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**Air Heaters
- PLANAR – 4D –12**

Operation Manual

ADVR.010.00.00.000 RE

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1 Introduction

This Operation Manual is intended to familiarize the User with salient features, operation, assembly and operating procedures for PLANAR-4D-12 (hereinafter called “the heater”) intended for heating a vehicle driver workplace and various compartments of a motorized vehicle at atmospheric temperatures as low as -45°C (-113 F).

The complete operative scope of the heater comprises the following functions:

- provision of controllable air heating for an inhabited enclosed area in accordance with the atmospheric air temperature,
- provision of forced air ventilation for an inhabited enclosed area.

Minor changes performed on the heater structure by the Manufacturer may not be documented in this Operation Manual.

When placing an order or referring to the heater in documents pertaining to other types of equipment, the heater codes will read as follows:

Diesel Air Heater PLANAR-4D-12 TU4591-008-40991176-2005,

2 Basic Parameters & Specifications

The basic heater specifications are quoted in Table 1.

The basic parameters are quoted to a margin of $\pm 10\%$ tolerance at a temperature of 20°C at a nominal voltage.

Table 1

Parameter Code	Version
	PLANAR-4D-12
Nominal Supply Voltage, V	12
Fuel Type	Diesel Oil in compliance with GOST 305, atmospheric temperature-dependent
Heating Efficiency: max, kw, min, kw,	3 1
Heated Air Volume: Max , m ³ /hr Min, m ³ /hr	120 70
Fuel Consumption at: Max power, l/hr Min power, l/hr	0.37 0.12
Start/Stop Mode	Manual
Maximum Weight, kg	8
Heater power consumption, W Doesn't exceed while heating mode Max, W Min, W	45 10

3 Safety Measures

3.1 The installation of the heater and its fittings shall be performed by authorized organizations only.

3.2 The heater may only be used for the purposes specified herein.

3.3 The fuel supply line shall not be installed inside the passenger compartment or cabin of a motor vehicle.

3.4 A vehicle that uses the heater shall be equipped with a fire extinguisher.

3.5 The environment where the heater is to be used shall be free of highly inflammable vapours and a large quantity of dust.

3.6 To prevent the possibility of exhaust gas poisoning, the heater shall not be used when the vehicle is in an enclosed area (garage, workshop, etc).

3.7 When refueling the vehicle, the heater shall be switched off.

3.8 When performing welding operations on the vehicle or repairs on the heater, disconnect the heater from the vehicle battery.

3.9 When assembling or dismantling the heater, observe the safety measures specified by electric work regulations for the fuel supply system and the vehicle's wiring system.

3.10 The heater shall not be connected to the vehicle electric circuit while the engine is running or the battery is switched off.

3.11 **The heater's electric power supply must not be disconnected before the end of the purge cycle.**

3.12 The heater's connectors must not be connected or disconnected while the heater's electric power supply is turned on.

3.13 Wait 5 to 10 seconds before switching the heater back on.

3.14 In the event of two subsequent ignition failures, contact the maintenance department to report a malfunction.

3.15 In the event of a failure in heater operation, contact a designated repair organization authorized by the Manufacturer.

3.16 Manufacturer warranty shall not apply if the above requirements are not adequately met.

4 Description of Heater Structure and Operation

The heater operates independently from the vehicle engine.

The fuel and electric power supply is provided by the vehicle. See Figure 4.1 for the heater wiring diagram.

The heater is a self-contained heating device comprising the following:

- Heating device (See Figure 4.2 for basic components thereof);
- Fuel supply pump providing fuel for the combustion chamber;
- Ignition and indicator device (control unit);
- Wiring harness connecting heater fittings to the vehicle battery.

The heater's operating principle is based on heating air driven through the vehicle's heat exchange system.

The heat source are fuel combustion gases from the combustion chamber. The resulting heat warms the walls of the heat exchanger, which is air-blown from the outside. Air passes through the ribbing of the heat exchanger and enters the passenger compartment or other compartments of the vehicle.

Upon ignition, check the heater to ascertain whether fittings such as the flame indicator, the overheat sensor, air pump motor, plugs, fuel supply pump and the electric circuits thereof are working properly.

If no problem is detected, the ignition process starts.

In accordance with the preset sequence, the combustion chamber is fore-purged and the heating plug warms up to the required temperature. Air and fuel starts to enter the combustion chamber under the same procedure, whereupon the ignition process is initiated. Once stable combustion is achieved, the heating plug switches off. Flame control is provided by the flame indicator. All processes involved in heater operation are monitored by the control unit.

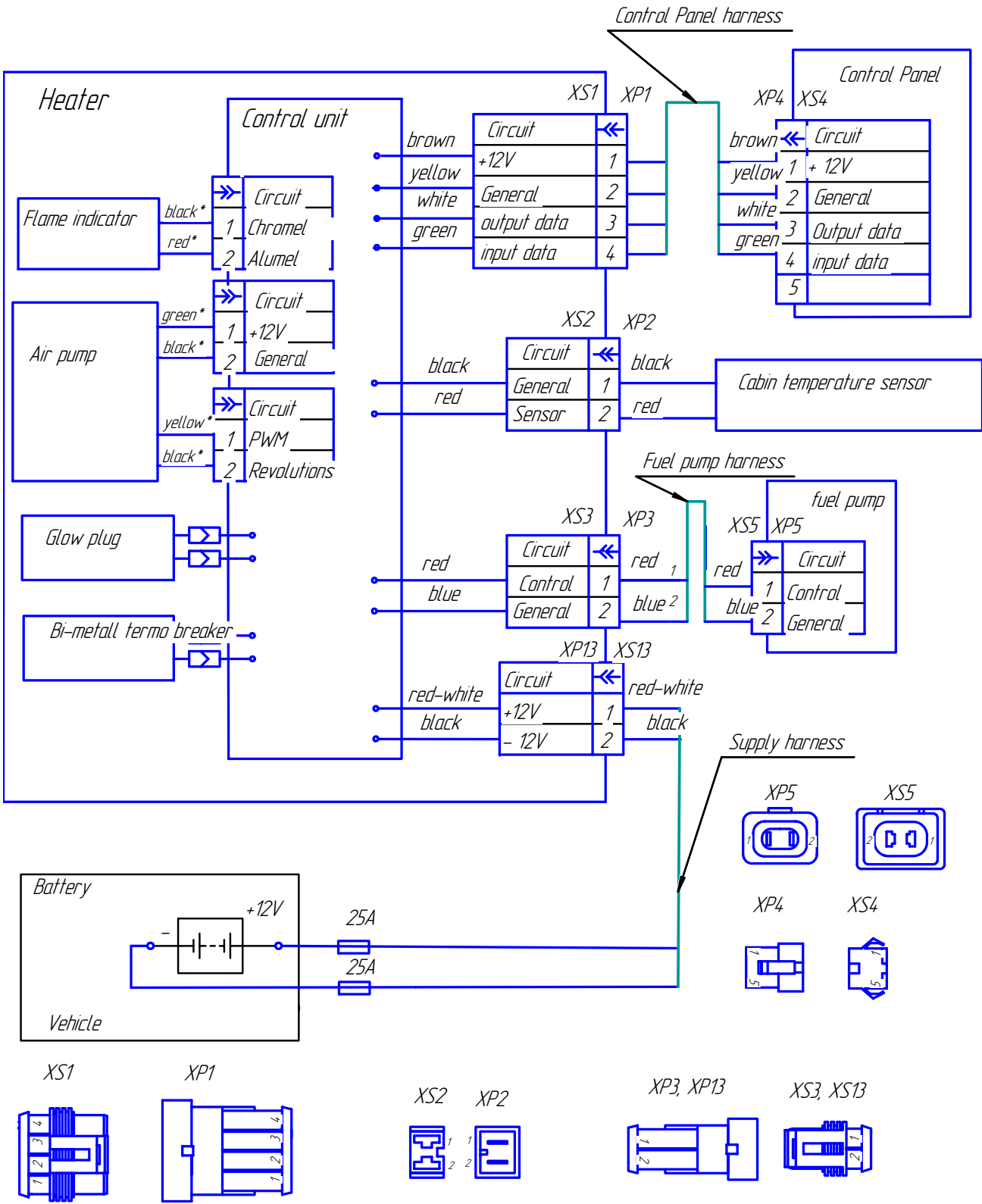
The control unit controls heat exchanger temperature and halts the combustion process as soon as the temperature exceeds the specified limit. The heater may be switched off at any time.

Pressing the heater deactivation command stops the fuel entering and the combustion chamber is purged with air.

During automated operation control of the heater in emergency situations, bear in mind the following:

- 1) In the event of ignition failure, the process will be repeated. The heater will switch off following two consecutive ignition failures,
- 2) If a combustion failure occurs while the heater is in operation, the heater will switch off,
- 3) If the heat exchanger is overheated (maybe as a result of closure of the heater inlet/outlet vents), the heater will switch off automatically,
- 4) If voltage drops below 10.5 V or exceeds 16 V the heater will switch off.
- 5) In the event of emergency shutdown, the indicator will show the information according to the code of malfunction.(see table 7.1)

Flashing frequency corresponds to failure type, see Section 12 for details.



* - the color of marking on flame indicator and air pump wiring .

figure 4.1- Wiring Diagram

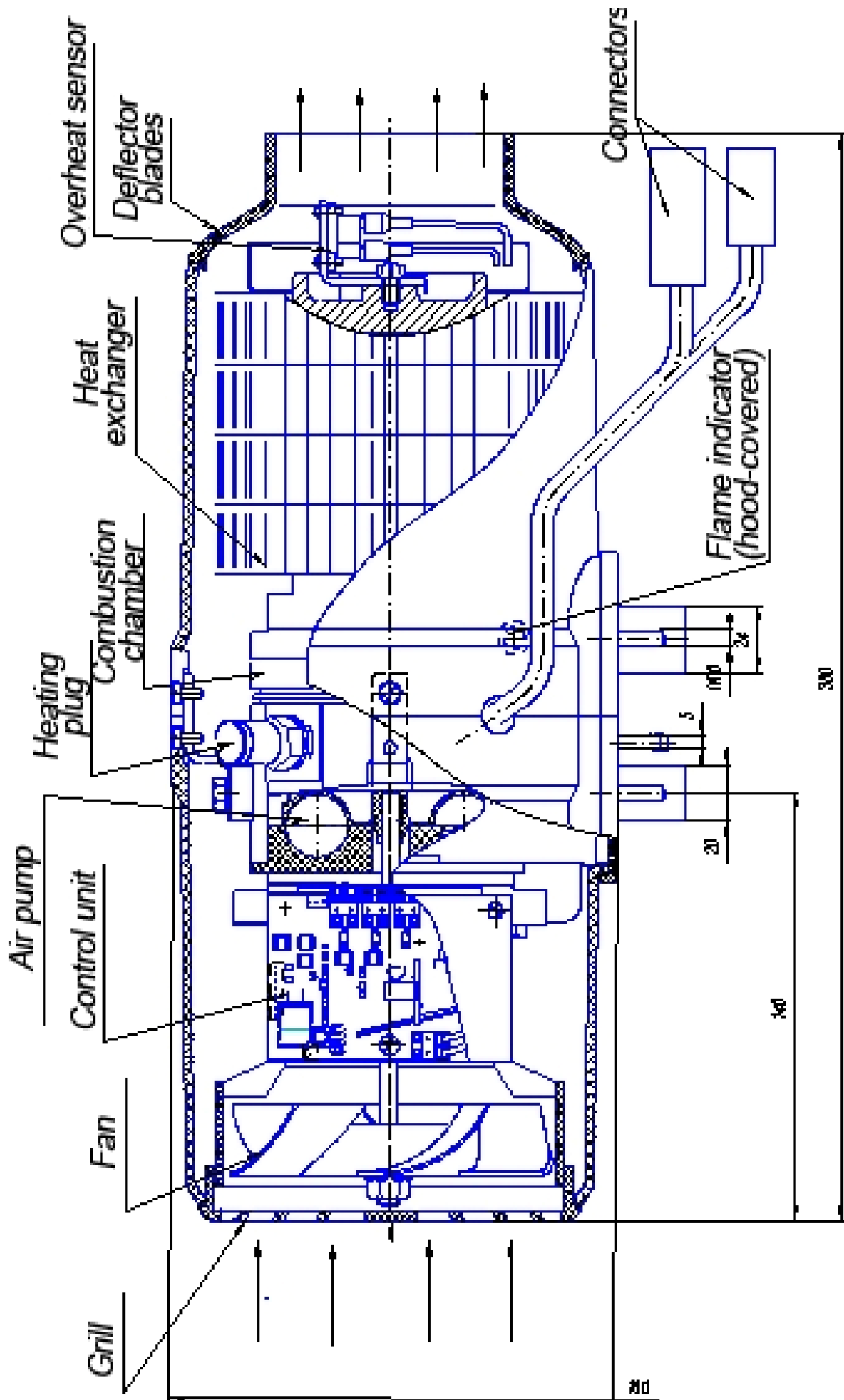


Figure 4.2 – Basic Heater Components

5 Control Unit

The control unit and the control panel control the heater.

The control unit performs the following functions:

- a) initial diagnostics (serviceability check) of heater fittings during ignition,
- b) diagnostics of heater elements throughout operation,
- c) heater activation/deactivation by command from control panel;
- d) combustion process control;
- e) automated switching of ventilation after the combustion process stopped;
- f) automated deactivation of the heater occurs:
 - in the event of failure of one of the controlled elements,
 - when any parameter exceeds the specified limit (heat exchanger temperature, supply voltage, combustion chamber flame failure)

6. Scope of Supply

See Figure 6.1 for scope of supply and connection diagram of basic heater components. For list of basic heater components, see Table 6.1.

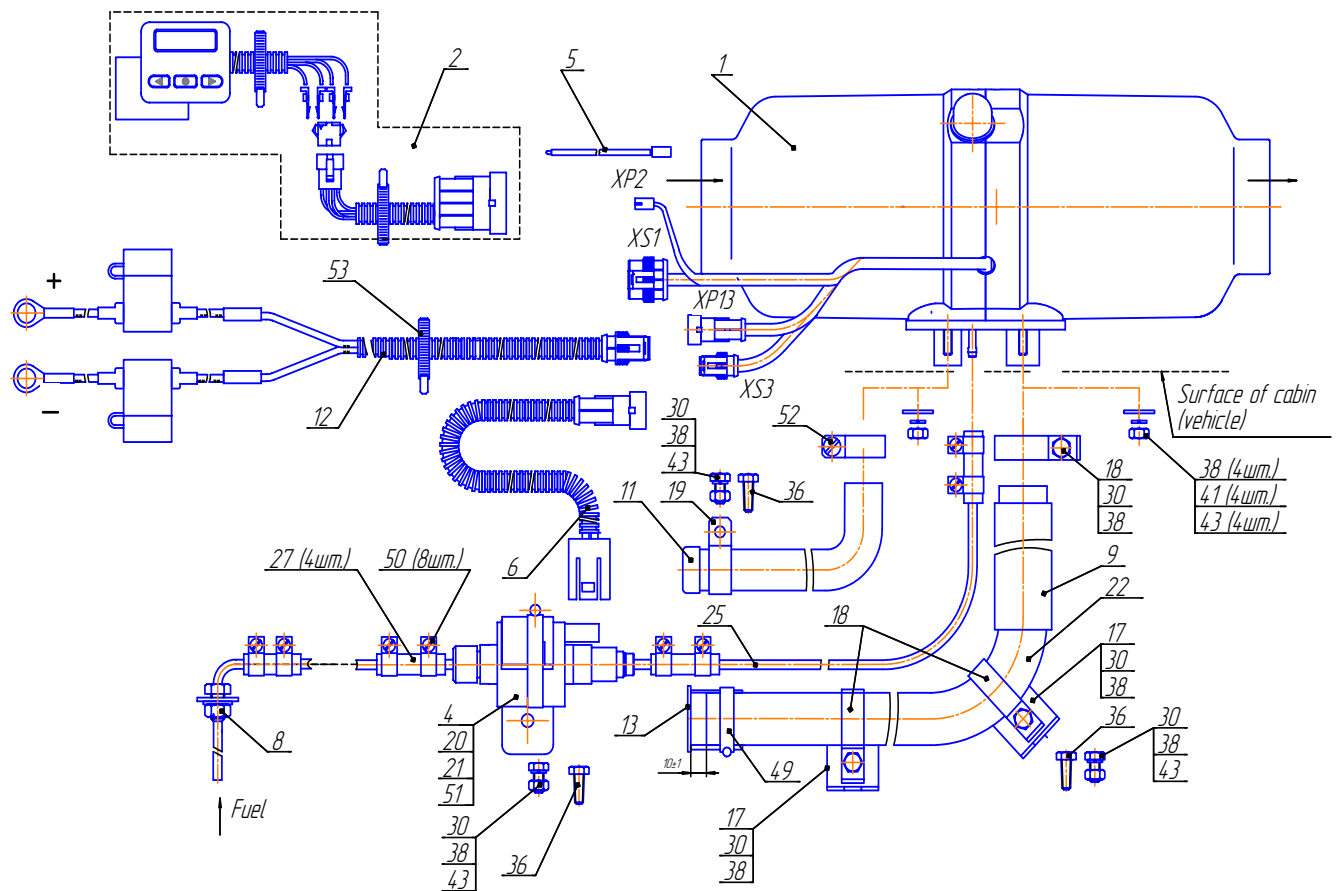


Figure 6.1 – Connection Diagram of Basic Heater Components

Table 6.1

No.	Designation	Pieces Per Set
1	Heater	1
2	Control panel ПY-8 with harness	1
4**	Fuel Supply Pump, Holder, Clamp (Set), Gasket(set)	1
5	Cab temperature sensor	1
6	Fuel Supply Pump Harness	1
8	Fuel supply intake	1
9	Heat insulation	1
11	Air Intake	1
12	Power Supply Harness	1
13*	Screen	1
17	Holder	2
18	Exhaust Pipe Clamp	3
19	Air Inlet Clamp	1
20**	Shock absorber	1
21**	Holder	1
22	Exhaust Pipe	1
25	Connecting Tube (polyamide) L = 5500 mm	1
27	Socket (L= at least 50 mm)	4
30	Bolt M6x16	7
36	Screwm6.4*16	4
38	Nut M6	11
41	Enlarged Flat Washer Ø6	4
43	Split Washer Ø6	8
49*	Clamp Torro 20*32/9W1	1
50	Clamp ABA min 10\9	8
51**	Clamp Torro 35*50/c7W1	1
52	Clamp 13*26	1
53	Plastic Clamp	15

7 Control Panel Functions

7.1 The control panel is intended for:

- heater activation and deactivation in manual mode;
- setting operation mode according to desired power or temperature;
- heater status indication (from the sensor integrated in the heater, control panel unit or external sensor if connected);
- failure code indication in case of heater failure while operation.

The front board of the panel contains: four-digit light emitting diode (LED) indicator, two LEDs and three knobs. Functionality of the knobs and LEDs. (fig.7.1)

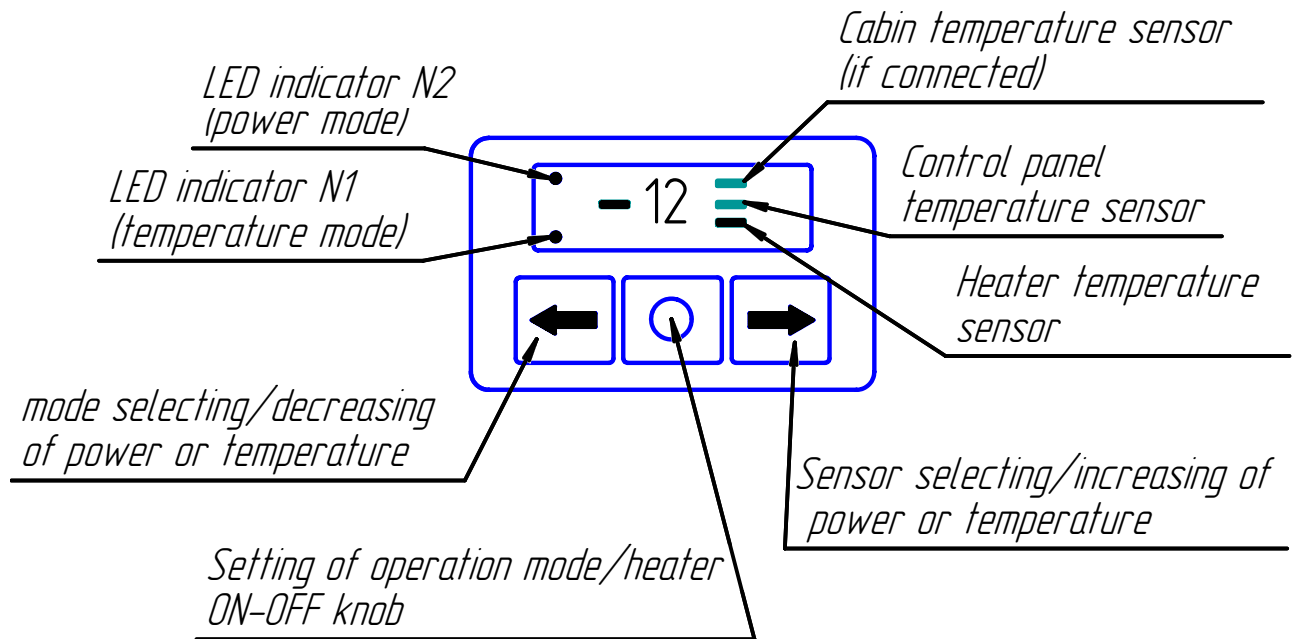


Fig. 7.1- Control panel

While first time the heater is connected to electric circuit of the car or after breaks of power supply, according to environmental temperature there will be following information on the panel (for example)- the temperature in the area of the sensor installed in the heater is -12°C (drawing 7,2), if the temperature in the area of the sensor is above zero, there will be no “mines” before the figure.

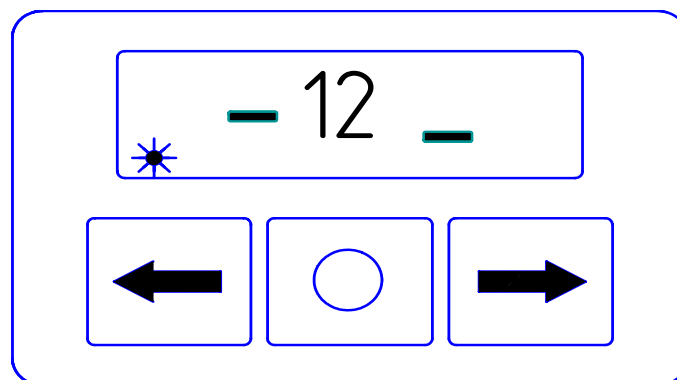


fig 7.2- View of the indicator after connection to electric circuit of the heater (initial stage of the indicator)

With the view to energy saving, the indicator stops glowing 20 seconds after last pressing of any knob, while this LED#1 or LED#2 is :

- lightning constantly if the heater is activated;
- blinking rarely (1 time per 1,5 second) if the heater is not activated;
- blinking while fault (1 time per second);
- blinking frequently (5 times per second) while deactivation of the heater (while purging)

To restart the indication there's need to press any knob.

7.2 Succession of work with the control panel

7.2.1 Operation mode set up.

Before heater activation there's need to select operation mode. Pressing knob with the arrow “←” select operation mode of the heater according to desired power or temperature. According to the choice the LED#1 or LED#2 is lightning. After selecting the mode “according temperature” there's need to press knob with the arrow “→” and choose the sensor, according which the temperature of the heater will be controlled.

7.2.2 Activation and setting the power or temperature.

After mode selection there's need to press the knob “O”, while this the heater will start working and there's information on the indicator- the power mode or temperature mode according to your choice.(see fig. 7.3 or 7.4)

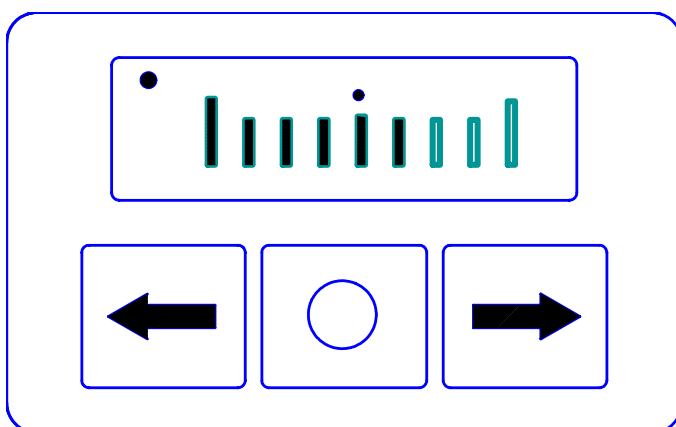


Fig. 7.3 (power mode)

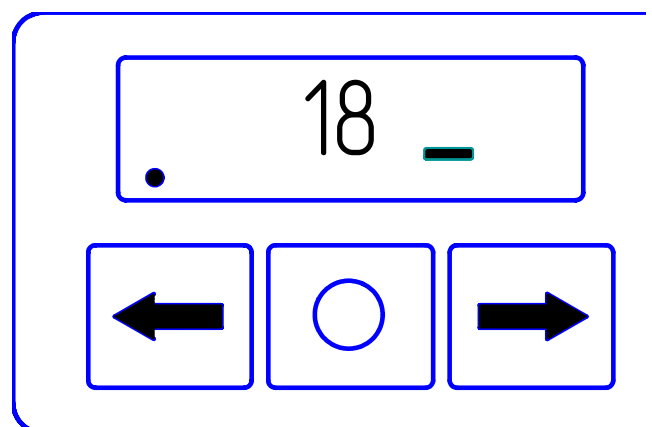


Fig. 7.4 (temperature mode)

If power mode is selected, pressing knobs with arrows “←” (decreasing), “→” (increasing) – you can set up the necessary power (see fig. 7.3) which can be set within 1 to 3 kWt. The indicator shows the scale according which the power is set up.

If temperature mode is selected, pressing knobs with arrows “←” (decreasing), “→” (increasing) – you can set up the necessary temperature (see fig. 7.4). The temperature is set within 15° to 30°C. You can see the figures on the indicator.

Attention!

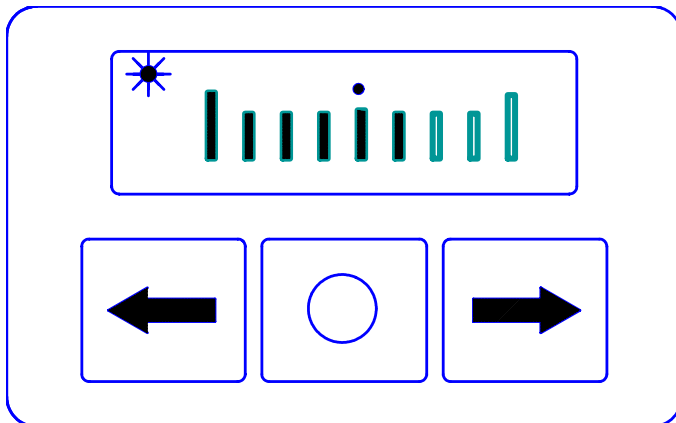
1. The heater Operation mode (according to power or temperature) is saved until new set up.

2. If cabin temperature sensor circuits are disconnected heater will go working on middle power Operation mode.

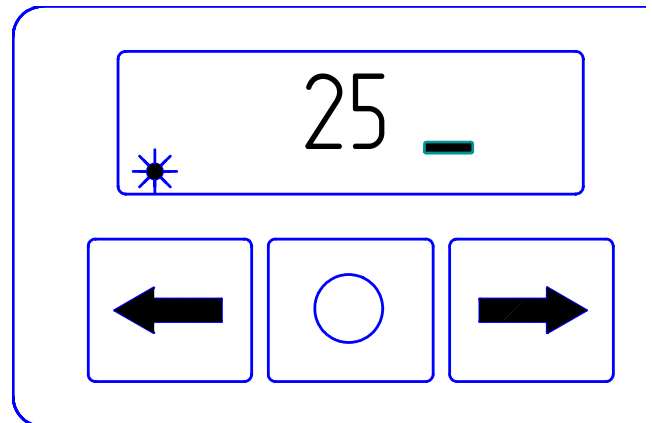
3. While heater activation without setting operation modes it is necessary to press the knob “O” one time if the indicator is lightning, and 2 times if the indicator is not lightning.

7.2.3 Heater deactivation.

To deactivate the heater press the knob “O”. While this the heater is in switching off mode, that means that the combustion process in combustion chamber is stopped and the process of purging is started. According to the mode the indicator will show information (for example) (see pictures 7.5 or 7.6), the LED#1 or LED#2 will be blinking frequently until the process of purging is stopped.



Picture 4.5-Purge



Picture 7.6- Purge

Attention!

It is forbidden to switch off electric power supply before purge cycle is finished.

7.2.4 Indication of malfunction code while failures in heater operation

While heater activation and operation there can be malfunctions. In case of malfunction the control unit automatically deactivate the heater. Every malfunction is coded and automatically appears on the indicator(see fig 7.7). While this, malfunction 's code and the LED showing the operation mode of the heater will blink rarely. The heater's malfunction codes are described in table 7.1. Pressing of any knob of the control panel will switch off indication of the malfunction code and bring the control panel in initial state.

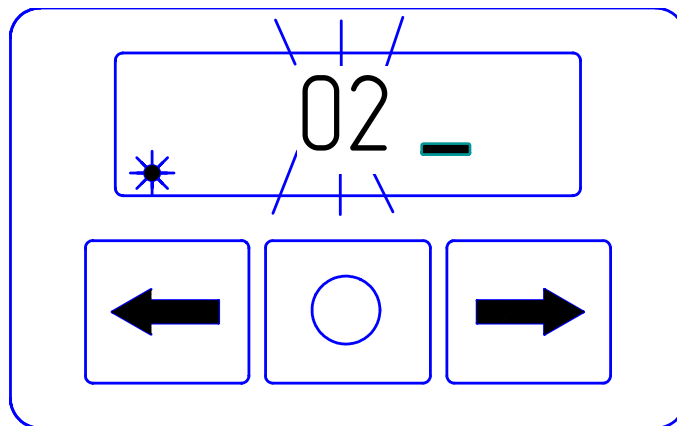


fig 7.7

Table 7.1-Malfunction codes

Malfunction code	Problem description	Commentary Problem solution
01	Heat Exchanger overheating	Check the inlet/outlet pipe of the heater for unpumped heated air flow. Check the overheat sensor on the heat exchanger, replace if necessary.
02	Possible overheating on temperature sensor. The sensor temperature (control unit) is more than 55°C	While purging before start the control unit is not cooled enough or control unit is overheated during operation. Check inlet/outlet pipe of the heater for unpumped heated air flow and repeat activation to cool the heater.
04	Built-in temperature sensor on control unit failure	Replace the control unit

05	Flame indicator failure	Check the flame indicator circuit for disconnection fault with sensor disconnected of its plate. Resistance between contacts should not exceed 10 Ohm. Replace the indicator if it is not operational.
08	Flame failure	Check the fuel level and fuel supply system. Check combustion air system and the exhaust pipe line. If the heater can be started, check fuel pump and replace if necessary.
09	Heating plug failure	Check the plug and replace if necessary.
10	Air pump motor failure	Check the wiring of the air pump, replace motor if necessary.
12	Shutdown, voltage boost	Check the battery, regulator and power supply wiring. The voltage between 1 contact and 2 contact of connector XP13 (see connection layout picture 4.1) should not exceed 16V
13	No further activation attempt is possible	If possible quantity of activation attempts is used, check the heating plug, fuel level and fuel supply system. Check combustion air system and exhaust pipe line.
15	Shutdown, low voltage	Check the battery, regulator and power supply wiring. The voltage between 1 contact and 2 contact of connector XP13 (see connection layout picture 4.1) should not exceed 10.5V

16	Ventilation period takes longer than usual	The heater is not cooled sufficiently during the purge. Check the combustion air supply system and exhaust pipe line. Check the flame indicator and replace if necessary.
17	Fuel pump failure	Check fuel pump wiring for short-circuit fault or disconnection fault. Replace the pump if necessary.
20	No connection between Control panel and the heater	Check wiring, connectors.
27	Air pump motor fault. Motor won't rotate	Check air pump motor wiring, connector.
28	Air pump motor fault. Motor won't switch off, go on rotation	Check air pump motor wiring, replace motor if necessary.

7.3 Control Panel installation and connection

Control Panel is installed in cabin or passengers compartment on the dashboard or any other comfortable for the driver place.

The control Panel is fixed with double-faced adhesive tape, which is stuck to the back side of the Control Panel. You can take out wires of the unit from its back or side cover. It is necessary to degrease the surface used for Control panel installation. Take off protective film from the tape and install the Control Panel on the prepared surface.

The connection of the Control panel to the heater is performed according wiring diagram(see fig. 4.1)

7.4 Complex checkup of the Control Panel after installation

After installation and connection of the Control panel to the heater the checkup is performed in following way:

- set up the necessary operation mode on the Control panel;
- check activation and deactivation of the heater;
- check deactivation of the heater while artificial failure (take off the connector from the fuel pump during operation mode of the heater), while this the malfunction code appears on the indicator.

7.5 Possible malfunctions

If after pressing any knob of the Control Panel the indicator is not lightning, there should be checked:

- fuses-25A;
- connectors and wires.

The Control Panel is not subjected to repair, it should be replaced for a new one.

8 Installation Requirements

8.1 Heater Installation

Installed the heater indoors while bearing in mind the permissible operating positions shown in Figure 5. The figure shows the two maximum assembly positions of the heater. Positioned the heater's inlet vent in such a way to prevent absorption of vehicle/heater exhaust gas in normal operating conditions. The gap between the walls/partitions and the edge of the inlet vent shall be at least 50 mm (see Figure 8.1). When assembling or operating the heater, ensure that no foreign objects enter the inlet/outlet vents. Prior to assembly, ensure availability of spare heating plug and bear in mind dismantlement requirements, as this will permit easier maintenance in future. See Figure 8.2 for how to position mounting holes to install the heater into the motor vehicle casing. Overall and mounting Dimensions are on the fig.8.3

ATTENTION !! To ensure reliable performance, follow the above recommendations carefully. Install the heater horizontally with the heating plug in the up position as shown in Figure 8.1.

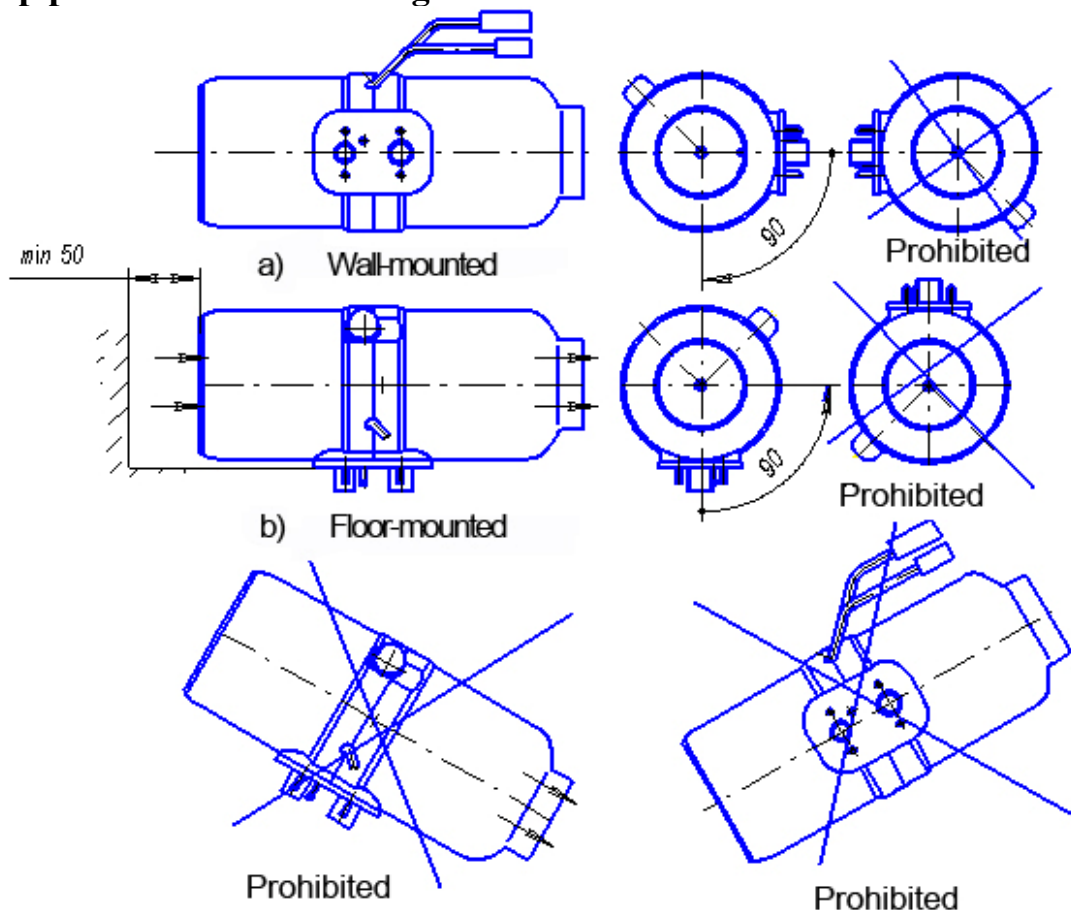


Figure 8.1 – Mounting Options

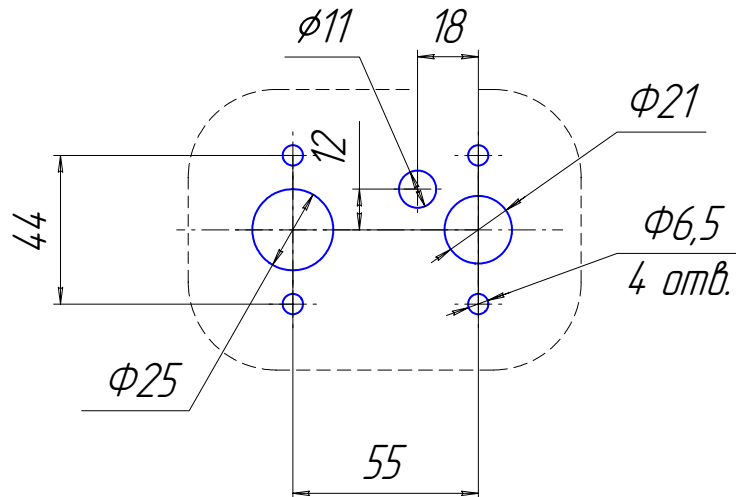


Figure 8.2– Mounting Holes Used for Heater Installation

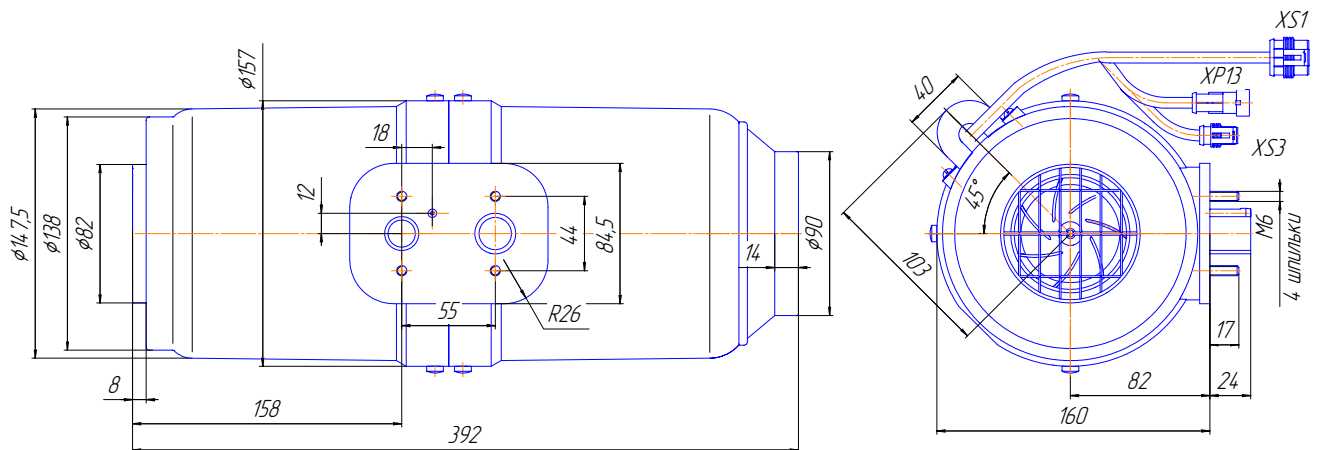


Figure 8.3- Heater dimensions

8.2 Air Inlet Installation

Do not allow combustion air to be sucked in from the passenger compartment or vehicle cabin or boot. Position the pipe's air inlet vent to prevent snow entering or choking the pipe and to allow incoming water to run off. Ensure the vent is not facing oncoming air.

8.3 Exhaust Pipe Installation

When installing the exhaust pipe, be mindful of its high operating temperature. Cut the exhaust pipe (a flexible corrugated metal hose) to size. Fix the exhaust pipe in place using clamps and position it at a slight angle following the trajectory of gas flow. To protect some parts of the vehicle (electric wiring and other harness) from high temperatures, there must be heat insulation installed. (pos.9, fig.6.1)

To achieve a tight fit, prior to connecting the exhaust pipe to the heater pipe, make a saw-cut of about 15mm along the length of the exhaust pipe without going beyond the gripped part of the pipe. Ensure that the end of the exhaust pipe does not come into contact with the rubber seal of the heater. Direct exhaust gas outside. Position the gas outlet vent and the air inlet vent in such a way as to prevent exhaust gas from entering the combustion chamber. Ensure that exhaust gas does not enter the passenger compartment of the vehicle and that it does not get sucked in through the vehicle fan.

Do not allow exhaust gas to affect the performance of vehicle components. Position the exhaust pipe outlet vent so as to prevent snow entering or choking the pipe and to allow incoming water to run off. At the vent of the exhaust pipe the screen is installed, this necessary for stable operation of the heater while working low idle. If the screen is not installed, install it according fig.6.1 **Ensure the vent is not facing oncoming air.**

8.4 Installation of Heater Fuel Supply System

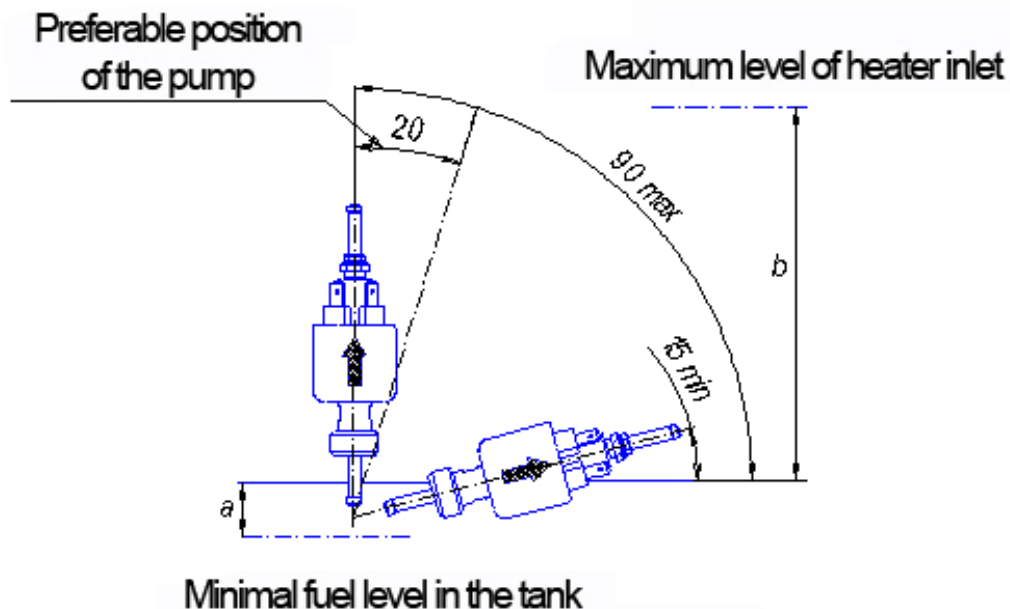
8.4.1 installation of Heater fuel pump

To prevent emergency situations, follow these instructions carefully.

The fuel supply pump should be mounted as close to the fuel tank as possible and positioned below the tank's lower fuel level.

To prevent the possibility of fuel leaking out of the tank (due to gravity flow) as a result of faulty sealing of the fuel supply pump, the fuel tank should be positioned in such a way that the maximum fuel level is below the incision in the heater fuel tube.

The spatial position of the fuel supply pump must comply with Figure 8.4 (preferably in a vertical position).

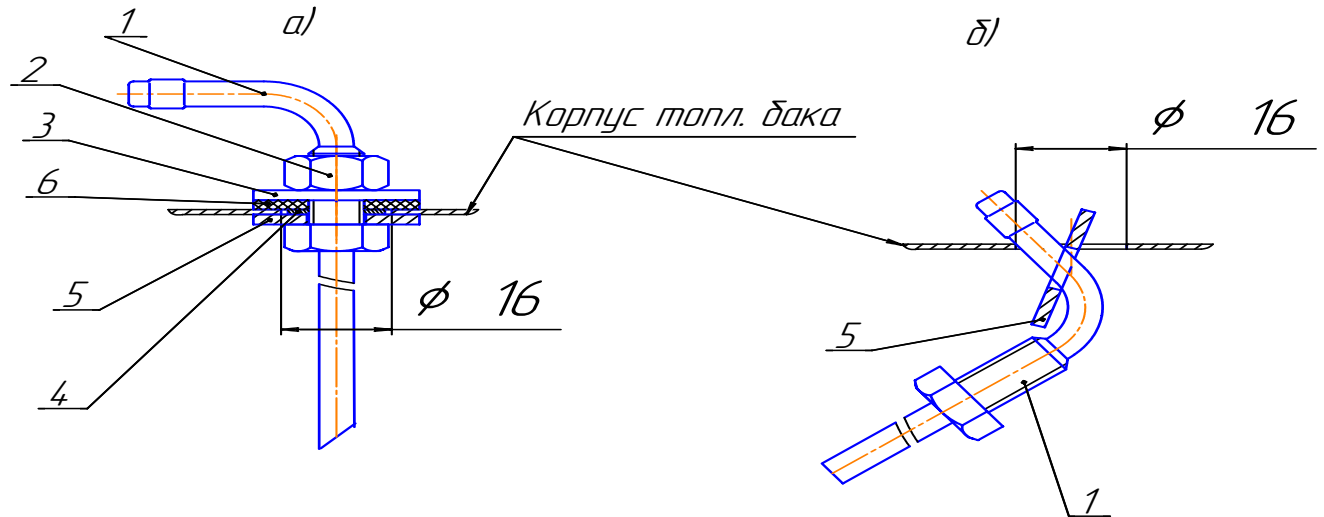


a – lift height up to 700 mm; b – delivery lift between fuel supply pump and heater up to 1500 mm.

Figure 8.4- Permissible Mounting Position of Fuel Supply Pump

8.4.2 Fuel intake through fuel supply intake.

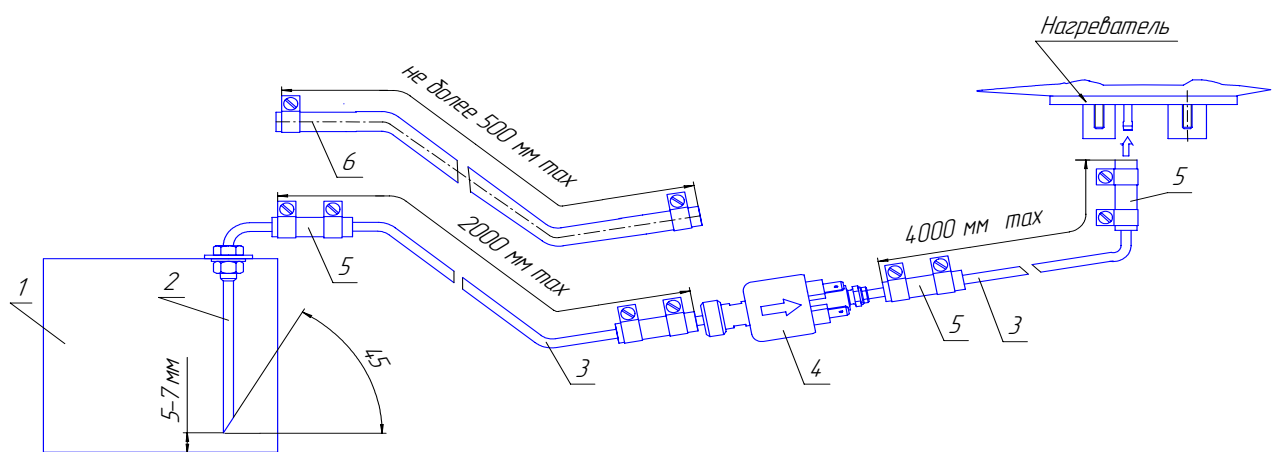
Fuel can enter the heater through a fuel supply intake from the fuel tank according to fig.8.5. a) Perform installation of special washer with fuel supply intake to the tank inlet according to fig.8.5,b) Perform installation of the fuel supply line from fuel supply intake to the heater according to fig.8.6.



- 1 - fuel supply intake
- 2- nut 8
- 3- washer 8

- 4-washer 8
- 5- special washer
- 6-gasket

Fig 8.5 – Fuel supply intake installation



- 1 - liquid phase heater fuel tank

- 4 - fuel pump

- 2 - fuel supply intake of liquid phase heater
- 5 - sleeve

- 3 – fuel supply line d=2mm

- 6 – fuel supply line d=5mm

Figure 8.6 – Installation Diagram for Heater Fuel Supply System Using a fuel supply intake

When installing the fuel supply line, do not allow connecting sleeves to bend. Use a sharp knife to cut the fuel tube as in Figure 8.7. The cutting location shall be free of indentations, hairs and must not restrict flow through the tube.

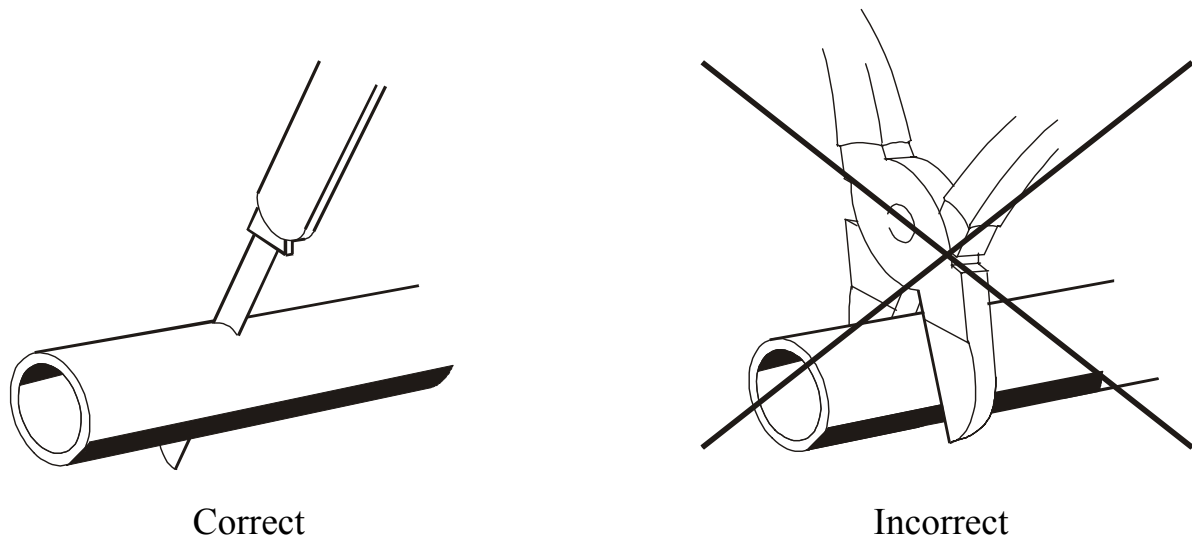


Figure 8.7 – Tube Cutting Prior to Installation

ATTENTION 1. Do not allow the fuel supply line or fuel supply pump to overheat. Do not install the fuel supply line and fuel supply pump near the exhaust pipe or on top of the engine.

2 The fuel supply line connecting the fuel supply pump to the heating element of the heater should be installed at the same lifting angle.

8.5 Installation of Heater Electric Circuit

Heater wire harnesses shall be installed in compliance with the heater wiring system as shown in Figure 4.1. When installing, do not allow the wire harnesses to become overheated, deformed or dislodged during vehicle use. Attach the harnesses to the vehicle fittings using plastic clamps.

Attention! Remove the fuse prior to installation.

8.6 Control Panel Installation

Install the control panel on to the dashboard in the cabin or passenger compartment of the vehicle. Attach the Control panel with the help of adhesive tape. Degrease the surface on which the panel is installed and remove protective film from the adhesive tape.

9 Post-installation Testing

9.1 When installing, ensure that:

- the fuel supply lines of the fuel supply system are leak-proof and all clamps are securely tightened,
- the electric contacts of the harnesses and heater elements are securely installed,
- the shift knob located on the control panel is turned to the far left position by being turned anti-clockwise as far as it will go following the click.

9.2 Install fuse 25A .

9.3. Fill the fuel pipe system with fuel with the help of fuel pumping device(fuel pumping device VIIT-1 can be ordered at manufacturer).After filling the system check that the fuel pump system is not leaking.

9.4 Check that the heater is working :

- in ventilating mode,
- in heating mode.

The process of activation begins with purging of the combustion chamber. After purging the process of combustion begins and the heater goes on working in operation mode.

9.5. Deactivate the heater. While switching off the heater the fuel stops entering and the process of ventilation of the combustion chamber and heat exchanger starts.

9.6 Activate the heater while the vehicle engine is running and ensure that the heater is operational.

ATTENTION! 1 When performing initial ignition following installation, the fuel supply line should be filled with fuel using a fuel pumping device until the fuel level reaches the inlet plug of the heater. If there is no pumping device, restart the heater as many times as necessary to fill the fuel supply line.

2 Remember that each time the heater fails to start at the first attempt, the heater will be restarted automatically by the control unit. If the heater is not activated after 2 attempts, there will be malfunction code on the Control panel.

10. Recommendations

10.1 To ensure consistent performance, the heater should be switched on for up to 5 minutes each month throughout the year (warm seasons included). This will prevent the moving parts of the fuel supply pump from sticking,(which may be caused by leaving the heater movable fittings in low-quality fuel for a long period of time).

10.2 Reliable performance depends on the type of fuel used depending on the atmospheric temperature.

10.3 An untimely switch to a winter type of fuel may cause a paraffin blockage in the fuel inlet tube filter (if applicable) located in the fuel tank and in the fuel supply pump filter, which may prevent the heater from starting or cause it to stall in mid-operation.

To fix breakdowns, proceed to the following steps:

a) change the fuel in the fuel tank as according to the ambient temperature,
 b) If the heater does not operate properly once the fuel was changed according to the temperature , check the fuel supply pump filter as follows:

- remove the fuel supply pump from the vehicle; using a wrench (F/A 17), fix the pump in place, unscrew the pipe stub and remove the filter (see Figure 10.1). Do not fix the pump in place using surfaces other than Surface A when removing and installing the pipe stub,
- rinse the filter in gasoline and blast it with compressed air,
- install the filter into the fuel supply pump; use sealant when installing the pipe stub,
- install the fuel supply pump and check if the heater works.

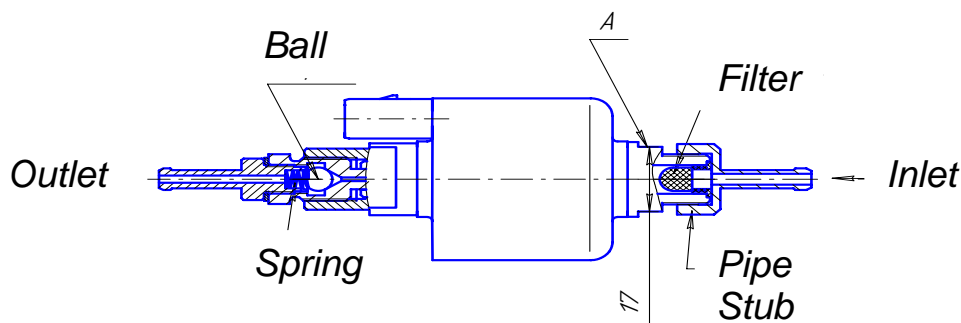


Figure10.1

10.4 Check **the battery charge level** on a regular basis.

10.5 While operation Control unit program failure is possible. For example, the heater is not activated or deactivated, does not come to sufficient heating power. To fix the failure it is necessary to disconnect the blocks on the power supply harness XP13 and XS13(fig.4.1) for 1-2 min.

10.6 While long storage of the vehicle it is recommended to switch off the heater from the vehicle battery to avoid its discharging (current consumption in non operation mode 30-40 mA)

11. Remedial Procedure for Heater Ignition Problems

11.1 Certain problems may be solved without contacting a maintenance station. If the heater does not operate when switched on, proceed to the following steps:

- 1) Check the fuel level in the tank and in the fuel supply line beyond the fuel supply pump,
- 2) Check fuse 25A,
- 3) Check to see that all the contacts of the connectors and the fuse block are securely joined (contact corrosion is possible),
- 4) disconnect blocks XP13 and XS13 of the power supply harness connector (fig 4.1) for 1-2 min and then connect them.

11.2 All other types of heater malfunction will be indicated automatically on the control panel according to the malfunction code.

11.3 If there are malfunctions except those specified in 11.1 does not remedy any of the problems that you may be having, please contact an authorized maintenance station.

12 Transportation & Storage

12.1 The heaters are safe to transport and may be transported by any means of transport, including air and rail transport providing the packed products are protected from atmospheric precipitations and climatic factors as per requirements specified in Section 5 of GOST 15150-69 and mechanical effects as per requirements specified in Category S of GOST 23216-78.

12.2 As far as climatic factors are concerned, transportation and storage conditions shall comply with storage requirements set out in Section 5 of GOST 15150-69.

13 Warranty

13.1 The heaters carry a warranty period of 18 months from the date of sale and have a warranty lifetime of 1,000 hours or 45,000 km in terms of vehicle mileage, provided that the Consumer observes the rules of use, transportation and storage specified herein.

13.2 If there is no organization stamp specifying the date of sale, the warranty period begins from the date of the heater's manufacture.

13.3 During the warranty period, all defects occurring through the Manufacturer's fault will be repaired by the personnel of authorized car-care centers, using the necessary spare parts provided free of charge by the Manufacturer.

13.4 The Manufacturer does not accept any liability for incomplete delivery or any mechanical damage occurring after sale.

13.5 The following defects and damages are excluded from warranty coverage:

- all defects and damages caused by force-majeure such as lightning strike, fire, flood, excessive voltage fluctuations, car accident, etc.,
- all defects and damages caused by violation of rules of installation, use, storage and transportation specified herein,

- all defects and damages caused by installation, repairs or commissioning of the heater performed by persons or organizations unauthorized by the Manufacturer to perform the said operations,
- improper use of the heater.

14 Packing Certificate

The PLANAR – 4D-12 heater

serial No. _____
has been packed by the Manufacturer LLC Advers in compliance with the requirements set out in the applicable specifications.

Date of Packing _____

Performed by _____ Signature

Accepted by _____ Signature

Stamp here
Technical Inspection Department

15 Acceptance Certificate

The PLANAR – 4D-12 heater

serial No.,

Program Code....., has been manufactured and accepted in compliance with Specification TU 4591-008-40991176-2005 and applicable specifications and declared ready to use.

Manufacture Date

Stamp here
Technical
Inspection

.....
(SPA’s Signature)

16 Vending and Assembly Certificate

16.1 The PLANAR – 4D-12 heater

serial No.

Point and Date of Sale.....

Stamp
here (Vendor’s Signature)

By signing below I confirm that I have read, understood and agreed to all of the above terms & conditions of this warranty, and have read and understood the provided Operation Manual, and that the product does not have any cosmetic damage, and that all components within the scope of supply are in place:

.....
(Purchaser’s Signature)

16.2 The heater has been installed and tested:

on Motor Vehicle (make / model / license no.) -

owner -

organization -

Stamp
here (SPA’s Signature)

Limited Liability Company
Advers
11 Lesnaya Street, Samara, 443100 Russia
Tel. (846) 270-65-09, Fax (846) 270-68-65

Certificate No 2
Warranty Repairs for PALNAR- 4D-12

Serial No..... Manufacture Date.....

Date and Point of Sale

Stamp here (SPA's Signature)

Date and Point of Assembly

Stamp Here (SPA's Signature)

The following operations have been performed to repair the following defect:

.....
.....

Performed by
(Initials and Signature)

Stamp here Manager
(the name of the Repairer)

.....
(SPA's Signature)

Owner
(Signature)



Certificate No 1

Warranty Repairs for PALNAR- 4D-12

Serial No..... Manufacture Date.....

Date and Point of Sale

Stamp here (SPA's Signature)

Date and Point of Assembly

Stamp here (SPA's Signature)

The following operations have been performed to repair the following defect:

.....
.....

Performed by
(Initials and Signature)

Stamp here Manager
(the name of the Repairer)

.....
(SPA's Signature)

Owner
(Signature)

Counterfoil to Warranty Certificate No 2
Warranty Repairs for PALNAR- 4D-12
on Performed by
(Date) (Initials and Signature)

Counterfoil to Warranty Certificate No 1
Warranty Repairs for PALNAR- 4D-12
on Performed by
(Date) (Initials and Signature)

