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# 1 Purpose

1.1 The compressor K-25 is designed to generate compressed air (with a pressure of 2.5 MPa) and to be used as a part of an Automated Pneumatic Calibrating System (PSKA).

1.2 Depending on its technical capabilities, it can be used with other laboratory equipment.

1.3 The compressor is designed for operation in laboratory conditions at the ambient air temperature of 10 to 30 °C and maximum relative humidity of 80 % or lower.

1.4 The K-25 consists of a low-pressure compressor (the operating pressure up to 0.7 MPa) from a third-party manufacturer and a 2.5 MPa booster unit made by “Alfapascal” LLC.

## Attention

1.5 This Manual is developed on the basis of a low-pressure compressor K-9 made by “Alfapascal” LLC (discontinued), which is why designations in Figures and some operations with it may be different from the specific specimen.

1.6 Technical characteristics and functioning of a specific low-pressure compressor are reviewed in a separate manual for this compressor.

# 2 Technical Characteristics

Operating pressure .....	0...2,5 MPa
Maximum outlet pressure .....	0...2,5 MPa
Maximum inlet pressure .....	0,65 MPa
Pressure increase factor .....	4
Auxiliary air consumption .....	120 %
Operating temperature .....	+2... 50 °C
Receiver volume .....	58 cm <sup>3</sup>
Connecting thread .....	G $\frac{1}{4}$
Overall dimensions (L×W×H), no more than .....	680×390×550 mm
Device weight, no more than .....	40 kg <sup>1</sup>

# 3 Scope of supply (in pieces)

Compressor K-25 .....	1
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<sup>1</sup>It depends on the low-pressure compressor and may change (these parameters correspond to the BAMBI BB24D compressor).

Operation manual, data sheet <sup>2</sup> .....	1
Operation manual, data sheet <sup>3</sup> .....	1

## 4 Instrument Design and Principle of Operation

4.1 The panel's appearance is shown in Fig. 1.

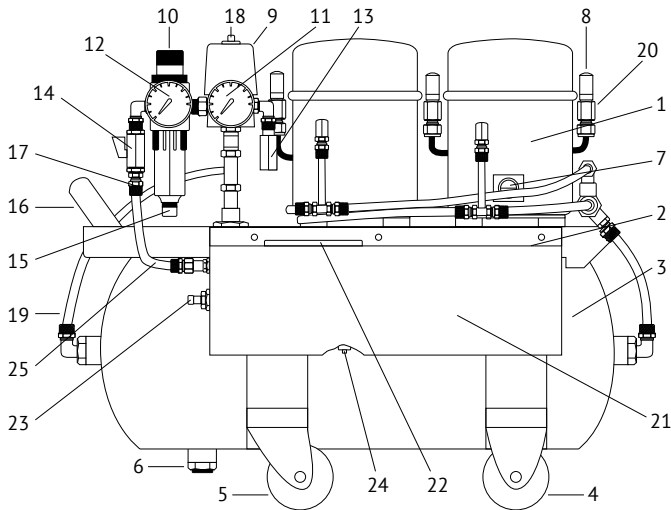


Fig. 1. Compressor K-25:

- 1 – compressor unit; 2 – platform; 3 – receiver; 4 – rear fixed wheels;
- 5 – front rotating wheels; 6 – condensate drain plug;
- 7 – oil level monitoring window; 8 – air filter; 9 – pressure switch;
- 10 – filter/regulator; 11 – receiver pressure manometer;
- 12 – outlet pressure manometer; 13 – pressure safety valve;
- 14 – outlet valve; 15 – filter/regulator valve; 16 – handle;
- 17 – compressor outlet; 18 – compressor start handle;
- 19 – connecting tubes; 20 – fitting; 21 – booster unit; 22 – manometer;
- 23 – compressor outlet; 24 – plug of condensate drain from the booster unit;
- 25 – connecting hose

4.2 The compressor K-25 consists of two portions: a main unit (compressor K9) and a booster unit.

4.3 Basic parts of the compressor are installed on platform 2 (Fig. 1), which is fastened with clamps 20 on receiver 3. Rear fixed wheels 4 and

<sup>2</sup>For the compressor K-25.

<sup>3</sup>For the low-pressure compressor.

front rotating wheels 5 are fastened on supports 21, which are welded to the bottom of clamps 20. The 4-wheel structure facilitates compressor movement within the room. Compressor units 1 are fastened on the platform with vibration dampening rubber bushes and are equipped with oil level monitoring window 7 and air filters 8. To ensure automatic operation of the compressor, there is pressure switch 9, which is set to switching-off if the pressure increases to 0.9 MPa and to switching-on if the pressure decreases to 7 bar. The on and off pressure can be monitored with manometer 11. In order to maintain the pressure on the same level, there is filter/regulator 10, which can be used to regulate the outlet pressure between 0 and 0.7 MPa. The outlet pressure can be monitored with manometer 12. At the filter/regulator bottom, there is automatic valve 15, which closes when the pressure appears and opens when the compressor turns off and when the pressure drops, to release the condensate accumulated. In order to prevent an emergency, there is emergency valve 13.

At the compressor outlet, there are ball valve 14 and a fitting (or G $\frac{1}{4}$  thread) for connecting 17. At the receiver bottom, there is plug 6 to drain the condensate. Handle 16 is fastened on the platform to allow easy movement of the compressor. All connections are made with plastic tubes 19 and cap-nut fittings. Threaded connections are sealed with special gaskets or anaerobic sealant.

In order to increase the pressure to 2.5 MPa, booster unit 21 is fastened on the platform; the booster unit has manometer 22 indicating the outlet pressure, outlet fitting 23, and condensate drain plug 24. Connecting hose 25 connects the main unit with the booster unit.

## 5 Safety Precautions

### Attention

This Section aims to ensure personnel safety during operation as well as integrity of the compressor and equipment running together with this compressor.

5.1 Before starting the compressor, thoroughly inspect it and make sure that there are no mechanical damages and that its elements are securely fastened.

**Attention**

5.2 The compressor must not be used with faulty electric wires or a faulty plug.

5.3 The compressor shall be connected only to a power outlet that has the third, earthing contact.

5.4 In order to avoid an electric shock hazard, connect the compressor via a residual current device (RCD) designed for the operating current of 16 A and the breaking current of 10 or 30 mA.

**Attention**

5.5 Do not exceed the duty cycle above the one specified in technical characteristics in order to avoid overheating and failures of compressor units.

5.6 In case of continued operation, do not touch compressor units so that to avoid thermal burns as the units can be heated as high as 80 °C.

**Attention**

5.7 Inspect the oil level in compressor units at all times (in the off state); refill oil, if necessary (when the compressor turns on, the oil level drops by 2–3 mm).

5.8 It is prohibited to eliminate any compressor issues if it is connected to the power grid – regardless of its being turned on or off – or under pressure.

5.9 The running compressor must not be left unattended.

5.10 Should any abnormal sounds or odours appear, the compressor shall be immediately shut down and disconnected from the power grid; contact specialists.

5.11 Periodically drain condensate from the receiver, filter/regulator, and booster unit.

5.12 The compressor shall be repaired by specially trained personnel. The compressor must not be repaired by your own efforts within the warranty period!

5.13 The compressor must not be tilted in order to prevent breakdowns of compressor units.

### **Attention**

5.14 The compressor must not be turned on manually if the pressure in the receiver exceeds 0.7 MPa (the pressure shall be preliminarily reduced).

5.15 Disconnection/connection from/to the compressor shall be made when there is no pressure.

### **Attention**

5.16 It is prohibited to generate a pressure at the booster outlet above 2.5 MPa.

5.17 The booster must not be operated with its housing open.

5.18 Be careful when operating the compressor as compressed air is a source of potential hazard.

## **6 Preparation for Operation**

6.1 Unpack the compressor and wipe it with clean cloth.

6.2 Make sure that there are no mechanical damages; check fastening reliability for compressor elements and integrity of electric wires and the plug.

6.3 Check the oil level in compressor units; refill, if required; to do so,

6.4 After making sure that switch 18 (Fig.1) is off, connect the compressor to the 220 V, 50 Hz AC mains having an earthing contact.

## **7 Operation Procedure**

7.1 The compressor can operate in two ranges: 0...0.7 MPa and 0... 2.5 MPa.

7.2 Operation in the range of 0...0.7 MPa.

7.2.1 Close valve 14 (Fig. 1).

7.2.2 Disconnect hose 25 from fitting 17.

7.2.3 Connect the PSKA system panel or other equipment to fitting 17.

7.2.4 Power on the compressor with switch 18.

7.2.5 Adjust the outlet pressure with filter/reducer 10.

7.2.6 Supply the pressure to the PSKA panel or other equipment by opening valve 14.

7.2.7 During operation, monitor the compressor on and off thresholds; if necessary, adjust them according to Fig. 2 while observing para. 5.6.

7.3 Operation in the range of 0... 2.5 MPa.

7.3.1 Close valve 14 (Fig. 1).

7.3.2 Connect compressor fitting 17 to the booster unit's inlet using hose 25, as shown in Fig. 1.

7.3.3 Connect the PSKA system panel or other equipment to fitting 23.

7.3.4 Power on the compressor with switch 18.

7.3.5 Adjust the compressor outlet pressure (booster unit's inlet pressure, manometer 12) with filter/reducer 10 considering the fact that the booster would increase the pressure 4 times.

7.3.6 Open valve 14.

7.3.7 We recommend that the pressure is set first according to manometer 12 a little lower than the required value, with subsequent fine adjustment during operation according to manometer 22. Avoid exceeding the maximum outlet pressure equal to 2.5 MPa.

7.4 In case of short-term downtimes, it is enough to close valve 14 (Fig. 1) and to bleed the air from the supply hose using the PSKA panel or other equipment connected. To resume operation, it is enough to open valve 14.

7.5 In case of long-term downtimes or upon completion of the work, the air shall be bled from the compressor using the PSKA panel or other equipment connected; the air hose shall be disconnected; the equipment shall be disconnected from the mains.

## **8 Maintenance**

8.1 In order to keep the compressor in the good working order, daily and routine maintenance is required.

8.2 Daily maintenance shall include visual inspection, removal of dirt and dust with dry clean cloth, and check of the oil level in compressor units. If the oil amount is insufficient, refill it according to para. 6.3.

8.3 Routine maintenance shall include works under para. 8.2 plus condensate drainage from the filter/regulator, from receiver 3 by unscrewing plug 6, and from the booster unit's receiver by unscrewing plug 24. Make sure that air filters are clean by purging them; if they are dirty, wash them or replace with new ones.

## **9 Storage**

9.1 Compressor storage in laboratory conditions. When storing the compressor in laboratory conditions, wipe it with clean cloth and cover it with a polyethylene cap.

9.2 Compressor storage in a storage room. Before putting the compressor into storage, perform works according to para. 8.3 and pack it in the original package (or a similar one). The compressor shall be stored in a dry heated room at an air temperature no lower than +5 °C and relative humidity no higher than 80 %.

## 10 Troubleshooting

<b>Malfunction</b>	<b>Cause of the malfunction</b>	<b>Repair method</b>
The compressor won't switch on	Mains voltage failure	Check the voltage
	The compressor's electric equipment is faulty	Contact a specialist
The compressor off and on pressure does not correspond to the specified one	The pressure switch is set incorrectly	Adjust the pressure switch's trigger thresholds
	The pressure switch is faulty	Contact a specialist
The pressure drops with valve 14 switched off (Fig. 1)	Leak-tightness of connections is lost	Identify the place of leakage with soapy water and eliminate the leak
The pressure is higher than the required one	High air consumption	Bring the consumption into accordance with technical characteristics
	Leak-tightness of connections is lost	Contact a specialist

## 11 Warranty Obligations

11.1 The Manufacturer guarantees compressor operation, provided that the operating, storage, and transportation conditions are met.

11.2 The warranty service life is 18 months.

11.3 The warranty storage life is 6 months.

11.4 The average service life is at least 8 years.

## 12 Claim Details

12.1 In case of a failure, prepare a certificate of required repair and submit it to the following address: "Alfapascal" LLC, 36, 2nd Paveletskaya, Chelyabinsk, 454047, Russia, phone: +7 (351) 725-74-50, e-mail: q@alfapascal.ru



### 13 Acceptance Certificate

The compressor K-25 Serial Number \_\_\_\_\_ complies with specification TU 3643-011-91357274-2013 and is deemed to be suitable for operation.

Date of issue

Responsible person \_\_\_\_\_  
Signature Surname

LS

### 14 Packing Certificate

The compressor K-25 Serial Number \_\_\_\_\_ was packed by “Alfapascal” LLC in compliance with specification TU 3643-011-91357274-2013.

Date of packing

Responsible person \_\_\_\_\_  
Signature Surname

LS

#### Note

The Manufacturer reserves the right to make changes to the compressor design that do not affect basic technical characteristics, without prior notice.