



AIR NIGHT HEATER

TECHNICAL SPECIFICATIONS
installation, operation and maintenance instructions



USER MANUAL

A RELIABLE ENERGY SAVING AIR NIGHT HEATER !

This manual contains the products structure and installation instructions.

Please read the instructions carefully before installing and using, to ensure the correct usage.

Please keep safe for future reference.

Attention!

- **The manual contents may incur some changes without being notified, but will still comply in accordance with the product.**
- **Please contact us directly if you have any queries.**
- **After opening the product, please check the main equipment and spare parts according to the packing list.**
- **Please contact the distributor if there are any problems as soon as possible**
- **Please keep the warranty card safe, as this is the only valid credential of after-sale service.**

Thank you for purchasing our air night heater

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TABLE 1

Packing List (PFJ-2D-12/ PFJ-2D-24)									
No.	Name	Specification	Unit	Quantity	No.	Name	Specification	Unit	Quantity
1	Main equipment	12V/24V diesel	Set	1	13	Intake (exhaust) pipe clip	German hose clamp (t)28mm	Piece	2
2	Main wire harness	Fuse (20A)	Set	1	14	Fixing clip for intake (exhaust) pipe		Piece	4
3	Fuel pump	12V/24V (22mL)	Piece	1	15	Fuel tank	IOL/5L	Piece	1
4	Diverter	12V/24V (22mL)	Piece	2	16	Gasket	(018mm x (06.5mmx 1.5mm	Piece	9
5	Control switch and wire harness	60mm	Piece	1	17	Nut		Piece	4
6	Fuel filter		Piece	1	18	Self-drilling tapping screw	ST5.5 x 25mm	Piece	8
7	Oil-conveying pipe	Nylon pipe (i) 7mm	Piece	1	19	3M Double-sided back foam	45mm x 35mm x 2mm	Piece	1
8	Air inlet pipe	(025mm x 600mm	Piece	1	20	Nylon cable ties	200mm	Piece	5
9	Exhaust pipe	(025mm x 600mm	Piece	1	21	Air inlet hood		Piece	1
10	Air duct	(t)60mm x 600mm	Piece	2	22	(060 air duct clip	(t)80mm - (0100mm	Piece	2
11	Gasket		Piece	1	23	Tee	Ø90/75mm	Piece	1
12	Dead plate		Piece	1	24	Fuel pipe clip	(t)32mm	Piece	1

TABLE 2

Packing List (PFJ-4D-12/PFJ-4D-24)									
No.	Name	Specification	Unit	Quantity	No.	Name	Specification	Unit	Quantity
1	Main equipment	12V/24V diesel	Set	1	13	Intake (exhaust) pipe clip	German hose clamp (t)28mm	Piece	2
2	Main wire harness	Fuse (20A)	Set	1	14	Fixing clip for intake (exhaust) pipe		Piece	4
3	Fuel pump	12V/24V 28mm	Piece	1	15	Fuel tank	IOL 5L	Piece	1
4	Diverter	(090/75mm	Piece	1	16	Gasket	(018mm x (t)6.5mmx 1.5mm	Piece	9
5	Control switch and wire harness		Piece	1	17	Nut		Piece	4
6	Fuel filter		Piece	1	18	Self-drilling tapping screw	ST5.5 x 25mm	Piece	8
7	Oil-conveying pipe	Nylon pipe (i) 7mm	Piece	1	19	3M Double-sided back foam	45mm x 35mm x 2mm	Piece	1
8	Air inlet pipe	(025mm x 600mm	Piece	1	20	Nylon cable ties	200mm	Piece	5
9	Exhaust pipe	(025mm x 600mm	Piece	1	21	Air inlet hood		Piece	1
10	Air duct	(090/75mmx 600mm	Piece	1	22	(090 air duct clip	(080mm - (0100mm	Piece	2
11	Gasket		Piece	1	23	Tee	Ø90/75mm	Piece	1
12	Dead plate		Piece	1	24	Fuel pipe clip	(t)32mm	Piece	1

Overview

The main equipment of an air night heater is a small burner tube controlled by a single-chip microprocessor. It's furnace body (heat exchanger) is located in the hood-shape case, which serves as an independent air passage. Cold air is sucked into the air passage by the heat fan and blown out when it becomes hot, therefore forming another heating system that is independent to that of the vehicle. Heat can then be supplied by the heater to the driver 's cab and passengers' compartment, no matter if the engine is working or not. The schematic diagram is shown in **IMAGE 1**. The heater is fully automatically controlled, and it has many advantages such as compact structure, easy installation, energy saving, environmental protection, safety, reliability, and simple maintenance.

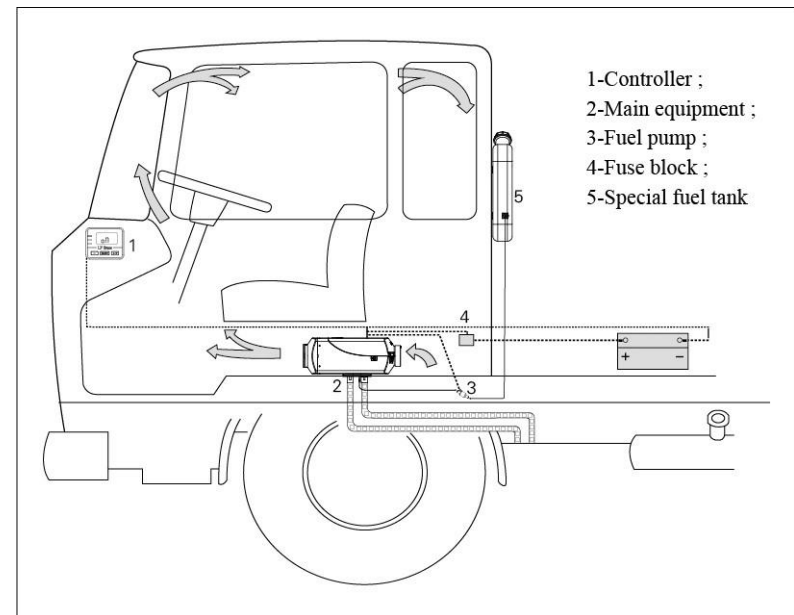


IMAGE 1

PAGE 4

Main Technical Parameters

Please refer to **TABLE 3** and **Table 4** for the main technical specifications.

TABLE 3

Item No.	PFJ-4D-12/PFJ-4D-24
Thermal Power	4000W
Fuel	Diesel
Rated voltage	12YT/24v
Fuel consumption	0.15—0.55 L/h
Rated power	40W
Operating (ambient) temperature	-400C+400C
Weight of the main equipment	4.45 kg
Dimension	372x141x150 mm

TABLE 4

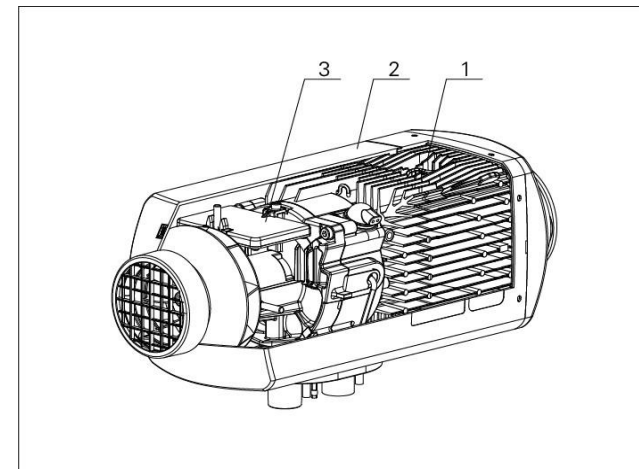
Item No.	PFJ-2D-12/PFJ-2D-24
Thermal Power	2000W
Fuel	Diesel
Rated voltage	12YT/24v
Fuel consumption	0.12—0.21 L/h
Rated power	40W
Operating (ambient) temperature	-400C+400C
Weight of the main equipment	4.45 kg
Dimension	310x1 16x122 mm

Structure and Work Principle

The structure of the main heater is as shown in **IMAGE 2**.

1. Heat exchanger
2. Casing / hood cover
3. Control unit

IMAGE 2



PAGE 5

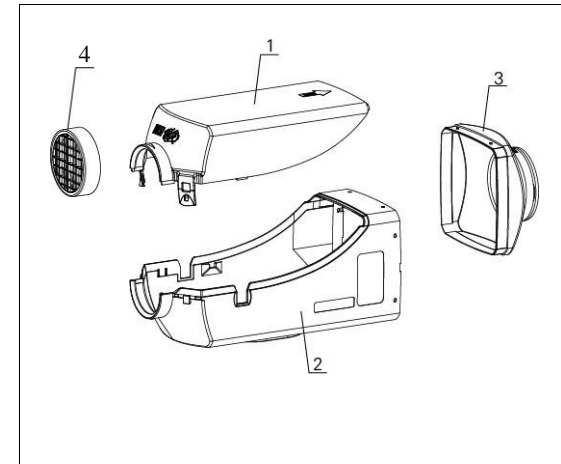
Case

The case structure of an air night heater is as shown in **IMAGE 3**. The Blade wheel on the heating fan and on the fan motor (the same motor for the combustion-supporting fan) sucks in cold air from the air inlet and delivers the air after being heated by the heat exchanger and then out through the hot air outlet.

Controller (circuit board)

The controller is mounted on the rear side of the heating fan. After start-up it will automatically control and monitor the entire working procedure of the heater and the implementation of fault protection functions according to the pre-programmed procedures.

IMAGE 3



1-Top hood cover 2-Bottom hood cover 3-Hot air outlet 4-air inlet hood

Fault Lock

The heater will automatically shut down and go into the locking state for protection, if the following conditions happen: 1) The heater cannot be ignited or will not work naturally after being ignited 2) An open circuit or short circuit happens to the glow plug, fan motor, fuel pump or sensors etc. 3) Overheat of the heat exchanger, flame out, unsuccessful ignition, abnormal voltage. To override the fault lock, turn the control switch off for more than 3 seconds and then restart it.

Circuit Interfaces

The following circuit interfaces can be found on the controller outer case: X1 for glow plug/flame sensor socket, X2 for overheating sensor socket, X3 for fan motor socket. Please refer to **IMAGE 4** for their locations

Sensors and safety protection

Flame sensor / glow plug

This component has dual functions, when it works as the flame sensor it can monitor the temperature of the furnace cavity. It is also used to judge whether the furnace is ignited or not in the ignition stage. In normal working conditions it helps to judge whether the flame is burning continuously or not.

Overheating Sensor

The overheating sensor is installed on the outer wall of the middle of the heat exchanger. When the exchanger's temperature is over 210 °C for a long time the controller cuts off the fuel pump circuit, stops the fuel supply, and then shuts down the heater to protect the system from overheating.

Temperature Sensor

The temperature sensor is plugged into the corresponding socket on the controller. It measures the air temperature at the air inlet and according to this temperature the controller changes the working status of combustion furnace to adjust the output power.

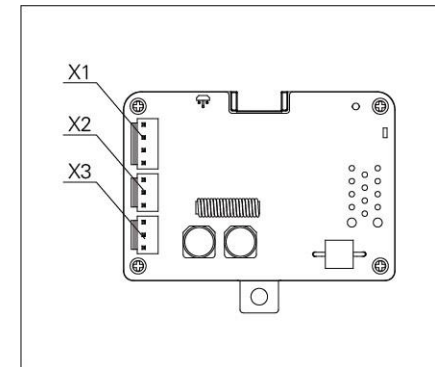
Power Supply

The heater shares the power supply with the car's engine, or secondary battery but with a separate fuse. When the power supply voltage is lower than the specified lower limit value or higher than the specified upper limit value, the heater will automatically report the fault.

Fuel Supply

The fuel used by the heater can be supplied by a special fuel tank. Fuel delivery and fuel supply adjustment is via a fuel pump from vehicle tank or separate tank.

IMAGE 4



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Installation

Only approved heating parts can be used for installation of the heater. **IMAGE 5** is the diagram for installation. The positions and fixing ways of various parts may vary for different types of vehicles, but the general principles must be followed to conform with the requirements of this chapter. Otherwise the heater may not work normally and safety problems may occur.

Requirements for installation and places of application of the air night heater

The air night heater must **NOT** be near or in direct contact with inflammable or explosive substances (such as flammable gas or flammable dust).

Do **NOT** use the air night heater in any closed spaces (such as garages or maintenance workshops) without proper air ventilation. As you run the risk of carbon monoxide poisoning.

Do **NOT** install or use the air night heater indoors.

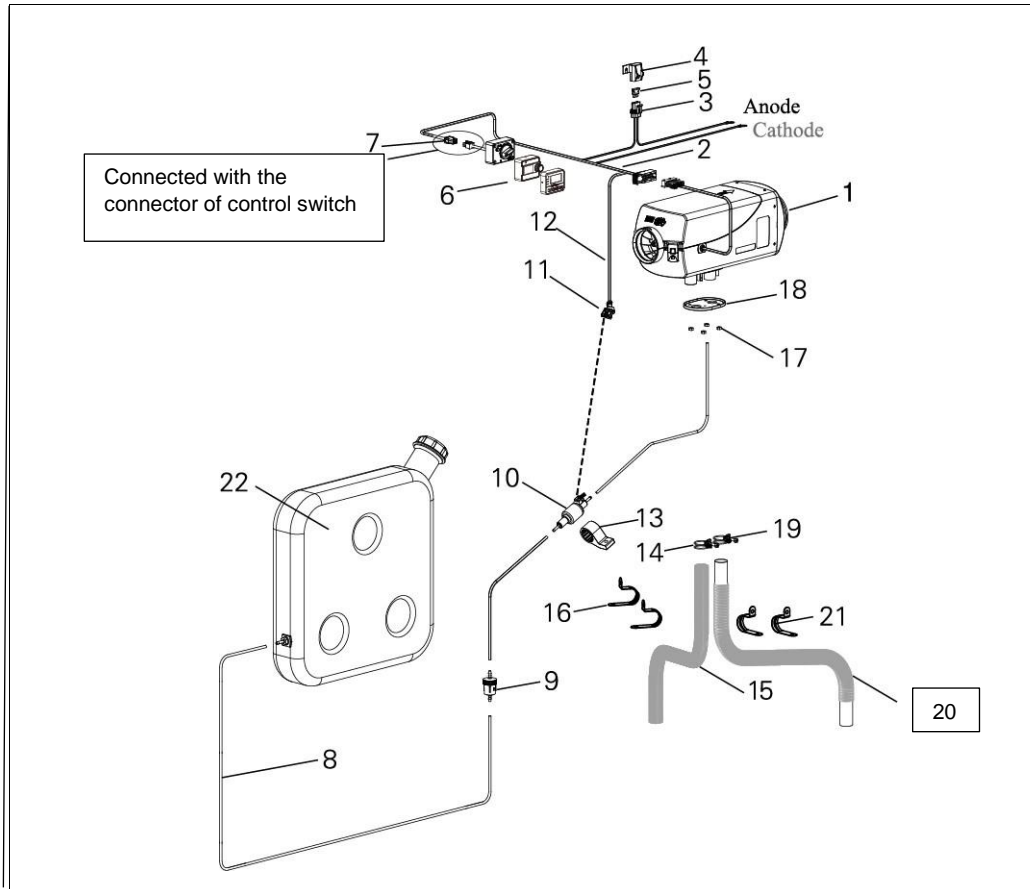
If the heater is installed in a special – purpose vehicle (such as a vehicle to deliver dangerous goods) pet - reg rules must be followed when installing.

Do **NOT** place the air night heater near any of the following: fuel tank, compression tank, fire extinguisher, paper or clothing.

Also avoid placing near hot air vents.

Installation Diagram

Image 5



- 1- Heater
- 2- Main harness
- 3- Fuse holder
- 4- Fuse box cover
- 5- Insert disk fusing
- 6- Control switch
- 7- Connector for control switch X9
- 8- Fuel pipe
- 9- Fuel filter
- 10- Fuel pump
- 11- Fuel pump connector
- 12- Pump leading wire
- 13- Fuel pump clamp
- 14- Air inlet pipe clamp
- 15- Air inlet pipe
- 16- Air inlet pipe fixing clamp
- 17- M6 nut
- 18- Gasket
- 19- Exhaust pipe fixing clamp
- 20- Exhaust pipe
- 21- Exhaust pipe fixing clamp
- 22- Fuel tank

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Installation of the main equipment

The main equipment can be installed inside or outside of the vehicle, but when it is installed outside of the vehicle a shield can prevent the damage from external forces (such as stones and debris).

The heater should not be immersed in water or soaked by rain. If the heater is corroded by rain and water, please stop using the heater immediately and let a qualified technician inspect all components.

To ensure heating airflow and easy access of the main equipment, enough space must be provided on installation. Please refer to the scope of double dot line for the space of installation, as shown in **IMAGES 6 and 7**.

Make sure that there is no interference of objects in the gap between the bottom surface of the main equipment and the mounting surface of the vehicle. As this can damage the blower motor.

(**IMAGE 6 and 7**)

A – Inset of air to be heated

B – Outlet of heated air

C – Inlet of combustion supporting air

D – Discharge of exhaust

E – Fuel inlet

F – None interference area

IMAGE 6

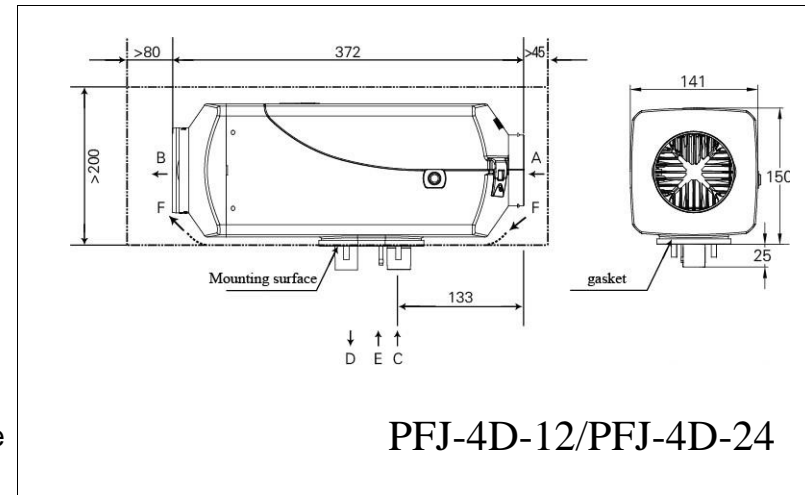
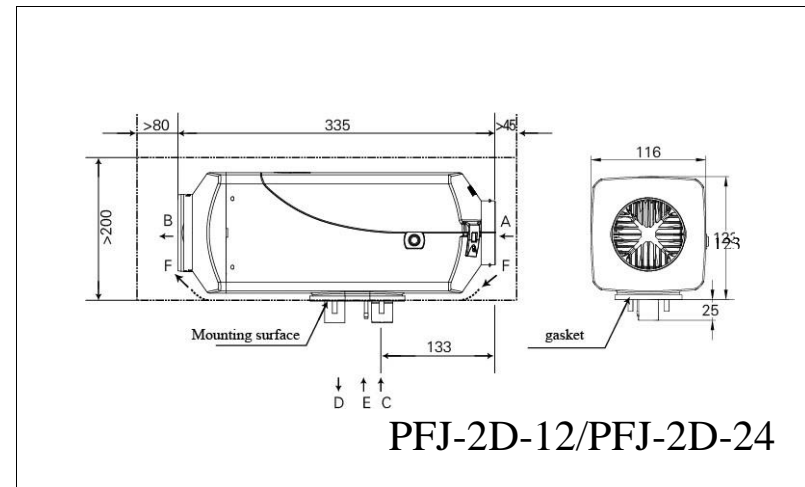


IMAGE 7



PAGE 10

Good sealing is necessary between the main equipment and the installation face on the vehicle. A special gasket (as shown in **IMAGE 8 AND 9**) supplied by the manufacturer must be padded for installation. The installation surface must be even. The parts at the installation bases of the main equipment must not have unevenness more than 1mm. After drilling installation holes, evenness must be improved according to the requirements when installing. Please rotate the four M6 nuts provided by the manufacturer tightly. The torque for tightening should be 6Nm+1Nm. The position of installation holes is shown in **IMAGE 8**.

If the thickness of the installation panel is < 1.5mm, a mounting plate is needed. The gap between the mounting plate and the car body must also be sealed (**IMAGE 9**). Please confirm the actual size with the real product.

NOTE: A new gasket must be replaced when the main unit is reinstalled.

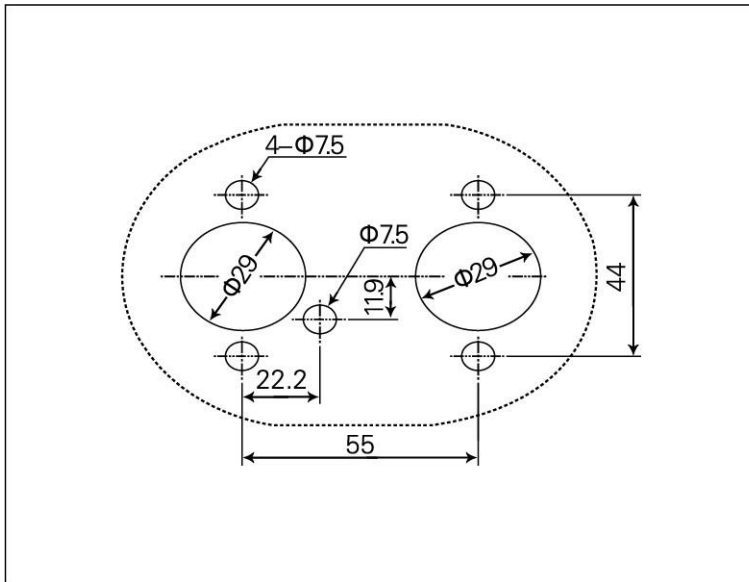


IMAGE 8

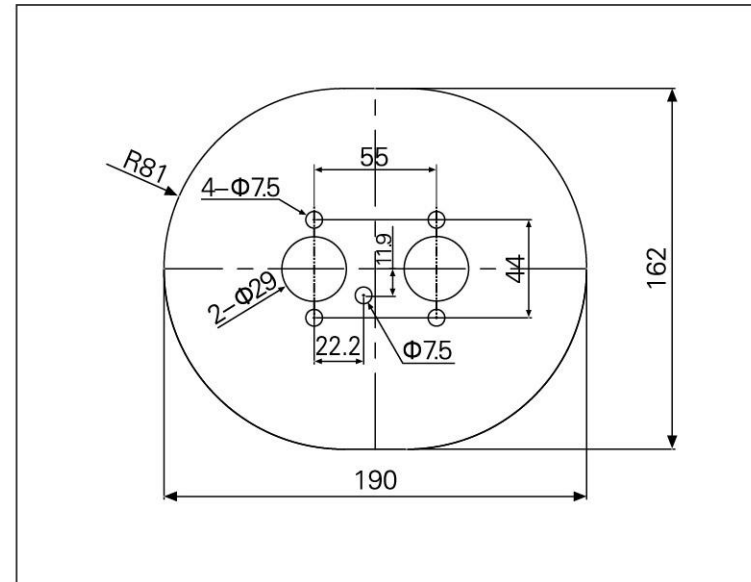


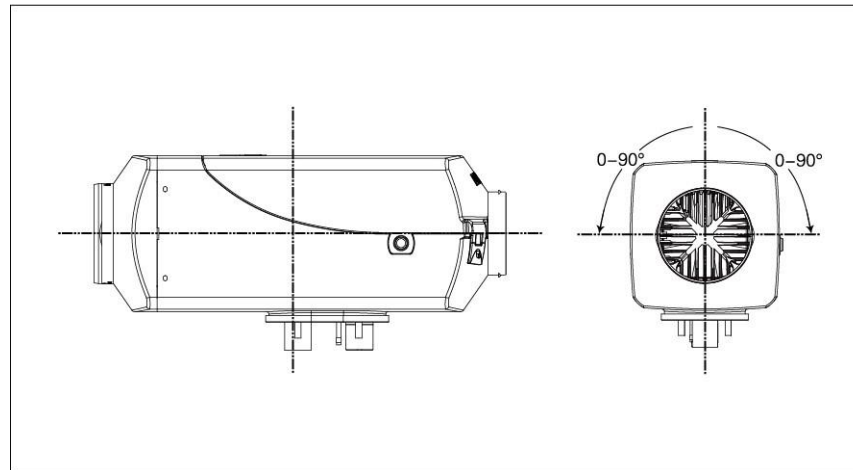
IMAGE 9

PAGE 11

The installation direction of the main heater is as shown in **IMAGE 10**. It must be noted that the tilt angle has to be exactly 90 degrees on both sides, otherwise it will affect the normal operation.

After the installation, it must be checked to ensure that there is no contact or friction between the fan wheel and the surrounding components, to prevent malfunction during operation.

IMAGE 10



Installation of Air Heating System

It's recommended to select an independent air duct system for heater installation. If the air heating system of the heater must be connected with the air duct of the vehicle the air flow should be decided by a professional to ensure the flow is unobstructed.

When an external heating air pipe is attached to the heater, its material shall be capable to resist the temperature of 150°C.

The maximum pressure drop between the air inlet side and air outlet side of the air heating system must not be higher than 0.3kPa.

The hot air from the heating system must not flow onto such parts that are unable to resist heat. In the case of passenger vehicles, measures must be taken to avoid the blockage of the air vent.

For a heater working in internal circulation, measures must be taken to avoid re-entering of the supplied hot air into the air inlet port (as shown in **IMAGE 11**). The inlet air shall be drawn from the cold area of the compartment, such as under the seats or berths. If no air inlet pipe is attached in this mode, an air inlet hood with grids (**IMAGES 3 AND 4**) must be installed at the air inlet port of the main equipment.

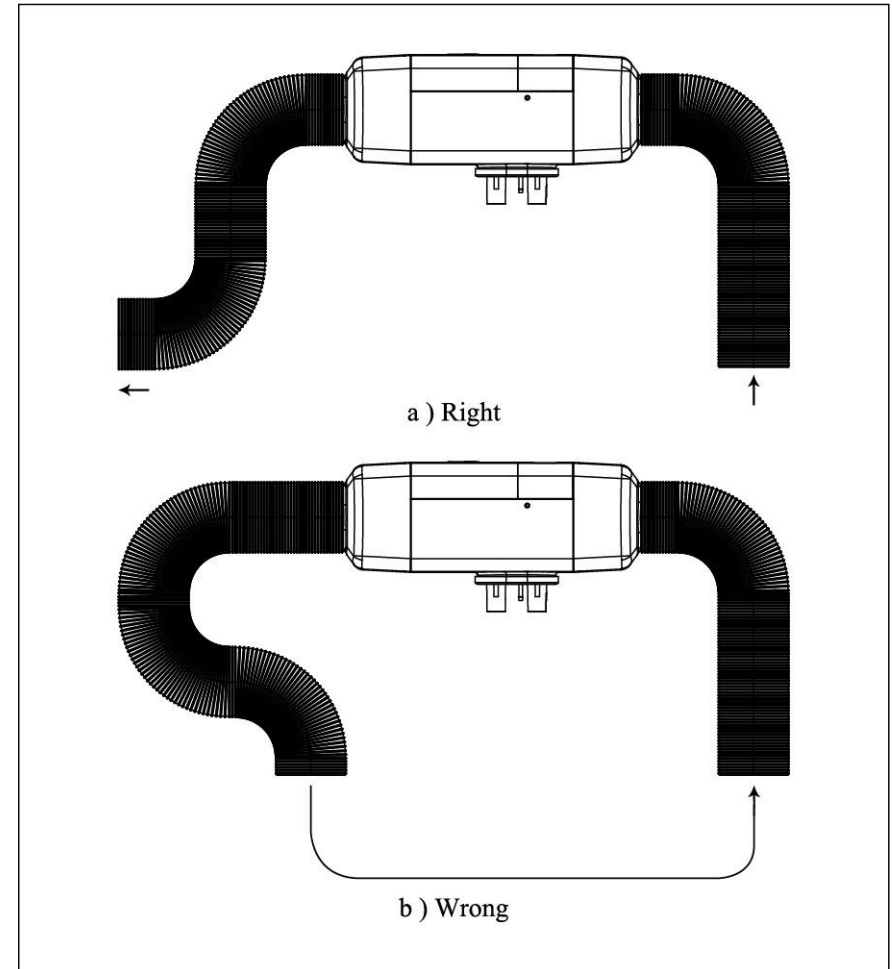


IMAGE 11

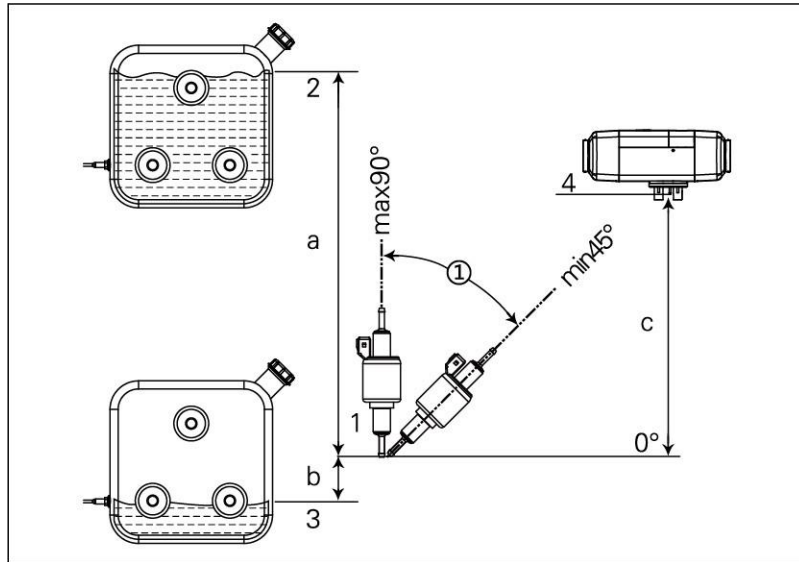
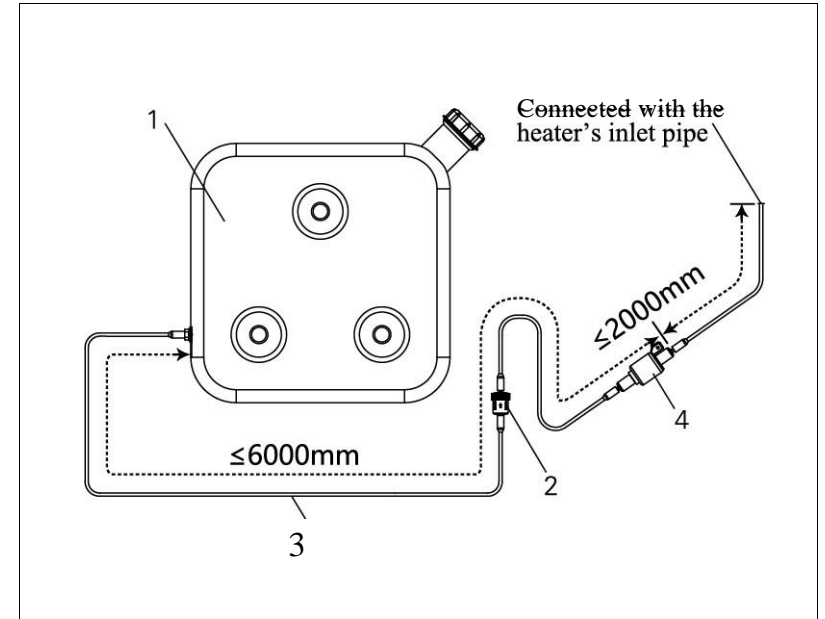
Installation of Fuel Supply System

The fuel supply system for the heater is as shown in **IMAGE 12**.

The fuel pump must be fixed in a protective rubber clamp to eliminate the transfer of vibrations. The outlet of the fuel pump is required to tilt upwards. The tilt angle can be selected from the range of 45 °C -95 °C (as shown in **IMAGE 13**). When conditions permit, the fuel pipe between the fuel pump and the heater shall go up gradually.

The elevation difference between the level of fuel and the fuel pump as well as the elevation difference between the fuel pump and the fuel inlet of the heater, can produce pressure (or suction) in the fuel pipeline (See **IMAGE 13**). Therefore, these dimensions conform to the requirements as follows

$$a \leq 3m; b \leq 0.5m; c \leq 2m$$



NOTE: PLEASE CHECK THE VENT HOLE ON THE FUEL TANK CAP INSTALLATION.

IMAGE 12

- 1- Fuel tank
- 2- Filter
- 3- Fuel connecting pipe
- 4- Fuel pump

IMAGE 13

- 1-Fuel pump
- 2-The highest level of fuel
- 3-The lowest level of fuel
- 4-Fuel inlet level for the main equipment
- (1) -The prior installation angle

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Installation of Fuel Filter

- A fuel filter should be installed before the fuel inlet port of the fuel pump. Make sure that the fuel flow is correctly followed. Its position must be at exactly 90 degrees - in conformity with **IMAGE 14**. The fuel filter should be replaced every 6 months.

Installation of Electrical Components

- Connection diagram of the main wire harness and the heater is as shown in **IMAGE 15**.(PAGE 15)The wires of the main equipment for connection to outside circuits have been made into wire bundles. They can be laid according to the positions of various components and must be fixed in the proper locations. The distance between two fixing points must not exceed 300mm. Please note that any exposed wire bundle out of the vehicle body or out of the wiring groove must be protected by the convoluted pipe.
- Connect the red wire on the fuse box to the "+" terminals of the vehicle's battery; and connect the black wire on the main harness to the "-" terminals of the vehicle's battery.
- Connect the fuel pump leads with the fuel pump.
- Install the control switch in a position for convenient operation. The terminals of the leads of the control switch should be plugged in the socket according to the order as shown in **IMAGE 16(PAGE 16)**, and then connected with the self-locking mechanism to the connector X9 on the main wire harness.
- Each wire end must be wrapped with electrician's insulating tape to avoid short-circuit.

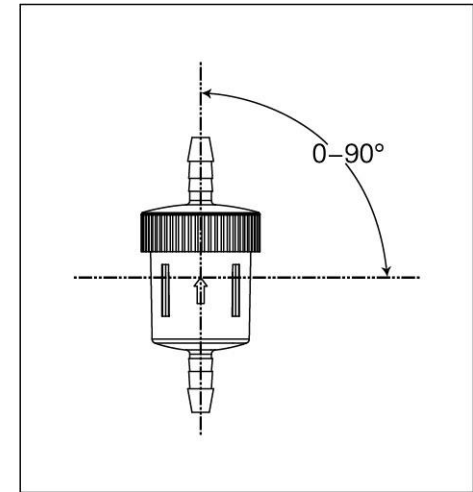


IMAGE14

Installation of Combustion Supporting the Air Intake Pipe and Exhaust Discharge Pipe

- The combustion supporting air must be sucked in from the external fresh air outside the vehicle. The fumes from combustion must be discharged externally through the exhaust pipe. Measures must be taken to avoid the fumes from re-entering the vehicle.
- The pipes go through the outer wall or holes on the bottom of the vehicle. Measures have to be taken to prevent splashes of water entering into the pipes. The pipes must be protected and can resist shock permanently.
- Only the air inlet pipe and exhaust pipe provided with the heater can be used. The air inlet pipe is an aluminium bellow; the exhaust pipe is a stainless steel bellow. They cannot be installed incorrectly or swapped during operation. To connect them with the heater, please use the supplied clamps to fix them tightly on the combustion supporting air inlet and exhaust pipe vent. The protective

hood on the vents of the air inlet pipe and exhaust pipe must be kept intact and must not be damaged or removed.

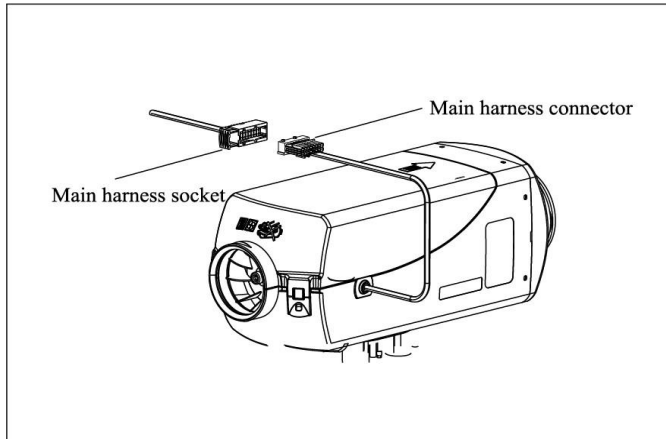


IMAGE 15

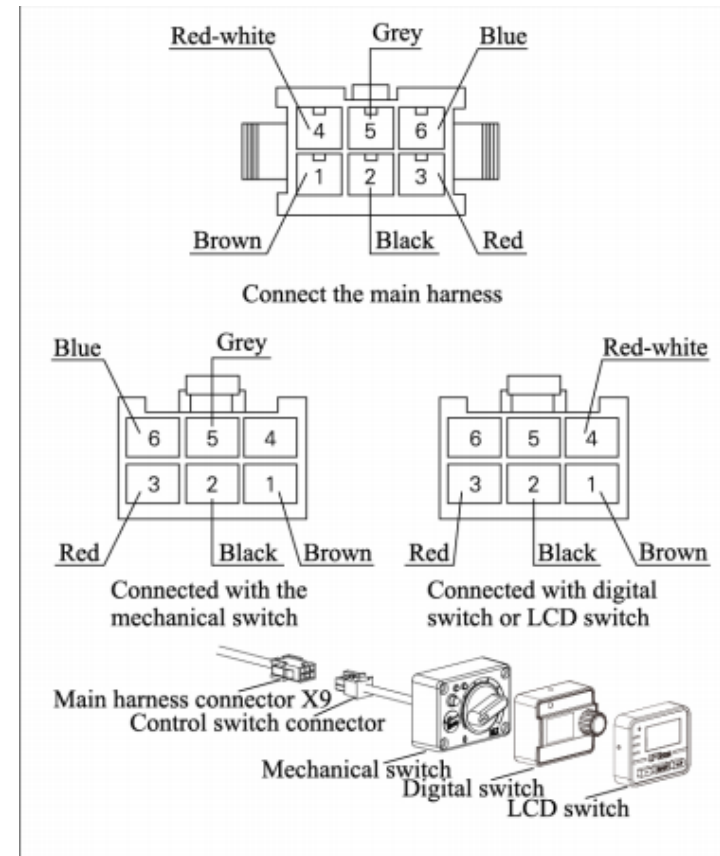
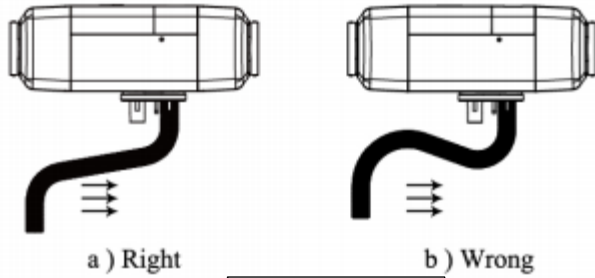


IMAGE 16

Installation Direction Diagram of the Air Inlet Pipe

← The direction of the running vehicle

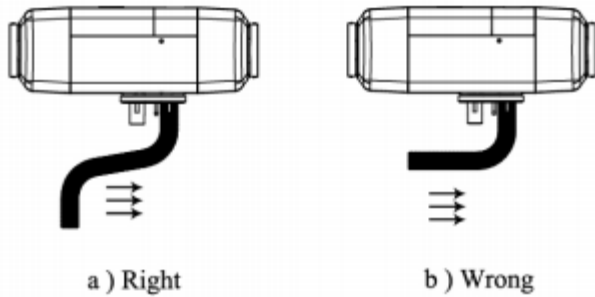


a) Right

b) Wrong

IMAGE 17

← The direction of the running vehicle



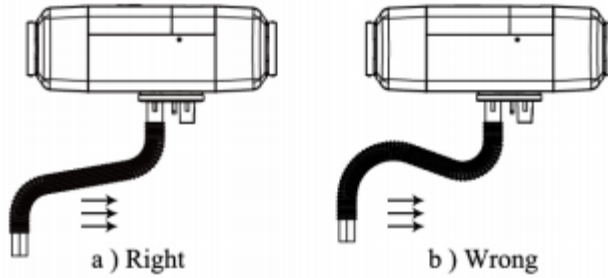
a) Right

b) Wrong

IMAGE 19

Installation Direction Diagram of the exhaust pipe

← The direction of the running vehicle

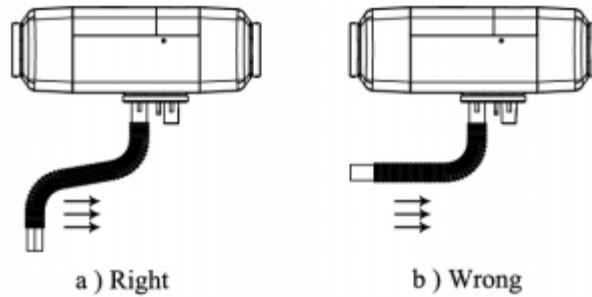


a) Right

b) Wrong

IMAGE 18

← The direction of the running vehicle



a) Right

b) Wrong

IMAGE 20

- Both the air inlet pipe and exhaust pipe must come outwards and downwards from the heater

(IMAGE 17 AND 18)

- Or a $\phi 5\text{mm}$ hole should be prepared at the bottom of the pipe for discharge of condensed water. If the pipe has to be bent, the bending radius of the pipe cannot be less than 50mm. Also the sum off all the curved angles for each pipe must exceed 270° .

- The openings of the pipe must not be opposite to the direction of the running vehicle.

(IMAGE 19 AND 20)

PAGE 17

Arrangement of the pipes must be protected from blocking by slurry, snow or other dirt.

(AS SEEN IN IMAGE 21 BELOW)

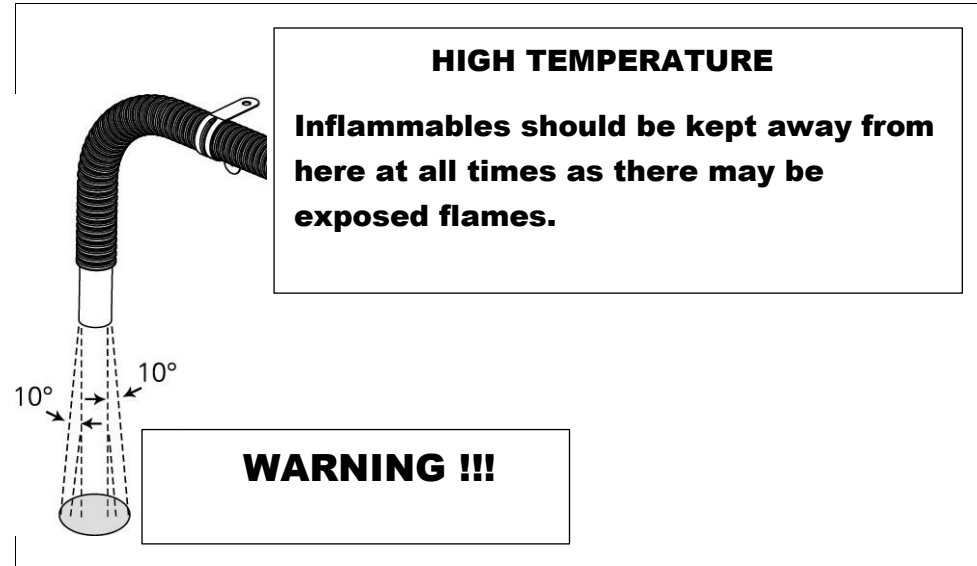
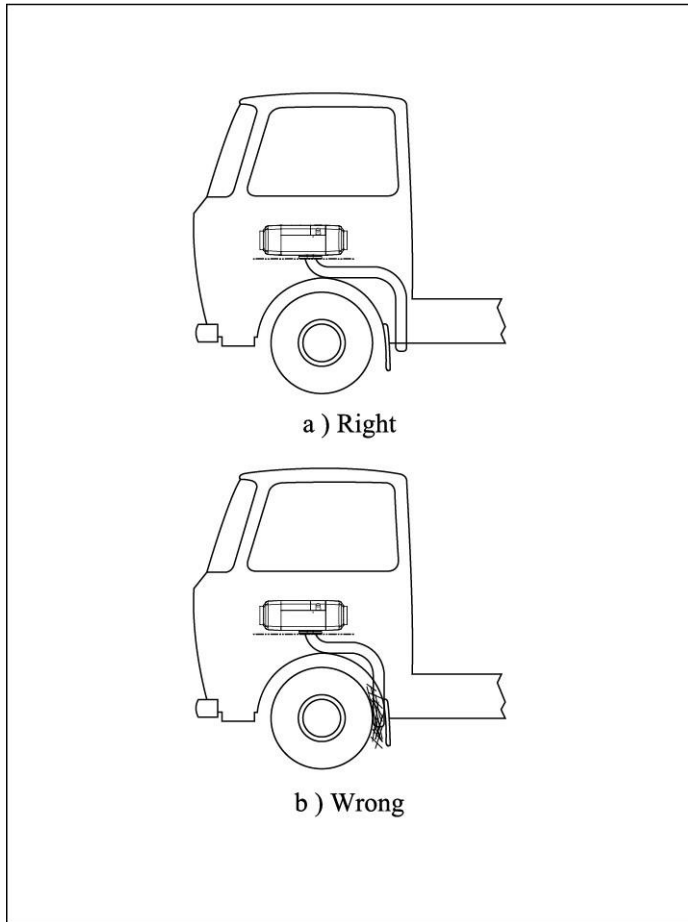


IMAGE 22

When the heater is running, the exhaust pipe is at a high temperature. During installation, make sure to install the pipe away from any plastic parts or other objects with poor thermal resistance. The exhaust pipe must be properly fixed.

The exhaust vent must be downwards, perpendicular to road surface with an angle of $90^{\circ}C \pm 10^{\circ}C$. To ensure an such an angle, the fixing clamp for the exhaust pipe must be within 150mm from the pipe end. (IMAGE 22)

WARNING : VIOLATION AGAINST THE ABOVE REQUIREMENTS MAY CAUSE A FIRE.WE WILL NOT ACCEPT ANY RESPONSIBILITY FOR ANY PROBLEMS THAT MAY OCCUR DURING INSTALLATION,IF YOU HAVE NOT FOLLOWED OUR GUIDELINES.

If the exhaust pipe inside the vehicle is in reach of a passenger, a protective cover has to be installed to prevent human contact and scalding.

Solutions to Common Malfunction

- During use, the heater may be unable to start naturally or cut out after start - up, which would lead to a malfunction locking state. In such cases, you should turn off the heater and keep it in shutdown status for above 3 seconds. Then restart the heater.
- Circuit malfunction might be caused by different reasons, such as corrosion of connectors, poor contact of connectors, wrong connection of wires, corrosion of wires or fuse, corrosion of battery poles, etc. Users need to pay attention to inspection and maintenance to prevent such faults from happening.

Precautions

- After installation of the heater, the air trapped in the fuel supply system must be removed thoroughly to make the fuel line fill up with fuel. Please use the fuel pumping mode until the fuel lines are fully filled with the fuel.
- The heater must be commissioned before use. Carefully check for any leaks and safety conditions of all connections during the test run.
- If there is discharge of dense smoke, irregular combustion noise or a fuel smell is sensed, the heater must be turned off. Please take out the fuse, to make the heater unable to operate. The heater can only be put into use after being repaired by qualified professionals.
- Before each heating season starts, a careful inspection must be performed by qualified professionals for maintenance, details as follows:
 - A)** Check the contamination and foreign matter in the air inlet and outlet.
 - B)** Clean the heater externally.
 - C)** Check if there is any corrosion or loose connection for electric contacts.
 - D)** Check to find any blockage or damage to the air inlet pipe and exhaust pipe.
 - E)** Check to find any leakage on the fuel line.

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FUNCTION AND DESCRIPTION OF THE CONTROL SWITCH

- If the heater is not going to be used for a long period of time, it must be run every four weeks for no less than ten minutes to prevent malfunction of mechanical parts.
- The air inlet port and air outlet vent of the heater must be kept clean and unblocked to ensure the smooth route for air flow, to prevent overheating.

- When replacing low-temperature fuel, the heater should be operated for at least 15 minutes, to fill the new fuel into the fuel line and pump.
- The heater must be turned off before refuelling.

- The heat exchanger should not be used for more than 5 years. After expiration, it must be replaced with genuine parts by the heater manufacturer or its authorised agent. The overheating sensor must also be replaced at the same time.
- If the heater is arranged in the area of passengers, the exhaust pipe from the heater, that discharges fumes, must be replaced with genuine parts when the usage time is reaching 5 years.

- When electric welding is performed on the vehicle, please detach the positive wire from the power supply to the heater then the battery and connect it to earth to protect the controller from any damage.

- During the transportation and storage of the heater, the ambient temperature should not exceed the range of -40°C - + 85 °C range to prevent any damage to electronic components.
- Only authorised customer service stations are allowed to install and repair the heaters, and non-original parts are prohibited from being used to avoid danger.

- The manufacturer **WILL NOT** be responsible for any damage to the heater, if the heater is opened without authorisation or such damage is caused due to installation or operation with violation against the regulations.


Fuel Pumping Mode

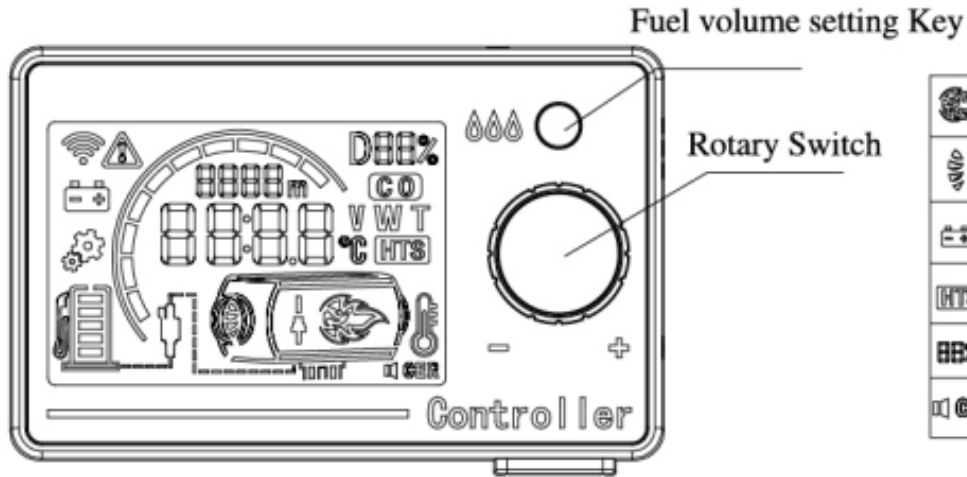
After installation of the heater for the first time, it needs to be filled up with diesel. Only when the diesel is entering the heater from the fuel tank, could the heater be operated successfully.

Operation method

Press and hold the “ **Rotary Switch**” in the shutdown state, the screen lights up and the buzzer sounds once. When the screen displays “ **Polr** “ (**IMAGE 1- PAGE 21**), release the button to enter the fuel pumping mode to start the heater. The fuel pump will enter the state of rapid pumping (500 times of pumping diesel).When the pumping is completed and the diesel enters the heater, the heater will run automatically. If the diesel does not reach the heater, please start the fuel pumping procedure again as described above. The start times of the fuel pumping mode depends mainly on the length of the oil circuit. When pumping diesel, you can observe the progress of the fuel filling in the fuel pipe to judge whether it is normal. **NOTE: THIS PROCESS IS LIMITED TO THE INTIAL INSTALLATION OR NO DIESEL IN THE OIL CIRCUIT. DO NOT USE IT AT ORDINARY TIMES TO AVOID FLOODING THE COMBUSTION CHAMBER.**

Start-up

Click the “ **Rotary Switch** “ in the shutdown state, the screen displays on (**IMAGE 2 - PAGE 22**)(the buzzer sounds once) and the heater is turned on. The screen displays as (**IMAGE 3 AND 4 - PAGE 22**) shows, showing the ambient temperature at the time and the local altitude. Turn the “**Rotary Switch**” at this time to set the power (P1.4kW~P5.0Kw) or temperature (t10°C - t35°C).When the screen shows as (**IMAGE 5 – PAGE 22**), the heater is running normally. **NOTE: WHEN THE HEATER IS RUNNING PRESS “  ”. UNTIL THE SCREEN SWITCHES TO DISPLAY (IMAGES 6,7 AND 8 – PAGE 22) WHEN THE BUZZER SOUNDS ONCE, THE SETTING IS COMPLETED.**



	Heating		Glow plug		Fault
	Fan		Fuel pump		CO Detecto
	Voltage		Shell Temperature		Timing
	Over temperature sensor		Remote control signal		Setting
	Combustion efficiency		Use time (days)		Oil volume
Voice broadcast (C–Chinese E–English R–Russian)					

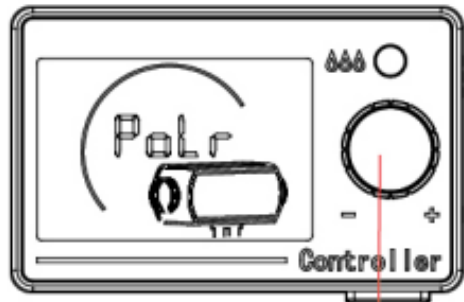


IMAGE 1

Press and hold

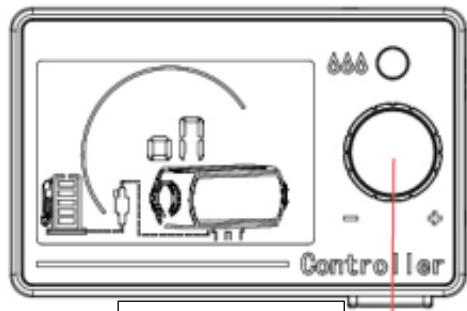


IMAGE 2

Click

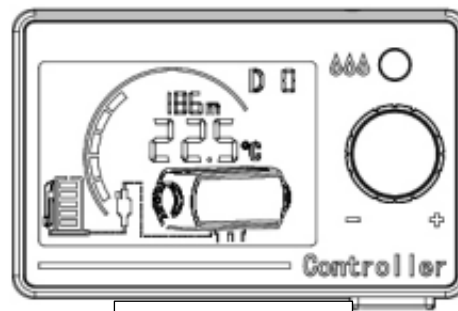


IMAGE 3

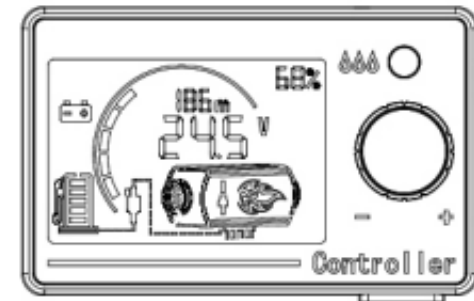


IMAGE 4

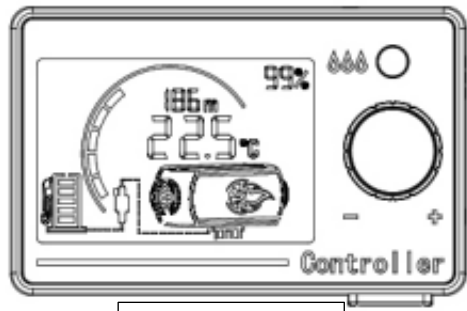


IMAGE 5

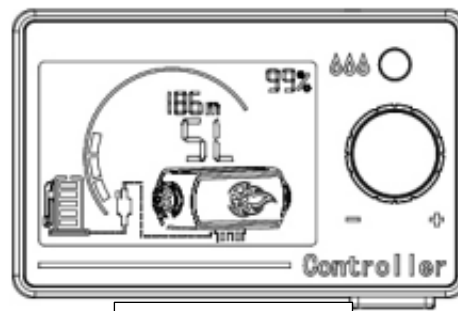


IMAGE 6

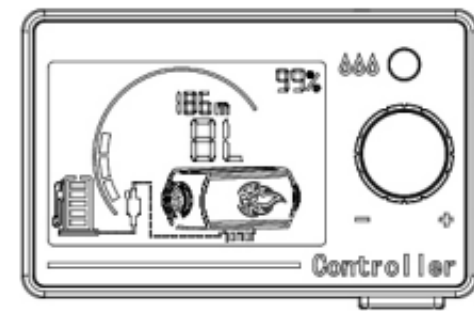


IMAGE 7

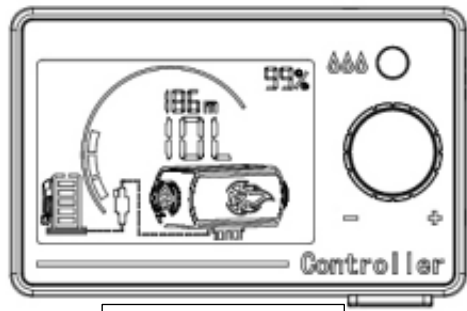


IMAGE 8

Shutdown

When the heater runs normally, press and hold the “**Rotary Switch**”, the buzzer sounds once, the screen displays “OFF” (**IMAGE 9 – PAGE 24**), and the heater enters the shutdown process. When the screen displays ----, the screen is turned off, and the heater stops working.

NOTE: IT IS NOT ADVISED TO CUT OFF THE POWER DURING THE SHUTDOWN PROCESS.


Mode Setting

When the heater is running normally, press the “**Rotary Switch**” to enter the mode setting.

- 1) When the screen displays P1.4~P5, it's the power mode. After setting the power, the heater would not work under the fixed power to heat continuously. (**IMAGE 11 – PAGE 24**)
- 2) When the screen displays 10°C ~35°C, it's the temperature mode. After setting the temperature, the heater would heat under automatic frequency conversion. (**IMAGE 12 – PAGE 24**)

NOTE: THE TWO MODES CAN ONLY BE SWITCHED, AND CANNOT COEXIST, WHICH EVER IS SET LAST.FOR EXAMPLE, THE PREVIOUS SETTING OF THE TEMPERATURE MODE WOULD BE INVALID IF YOU ARE SETTING THE HEATER AT THE POWER MODE.

Abnormalities and faults

“” and “**HTS**” icons flash (the buzzer beeps with high frequency), and E11 (**IMAGE 13 – PAGE 24**) is displayed. This is the fault code (E0~E15). Please refer to the fault code table for processing.(PAGE 25)

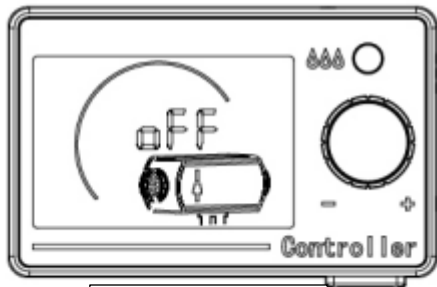


IMAGE 9

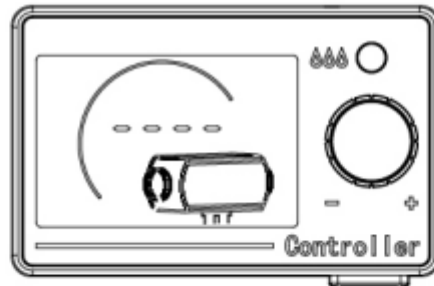


IMAGE 10

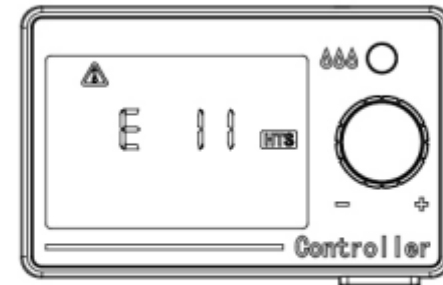


IMAGE 13

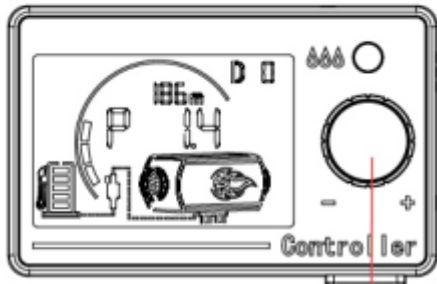


IMAGE 11

Click

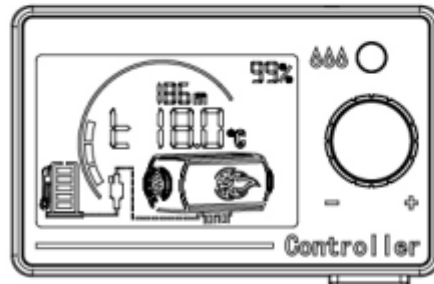


IMAGE 12

PAGE 25

Troubleshooting

Wire harness disconnection of the switch is:

- When turning on the heater, the main screen is black or displays "**Con**", indicating that the wiring harness of the switch is not securely connected, please check:
 - 1) When the red-white wire harness is disconnected, the digital screen will not show anything. After 5 seconds, the "**Circuit Board**" will perform the shutdown process to turn off the heater. The "**Circuit Board**" will take the heater's shutdown as a normal shutdown.
 - 2) When any one of the other three wire harnesses are disconnected, the buzzer will sound continuously, and the screen displays "**Con**". After 5 seconds, the "**Circuit Board**" will execute the shutdown process to turn off the heater. The "**Circuit Board**" takes the heater's shutdown as a normal shutdown. In both variants, make sure that all electrical connections are connected and follow the "**Start-up**" mode.

Sudden power failure is:

- When the heater has just been turned on, and the fuel pump has not started pumping the diesel yet, the 12V/24V power supply is suddenly disconnected. The heater will be powered off directly. The "**Circuit Board**" will take the heater's shutdown as a normal shutdown. Follow the "**start - up**" mode and it will enter into the normal start - up process.
- When the heater is in one of the working modes, the 12V/24V power cord is disconnected. The heater will be powered off directly. The "**Circuit Board**" will take the shutdown as a prohibited shutdown. Follow the "**Start-up**" mode, the "**Circuit Board**" will perform the sweeping process (to clear the residual oil), and the buzzer will sound once, and the screen displays "**Los**". Please wait for a couple of minutes to enter into the normal start-up process.

Abnormal shutdown is:

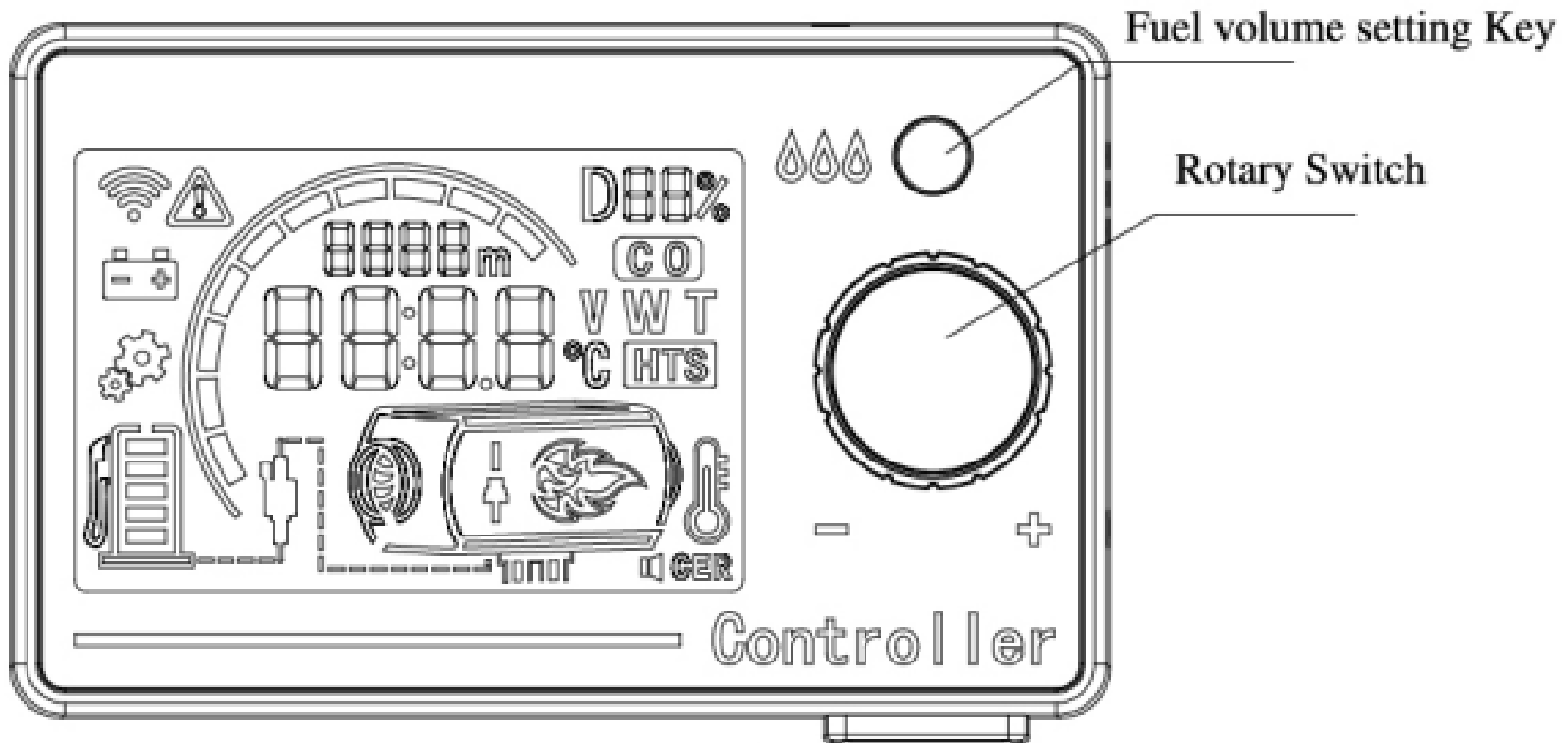
- When you turn the heater on and the screen displays "**Los**", indicating that it was a prohibited shutdown last time. Please wait at least 5 minutes for the automatic processing to complete, and it will automatically switch to the normal power-on state.

Fault code:

- If the buzzer sounds continuously, the screen displays "**EO - EI 5**". This is the fault code (FOO - F 15). Please refer to the fault report table (PAGE 23) for troubleshooting (for example, E7 is F07 fault code - the fuel pump fault).

FAULT REPORT TABLE

FAULT CODE	FAULT DESCRIPTION	SOLUTIONS
E00	Control unit error / incorrect parameter setting / hot start recognition	1. Replace the control panel
E01	Failed to start (has been tried twice) / failed to form a flame	1. fuel exhaustion 2. bubbles in the oil line and the oil supply is discontinuous 3. fuel pump is abnormal 4. bad quality of fuel
E02	Flame off (already repeated 3 times)	1. bubbles in the fuel line and the fuel supply is discontinuous 2. fuel pump is abnormal 3. bad quality of fuel
E03	Undervoltage or overvoltage	1. confirm if the voltage of the power supply matches the voltage of the heater 2. poor power cord installation 3. access to additional non – complaint power cord 4. power converter cannot provide enough current 5. power converter output voltage is unstable
E04	Premature ignition identification	1. residual fuel in the heater
E05	Thermal efficiency failure (burning problems or pump failure)	1. fuel pump is abnormal 2. filter is blocked 3. fuel inlet is blocked 4. too much carbon deposition 5. Pt1000 sensor fault
E06	Temperature sensor is open or shorted	1. temperature sensor of circuit board is damaged
E07	Metering pump is open or shorted	1. the wire of fuel pump is open or shorted 2. fuel pump fault
E08	Motor of the fan is open or shorted / or motor of fan is overloaded or blocked	1. motor blade is stuck 2. motor fault
E09	The glow plug is shorted	1. short circuit of ignition needle 2. the wire of ignition needle is connected reversely
E10	Overheat	1. a large flow of fuel pump is connected by mistake 2. air duct of air inlet or air outlet is blocked
E11	Overheat sensor is shorted or over temperature sensor is shorted	1. Pt1000 shell temperature sensor failure
E12	Glow plug connection	1. poor contact of the wire of glow plug 2. glow plug failure
E14	The overheat sensor is not positioned correctly	1. Pt1000 sensor is installed incorrectly
E15	Open circuit of setpoint generator	





WARRANTY CARD FOR REPAIRS AND MAINTENANCE

DATE OF PURCHASE : _____ **INVOICE NUMBER :** _____

DATE	PRODUCT AND DESCRIPTION
/ / DAY / MONTH / YEAR	
/ / DAY / MONTH / YEAR	
/ / DAY / MONTH / YEAR	

THIS WARRANTY CARD IS VALID FOR A PERIOD OF 24 MONTHS FROM THE PURCHASE DATE AND COVERS THE REPAIR OR REPLACEMENT OF THE BROKEN UNIT AT OUR DISCRETION. THIS WARRANTY DOES NOT PROVIDE COVERAGE FOR LOST OR DESTROYED HEATERS AND WILL BE VOID IF ALTERED IN ANYWAY. THIS PRODUCT IS QUALIFIED AFTER INSPECTION AND MEETS THE MARKET STANDARDS. PLEASE CONTACT P F JONES DIESELS FOR REPAIRS OR MAINTENANCE .DO NOT DISASSEMBLE THIS PRODUCT, PLEASE SPEAK TO A QUALIFIED TECHNICIAN TO AVOID THE WRONG OPERATION. IT IS NECESSARY TO INSPECT AND MAINTAIN THE HEATER BY A QUALIFIED TECHNICIAN BEFORE EVERY WINTER. THIS WARRANTY CARD IS ONLY VALID PROVIDED YOUR HEATER IS SERVICED EVERY 12 MONTHS BY A QUALIFIED TECHNICIAN. IT IS THE BUYERS RESPONSIBILITY TO COVER THE COST OF THE RETURN.

PLEASE FILL IN AND RETURN THIS WARRANTY CARD TO P F JONES DIESEL AS PROOF OF PURCHASE AND WARRANTY



WARRANTY CARD

INVOICE NUMBER:

DATE OF PURCHASE:

CLIENT NAME:

_____ **COMPANY NAME:** _____

ADDRESS:

POSTCODE: _____

EMAIL : _____

TELEPHONE NUMBER : _____

MOBILE: _____

PLEASE RETURN TO : P F JONES DIESEL SERVICE LTD,NUTTALL STREET,OLD TRAFFORD,GREATER MANCHESTER,M16 9JA.