DESORBER

USER MANUAL

214.5.886.045UM

PRODUCTS P/N: 400-1901…400-1903

CHROMATEC PV-2

Rev. 26.12.2023

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Important notes

This User Manual (UM) is intended to get familiar with the Tube Conditioner – Desorber (hereinafter – the tube conditioner) and contains all necessary instructions to ensure its correct operation and maintenance.

Before using the sampling pump accurately read the present User Manual.

The relevant sections of the operating manual provide instructions for the operation and maintenance of the desorber.

Instructions marked by this box are necessary for carrying out in order to avoid injuries sustaining at working with Desorber and to avoid Desorber damage.



This symbol warns of a burn hazard. It is applied to the top cover of the desorber (warns of hot surfaces).

Two marking types of parts are used in this and accompanied documents:

XXX-XXXX – Part number or Cat. Number referred to ordering documents;

214.X.XXX.XXX(-XX) or simplified X.XXX.XXX(-XX) – Cross ID referred to internal manufacturer documents.

Both can be used for ordering parts.

1 Description and operation

1.1 Purpose

The tube conditioner is used for conditioning sorbent tubes from volatile contamination. During conditioning the sorbent tube is heated and purged with inert gas (helium, nitrogen or argon). The tubes are loaded into an oven. The gas flow rate is adjusted with a pressure regulator.

Three tube conditioner versions are available:

- P/N 400-1901 – for tubes with O.D. 5 mm and length 110 mm used in single-stage thermal desorber (Cross ID 214.2.393.004);
- P/N 400-1902 – for tubes with O.D. 6 mm and length 115 mm used in two-stage thermal desorber (P/N 400-1101);
- P/N 400-1903 – for tubes with O.D. 6.35 mm (1/4'') and length 89 mm (3.5'').

These versions have different manifold design. To conditioning sorbent tubes with different sizes in one tube conditioner are used the respective manifolds in set with rings and plugs (Table 1).

Table 1 – Manifolds, rings and plugs depending on the sorbent tube size

Item	**Sorbent tube size (O.D., length), mm**		
	5 × 110	**6 × 115**	**6.35 × 89**
Manifold	6.152.001	6.152.001-01	6.152.001-02
Ring	8.683.032-01	8.685.086	8.685.086
Plug	8.632.112	8.632.112-01	8.632.112-01

The tube conditioner is operated in closed laboratories if combustible gases and highly flammable liquids may be present in volume insufficient to create the explosion or fire-hazardous mixture, at ambient temperature from 10 to 35 °C, relative humidity max. 80 %, atmospheric pressure from 84 to 107 kPa (from 630 to 800 mm Hg), with ambient air impurity content within sanitary norms stated in GOST 12.1.005-88. The tube conditioner refers to UHL climatic version category as per GOST 15150-69.

The tube conditioner is powered from the AC mains, ($220\ ^{+22}_{-33}$) V / (50 ± 1) Hz.

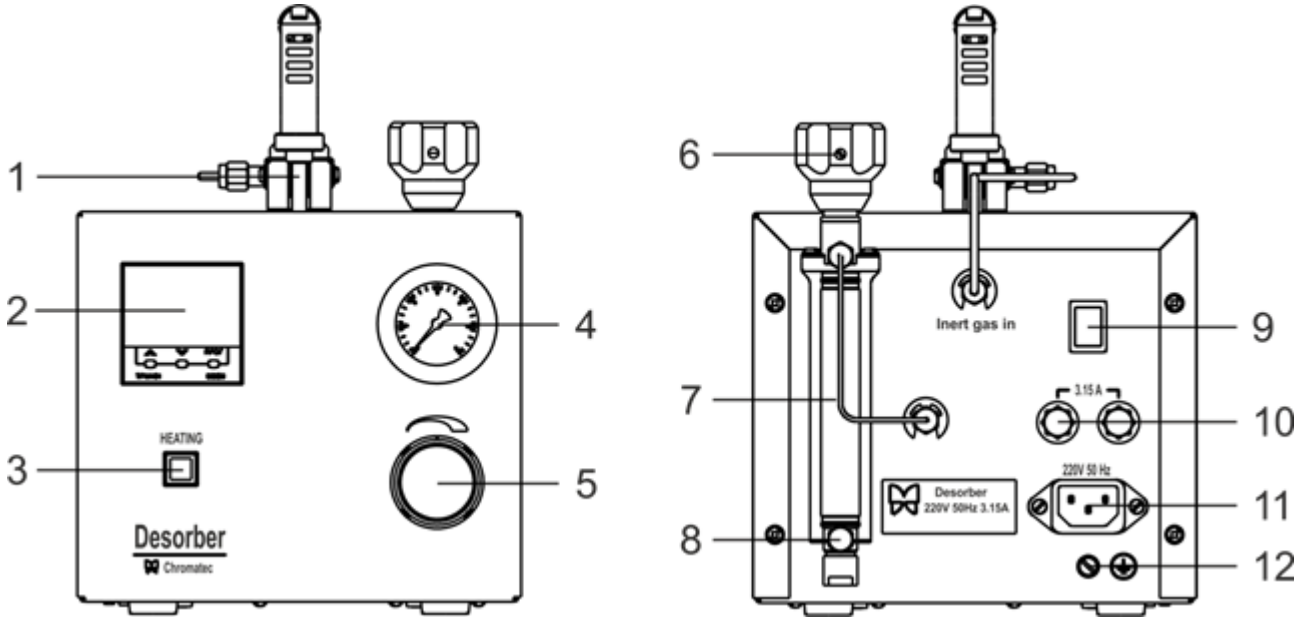
Items produced by SDO Chromatec may contain updated parts following new developments or may be undergone to non-essential modernization, not specified in this User manual.

1.2 Specifications and delivery set

Technical specifications and delivery set are according to Passport 214.5.886.045PS.

1.3 Construction and operation

The tube conditioner overview is shown in the Figure 1.



1 – manifold; 2 – temperature gauge-regulator; 3 – "Heating" button; 4 – pressure gauge; 5 – pressure regulator; 6 – valve; 7 – filter; 8 – connector; 9 – power switch; 10 – fuses 3.15 A; 11 – power socket; 12 – grounding.

Figure 1 – Tube conditioner. Overview

The pressure regulator knob, pressure gauge, temperature gauge-regulator and the "Heating" button are located on the front panel.

The power switch, power socket, fuses, grounding, filter, gas supply valve and gas line connectors are located at the rear of the tube conditioner.

The tube conditioner includes the following functional units: oven, mechanical pressure regulator, pressure gauge and filter.

The oven is an aluminum heater with holes for sorbent tubes.

Pneumatic principal drawing is shown in the Figure 2.

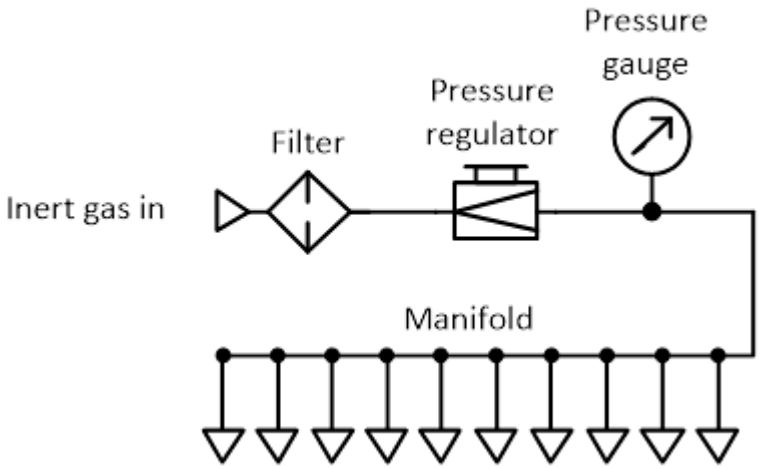


Figure 2 – Pneumatic principal drawing

2 Usage

2.1 Safety measures

Persons who studied this manual and passed workplace operating skills test are allowed to operate the tube conditioner.
The tube conditioner must be grounded. The grounding is provided with a power socket and additional grounding. The contact "⊥" of the tube conditioner power socket and the additional grounding must be connected to the outer grounding loop with copper wires min. 1.5 mm^2. The cable 6.644.056 is used for additional grounding.

Maintenance is only allowed when the power cable is disconnected from the mains and the gas line is turn off.

When operating with combustible, noxious and aggressive gases observe the fire safety precautions stated in GOST 12.1.004-91 as well as instructions given in the dedicated user-developed manuals (considering specific features of the materials used) based on GOST 12.1.007-76.

In case of long interruption disconnect the tube conditioner from the mains and turn off the gas line.

2.2 Preparation

Place the tube conditioner on a horizontal surface.

Connect the inert gas line to the inlet connector at the rear of the tube conditioner. The max pressure at the inlet is 0.44 MPa.

Ground the tube conditioner as described in Section 2.1.

Use the power cable SCZ-1 to connect the tube conditioner to the mains.

2.3 Operation procedure

Install the sorbent tubes into the oven:

- Remove the manifold from the tube conditioner (Figure 3a);
- Place the manifold on the support (Figure 3b);
- Unscrew the nuts from the holder and fix them on the support (Figure 3c);
- Install the O-rings on the sorbent tubes (the distance between tube ends is about 7 mm) and place the tubes on the support. The tube tag must be located at the top of the tube (Figure 3d);
- Tighten the nuts on the manifold (Figure 3e);
- Remove the manifold from the support (Figure 3f);
- Install the manifold into the tube conditioner (Figure 3g).

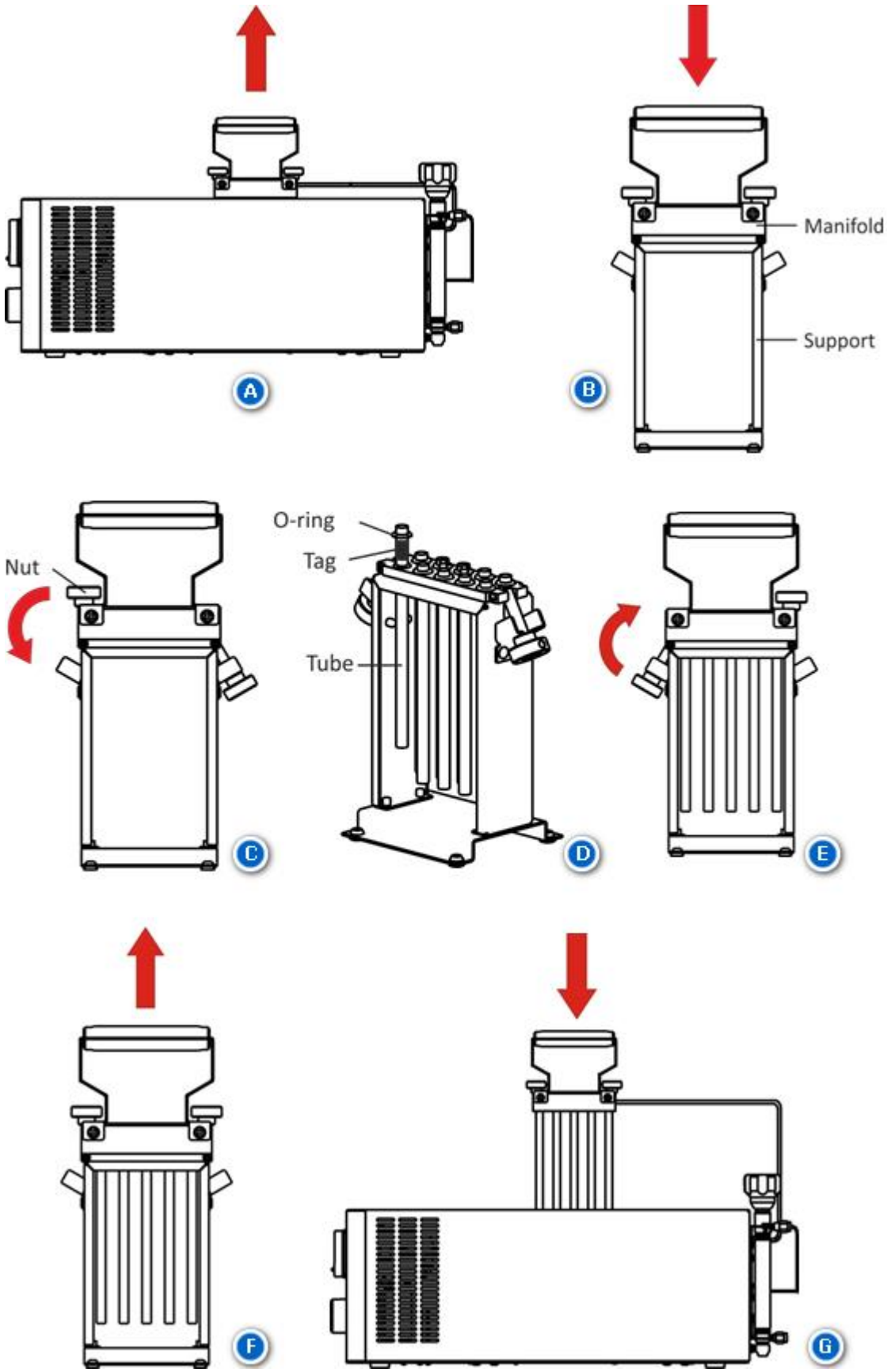


Figure 3 – Tube installing

If some of channels are not used, close them with plugs 8.632.112 or 8.632.112-01.

Put the power switch at the rear of the tube conditioner into the "Mains" position.

Open the gas supply valve by turning it counterclockwise up to the stop.

Set the required gas flow using the pressure regulator knob located at the front panel. The pressure is monitored at the pressure gauge.

The recommended gas pressure for conditioning the sorbent tubes filled with adsorbent, fraction 35/60 mesh – 0.1 MPa, fraction 60/80 mesh – 0.2 MPa.

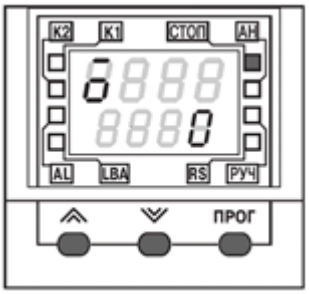
Desorber 214.5.886.045 is auxiliary equipment and does not participate in measurements according to the Measurement Methodology. Meter-regulator TRM101 from the desorber is not subject to mandatory verification.

Set the oven temperature with the gauge-regulator at the front panel.

Select the required temperature value with the "^" and "v" keys.



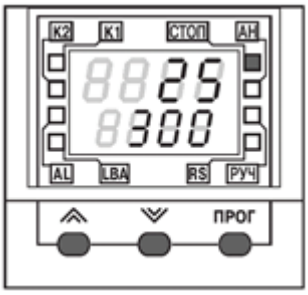
To apply the selected value press the “ПРОГ” key. The gauge-regulator switches to the service data menu.



For the gauge-regulator to display only the measured temperature press the “ПРОГ” key.

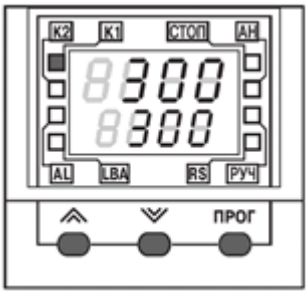


For the gauge-regulator to display only the preset temperature press the “ПРОГ” key.



Press the "Heating" key on the front panel to start heating. The K1 LED goes on and the STOP LED goes off.

The gauge-regulator is also used for oven temperature monitoring. The upper value displays the measured temperature and the lower displays the preset one.



To force stop the heating press the "Heating" key again.



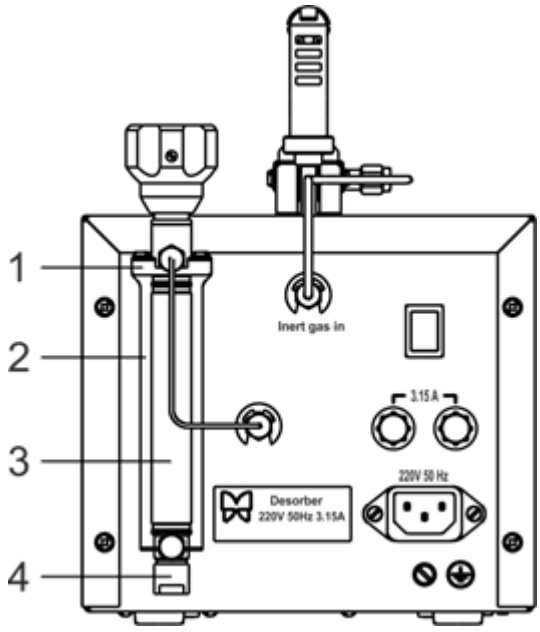
To prevent the burning after taking the manifold with sorbent tubes out of the oven wait at least 5 minutes before removing the sorbent tubes from the manifold.

3 Maintenance

When the tube conditioner is in service the adsorbent (activated carbon) in the gas filter has to be recovered (or replaced). The recovery is carried out once per each (2000–3000) operating hours.

Actions:

- Disconnect the gas lines from the filter;
- Unscrew the L-piece 8.665.385;
- Remove the filter from the bracket;
- Unscrew the cover 8.048.149 at the bottom of the filter.
- Pour out the adsorbent (activated carbon).
- Bake the activated carbon at temperature (150–155) °C for 3 hours.
- Pour the activated carbon back into the filter;
- Screw the cover 8.048.149;
- Install the filter onto the bracket;
- Screw the L-piece 8.665.385;
- Connect the gas lines to the filter.



1 – L-piece 8.665.385; 2 – bracket; 3 – filter; 4 – cover 8.048.149.

Figure 4 – Filter location in the tube conditioner

4 Transportation and storage

Before transportation remove the manifold from the tube conditioner and put it into a separate bag and then into the package.

Transportation of the tube conditioner in package can be carried out on any distance by any kind of transport, except for not hermetically sealed plane compartments and open decks of water transport. At transportation protection of transport container against atmospheric precipitations should be provided.

Transportation conditions:

- ambient temperature from minus 50 to plus 50 °C;
- relative air humidity up to 98 % at 35 °C;
- Presence in air of dust and aggressive admixtures vapors is not allowed.

The way of boxes stacking in transporting means should exclude their moving. During loading and offloading operations boxes should not be exposed to hits and atmospheric precipitations impact.

The tube conditioner should be stored in the packed state indoors under conditions 2 in accordance with GOST 15150-69:

- Air temperature from minus 30 to plus 40 °C:
- Relative air humidity no more than 98 % at 25 °C.

No dust, acidic or alkaline vapors and other aggressive impurities are acceptable in the air.

Max three packages can be stacked.

Keep the packed tube conditioner for at least 4 hours in operation conditions before removing the package after transportation or storage at negative temperatures.

5 Claims

In case of sampling pump failure within warranty period it is necessary to:

- draw up a technically reasoned act of defects concerning its incompliance with technical requirements, specified in the passport;
- make abstracts from section "Acceptance certificate";
- specify performed maintenance procedures.
- The claim should be sent to the address:
- Special Design Office “Chromatec”, 94 Stroiteley Str., Yoshkar-Ola, Russian Federation 424000; or at Correspondence address: Central post office, P.O. box 84, Yoshkar-Ola, Mari-El republic, Russian Federation 424000. Fax: +7.8362.685916, E-mail: mail@chromatec.ru
- **Service support department**
- Tel.+7.8362.685919, +78362.685932, fax. +7.8362.685987, E-mail: service@chromatec.ru
-
- **Sales department**
- Tel.+7.8362.685968, +78362.685969, fax. +78362.685970, E-mail: sales@chromatec.ru