TECHNICAL-OPERATING DOCUMENTATION

Inflow and exhaust ventilation system with heat recovery

PRANA-150
PRANA-200G
PRANA-200C
Monoblocks of the centralized anti-current inflow-exhaust ventilation.

PRANA-150 and PRANA-200 belong to the category of innovative and reliable products aimed at creating and maintaining a healthy microclimate in premises of various functional purposes.

High energy efficiency and significant air exchange capabilities make it possible to apply these ventilation systems for organizing domestic ventilation.

Technologically, the system is a monoblock with high-efficiency counter-current copper recuperator ready to use in accordance with the design and assembly tasks and conditions.

**DESCRIPTION OF THE SYSTEM**

Ventilation systems “PRANA-150”, “PRANA-200C”, “PRANA-200G” are intended for creation and maintenance of healthy microclimate in premises.

These systems are recommended for use in residential and public facilities (apartments, houses, office premises, educational establishments, kindergartens, etc.).

**INTENDED USE**

The basis of the technical solution for recuperation ventilation is the countercurrent, with a continuous thermal cycle, a copper heat exchanger, which makes it possible to form two different-directed airflows in the volume of one cylinder (Fig. 1).

Warm exhaust air that is removed from the room, passing through a copper heat exchanger transmits its warmth to the counter stream of fresh air from the outside.

The system allows recover heat, which contributes to increasing the overall recuperation rate and allows maintain the optimum humidity mode in the room. Taking into account that air streams are separated and regulated at levels “inflow” – “exhaust”», there is no mixing of different-directional airflows.

High velocity of the flow with sufficient heat transfer efficiency ensures removal of up to 90% moisture in a dispersed state, preventing its condensation and freezing of the heat exchanger at low ambient temperatures.

**PRINCIPLE OF WORK**

![Diagram](Fig.1. The principle of operation of recuperator PRANA-150, PRANA-200C, PRANA-200G)

Warm exhaust air that is removed from the room, passing through a copper heat exchanger transmits its warmth to the counter stream of fresh air from the outside.
ADDITIONAL FUNCTIONS

The function of “heating with minimally-raised temperature”

For additional comfort in equipping residential premises with ventilation systems PRANA of residential-and-public and semi-industrial series, the function of air “heating with minimally-raised temperature” is provided for. It can be switched on by pressing the “On heating with minimally-raised temperature” button on the remote control or in a mobile application (see the remote control manual included in the list of standard equipment).

After having activated the function of “heating with minimally-raised temperature”, the temperature of the inflow air increases by 3-5 ºC.

When the motors are switched off and the cover of the recuperator is open, this function additionally plays the role of an air heat curtain.

WARNING! DO NOT SWITCH ON «heating with minimally-raised temperature», if the outside air temperature is +20 ºС and above!

Function “Winter Mode”

Function “Winter Mode” is intended to prevent the icing of condensate drainage during the cold season or to freeze it if icing has occurred.

WARNING! To avoid icing and to ensure the system operates correctly at the minus temperature from the outside - the use of the Winter Mode is mandatory.

MAIN TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>PRANA 150</th>
<th>PRANA 200G</th>
<th>PRANA 200C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of the working module, mm with thermal insulation, mm</td>
<td>150</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>210</td>
<td>210</td>
</tr>
<tr>
<td>Diameter of the mounting hole, mm</td>
<td>≥162</td>
<td>≥215</td>
<td>≥215</td>
</tr>
<tr>
<td>Length of the working module, mm</td>
<td>≥475</td>
<td>≥440</td>
<td>≥500</td>
</tr>
<tr>
<td>Recommended area of the premises, m²</td>
<td>&lt;60</td>
<td>&lt;60</td>
<td>&lt;120</td>
</tr>
<tr>
<td>Amounts of air exchange during recovery, m³/h: (the inflow and exhaust work simultaneously):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- inflow</td>
<td>115</td>
<td>135</td>
<td>235</td>
</tr>
<tr>
<td>- exhaust</td>
<td>105</td>
<td>125</td>
<td>220</td>
</tr>
<tr>
<td>- night / minimal</td>
<td>25</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>- passive mode</td>
<td>6</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>“mini-after-heating”</td>
<td>7-32</td>
<td>7-32</td>
<td>12-54</td>
</tr>
<tr>
<td>Recovery efficiency, %</td>
<td>91</td>
<td>92</td>
<td>93</td>
</tr>
<tr>
<td>Acoustic pressure from the product at a distance, dB (A):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3m</td>
<td>13/24</td>
<td>13/24</td>
<td>13/24</td>
</tr>
<tr>
<td>1m</td>
<td>21/36</td>
<td>21/36</td>
<td>22/38</td>
</tr>
<tr>
<td>Weight of the system in individual packing, mm (LxHxW)</td>
<td>≥4,4</td>
<td>≥5,8</td>
<td>≥6,0</td>
</tr>
<tr>
<td>The size of the packing box, mm (LxHxW)</td>
<td>≥750x210x210</td>
<td>≥750x260x260</td>
<td>≥750x260x260</td>
</tr>
<tr>
<td>The body of the system is thermally insulated. Double protection against frontal blasting. The function of “heating with minimally-raised temperature” and “freezing”. The established service life of the system: 10 years. The warranty period: 2 years. The use of the system is designed for long-term operation at air temperature in the range from -30 ºС to +50 ºС.</td>
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</tr>
</tbody>
</table>
In mode «AUTO» after engine shutdown, «Winter mode» will work for 30 minutes to prevent icing in the system, which may result in reduced efficiency or condensate drainage complications.

**Preheating element (additional option)**

Recuperators that will be used in rooms with excessive humidity in the cold climate are recommended to be equipped with an additional heating element.

**Passive mode**

The operating mode of the ventilation system with the open lid of the recuperator and switched off motors. It lies in the movement of uncontrolled airflows through the recuperator due to the difference in pressure and temperature inside and outside the premises. It is allowed to use, when the difference between outside and inside temperatures is no more than 5 o C.

**Defrosting**

**WARNING!** In the cold season, the improper operation of the recuperator is likely to freeze it! When freezing, it is necessary to activate function «mini-heating» with engine switched off for at least 60 minutes, and let it freeze, then turn on the recuperator to the required mode.

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1. switched off motors  
   + the “heating with minimally-raised temperature” switched on

2. turn on the desired mode

Fig. 2. Defrosting
Fig. 3. The overall dimensions and the dimensions of ventilation system “PRANA-150”, “PRANA-200G”, “PRANA-200C”:

a) the ventilation grid and air intake in the premises;
b) monoblock, side view;
c) the ventilation grid and air intake from the outside.
The inflow and exhaust ventilation system with heat recovery “PRANA” is a monoblock ready for use in accordance with design and assembly tasks and conditions.

The system is mounted in a hole of the appropriate diameter in the upper part of the wall adjoining the outside, at a distance of no less than 100-150 mm from the ceiling or walls. The through hole should be a slope of 3-5 degrees towards the outside. The operating module of the ventilation system is mounted in the hole using a seal (Fig. 4).

The length of the working module should correspond to the thickness of the wall in which the installation will be carried out. In order to ensure the normal operation of the system, it is necessary that its body facing the the outside extends beyond the wall by 1-2 cm to the beginning of the air intake (Fig. 4).

![Diagram of installing the recuperator in the wall.](image)

Other preparatory works:

- preparation of the hole for installing the switch and preparation of the grooves for the installation of the electrical supply network between the system, the switch and the place of connection of the system to the power supply source.

![An example of mounting of the recuperator “PRANA-150”, “PRANA-200G”, “PRANA-200C”.](image)


**CONNECTING TO THE ELECTRICAL SUPPLY NETWORK**

Connecting the recuperator to the electrical supply network, controlling the system from the remote control.

Disconnect the power supply to the electrical system to which the ventilation system will be connected.

![Diagram of connection to the electrical supply network](image)

**WARNING!** Ensure that the electric power supply is really switched off!

The connection of the ventilation system to the electrical supply network is done using an electric cable, which is laid from the working module (standard equipment).

In the event that the electrical system is not laid to the mounting hole, the electric cable from the recuperator should be connected to the electrical supply network in the distribution box according to the diagram in Fig. 6: You must connect the contact terminals 1 and 2 in parallel, or install in the cable an electrical connector that meets the above parameters for quick connecting and disconnecting electrical appliances. Electrical connectors are not included in the list of the standard equipment.

If the cable of the electrical supply network of the building has been laid to the mounting hole, then the power supply to the working module cable is carried out in the immediate vicinity of the body of the recuperator. Shorten the electric cable from the recuperator to a length that is convenient for electrical connection.

All electrical cables used in the installation should have the cross-section of 0.5-0.75 mm².

The operation of the system is controlled using a remote control or mobile application that controls the operation of the fans installed in the body of the ventilation system (it turns on, regulates and turns off).

The PRANA 150 / 200G / 200C recuperators are adapted to an existing electrical network in an automatic mode, without the use of software. This significantly reduces the noise indicators of the equipment and allows ensure the the noise characteristics of the ventilation system declared in the technical passport.

**WARNING!** After having connected the ventilation system to the electricity supply network, it is necessary:

1. to supply electrical power to the system.
2. to check the operation of the fans in different operating modes, using control units.
The first start-up of the system should be carried out by a specialist who has theoretical knowledge and has practical skills in the electrical installation of this ventilation system.

Before starting-up, it is necessary to check:
- if the connection to the electrical supply network has been performed correctly (according to the mark in Fig. 6);
- if the air in is open;
- if the ventilation system is functioning properly.

**WARNING!** Before switching on the system, open the air intake as indicated in the photo below:

1. The lid is closed. Do not switch on the system, when the lid is closed.
2. Smoothly pull the cover. The system is ready for starting-up.

During operation, it is necessary to periodically check:
- the quality of function of the fans;
- the correspondence of the graphic symbols of the indication;
- correct operation of the device in accordance with the control devices.

The device must be switched off in case of:
- excessive oscillations and noise;
- damage to the elements of the device body;
- damage to the insulation of the electric cable;
- damage to the elements of automation;
- the temperature of the outside air is below -30 °C.

The PRANA 150 / 200G / 200C recuperators are adapted to an existing electrical supply network automatically, without the use of software. It significantly reduces the noise indicators of the equipment and allows ensure the noise characteristics of the ventilation system declared in the technical passport.
The maintenance consists in periodic (recommended 1-2 times a year) and preventive inspection of surfaces of the fans and the heat exchanger and, if necessary, in cleaning them. The procedure for disassembling / assembling the device for / after cleaning:

1. Press the “Switch off” button on the remote control. Switch off the ventilation system.
2. De-energize the ventilation system.
3. Open the lid of the recuperator.
4. Turn the fasteners of the lid and remove it.
5. Disconnect the cable and remove the power wires by pressing the terminals. Remove the lid.
6. Unscrew the self-tapping screws through special openings. Remove the flange.
7. Extract the heat exchanger and fans from the body.
9. Unscrew the self-tapping screws. Remove the fans on both sides.

10. Remove the blades from the fan housings and clean them in a dry manner.

11. Clean the heat exchanger in dry or, if necessary, in a wet manner.

12. The drain in the heat exchanger and the body must coincide and be below during the installation.

14. The flange must be installed correctly; the larger protrusion of the should be below.

WARNING!
Before rinsing or wet cleaning of the heat exchanger, make sure that all the electrical components and parts are removed from the heat exchanger (except for the components of “heating with minimally-raised temperature” and “heating the condensate drainage with raised temperature”).

QUALITY

The technological process provides for 100% inbound quality control for all components, as well as double 100% inbound control after their manufacture and 24-hour run in the maximum power mode.

TRANSPORTATION AND STORAGE RULES

Transportation and storage of the products in individual packing boxes is ensured in a horizontal position.

Keep the recuperator in the factory packaging under the cover or (in enclosed space) with relative humidity of air of no more than 70% and air temperature from -20°C to + 40°C.
- Ventilation system.
- Technical passport for the system.
- Technical (warranty) card.
- Remote control.
- Manual for the remote control.
- Packing box

**SCOPE OF DELIVERY**

- Ventilation system.
- Technical passport for the system.
- Technical (warranty) card.
- Remote control.
- Manual for the remote control.
- Packing box

**SAFETY REQUIREMENT**

All electrical installation works (maintenance) must be carried out only by a qualified specialist with a category of admission to such works.

Ensure that during installation, the provisions, mechanical and electrical installation rules and norms valid in the country, in which the installation is carried out, are observed.

**WARNING!** All installation and electrical works relating to the connection (maintenance) are carried out only after the device is disconnected from the electrical supply network.

**WARNING!** Do not operate the ventilation system, if there is a threat that foreign objects may enter the inflow part of the body, which objects may jam or damage the impeller of any of the two fans.

**WARNING!** Do not operate the ventilation system in premises, where the air contains aggressive substances and does not correspond to the working temperature regime.

After commissioning, the ventilation system must comply with the provisions of the following directives:

- Directive 2014/35 / EU. Low Voltage Directive (LVD);
- Directive 2006/42 / EU. Safety of Machinery mechanisms;
- Directive 2004/108 / EU. Electromagnetic Compatibility (EMC);
- Directive 2011/65 / EU. Restriction of Hazardous Substances (RoHS).