

# Contents

1 Purpose .....	2
2 Specifications .....	2
3 Delivery set .....	2
4 Design and principle of operation.....	3
5 Safety measures.....	4
6 Preparation for operation.....	5
7 Operation order.....	5
8 Technical maintenance.....	5
9 Storage.....	6
10 Possible troubles and their elimination.....	6
11 Warranty .....	7
12 Data on claims .....	7
13 Acceptance certificate.....	7
14 Packing certificate .....	7
15 Use cases PSKA panel.....	8
16 Note.....	9

## 1 Purpose

1.1 PSKA panel is intended to control operation elastic element pressure gauges and other measuring instruments (MI) by means of comparison with reference pressure measurement instruments (RMI).

1.2 PSKA is not a MI, that is why it is required to select RMI on the basis of checking procedures of MI under check. RMI is not included in the standard supply package of PSKA panel (is supplied upon an additional order).

1.3 PSKA panel is intended for use as part of «Automated Pneumatic Calibrating System» (PSKA).

## 2 Specifications

Operating pressure

maximum ..... 2,5 MPa, 25 kgf/cm<sup>2</sup>

minimum ..... -0,095 MPa, 0,95 kgf/cm<sup>2</sup>

Quantity of places for pressure measurement

instruments under verification ..... 3 pcs

Weight ..... 17 kg

Overall dimensions (L×W×H), maximum ..... 800×250×230 mm

Operation medium ..... Air<sup>1</sup>, nitrogen<sup>2</sup>

Connection ..... QDC<sup>3</sup>

## 3 Delivery set

PSKA panel ..... 1

Connection nut

M20×1.5 ..... 4

M12×1.5 ..... 3

G<sup>1</sup>/<sub>2</sub> ..... 3

G<sup>1</sup>/<sub>4</sub> ..... 3

Blank plug ..... 2

Connection nut flywheel ..... 4

Connection hose ..... 1<sup>4</sup>

QDC plug ..... 1<sup>3</sup>

Users manual ..... 1

MI and RMI sealing ring 007-011-25 (SPA) ..... 10

<sup>1</sup> Compressed air purity class ISO 8573-1: 6 3 1 according to GOST R ISO 8573-1-2005.

<sup>2</sup> Gaseous nitrogen of ultra high purity 2<sup>nd</sup> grade according to GOST 9293-74.

<sup>3</sup> Quick-disconnect connection in case of supply together with K-9, K-25, and vacuum pump. If it is supplied only PSKA panel, output – thread G<sup>1</sup>/<sub>4</sub>.

<sup>4</sup> In case of supply together with K-9, K-25, and vacuum pump.

## 4 Design and principle of operation

4.1 The external view of the panel is given in fig. 2.

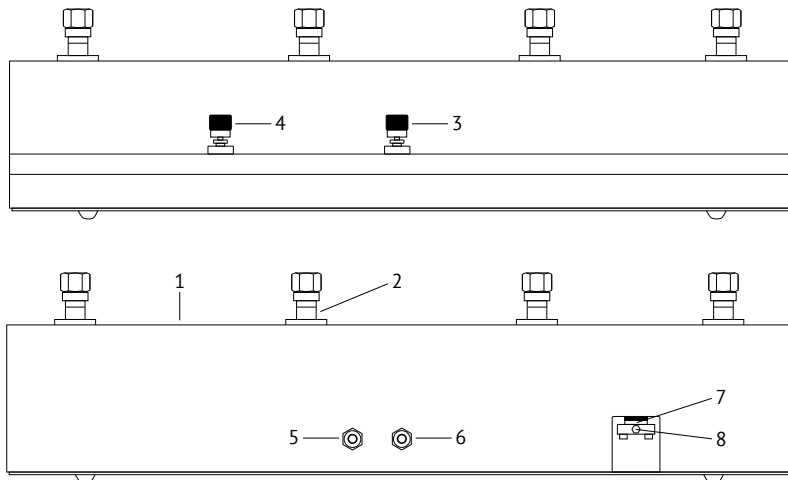


Fig. 2. PSKA panel, front and rear view:

- 1 – body; 2 – rack; 3 – pressure boost valve (underpressure reduction);
- 4 – pressure reduction valve (underpressure boosting); 5 – pressure input;
- 6 – underpressure input; 7 – mud collector; 8 – condensate drain valve

4.2 PSKA panel is made of 2.5 mm thick steel sheet and is covered with powder enamel. 4 racks 2 (fig. 2) are located at the top of PSKA panel, the 2nd from the left (is recommended) for RMI, the others – for operation MI. Valves 3 and 4 serve to increase and reduce the pressure. Quick disconnect connections 5 and 6 are located at the rear side (in case of supply together with K-9, K-25 and vacuum pump. If it is supplied only PSKA panel, output – thread G1/4) for connection of pressure or underpressure source. Also there is a window for mud collector 7 maintenance at the rear side. Valve 8 serves to drain condensate from the mud collector.

PSKA panel pneumatic diagram is presented in figure 3. On the diagram it is seen that the delivery pipe approaches to the rack higher than drain pipe, that is way the possible condensate of the manometer under verification will enter into collector 6, an then into mud collector 7. The air moving direction, no matter what source (pressure or underpressure) PSKA panel is working with, will be always the same as it is shown by arrows in the diagram.

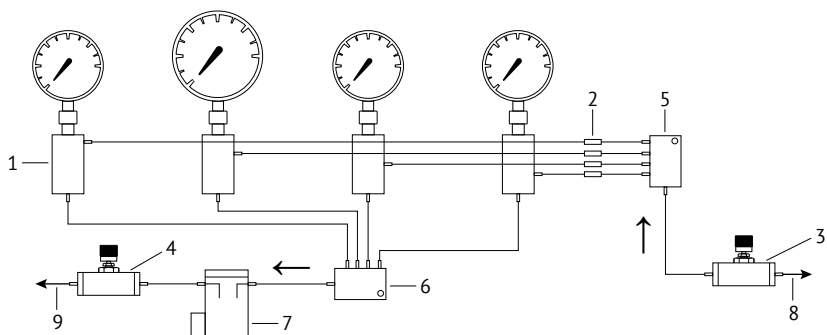


Fig. 3. PSKA panel pneumatic diagram:

1 – rack; 2 – choke; 3 – pressure boost valve (underpressure reduction);  
 4 – pressure reduction valve (underpressure boosting); 5, 6 – connecting  
 collectors; 7 – mud collector; 8 – pressure input; 9 – underpressure input

## 5 Safety measures

### Attention

This section is intended to provide safe operation of the personnel, preservation of PSKA and measuring instruments used with it.

5.1 *It is prohibited* to use PSKA panel for operations not indicated in this manual.

5.2 Check that MI are clean and that connecting fittings are serviceable before the installation of the MI under verification.

5.3 Use only standard sealing rings.

5.4 Tighten the connection nuts by hand against the notable stop.

5.5 Shut down the pressure boost (reduction) valve applying slight force not to damage plastic valve seat guide.

5.6 *It is prohibited* to exceed the pressure indicated in PSKA panel manual.

5.7 Remove instruments from the device only after complete pressure reduction.

5.8 Switch pressure (underpressure) sources only at complete pressure reduction (underpressure) in the supply main.

5.9 *It is prohibited* to incline PSKA panel without cleaning preliminarily the mud collector according to items 8.4, 8.5, because the condensate containing in the mud collector can enter into valves 3, 4 (fig. 2) and worsen its characteristics.

## **6 Preparation for operation**

6.1 Unpack PSKA panel and wipe it with clean rags.

6.2 Install PSKA panel on the table and check smoothness of movement of valves and connection nuts.

6.3 Install sealing rings on racks.

6.4 Install blank plugs (if necessary).

## **7 Operation order**

7.1 Operation with gauge pressure source.

7.1.1 Connect the pressure source to input 5, leave input 6 free

7.1.2 Shut down both valves.

7.1.3 Install RMI and MI.

7.1.4 Supply pressure to PSKA panel

7.1.5 Open gently pressure boost value 5 and check the pressure value.

7.1.6 When the pressure achieves the preset value, shut down the valve.

7.1.7 To reduce the pressure, open gently valve 4 and check the pressure value.

7.1.8 When the pressure achieves the preset value, shut down the valve.

7.1.9 After the end of the verification reduce completely the pressure, remove the MI

7.2 Operation with underpressure source.

7.2.1 Connect the underpressure source to input 6, leave input 5 free.

7.2.2 Shut down both valves.

7.2.3 Install RMI and MI.

7.2.4 Supply underpressure to PSKA panel.

7.2.5 Open gently underpressure boost value 4 and check the underpressure value.

7.2.6 When the underpressure achieves the preset value, shut down the valve.

7.2.7 To reduce the underpressure, open gently valve 5 and check the pressure value.

7.2.8 When the underpressure achieves the preset value, shut down the valve.

7.2.9 It is recommended to leave valves opened in between calibratings.

## **8 Technical maintenance**

8.1 To maintain PSKA panel in operation condition it is required to perform daily and routine maintenance.

8.2 During daily maintenance it is required to perform visual inspection, clean it from dirt and dust using dry rags. Check the integrity of racks rubber seals, if they are damaged – it is required to replace them. Check the presence of grease on threaded part of valves 2 (fig. 4), in case of its absence or insufficient quantity, lubricate it using consistent grease LITOL – 24 GOST 21150-87.

8.3 During the routine maintenance clean the mud collector, for this purpose:

8.3.1 Create the pressure of 5-8 bar in the panel and discharge sharply the pressure 4 (fig. 2). In this case, the major part of the condensate generated in pipes of PSKA panel will come into the mud collector.

8.3.2 Unscrew screw 8 and drain the condensate, having put preliminarily flat container.

8.4 Perform the routine maintenance as may be necessary, but not less than 1 time every 3 months.

## 9 Storage

9.1 PSKA panel storage in laboratory conditions. In case of PSKA panel storage in laboratory conditions it is required to wipe it using clean rags and cover it with plastic cap.

9.2 PSKA panel storage in warehouse room. Prior to install the panel for warehouse storage it is required to wipe it using dry rags, perform routine maintenance according to items 8.4, 8.5 and pack it in factory package (or its analogue). Store PSKA panel in dry heated room at air temperature of +5°C minimum and at relative humidity of 80% maximum.

## 10 Possible troubles and their elimination

<b>Trouble</b>	<b>Cause</b>	<b>Elimination</b>
Drop of pressure at closed valves	Damaged sealing ring under the manometer	Replace the sealing ring
	Damaged end surface of the manometer fitting	Replace or repair the manometer
	Break of airtightness of the valve seal	Tighten connection bushing 2 (fig. 3)
Heavy rotation of the valve	Heavily tightened connection bushing 2 (fig. 3)	Loosen the connection bushing

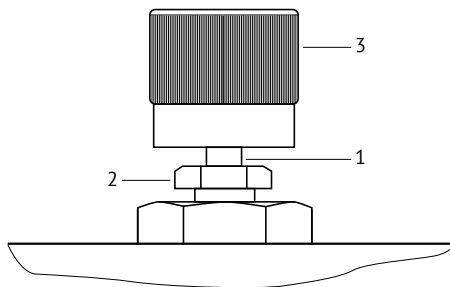


Fig. 3. Valve:

1 – pressure bushing; 2 – valve needle thread; 3 – handle

## 11 Warranty

11.1 The manufacturer guarantees the compressor operation provided that operation, storage, and transportation conditions are observed.

11.2 Guaranteed operation period – 18 months.

11.3 Guaranteed warehouse storage period – 6 months.

11.4 Average service life – 8 years minimum.

## 12 Data on claims

In the case of gauge pressure balance fault, the user should draw up a report about the necessity in repair and about its dispatch to the Manufacturer's address: 2nd Paveletskaya st., 36, Chelyabinsk, 454047, Russia Federation, Alfapascal LLC, phone: +7 (351) 725-74-50, e-mail: q@alfapascal.ru.

## 13 Acceptance certificate

Automated pneumatic calibrating system (PSKA) serial number \_\_\_\_\_ corresponds KD AP.038.000.000 and is qualified fit for operation.

Date of manufacturing \_\_\_\_\_

Responsible person \_\_\_\_\_

Signature

Surname

Stamp

## 14 Packing certificate

Automated pneumatic calibrating system (PSKA) serial number \_\_\_\_\_ was packed in Alfapascal in accordance with KD AP.038.000.000.

Packing date \_\_\_\_\_

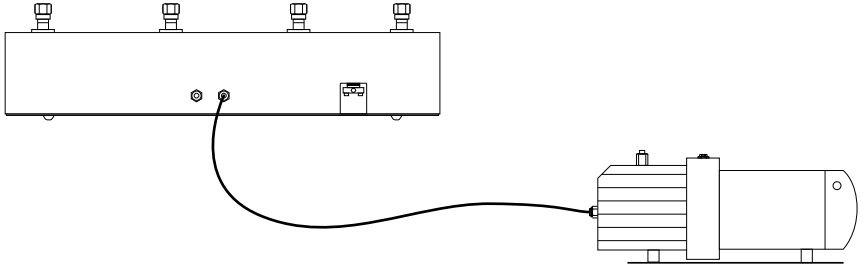
Responsible person \_\_\_\_\_

Signature

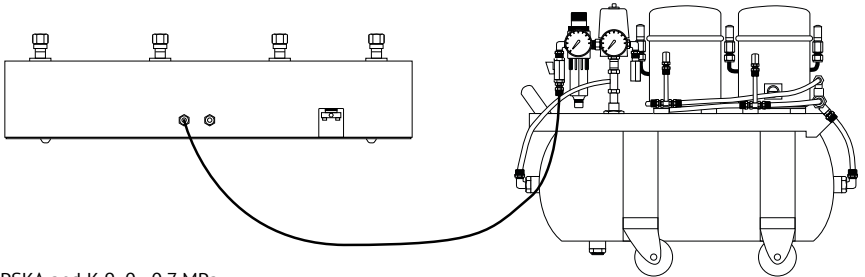
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Stamp

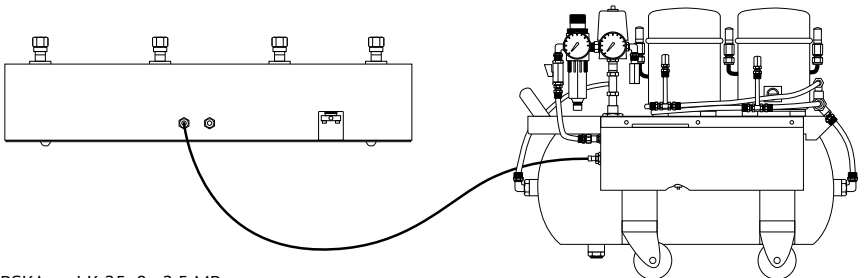
## Use cases PSKA panel range: $-0,095...2,5$ MPa



PSKA and vacuum pump  $-0,095...0$  MPa



PSKA and K-9:  $0...0,7$  MPa



PSKA and K-25:  $0...2,5$  MPa

### Note

The manufacturer reserves the right to introduce changes to PSKA panel design.