pressure, steam, water, oil and air. Switches maintain required pressure value in range defined by set pressures difference. Moreover, they may be used as indicators of pressure exceeding or drop in various industrial devices.

Other applications must be consulted with the producer.

Producer is not responsible for any damages, resulting from controller use, inconsistent with above applications. The risk is born by the user only.

The element of proper use of that device is also following this technical product documentation recommendations.

#### 1.1.2. Definitions used in description

- **Operator** – person, who use product according to application (PN-EN 61010-1, July 2004),
- **Technical inspection** - person or group of people responsible for using and conservation of product, this person has to assure of well special training for OPERATORS (PN-EN 61010-1, July 2004),

#### 1.1.3. Allowed activities range

- **For operator** – switch's using.
- **For technical inspections** – activities like for operator, mechanical and electrical assembly and activities connected with controlling.



#### 1.1.4 Power supply connection

Assembly and starting works should be done only by electricians with qualifications or staff instructed by them – according to actual law rules of electrotechnics.

#### 1.1.5 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 level 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:

	<p><b>This sign means: Pointer.</b></p> <p>„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.</p>
	<p><b>This sign means: Warning.</b></p> <p>„Warning ” indicates on action or any process, which might be danger for staff or makes material damages if those aren't made correctly.</p>

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## 1.2 SUBJECT OF TECHNICAL PRODUCT DOCUMENTATION

Technical Product Documentation subject is using, construction and assembling of electric pressure switches.

## 1.3 APPLICATION, MARKINGS ACC. TO SWW AND PKWiU

Electric pressure switches are designed for on – off adjustment of pressure, steam, water, oil and air. They maintain required pressure value in range defined by set pressures difference. Moreover, they may be used as indicators of pressure exceeding or drop in various industrial devices.

Designation according to Polish Classification of Products and Services (PKWiU): 26.51.70.0

Designation according to Systematic List of Products (SWW): -0918-132

## 1.4 CONSTRUCTION AND WORKING RULES

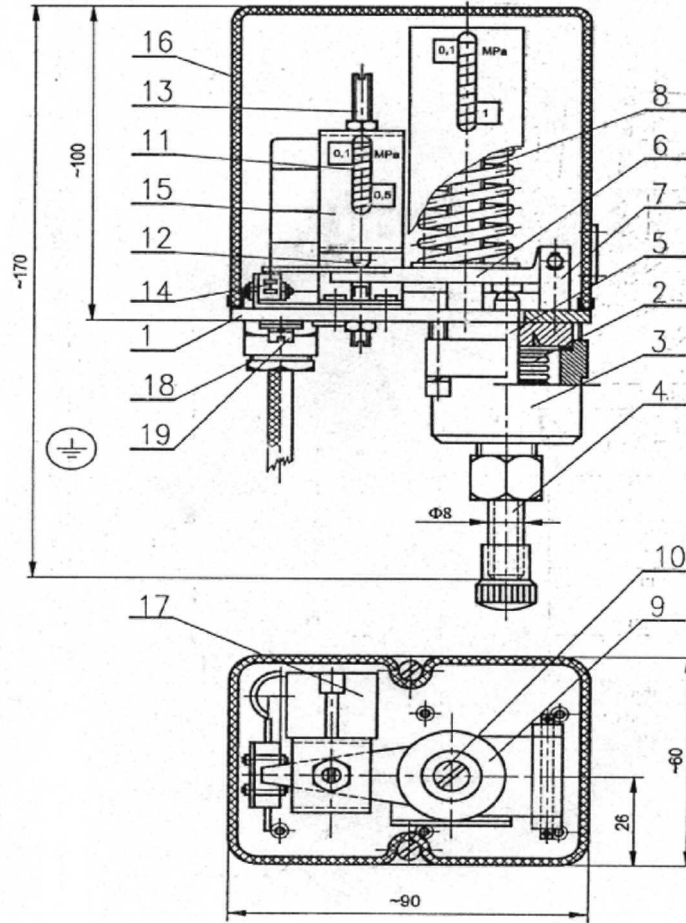
Pressure pulse is delivered through connection terminal, pos. 4, to the body, pos. 3, and measurement bellow, pos. 2. Deflection of bellow, pos. 2, is transmitted through pusher, pos. 5, to lever, pos. 6, having its rotation centre in holder, pos. 7. Mobile lever, pos. 6, causes switch activation, pos. 14. Spring, pos. 8, with stop, pos. 9, and adjustment screw, pos. 10, is used for controller operation range adjusting. On the bracket, pos. 15, there are installed spring, pos. 11, pusher, pos. 12, and adjustment screw, pos. 13, used for setting pressures difference for contacts switching in the switch, pos. 14. The housing, pos. 16, is fully made of plastic. In the base, pos. 1, there is gland, pos. 18, used for passing electric cables from the terminal strip, pos. 17. On the outer base side, pos. 1, there is screw, pos. 19, where neutral or earthing cable is connected.

Electric pressure switches may be appropriately adjusted in range of technical data, according to table 1. Adjustment to required pressure is performed in the following way:

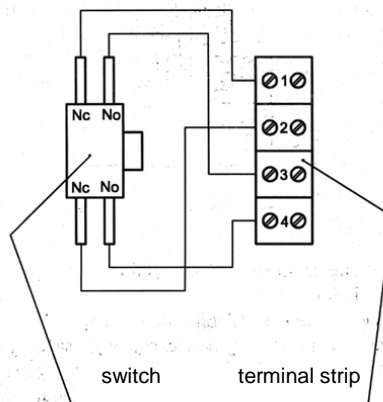
- install the controller in hydraulic press, equipped with control manometer of 0.4 class in range consistent with switch operation range.
- remove cover, pos. 16, and connect terminal strip, pos. 17, to the signalling system, consisting of power source and 24V signalling lamp.
- switch operation pressure is set through proper setting of spring tension, pos. 8, with adjustment screw, pos. 10, in range of indications on the scale.
- range of pressures difference for switch contacts switching, pos. 14, is performed through rotating the adjustment screw, pos. 13, in range of indications on the scale.
- check the correctness of performed settings by decreasing and increasing the hydraulic press pressure for a few times.

The controlled pressure setting may be also performed in the controlled object, if there is a possibility of concurrent measurement of controlled medium pressure measurement.

Dimensional drawing of electric pressure switch



Electric circuit diagram



## 2. TECHNICAL DATA.

Table no. 1

No.	Parameters	Unit type	ERP-01-00	ERP-01-01	ERP-01-02	ERP-01-03
1.	Pressure value setting range	MPa	0.03...0.15	0.1...1.0	0.3...2.0	0.4...4.0
2.	Pressures difference value setting range	MPa	0.03...0.1	0.15...0.5	0.2...0.6	0.4...1.5
3.	Max. static pressure of medium	MPa	0.2	1.6	2.5	4.5
4.	Repeatability	%	± 2	± 2	± 2	± 2
5.	Allowable temperature of measured medium	°C	120	120	120	120
6.	Rated switched current Ue AC-15 DC-13	V	230V; 50...60Hz 220V=	230V; 50...60Hz 220V=	230V; 50...60Hz 220V=	230V; 50...60Hz 220V=
7.	Switched current: Ie/AC15 Ue230V; 50...60Hz e/DC13 220V=	A	2.5 0,3	2.5 0,3	2.5 0,3	2.5 0,3
8.	Ambient temperature	°C	-20...+80	-20...+80	-20...+80	-20...+80
9.	Durability: AC-15 DC-13	No. of connections	85x10 <sup>3</sup> 30x10 <sup>3</sup>	85x10 <sup>3</sup> 30x10 <sup>3</sup>	85x10 <sup>3</sup> 30x10 <sup>3</sup>	85x10 <sup>3</sup> 30x10 <sup>3</sup>
10.	Mass	kg	0.8	0.8	0.8	0.8
11.	Housing protection rating	IP	55	55	55	55

## 3. ORDERING METHOD AND EXAMPLE OF ORDERING

Order should contain the following data:  
 Pressure switch type, e.g. ERP -01-00,

## 4. MAINTENANCE INSTRUCTION

### 4.1 ASSEMBLY INSTRUCTION

Switches may be installed in closed rooms or at least protected from weather conditions: rain, snow, etc., and free from excessive chemical exhalations.

Switches are in the factory equipped with connection terminals, used for welding the impulse pipe. Impulse pipe is the controller fixing element.

Switches may operate in any position.

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## 4.2 STARTING AND SERVICE INSTRUCTION

### 4.2.1 Preparing products for starting

After switch installation in the place of destination perform electric installation, checking previously, if current and voltage do not exceed allowable values. Used cable gland Pg9 allows for introducing cable from  $\varnothing 4$  do  $\varnothing 8$  mm. Minimum cross section of cables is  $1 \text{ mm}^2$ .

In case of using the switch as protection from excessive pressure rise in the given system, connect coil of contactor, switching on e.g. pump motor to the terminals 1 and 2. Terminals 3 and 4 may be used for connecting the signalling system.

During normal operation of the whole system switch terminals 1 and 2 will be shorted. After exceeding of controller setting pressure value, contacts 1 and 2 are pulled apart, which opens the whole system power supply circuit, and contacts 3 and 4 are shortened, which is indicated by the signalling lamp.

After pressure drop to the present value controller switches on automatically.

### 4.2.2 Maintenance instruction

After installation, connecting electric circuit and checking its operation, as well as setting the required pressure and pressures difference the switches do not require further operation.

## 4.3 CONSERVATION INSTRUCTION

Conservation consists in performing inspection every three months to check the condition of tightness of impulse pipes and insulation of electric cables. In range of those inspections threaded connections should also be checked

## 4.4. INDUSTRIAL SAFETY INSTRUCTION



**Workers who make assembly of pressure switches on objects should have general knowledge of safety instruction and this Technical Product Documentation. Assembly can't be making if system is live.**

**Pressure switch might be zeroing or grounding – it depends on kind of object.**

**Marking screw helps in make mentioned actions.**

## 5. STORAGE AND TRANSPORT TERMS

Switches received from the producer should be stored in rooms free from chemical exhalations and assuring environment temperature from  $5$  to  $30^\circ\text{C}$  and relative humidity from  $30$  to  $80\%$ .

The switch technical condition should be checked at least once a year.

Switches should be stored in the package, assuring protection from mechanical damages.

Switches should be transported in the packages. Pay attention for immobilizing the switches during transport.

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## 6. SETS DELIVERY

Pressure switch ERP-01- should be accompanied with:

- Technical product documentation,
- Declaration of Conformity.

## 7. GUARANTY TERMS

Guaranty terms are determined in guarantee card of Manufacturer – Controlmatica ZAP-PN EFAL Sp. z o.o., Ostrów Wlkp., Poland – guarantee card is added to the each piece of pressure switch.

**ATTENTION: The right of introducing design changes in the product, without deteriorating of its operation parameters, is reserved.**

**THE ORIGINAL IS MADE IN POLISH LANGUAGE.  
THE ENGLISH VERSION IS PRESENTED AS FOLLOWS:**

“ ...

Ostrów Wielkopolski, on 24<sup>th</sup> October 2008

### PRODUCER'S DECLARATION

We declare that the products type ERP-01-, meet the requirements of the EU Directive „Pressure-type Equipment” no. 97/23/WE.

According to Article 3, section 3 of mentioned directive, these products are made with the acknowledged engineering practice and are not subject to the CE marking.

<b>Signed by:</b> <b>Technical Dept. Manager</b> <i>(-) illegible signature</i> <i>mgr inż. Krzysztof Idzior</i>	<b>Signed by:</b> <b>President of the Board</b> <i>(-) illegible signature</i> <i>Sebastian Moch</i>
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