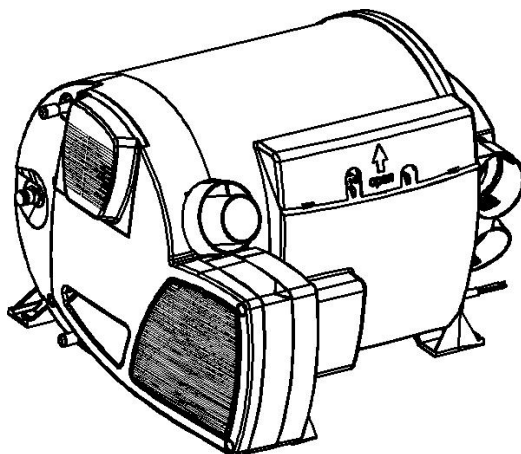

6KW Diesel Combi Air & Water Heater

4kw diesel+2kw electric

Technical Instructions, Installation, Operation and Maintenance Instructions



Type of product category

Order number

Diesel Electric Heating DC12V/220VAC

4W2005 12C11

Preface

Thank you for Using JP Heater

This manual describes the technical instructions, installation, operation and maintenance of JP Diesel Combi heater. To ensure the correct use of the heater, please read this manual carefully before installation and use. Please keep this manual for reference.

Note:

- The contents of this manual are subject to change without notice, but it can be guaranteed that this manual is consistent with the purchased products.
- We try our best to express clearly the problems that users shall know in this manual. If you have any questions or find anything wrong, please contact us directly.
- When the user unpacks the box for the first time, please check the main machine and accessories according to the packing list. If problems are found, please contact the seller immediately.
- If there is a problem in use, please contact our marketing department or the customer service stations authorized by us. We will serve you wholeheartedly.

Please carefully keep the after-sales service warranty bill and give feedback as required. This is the only valid proof of after-sales service.

Notes

The product must be installed and used according to the requirements of this manual to ensure long-term use!

1. Application

FJH-4/1C-E type diesel combi air and water heater (hereinafter referred to as the Heater) is a special heater integrating hot water and warm air for motor homes. The Heater cannot be used for passenger cars or dangerous goods transport vehicles.

2. Main technical parameters

Rated voltage	DC12V	
Operating voltage range	DC10.5V~16V	
Short-term maximum power consumption	8-10A	
Average power consumption	1.8-4A	
diesel type	Diesel	
diesel thermal power	2000	4000
diesel consumption ml/h	240	510
Quiescent current	1mA	
Warm air supply m ³ /h	287max	
Tank capacity	10L	
Maximum pressure of water pump	2.8bar	
Maximum system pressure	4.5bar	
Electrical mode voltage	~220V	
Electrical mode thermal power	900W	1800W
Electrical mode power consumption	3.9A	7.8A
Working (environmental) temperature	-25°C~+80°C	
Operating altitude	≤5000m	
Main machine weight	15.6Kg(without water)	
External dimension (mm)	510×450×300	
Protection grade	IP21	

Table 1

3. Functions

The Heater integrates hot water and warm air, providing hot water for living while heating passengers. It can be used during driving. The Heater can also realize heating with electrical mode.

In the hot water and warm air operation mode, the Heater can be used to for room heating and water heating. If only hot water is required, please select the hot water operation mode.

When the ambient temperature is lower than 3°C, please empty the water in the water tank to prevent freezing of the water tank.

There are three energy options:

-Diesel mode

The heater automatically adjusts the power.

-Electrical mode

Select the 900W or 1800W heating mode manually according to the power supply capacity of the motor home camp.

-Mixed mode

When the power demand is low (for example, at the stage of maintaining room temperature), electrical mode is preferred. The diesel mode will not be started until the electrical mode can not satisfy the demands, and the diesel mode function shall be turned off first in the power adjustment stage.

In the hot water operation mode, the diesel mode or the electrical mode is used to heat the water tank. The temperature of the water tank can be set to 40°C or 60°C.

--Diesel mode

The heater works with the lowest power. Stop heating as soon as the set temperature is reached.

--Electrical mode

Select the 900W or 1800W heating mode manually according to the power supply capacity of the motor home camp.

4. Safety instructions

Safe working environment

--The device can only be operated with appropriate control panels and accessories.

--The danger of toxic waste gas. If the vehicle is parked in a closed room, the exhaust gas from the heater may be toxic in the closed space (e.g. garage, maintenance workshop). Therefore, the fuel supply of the water heater and the timing switch shall be turned off. And the heater shall be turned off through the control panel.

--If an exhaust hood is installed near or under an open window, the device must be equipped with an automatic closing device to prevent the opening of the window.

--Heat-sensitive objects (e.g. spray cans) or flammable materials/liquids cannot be stored in the same compartment as the equipment because the area may be affected by high temperatures in some cases.

--Flammable items shall be kept away from the warm air outlet to prevent the block of the warm air outlet.

--For the opening of circulating air intake, the space around the installation room and the installation unit must not be restricted by obstacles, so that the equipment will not overheat.

--At all times, keep the exhaust pipe, exhaust cowl (inlet and outlet) and combustion air inlet free from pollution (slush, ice, leaves, etc.).

--The danger comes from the heated wall surface and exhaust gas around the smoke exhaust cowl. Do not touch the area of the wall around the smoke exhaust cowl, and do not lean anything against the smoke exhaust cowl on the wall or the vehicle.

Obligations of Operator/Owner

--The owner is responsible for filling the container of the heater with water and for its maintenance.

--The owner has the responsibility to operate the equipment correctly.

--Liquid fuel systems must comply with national technical and administrative regulations. National legislation and regulations must be abode by.

--Check the water pipeline regularly. If the water pipe breaks, please replace it.

--If the water heater is not in use, drain the water from the water heater to prevent frost. We will not maintain or compensate for the damage caused by frost.

Safe operation

--Make sure the car is well ventilated. When the heater is started, there may be some smoke or smell due to dust or dirt, especially when the equipment has not been used for a long time.

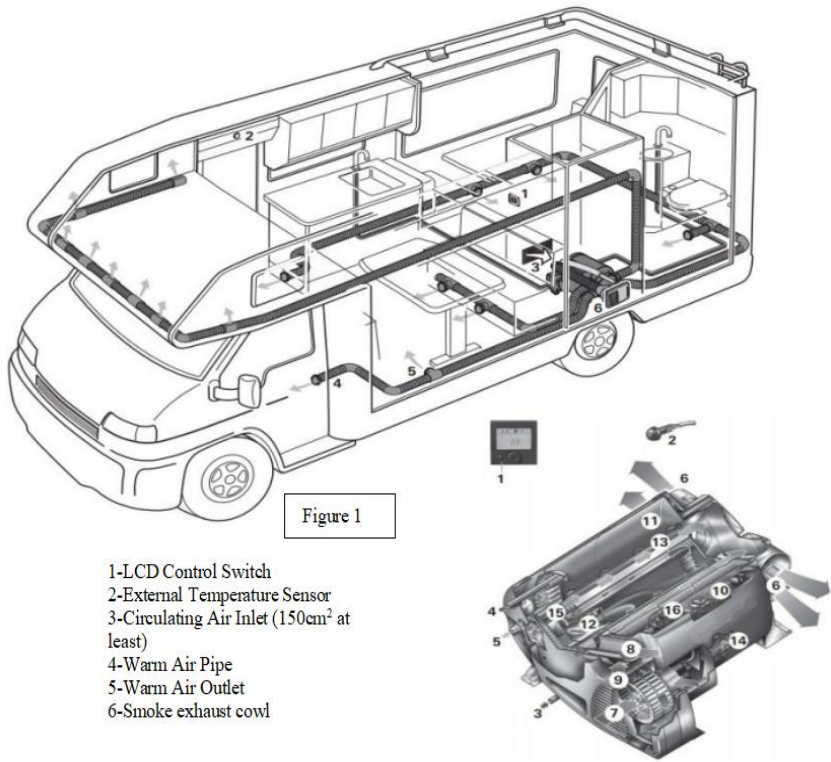
--This equipment may be used by children over the age of 8 under the guidance of their adults.

-The integrity and close cooperation of the exhaust double pipes must be checked regularly, especially at the end of a long journey. It is also necessary to check the installation of the device and smoke exhaust cowl.

-When cleaning the vehicle, do not spray water directly into the smoke exhaust cowl.

5. Installation of the Heater

Typical installation drawing of the Heater is shown in figure 1.



★Installation and maintenance must be carried out by professionals authorized by the Company!

The Company will not be liable for any of the following acts:

- Modification to heaters and accessories
- Modification to exhaust pipes and accessories
- Do not follow the operation and installation instructions
- Do not use special accessories of the Company

Figure 2

- | | |
|--------------------------------|---------------------------|
| 1- LCD Control Switch | 9-Combustion Air Inlet |
| 2- External Temperature Sensor | 10-Main Control Panel |
| 3- Cold Water Inlet | 11-Water Tank |
| 4- Hot Water Outlet | 12-Burner |
| 5- Diesel Interface | 13-Heat Exchanger |
| 6- Warm Air Outlet | 14-Electric Control Panel |
| 7- Circulating Air Inlet | 15-Electric warm air pipe |
| 8- Exhaust Port | 16-Overheating Switch |

Figure 3 Schematic diagram of heater installation

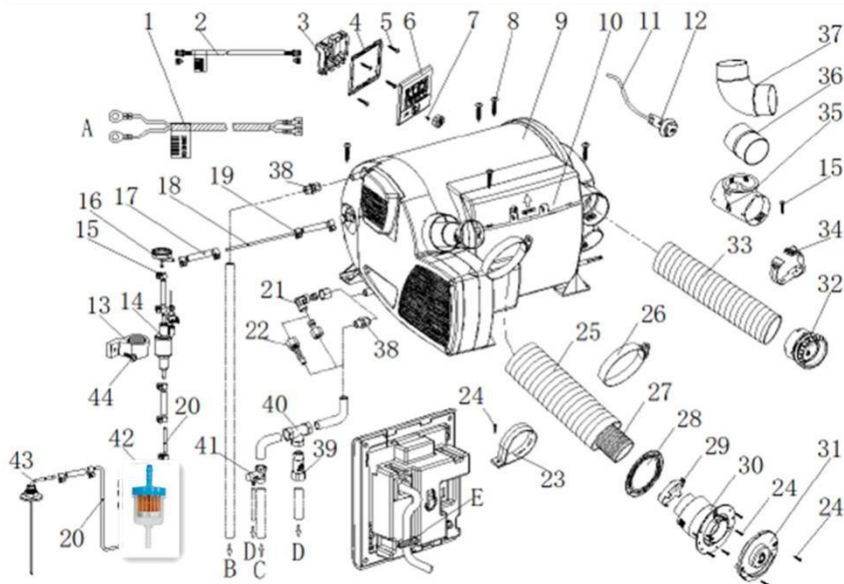


Figure 3

1_12V Power Cord 2_ LCD Switch Lead 3_ LCD Switch Rear Cover 4_ LCD Switch Bracket 5_ Self-tapping Nail M3*10 6_ LCD Switch 7_ Cross Countersunk Head and Flat Tail Self-Tapping Nail M3*6 8_ Self-Tapping Nail St5*25 9_ Main Machine 10_ Controller Cover Plate 11_ External Temperature Sensor Lead 12_ External Temperature Sensor 13_ Oil Pump Fixing Sleeve 14_ Oil Pump 15_ oil-conveying pipe Clamp (φ9-11) 16_ Buffer 17_ Tubing Connector 18- Nylon Tubing (Transparent, from main machine to oil pump) 19_ Tubing Clamp (φ8-10) 20_ Nylon oil-conveying pipe (Blue, from oil tank to oil pump) 21_ Φ 10 Steel (Water) Pipe Bent Transition Joints 22_ Soft (Water) Pipe Transition Joint 23_ Intake Pipe Fixing Clip 24_ Self-tapping Screw St 3.5× 25_ Intake Pipe 26_ German Clamp 27_ Exhaust Pipe 28_ Sealing Rubber Gasket 29_ (Exhaust Pipe) Clamp 30_ Inlet and Outlet Body 31_ Inlet and Outlet Cover 32_ Air Outlet 33_ Warm Air Pipe 34_ ducting Buckle 35_ φ60 Tee-junction 36_ φ60 Straight 37_ φ60 Bent 38_ G1/2-φ10 Fixing Sleeve Connector 39_ Anti-Freezing Valve 40_ G1/2 Tee-junction 41_ Pressure Reducing Valve 42_ Diesel Filter 43_ Suction Pipe Combination 44_ Self-Tapping Self-Drilling Nail St5.5*30 A_ Connecting to 12V Battery B_ Connecting to Water Equipment C_ Connecting to Water Tank of the System D_ Draining out of the Vehicle E_ Hook for Sticking the LCD Switch Lead

The installation position of heater shall be selected as load-bearing floor, double-layer floor or sub-floor. If there is no suitable floor, a bearing surface made of plywood can be used first.

★ The heater must be firmly fixed to the installation surface with screws to prevent the danger caused by damage to the diesel pipe during the driving process of the car.

According to the actual installation situation, only three screws can be installed. After fixing by two die-cast aluminum fixing screws, a plastic right angle can be used for further fixing.

To ensure uniform heat distribution of the heater, the installation position of the heater shall be centered as far as possible so as to make the warm air pipes as long as possible.

The heater surface cannot be covered with any additional covering.

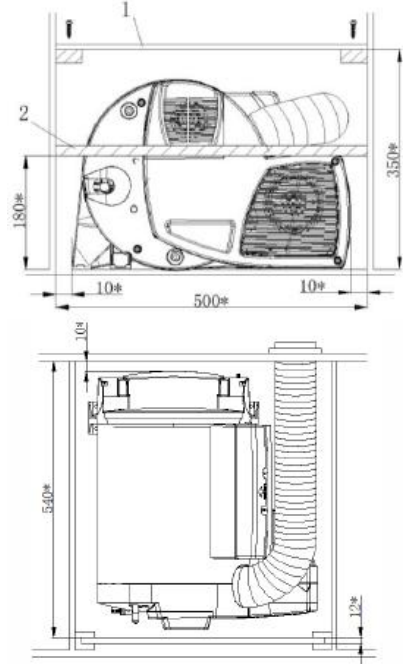


Figure 4

Size with * refers to the minimum size. And enough space shall be left for connecting accessorizes such as diesel and water pipes.

To prevent the danger caused by accidental loosening of the heater, the upper cover plate of the heater compartment is fixed with screws (figure 4-1). Next to the installation position, it is necessary to install a strong partition bar in front of the heater, perpendicular to the direction of travel. 180mm above the floor height, spacers can be attached (minimum 30*50mm). Heat-sensitive and flammable objects shall be kept away from the Heater.

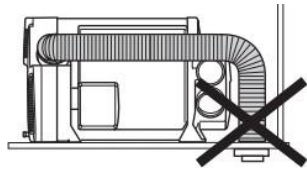


Figure 5

★ **Smoke exhaust cowl** (inlet and outlet) must be placed on the **side wall or top plate**. In the exhaust hood layout area, there shall be no ventilation window within the range of 300mm and no oil filler or oil tank respirator within the range of 500mm. The smoke exhaust cowl is installed close to under the window that can be opened. A window switch shall be installed to ensure that the heater is automatically turned off when the window is opened.

Installation of intake and exhaust pipes

The exhaust pipe passes through the intake pipe.

As shown in figure 6, the length of the intake and exhaust pipes is 60cm at the shortest and 100cm at the longest. The exhaust cowl can only be 20cm below the exhaust port.

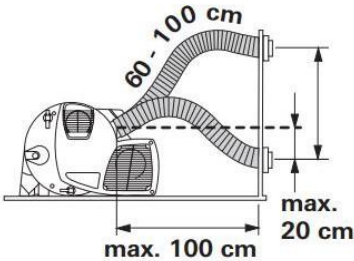


Figure 6

After the intake and exhaust pipes pass through the via hole, they must be cut short. The exhaust pipes are slightly shorter than the intake pipes so as to avoid excessive expansion of or tension on the exhaust pipe.

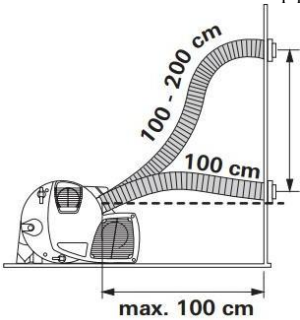


Figure 7

The length of the intake and exhaust pipes is 100cm to 200cm, as shown in figure 7. The pipes must be arranged in the ascending direction.

Installation of smoke exhaust cowl (inlet and outlet)

Flat mounting surface shall be selected so that combustion air can enter from all sides. Drill a $\Phi 83$ hole. Seal it with a seal (figure 8-8) with the plane facing the smoke exhaust cowl. Install the fixing clamp before installing the exhaust pipe (figure 8-3). Pay attention to the upward mark of the smoke exhaust cowl during installation.

The 20mm-long part at the end of the smoke exhaust pipe shall be compressed and not straightened. Insert the smoke exhaust pipe into the smoke exhaust cowl interface (figure 8-10) as deep as possible. Set the fixing clamp up as far as possible and tighten it.

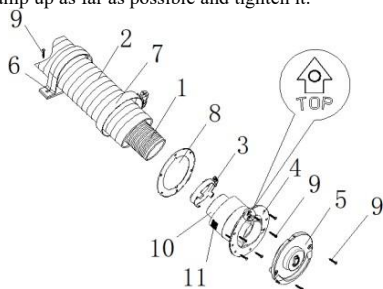


Figure 8

Cover the teeth of the smoke exhaust cowl (figure 8-11) with the air inlet pipe (figure 8-2). Put on the fixing clamp (Figure 8-7) and tighten it. Fix the smoke exhaust cowl with 6 screws (figure 8-9). Fix the smoke exhaust cowl with 2 screws.

The intake and exhaust pipes can be fixed to the side wall with fixing clamps (figure 8-6).

The intake and exhaust pipes are installed on the Heater

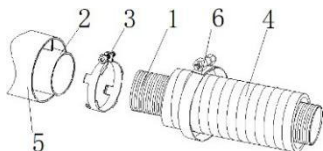


Figure 9

The 20mm-long part at the end of the smoke exhaust pipe (figure 9-1) shall be compressed and not straightened.

Insert the exhaust pipe into the exhaust outlet (figure 9-2) as deep as possible. Set the fixing clip up as far as possible and tighten it.

Insert the air inlet pipe (figure 9-5) into the air inlet pipe (figure 9-3). Install the fixing clamp (figure 9-6) and tighten it.

Warm air intake

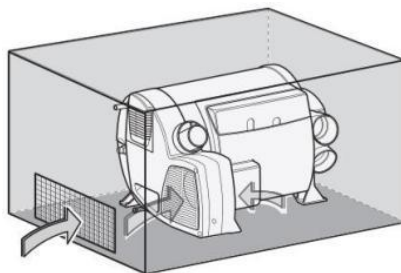


Figure 10

The warm air intake is sucked in by the heater. There must be an opening with a total area of not less than 150cm^2 between the room and the Heater.

Ensure that the warm air intake is not polluted by engine or heater exhaust, and use structural isolation measures when necessary.

Warm air distribution

Most of the warm air is introduced into the floor area of the living room through ducting.

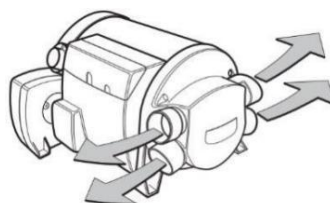


Figure 11

Four air outlets on the heater are connected with $\Phi 60$ ducting. Only pressure pipes that meet the quality requirements of the Company can be used. Other pipes that do not meet our quality standards (especially wind resistance, pipe diameter and corrugation number) shall not be used.

If the warm air duct must withstand considerable elbowing immediately after the hot air outlet of the heater in a limited space, we recommend using a 90° elbow (figure 3-37). This kind of elbow can connect the hot air pipe with a diameter of 60mm.

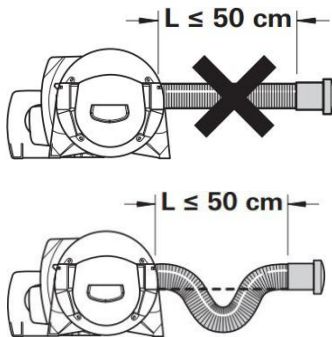


Figure 12

When the length of the pipe is less than 2 meters, the air outlet shall not be installed at a place higher than the connector of the warm air pipe. When the length of the pipe is less than 50 cm, there shall be a siphon between the connector and the outlet for the pipe. These measures prevent undesirable heating of the vehicle due to convection (fairing effect) during summer operation.

★ The warm air pipe must be firmly inserted into the connector.

★ To obtain the best warm air distribution, the Company requires the use of all 4 warm air outlets of the Heater.

★ **The cross section of the warm air pipe shall not be reduced due to duct connection or the like.** In other words, the opening number of warm air duct outlets (figure 3_32) shall not be less than four, and it shall be ensured that more than four warm air outlets are open.

diesel system connection

diesel is extracted from the vehicle diesel tank or supplied from a 10L special diesel tank, and is delivered and adjusted by a special oil pump (provided by the manufacturer). It is not allowed to extract diesel from the return system of the vehicle engine or downstream of the internal transfer pump of the vehicle. Please use the diesel hoses and pipelines within the scope of delivery only for installation.

The diesel oil shall conform to the national standard GB19147-2013 *Standards for Vehicle Diesel Oil*.

During winter, the diesel used shall meet the requirements of low temperature. Bio-diesels are not allowed.

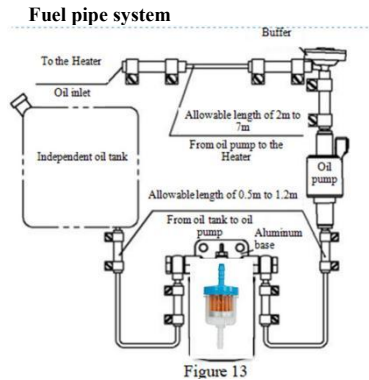


Figure 13

Installation of oil-conveying pipes

Oil-conveying pipes must be the kit's accessories, namely nylon hoses with good light resistance and thermal stability. Allowable diesel pipe length: the maximum length of the diesel pipe on the oil inlet side is 2m, and that of the diesel pipe on the pressure side is 6m. As shown in figure 13

Safety regulations for diesel pipes

Be sure to use a hose cutter or a sharp knife to cut the diesel hose and pipes to a certain length. The cut area cannot be compressed and must be free of burrs. The diesel pipes must be firmly connected to prevent damage and/or noise caused by vibration (the recommended distance between connection points is about 50 cm). diesel pipes must be protected from mechanical damage. The laying of diesel pipes will not adversely affect the stability of vehicle rotation, engine operation, etc. Protect diesel-carrying components from high temperatures that may affect operation (use suitable fiberglass-lined aluminum thermal protection hose). Do not set or fix the diesel pipe near the Heater or the exhaust line of the vehicle engine. If the lines cross, keep a sufficient distance from the hot parts—if necessary, provide thermal radiation protection plates. The installation position of the oil pipe shall be able to prevent flying stones from hitting, and shall be far away from the heating parts of the vehicle, and protective devices shall be installed when necessary.

Installation of oil pump

The oil pump shall be fixed with an oil pump fixing sleeve (rubber). The oil outlet of the oil pump shall be inclined upward, and its installation angle shall be between 15° and 35° (as shown in figure 14). When conditions permit, the oil pipe from the oil pump to the heater main machine shall gradually rise. To prevent the oil pump from being heated (the maximum working temperature is 40°C), it shall not be installed near the exhaust pipe. The height difference between the diesel level and the oil pump and the height difference between the oil pump and the oil inlet of the main machine will generate pressure (or suction) in the oil circuit, so these dimensions shall meet the requirements of figure 14.

Connection of the Heater and oil pump

The direction of the oil pipe from the oil pump to the main machine shall be as upward as possible. Mark holes for connecting cables through diesel lines and oil pumps at appropriate locations on the vehicle floor. Before drilling, be sure to check the hidden cables, diesel pipes, frame

sections, etc.

Then, seal the edge of the opening on the vehicle floor with the underbody protector. To prevent the cable of oil pipe and oil pump from being cut, please add the lead-in bushing or section edge protection material.

Oil pipes shall be tied and fixed at suitable places with the binding spacing not more than 50cm.

The connection between the oil pipe and the oil pump, the main machine and the oil tank (oil suction nozzle) shall use the oil pipe connector provided for the Heater. The connector shall be clamped tightly with the oil pipe clamp. Bubbles at the joint shall be prevented (figure 15).

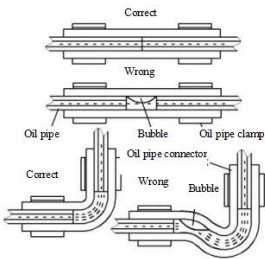


Figure 15

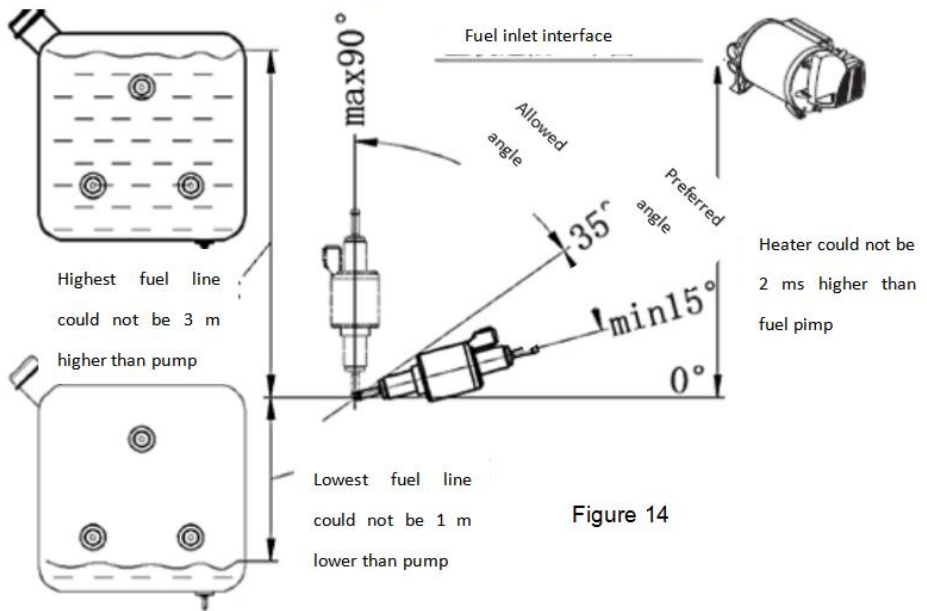


Figure 14

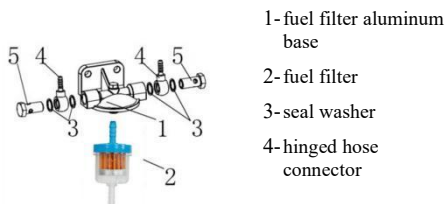
Figure 14

Installation of fuel filter

Install the diesel filter in front of the oil inlet of the oil pump.

During installation, it shall be noted that the fuel filter must be vertically upward (to ensure that impurities deposit downward).

The replacement cycle of the fuel filter is two years. The oil pipe joint and clamp must be replaced at the same time.



1- fuel filter aluminum base

2- fuel filter

3- seal washer

4- hinged hose connector

5- Hinged bolts

Figure 16

Installation of the oil suction nozzle (figure 17)

First, cover the O-type ring with oil suction nozzle, and then make it pass through the $\Phi 8$ hole at the bottom (processed as required) from the inside of the oil tank. Wear a washer on the outside of the oil tank and tighten it with a nut. The tightening torque is $6\text{Nm}+1\text{Nm}$. The O-type ring must be sandwiched between the inner side wall of the oil tank and the oil suction nozzle to ensure a good seal between the oil suction nozzle and the oil tank. (oil suction nozzle and other accessories are carried in the oil tank)

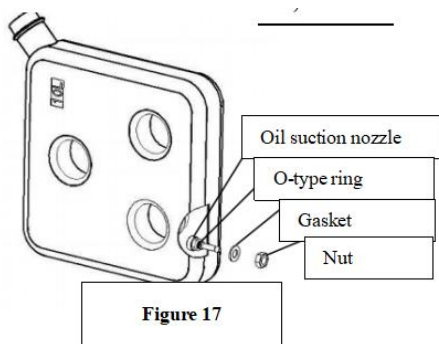


Figure 17

Installation of oil suction pipe (figure 21)

Use when drawing diesel suction from the vehicle's diesel tank. During installation, ensure that the size of the installation opening on the oil tank (or tank cover) is $\phi 25 \pm 0.2$. The edges shall be neat and surroundings shall be smooth to ensure a good seal with the oil suction pipe seat. The distance between the lower opening of the oil suction pipe and the bottom of the oil tank shall be 30 to 40mm, **which can not only ensure the full absorption of diesel, but also prevent the impurities deposited at the bottom of the oil tank from being sucked in.**

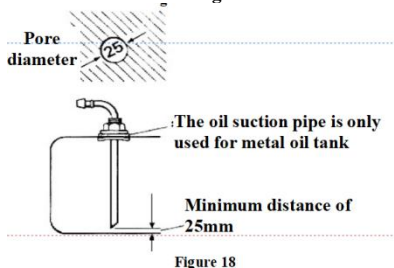


Figure 18

Water pipe connection

The water tank can be supplied with water by a pressure pump or an immersion pump with a pressure of 2.8bar.

If the water tank is connected to a centralized water supply (rural or urban connection), or if a high-pressure pump is used, a pressure reducer must be used, which will prevent pressure above 2.8bar.

★ Before the pressure relief valve is triggered, the temperature rise of water and its expansion may lead to a pressure up to 4.5 bar (which may also occur together with the immersion pump). The water pipes connected to the water tank and the safety/drain valve must be water pipes with safe drinking water, pressure resistance (up to 4.5bar) and hot water resistance up to 80°C .

Anti-freezing valve (figure 3-39, anti-freezing automatic drain valve), a mechanical safety/drain valve. When there is danger of frost, it will automatically drain the water from the water tank through the drain outlet.

Pressure reducing valve must be installed (figure3-41, 0.5MPa). If there is excessive pressure in the system, the pressure will be automatically released intermittently through the pressure reducing valve.

Installation of external temperature sensor

The sensor is installed in the vehicle to measure room temperature. The installation position of the sensor is determined by the motor home manufacturer according to the specific conditions of the vehicle. When selecting the installation location, please note that the external temperature sensor shall not be exposed to direct thermal radiation.

To obtain the best room temperature control, an external temperature sensor is installed above the entrance door.

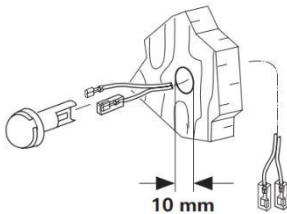


Figure 19

Please ensure that the external temperature sensor is always installed on the vertical wall. There must be free flowing air around it.

Drill a hole with a diameter of 10 mm. The single-wire terminal passes through the opening from the rear. Connect the end of the cable to the sensor with an insulated connection plug (polarity needs not be observed). Push in the external temperature sensor and connect both ends of the cable with the two insulated connection plugs to the heater electronics (if necessary, extend the cable to a maximum length of 10 meters. 2 x 0.5 mm² cable).

The provided external temperature sensor must always be connected, otherwise the Heater will switch to failure.

Installation of LCD switch

The Heater must be operated using a dedicated LCD switch. Please refer to the relevant instructions for details.

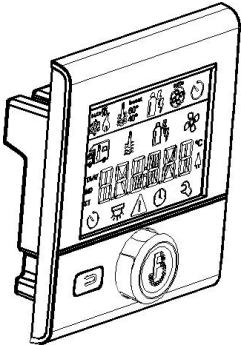


Figure 20

Electrical appliance connection

Scratches shall be avoided during wires laying. If there are sharp edges, such as metal panel threading, please use lead bushing or edge protection fittings.

Connector cables shall not adhere to or contact metal surfaces, exhaust pipes or hot air pipes.

The electrical connection socket is located below the controller cover. The controller cover can be removed by pressing and simultaneously pushing in the direction of the arrow.

When removing or installing the controller cover, make sure that the connecting cable is not pulled out or squeezed.

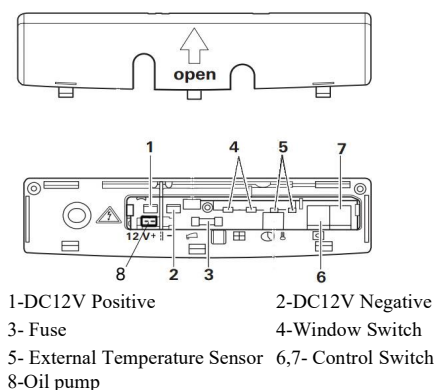


Figure 21

When the window switch is not installed, the short wiring cannot be removed.

All cables connected to the heater shall be routed downward, which will prevent condensed water from slipping off the connector cable and entering the Heater.

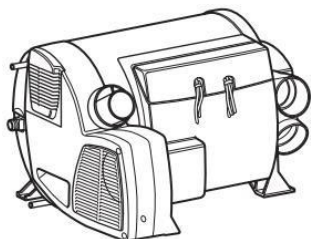


Figure 22

The connector cable and plug must not be stressed. Tie the connector cable (see figure 23) and fix it to the housing with a tie to eliminate tension. All cables must be firmly connected together and cannot be loosened or disconnected due to vibration. This may cause fire hazard!

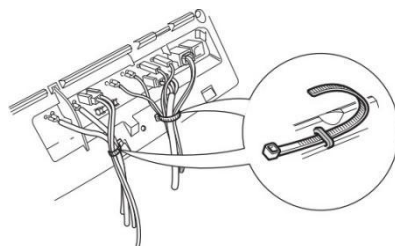


Figure 23

DC12V Power supply

The electrical wiring, switches and control equipment of the Heater must be located in a position that will not adversely affect its operation under normal operating conditions.

The Heater has reverse polarity protection. If the controller is not connected with the correct polarity, the LED indicator will not work. To ensure the best power supply, the Heater must be connected to the on-board power supply (or battery) protected by fuse (10A) with $2 \times 2.5 \text{ mm}^2$ cable ($2 \times 4 \text{ mm}^2$ if the length exceeds 6m).

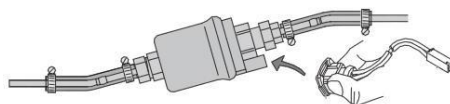
If necessary, the voltage drop of the power supply line must be considered.

Connect the negative line to the main ground.

If the Heater is directly connected to the battery, the positive and negative lines must be protected.

Do not connect other power consuming devices.

Electric connection of oil pump



Figure

24

Please ensure that the plug is firmly connected.

Wiring diagram

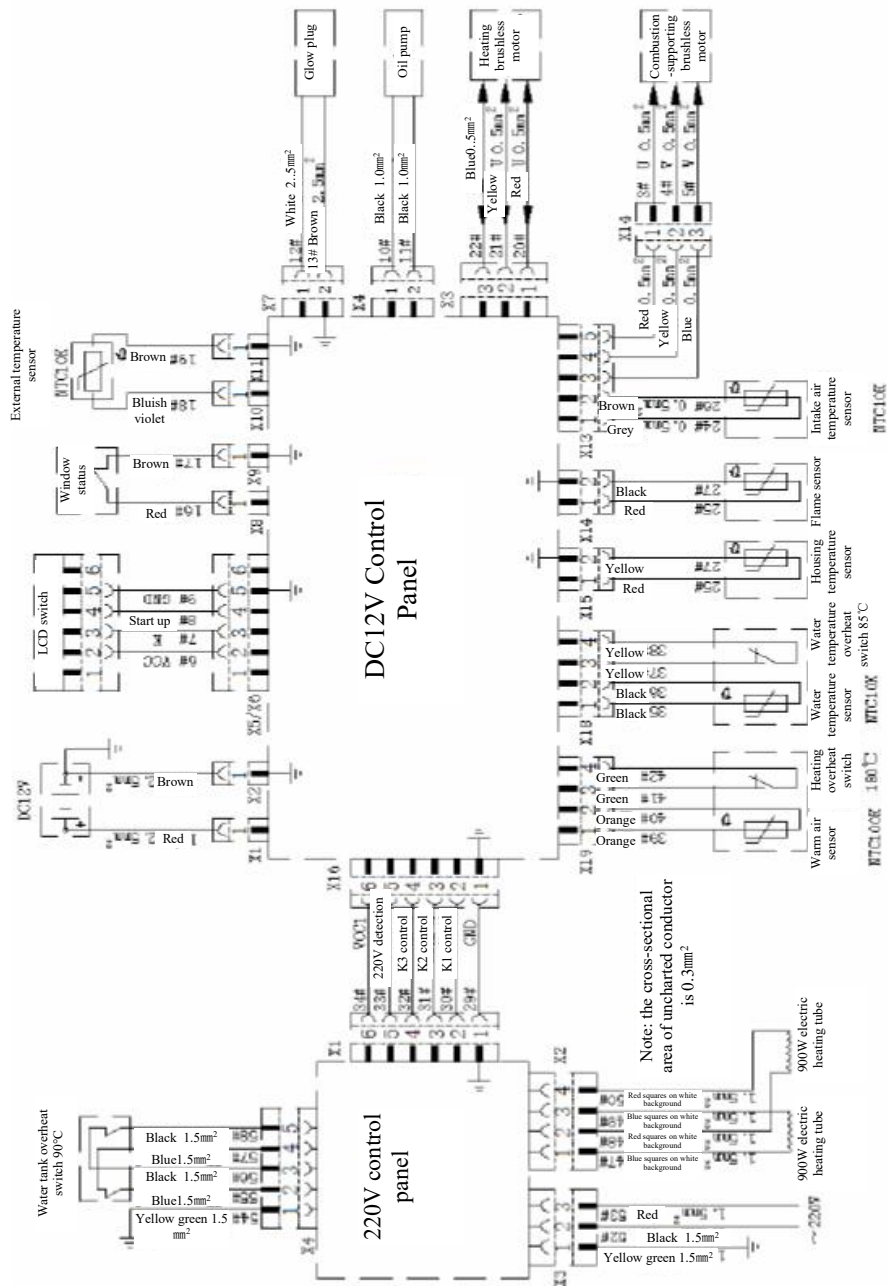


Figure 25

6. Operational precautions

The Heater shall not be operated during refueling or in confined spaces (closed parking lots, repair workshops or ferry cabins).

Regularly check whether the intake and exhaust pipes are in good condition and whether the fixing is reliable, especially after a trip. Also check the fixing of the intake and exhaust pipes and the exhaust cowl.

If black smoke is found, please ask the Company's authorized professionals to carry out maintenance.

Ensure that the exhaust pipe and the air inlet pipe at the smoke exhaust cowl are unobstructed and free from blockage such as snow mud, ice, leaves, etc.

Warm air outlet and circulating air inlet shall be unobstructed to avoid overheating of the Heater. In case of overheating, the overheat switch will immediately cut off the diesel supply.

The Heater shall be equipped with safety cut-off device to meet the heating needs during driving.

★ If there is no safety cut-off device, the Heater must be turned off before driving.

12V fuse

Only identical fuse T20A is allowed to be used for replacement.

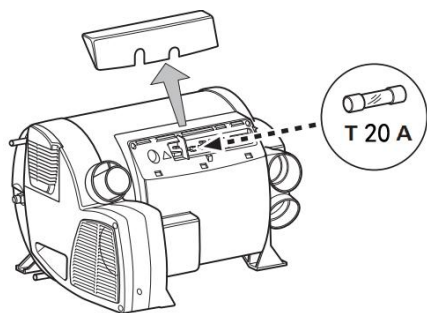


Figure 27

~220V fuse

★ Fuses and wire harnesses must be replaced by professionals authorized by the Company.

★ All power must be disconnected before opening the control enclosure.

Fuse specification: T20A slow blow

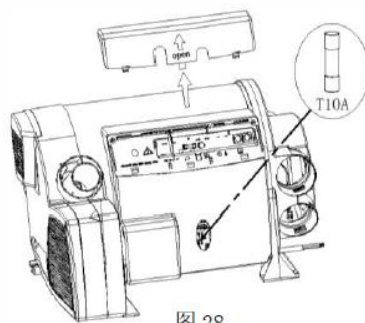


Figure 28

~220V overheat protection

The electrical heating function has a mechanical overheat protection switch. If the 12V power supply is interrupted during or after the heating process, the waste heat of the Heater will trigger the overheat protection switch.

After the temperature of the water tank decreases, disconnect the **~ 220 V power supply**, remove the controller cover plate, and manually press the reset button to reset the overheat protection switch.

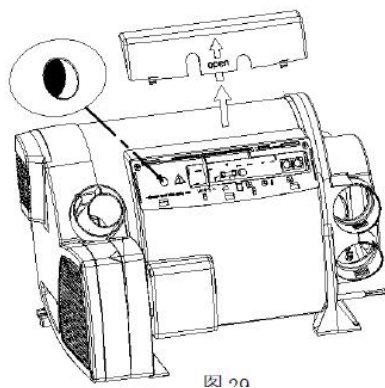


Figure 29

7. Operation instructions

Please read the operating instructions carefully before operating.

Start of the Heater

Operate with dedicated LCD switches.

The main machine heating by diesel, electrical, mixed mode, heated water tank or unheated water is set as required.

Check the power supply capacity of electrical in motor home camp and select electrical mode

900W(3.9A) or 1800W(7.8A) mode accordingly.

-check whether the smoke exhaust cowl is unobstructed

-Fill the water tank with water when needed.

Water filling

Check whether the safety valve/drain valve is closed.

----Turn on the power supply of the water pump (main brake or pump switch)

----Open the hot water faucet in the kitchen or bathroom and keep the valve open until the air in the container is exhausted and the water is continuously discharged.

----Without water heater heating, if only the cold water system is running, the water heater will be filled with water. To avoid frost damage, the water heater must be drained through a safety/drain valve, even if it is not in operation.

----In case of frost, frozen residual water can prevent filling. The water heater only needs to be turned on for a while to defrost.

(no more than 2 minutes). The frozen part can be thawed after heating the inside of the water heater.

---If the heater is connected to a central water supply system (rural or urban), a pressure reducer must be used to prevent the pressure from exceeding 2.8bar(0.28MPa).

-turn on the circulating water pump

-turn on the hot water faucet in the kitchen and bathroom until the air is exhausted to fill up the water tank and the water outlet will not be interrupted.

Turn off the Heater

-Operate with dedicated LCD switches.

-After the heater is turned off, the combustion-supporting fan and the heating fan will continue to work for several minutes according to the temperature of the furnace body.

In case of freezing hazard, the water tank must be emptied.

-Turn off the circulating water pump

-Turn on the hot water taps in the kitchen and bathroom.

Drainage of the Heater

---If the motor home is not used during frost. The Heater must drain the water.

---Turn off the power supply of the pump unit (main power supply or pump switch).

---Turn on the hot tap in the kitchen and bathroom.

---To check the outflow of water, place a suitable container under the drain tank of the safety/drain valve (installment by users; used to manually drain the water tank. The anti-freezing valve cannot ensure that the water tank is completely emptied.).

-Turn on the safety/drain valve.

---The water in the Heater will be directly discharged to the outside through the safety/drain valve. Check whether all water in the heater has been drained into the container through the safety/drain valve. No claim for damages caused by frost is allowed during the warranty period.

★ Use 10L bucket to collect water for inspection to ensure that the water tank is empty.

Maintenance/repair/cleaning

-The device can only be repaired and cleaned by professionals.

-Maintenance, repair and cleaning cannot be done by children.

-Flush all hot/cold water hoses thoroughly before using the new equipment or after the equipment has not been used for a period of time.

8. Fault

8.1 Handling of general faults

8.1.1 During the use of the Heater, the Heater may fail to start normally or shut down automatically after starting and be in a fault locking state. At this time, the Heater can be turned off for more than 5S and turned on again.

8.1.2 The Heater may cause circuit faults due to the following reasons: corrosion of connectors, poor contact, wrong insertion, corrosion of wires or fuses, corrosion of pile heads of storage batteries, etc. During use, pay attention to inspection, maintenance and prevention of these phenomena.

8.1.3 Users can handle and eliminate the following situations by themselves:

- After startup, the Heater does not start and the LCD switch screen is not bright, which is due to open fuse or wrong wiring; in addition, check whether the plug on the LCD switch lead is properly connected with the main machine.

8.2 Fault locking

8.2.1 The fault generated by the Heater shall be displayed by the fault code on the LCD switch.

8.2.2 The faults can be eliminated according to the methods listed in Table 2.

Troubleshooting Method for Fault Locking State		
Fault code	Fault name	Troubleshooting methods
10	Extremely high voltage	a check vehicle power supply system
11	Extremely low voltage	a check vehicle power supply system
21	Open circuit of warm air outlet temperature sensor	a check whether the sensor is in good condition.
22	Short circuit of warm air outlet temperature sensor	a check whether the sensor is in good condition.
23	Open circuit of water temperature sensor	a check whether the sensor is in good condition.
24	Short circuit of water temperature sensor	a check whether the sensor is in good condition.
25	Open circuit of external temperature sensor	a check whether the sensor is in good condition.
26	Short circuit of external temperature sensor	a check whether the sensor is in good condition.
27	Open circuit of combustion-supporting temperature sensor	a check whether the sensor is in good condition.
28	Short circuit of combustion temperature sensor	a check whether the sensor is in good condition.
31	Ignition failure	a check the diesel supply system b check whether the combustion-supporting inlet and outlet are blocked c check glow plug and flame sensor

Table 2

Troubleshooting Method for Fault Locking State		
Fault code	Fault name	Troubleshooting methods
32	Combustion failure	a check the diesel supply system b check whether the combustion-supporting inlet and outlet are blocked c check the flame sensor.
33	Flame sensor failure	a check flame sensor leads b check flame sensor
41	Warm air outlet temperature is too high	a check whether the air inlet and outlet are blocked
42	Warm air overheat switch protection	a check whether the air outlet is blocked b check the heater overheat switch
43	Water temperature is too high	a check whether the water tank is short of water. b check whether the sensor is in good condition. c check whether the air outlet is blocked
44	Water temperature overheat switch protection	a check whether the air outlet is blocked b check the water temperature overheat switch
45	Continuous overheat fault	a check whether the air outlet is blocked b check the water temperature sensor c check heater sensor
51	Communication failure	a check the connection cable
61	Open circuit of oil pump	a check whether the oil pump lead is damaged b check whether the oil pump lead connection is reliable. c replace oil pump d replace motherboard
62	Oil pump short circuit	a check whether the oil pump lead is damaged b check whether the oil pump lead connection is reliable. c check oil pump d replace motherboard
63	Open circuit of glow plug	a check power supply voltage b check the normal temperature resistance of glow plug (0.2Ω/12V) c clean up carbon deposits in glow plug d replace motherboard

Table 2 continued

Troubleshooting Method for Fault Locking State		
Fault code	Fault name	Troubleshooting methods
65	Glow plug has no drive	a replace motherboard
81	Open circuit of combustion-supporting fan	a check combustion-supporting fan
82	Combustion-supporting fan failed to start	a check motor lead connection b check combustion-supporting fan
83	The speed of combustion-supporting fan is too low.	a check combustion-supporting fan
84	Open circuit of heater fan	a check the heater blower.
85	The warm air blower failed to start.	a check motor lead connection b check the heater blower
86	The speed of warm air blower is too low.	a check the heater blower.
110	Window opening alarm	a check window switch connection cable
120	Low voltage alarm	a recommend charging
220	220V no connection	a check AC 220V power supply system
169	Power reset	a. Whether the power cord is directly connected to the battery, b. Insurance on the host c. Whether the source is sufficient, the power supply is pulled down a lot when the heater starts

Table 2 Continued

9. Precautions

● First installation

–If the Heater is installed for the first time, it is necessary to fill up the diesel pipe with diesel to completely remove air from the oil supply system. And a separate oil pumping function is specially designed. Please refer to the LCD switch manual for details.

–Flush the water tank with clean water before installing and using the Heater for the first time. When the Heater is not in use, please empty the water tank to avoid freezing the water tank. The Company does not bear the responsibility of water tank damage caused by freezing.

–Turn on the circulating water pump

–Turn on the hot water faucet in the kitchen and bathroom until the air is exhausted to fill up water tank and the water outlet will not be interrupted.

–The Heater shall be tested before use. During the trial run, all connections shall be carefully checked for leakage and safety. If there is smoke emission, abnormal combustion noise or diesel smell, the Heater shall be turned off and the fuse shall be pulled out to prevent the Heater from running. It can only be used after being overhauled by professional personnel.

–Odor may be emitted for a short time when the Heater is first used. This is normal in the first few minutes of operation. It does not mean that the Heater is malfunctioning.

● Quarterly maintenance

–Before each heating season, professional personnel must carry out an inspection and carry out the following maintenance work:

Check the air inlet and outlet for contamination and foreign matter.

Clean the outside of the Heater.

Check the circuit connector for rust and looseness.

Check whether the intake and exhaust pipes are blocked or damaged.

Check the diesel line for leaks.

● Long-term shutdown

—When the Heater is **not in use for a long time, it shall be operated every 4 weeks for about 10 minutes each time to prevent mechanical components such as oil pump or combustion air fan from malfunctioning (stuck).**

–The air inlet and outlet of the Heater must be kept free

from blockage and dirt, so that the warm air duct can be unblocked to prevent overheating.

–When replacing low-temperature diesel, the Heater shall be operated for at least 15min before filling the diesel system with new oil.

● Service life of the Heater

–The service life of the heat exchanger of the Heater shall not exceed 10 years. After expiration, genuine parts must be used for replacement. The replacement shall be performed by the heater manufacturer or its authorized agent.

–The exhaust pipe of the Heater, which discharges combustion exhaust gas, must be replaced with genuine parts when it is used for 10 years.

● Other precautions

–**The water tank must be descaled regularly, at least twice a year.**

–During the transportation and storage of the Heater, its ambient temperature shall not exceed the range of -40°C to 85°C so as to prevent electronic components from being damaged.

–Only authorized customer service stations are allowed to install and repair heaters, and non-original parts are prohibited to avoid danger.

–For the Heater damaged due to installation and operation not in accordance with regulations, the manufacturer is not responsible for warranty.

–The Heater must be turned off before refueling.

–When performing electric welding on the vehicle, the positive power supply line of the Heater shall be removed from the battery and grounded to prevent damage to the controller.

10. Packing list

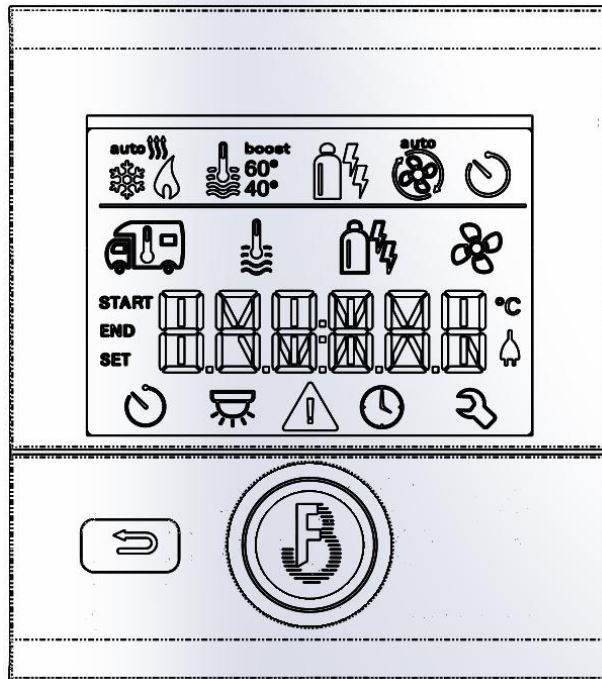
Packing list				
No.	Name	Specification	Quantity	Order code
1	Instructions	YJH-4/1C-E Host	1	22020203400
2	Main machine of the Heater	YJH-4/1C-E	1	4T300612C01
3	Cross head self-tapping nail	ST5*25	5	12050016100
4	12V power cord	4m	1	120311101600
5	External temperature sensor	NTC10K L=4m	1	31011102100
6	LCD switch	MNB-V-FY	1	31011104400
7	LCD switch lead	6m	1	120311101500
8	Controller cover	260×75×22	1	120211100900
9	Cross head self-tapping screw	ST5×16	4	12050007300
10	Outer wire clamping sleeve joint	G1/2-φ10	2	120111104300
11	Nylon cable ties	4×200	10	21990000000
12	Air inlet and outlet body	φ110×108	1	120111101900
13	Inlet and outlet cover	φ110×34	1	12021102000
14	Sealing washer	φ104.5×φ73×2.4	1	12041101800
15	Clamp	φ55	2	310111102700
16	German clamp	70-90	2	12050200700
17	Air inlet pipe fixing clip	φ80	1	120211102700
18	Cross head self-tapping screw	ST3.5×25	9	12050015600
19	Outlet pipe	φ55/φ50×950	1	12060007700
20	Inlet pipe	φ80/φ76×1000	1	12060007800
21	Air outlet	CFK-φ60-III Resilience adjustable	4	310111104700
22	Reducing valve	0.5MPa	1	12501101000
23	Drain valve	1~4°C	1	31011106600
24	German clamp	φ50-φ70	4	12010005100
25	Ducting buckle	φ60	4	12021102600
26	Oil pump assembly	YB-I-12V with buffer	1	33000007600
27	Oil pump fixing sleeve	φ32×29	1	12990007300
28	Fuel filter assembly	CX0708(4100) with aluminum seat and combination pad	1	12500005400
29	Oil pipe connector	φ3.5/φ9.5 L=40	3	12060003900
30	Oil pipe connector	φ4.1/φ10.5 L=40	4	12060003800
31	Oil pipe clamp	φ8~10 (9)	5	12010004300
32	Oil pipe clamp	φ9~11 (10)	9	12010004200
33	Oil pipe (from oil pump to main machine)	Nylon tube φ4×1 L=6800 transparent	1	12060004200
34	Oil pipeline (from oil pump to oil tank)	Nylon tube φ5×1.5 L=1200 blue	1	12060004600
35	Oil pump harness	L=6800	1	12031200300
36	Self-drilling self-tapping screw	ST5.5×30	3	12050003000
37	Oil suction pipe	XYG-IIφ5×600	1	31000000500
38	Reducing tee-junction	10-6-10	1	12020015700
39	Mini clamp	12-14	2	12010004600
40	Composite ducting	Φ60 L=4000	2	12060008800

Note: Items 12 to 40 are additionally packed in the accessory box. Those out of the packing list are optional

accessories which can be provided by the Company as required.

Diesel/LPG Combi Air and Water Heater

LCD Switch Operation Manual



December 25th, 2020 Edition

Preface

Thank You for Using JP Heater Combi Air and Water Heater

This product supports the heating of water or motor home or both with either eclectic mode or liquefied petroleum (or fuel), making trip more convenient and comfortable.

This manual describes the use method, installation instructions, technical parameters and fault inquiries of the LCD switch of the integrated air and water heater (referred to as LCD switch). Please read this manual carefully before use. Please keep it in a safe place for future reference.

Security warning:

1. If the information in this manual cannot be read or executed accurately, fire or explosion may be caused, resulting in property damage, personal injury or death.

2. Do not store flammable, explosive or volatile gas or liquid holding equipment near the Heater.

If you smell the gas:

- Evacuate passengers from the vehicle.
- Turn off the gas supply to the gas container or gas source.
- Do not touch any electrical switches or use any phone or radio in the vehicle.
- Do not start the engine or generator of the vehicle.
- Do not start the gas supply until the gas leak is detected.

Installation and service must be performed by certified service technicians, service organizations, or gas suppliers.

3. The Heater must be installed in motor home or trailer.

4. The LCD switch can only be used when the whole equipment is installed properly.

5. Please correct any malfunctions immediately. The remedy specified in the troubleshooting table in these operating instructions can only be repaired by itself.

6. Do not perform any repair or modifications on the LCD switch! Any changes to the device or its controls can be dangerous and will void the warranty.

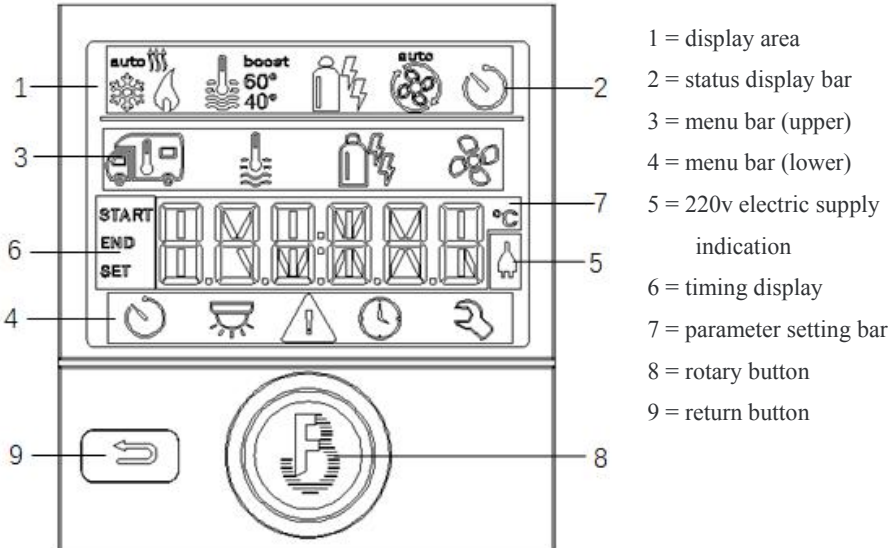
7. Defective LCD switch can only be repaired by the manufacturer or the service department of the manufacturer.

8. Do not use the Heater in garages, multi-storey vehicle parks or ferries or during refueling. Turn off the Heater with the LCD switch to ensure that the Heater cannot be turned on by remote control.

Important information:

If a new heater or a heater for replacement is connected to the LCD switch, the process described in "Power On Start" must be repeated.

I. Display and Control



-- Information is displayed on the LCD display with backlight.

-- In the menu bar (3, 4), the function of the LCD switch can be arbitrarily selected. The operating parameters are displayed on the status bar (2) and display (5, 6).

After the 220v supply is connected, the 220v electric supply indication bar (5) displays the power supply flag.

-- During operation, set the parameter bar (7) to display the change between time and set room temperature.

-- Press the return button to disable selected parameters and return to the previous interface.

Rotary button

Select, modify, and save icons for menu bars 3 and 4 with the rotary button. The selected icon flashes.

Clockwise rotation indicates:

--Options scroll from left to right of one menu bar, from the end of one menu bar to the front of another menu bar.

-- Increase the numerical value by one.

--Options scroll from right to left of one menu bar, and from the front of one menu bar to the end of another menu bar.

-- Reduce the numerical value by one.

Tapping of the rotary button indicates:

--Confirm and store the selected option and return to the main menu.

Long press of the rotary button (more than 3s) indicates:

-- The Heater's heating function or other functions are turned off and the LCD switch is turned off to enter the sleep state.

Return button

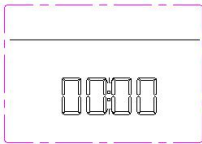
-- Discard the current option and return to the previous option.

Counterclockwise rotation means:

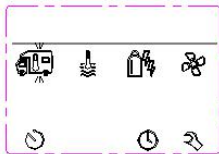
II. Switch setting

1. Power on

When the LCD switch is powered on, "INIT. ." will appear on the display. After a few seconds, the time 00:00 will be displayed.



Click the rotary button to display the initial interface options in the display area.



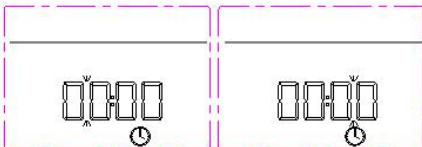
Timing (current time setting)

Click the rotary button to display the icon in the menu bar (3).



-- Use the rotary button to select the "Set Clock" icon in the menu bar (4).

-- Click the rotary button to enter the clock settings.



--The hour display flashes.

--Use the rotary button to set the time.

"A--" is displayed in the morning and "P--" is displayed in the afternoon, which is automatically switched.

--Click the rotary button again to determine the time, then the minute display flashes.

--Set the minute with the rotary button.

--Click the rotary button to confirm the value and exit the clock setting.

2. Start with rotary button

--Press the rotary button for a long time (more than 3s), and the LCD switch will start.

3. Shutdown

Press the rotary button for more than 3s at the initial interface to shut down. When the LCD switch is turned off, the heating process and any connected equipment are also automatically turned off. The parameters before shutdown are retained.



Halt process

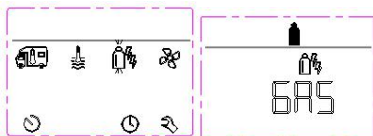
Since the Heater has a higher residual heat after heating and a post-cleaning need (cleaning of combustion room after combustion), the fan operation will be delayed for a few minutes to cool.

III. Heating Function Setting

For the heating function setting, it is necessary to set the energy first, then choose water heating or room heating or simultaneous heating, and finally set the circulating wind speed. The default heating function settings include the energy setting gas and the circulating wind speed setting eco.

1. Energy setting

Click the rotary button to display the icon in the menu bar (3). Rotate the button to select the energy icon in the menu bar (3).



-- Click on the selected icon.

--Use the rotary button to select the desired energy mode.

-- Click the rotary button to confirm.

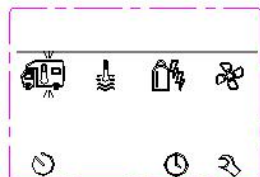
Working mode Energy mode

Gas	Liquefied petroleum gas / diesel
Mix 1	Electric supply 900 w + gas
Mix 2	Electric supply 1800 w + gas
EI 1	Electric supply 900 w
EI 2	Electric supply 1800 w

If the energy type is not selected, once the heater starts to operate (room temperature, hot water icon is activated), the status bar shows the type of energy selected during the previous heating or the default energy type gas.

2. Indoor temperature adjustment

Click the rotary button to display the icon in the menu bar (3).



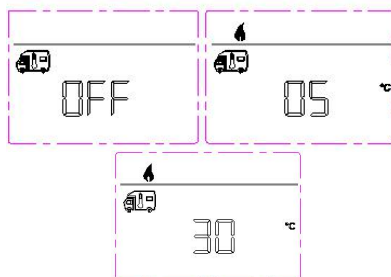
--Select the room temperature heating system with the rotary button depending on the connected device.

--Confirm the option by clicking the rotary button on the selected room temperature icon.

--Use the rotary button to select the desired temperature.

--Click the rotary button to confirm its value.

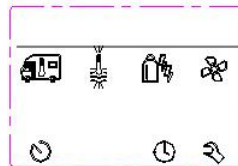
Temperature display	Adjustment range	Step
°C	5~30 °C	1 °C



Flame icon = room temperature heating start. This icon will flash until the predetermined room temperature is reached.

3. Water heating adjustment

Click the rotary button to display the icon in the menu bar (3).



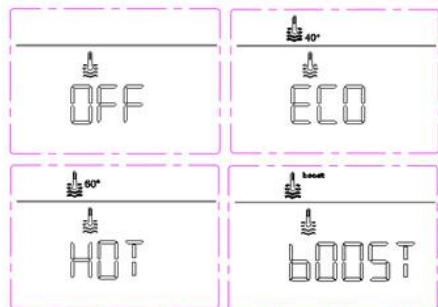
--Use the rotary button to select an icon in the menu bar (3).

--Click the rotary button to confirm and enter the setting level.

--Use the rotary button to select the desired water temperature setting level.

--Click the rotary button to confirm the value.

Working mode	description
OFF	Water heating is closed. Water heating icon disappears
ECO	Presetting water temperature 40 ° C
HOT	Presetting water temperature 60 ° C
BOOST	Performing water heating for 40min first or heating room after water temperature reaches 60 °C



This icon will flash until the predetermined water temperature is reached.

In the "heating and hot water mode", the water temperature of 40°C can only be stored for a limited time (room heating priority).

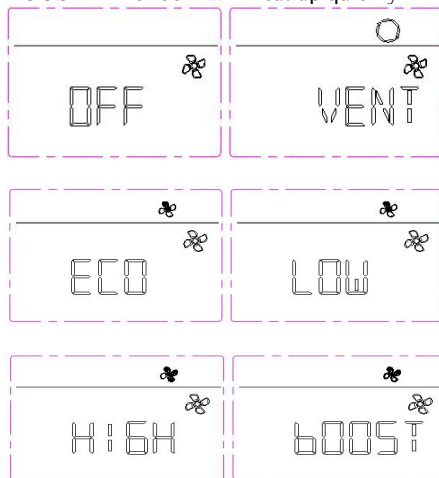
4. Selection of wind speed

Click the rotary button to display the icon in the menu bar (3).



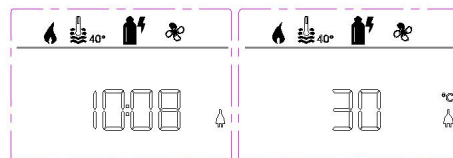
- Rotate the button to select an icon in the menu bar (3).
- Click the rotary button to confirm and enter the setting level.
- Use the rotary button to select the desired fan speed.
- Press the rotary button to confirm and save.

Working mode	description
OFF	Turn off the fan.
VENT ventilation	Circulation ventilation. The 10-level wind speed can be selected. Wear of the motor may increase depending on the frequency of use.
ECO	Low wind speed
LOW	Intermediate wind speed
HIGH	High wind speed which results in higher power consumption, higher noise level and increase of motor wear.
BOOST	The room will heat up quickly



5. Start heating

After the setting is finished, press the back key or wait for 10s to enter the timing interface, and the heating starts. Time and set temperature are displayed alternately.

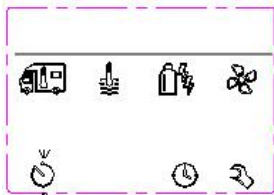


6. Stop heating

Press the rotary button for more than 3s to shut down.

IV. Timing heating setting

Click the rotary button to display the icon in the menu bar (3). Click the rotary button to enter the timing setting.



Warning: Danger of toxic exhaust gases.

The activated timing switch will turn on the Heater even if the vehicle is stopped and there are no operators. Exhaust gases from the Heater may be toxic in confined spaces such as garages, workshops, repair shops.

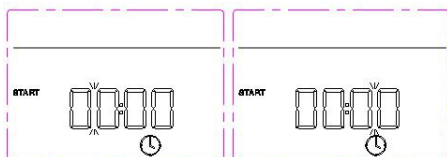
If the vehicle is parked in a closed room:

- Turn off the fuel supply to the Heater.
- Turn off the timing switch of the LCD switch.

-- Turn off the Heater with the LCD switch. Press the rotary button for 3 seconds to turn it off.

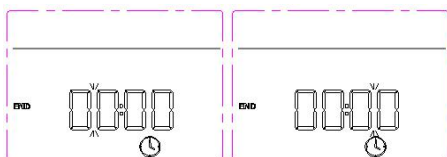
1. Start time entering

Use the rotary button to set the start time. Click the rotary button to confirm and proceed to the next setting.



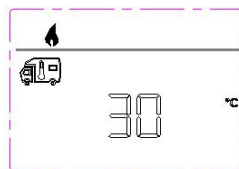
2. End time entering

Use the rotary button to set the heating end time. Click the rotary button to confirm and proceed to the next setting.



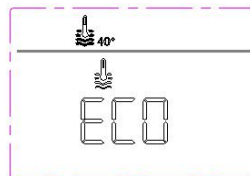
3. Room temperature setting

Use the rotary button to select the desired room temperature. Click the rotary button to confirm the value.



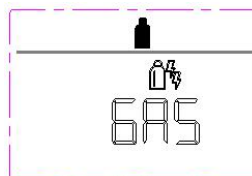
4. Water temperature setting

Use the rotary button to select the desired hot water temperature. Click the rotary button to confirm.



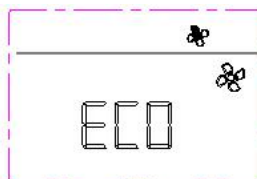
5. Energy mode selection

Use the rotary buttons to select the desired energy mode. Click the rotary button to confirm the value.



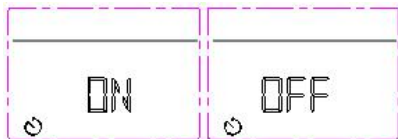
6. Fan speed level selection

Use the rotary button to select the desired fan speed level. The fan speed level is selected only after the room temperature heating mode is set. Click the rotary button to confirm.



7. Timing enabled

Use the rotary button to select Enable Timing (on). If OFF is selected, the timing is canceled, but the setting is saved. Click the rotary button to confirm that the timing is valid.



The timing switch remains enabled only once until it is disabled (turned off) or powered down. If the time switch is programmed and enabled, the timing switch icon is displayed in the status line (2). The timing icon flashes if the time switch is enabled and activated.

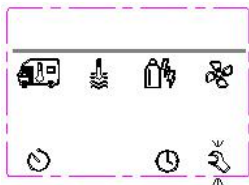
8. Timing cancellation

After timing is set, use the rotary button to select the timing setting. Click the rotary button to enter the setting.

Use the rotary button to select the timing cancellation (off). If on is selected, continue to use timing. Click the rotary button to confirm that the timing cancellation is valid. But the previous settings are still saved.

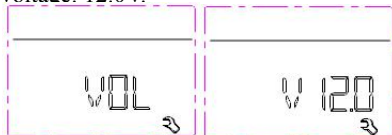
V. Parameters Setting

The specific parameter setting will remain after the power is turned off. Use the rotary button to select the "setting" icon in the menu bar (4). Click the button to enter the setting.



1. Voltage inquiry

Click the rotation button to display the voltage: 12.0V.

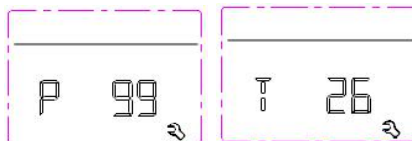


2. Air pressure and temperature inquiry

Use the rotate button to select the atoms icon.



Click the rotation button to enter the query.



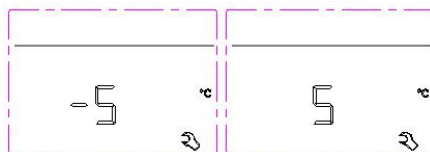
Use the rotary button to switch between atmospheric pressure and ambient temperature.

Atmospheric pressure: 99KPa

Ambient temperature: 26 °C

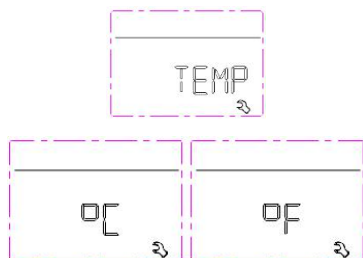
3. Offset setting

The external temperature sensor of the Heater can be adjusted separately depending on the installation of the sensor. The offset setting can be in the range of -5 °C to 5 °C, with an error of 1 °C. Use the rotary button to select the offset icon and click the rotary button to enter the setting. Use the rotary button to select the offset value. Click the rotary button to confirm and save.



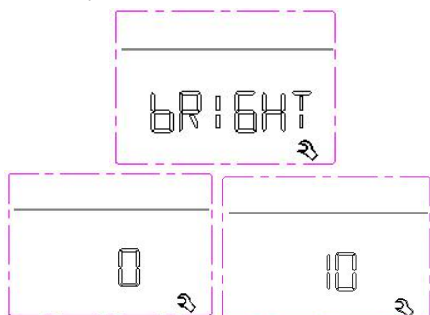
4. Switching temperature units

Use the knob to switch between centigrade and Fahrenheit, and click OK.



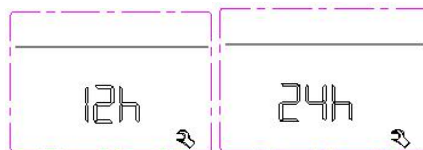
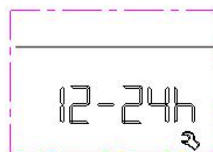
5. LCD backlight adjustment

The LCD backlight has 10 levels of incremental adjustment. Use the rotary button to select the BRIGHT icon and click the rotary button to enter the setting. The brightness of the LCD changes as the rotary button rotates. After confirming by clicking the rotary button, return to the previous operation. The backlight brightness is set to level 6 by default.



6. Time format setting

Use the rotary button to select the time format setting icon and click the rotary button to enter the setting. Use the rotary button to select the 12h icon or the 24h icon and click the rotary button to confirm. The default setting is 24h.



7. Fast oil pumping setting

Use the rotary button to select the oil pumping icon GoOil.

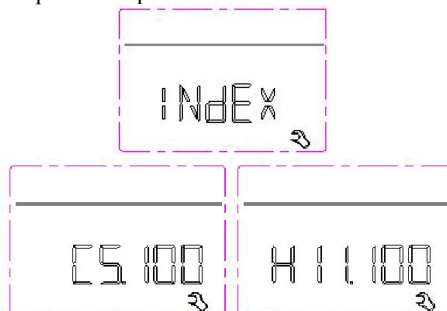


Click the rotary button to enter the fast oil pumping. The default fast pumping time is 90 seconds. The remaining time can be adjusted with the Rotary button.

Stop the fast oil pumping by pressing the return button or when the pumping time exceeds the set value.

8 Software version number

Use the rotary button to select the INdEx icon and click the rotary button to enter the query item. Use the rotary button to view the information of the LCD switch or the information of the main controller. Click the rotary button or the return button to return to the previous operation.

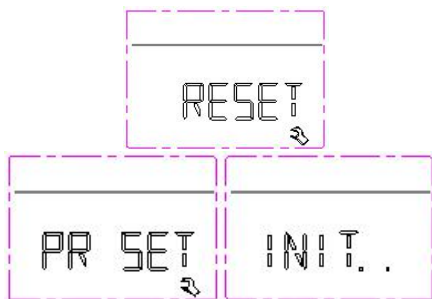


C5.1000--LCD switch version
H11.100--main controller version

9. Factory settings

The reset function resets the LCD switch to factory settings. All previous settings will be deleted. All devices used before reset should be installed and powered.

Use the rotary button to select the RESET icon and click the rotary button to display the factory settings PR SET. After clicking to confirm, the initialization "INIT...." is displayed.



VI. Fault Display

How to read the alert code:

- Use the rotary button to select the  icon and click the rotary button to display the current warning code (for troubleshooting, please refer to the relevant heater operation manual).

Faults include faults recovering automatically and faults recovered manually after repair.

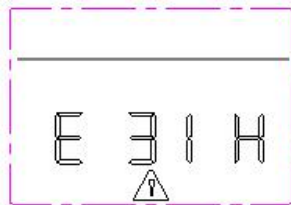
A fault recovering automatically is a warning fault in which an operating parameter has exceeded a defined range of normal operation and reaches an undefined state. In this case, the equipment will continue to run and the warning symbol () will be displayed in the menu bar (4) without warning code. After the fault is repaired, the warning symbol disappears automatically (it can also be manually restored), and the equipment continues to work according to the original settings. For example: warning fault code W120H.



A manually recovered fault means that the fault code is displayed in the parameter setting bar (7) when the fault occurs. The cause of the fault can be determined and remedied by the help of the troubleshooting guide. The fault code disappears after a few seconds, and the warning also disappears. The warning symbol is displayed in the menu bar (4).

To select reheating after the fault is identified and resolved, eliminate the fault code first. Press the rotary button to display the fault code. Then, press the rotary button again, the displayed fault code disappears and the interface returns to the initial time interface. Re-enter the heating parameters to initiate heating. If the fault is eliminated, the heating will be normal. Otherwise, the fault will occur again. The LCD switch will jump to the "Fault" menu again, and the warning symbol will be displayed again. The affected equipment will still be in the warning state. Since the fault has not been eliminated, if you want to return to the setting level, press the return button (9).

For example: fault code E31H. Shutdown and power-off can also eliminate faults.



The fault code table and troubleshooting methods can be found in the tenth fault code table at the end of the manual.

VII. Technical Parameters

Display: LCD, black and white, with backlight.

Dimensions: 92 × 103 × 40mm

Working temperature: -25 °C ~ +60 °C

Storage temperature: -25 °C ~ +70 °C

Power supply: dc10.5~16v

Power consumption: Max.65mA (100% backlight)

Standard current: 10mA

Quiescent current: 3mA

The above parameters are subject to change without notice.

Maintenance:

The LCD switch is maintenance-free. To clean the front panel, use damp cloth or neutral soap solution.

VIII. Installation Instructions

Installation in vehicles must comply with applicable technical and administrative regulations.

Security information:

Installation and service must be performed by authorized installers and service agents. Improper installation, alteration, repair, or maintenance can result in property damage, personal injury, or loss of life, and the warranty will also be canceled.

Do not try to install the equipment by yourself. Do not use high voltage equipment unless the electronic circuit (board) is disconnected. Do not use a battery charger to power the Heater, even while testing. If the vehicle requires electric welding, do not connect a 12 volt DC power supply to the equipment. Electric welding can cause serious damage to the equipment. Do not shorten the electrical connection cable or remove the label indicating polarity. Turn off the vehicle's vehicle power supply during installation and turn off the power when the equipment is connected. The equipment can only be installed in the specified location.

When the gas heater is not used, it is best to turn off the gas valve.

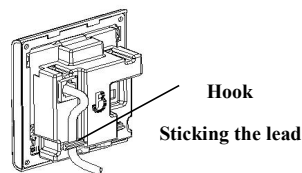


Figure 1

Installation location:

Install the LCD switch in a waterproof and moisture-proof position.

Install the LCD switch at the height of your eyes for easy reading and operation.

Prepare a mounting opening for the LCD switch, as shown in figure 2.

Lay the connector cable connecting the cables in a tension-free circuit. It shall be able to pull the LCD switch out of the mounting hole by 20 cm so that no tensile stress is applied to the plug connection. Never pulling the connector cable connecting to the LCD switch.

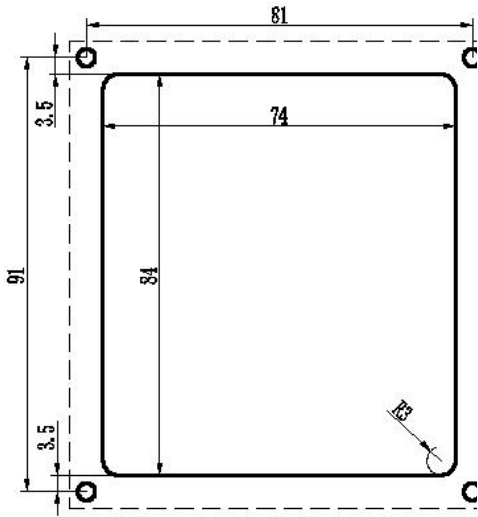
Assembly:

Install as shown in Figure 3.

Install the LCD switch holder to the wall with 4 m3×10 screws.

- ① Hang the front panel of the LCD switch on the holder
- ② Fasten the LCD switch to the holder
- ③ Secure the LCD switch with m3×6 screws.
- ④ Install the rotary button (figure 3-4) onto the shaft.

LCD switch installation opening diagram



LCD switch installation method

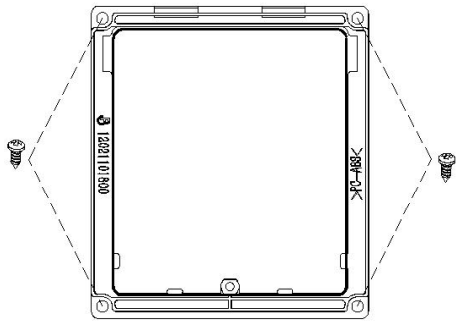


Figure 2

IX. Attachments

Name	Quantity
LCD switch	1
Cross countersunk head and flat tail self-tapping nail m3×6 (fastening the switch panel)	1
Cross head self-tapping nail m3×10 (installing the switch on the wall)	4
Operation and installation instruction	1
Connecting cable, a length of 6m	1

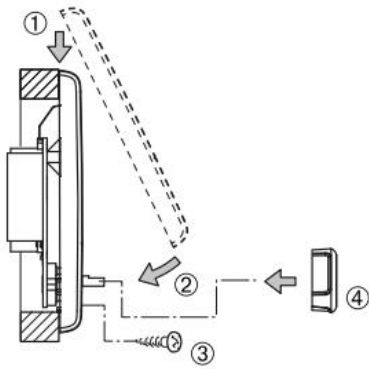


Figure 3

X. Troubleshooting Method

Troubleshooting Method for Fault Locking State		
Fault code	Fault name	Troubleshooting methods
10	Extremely high voltage	a check vehicle power supply system
11	Extremely low voltage	a check vehicle power supply system
21	Open circuit of warm air outlet temperature sensor	a check whether the sensor is in good condition.
22	Short circuit of warm air outlet temperature sensor	a check whether the sensor is in good condition.
23	Open circuit of water temperature sensor	a check whether the sensor is in good condition.
24	Short circuit of water temperature sensor	a check whether the sensor is in good condition.
25	Open circuit of external temperature sensor	a check whether the sensor is in good condition.
26	Short circuit of external temperature sensor	a check whether the sensor is in good condition.
27	Open circuit of combustion-supporting temperature sensor	a check whether the sensor is in good condition.
28	Short circuit of combustion temperature sensor	a check whether the sensor is in good condition.
31	Ignition failure	a check the diesel supply system b check whether the combustion-supporting inlet and outlet are blocked c check glow plug and flame sensor
32	Combustion failure	a check the diesel supply system b check whether the combustion-supporting inlet and outlet are blocked c check the flame sensor.
33	Flame sensor failure	a check flame sensor leads b check flame sensor

41	Warm air outlet temperature is too high	a check whether the air inlet and outlet are blocked
42	Warm air overheat switch protection	a check whether the air outlet is blocked b check the heater overheat switch
43	Water temperature is too high	a check whether the water tank is short of water. b check whether the sensor is in good condition. c check whether the air outlet is blocked
44	Water temperature overheat switch protection	a check whether the air outlet is blocked b check the water temperature overheat switch
45	Continuous overheat fault	a check whether the air outlet is blocked b check the water temperature sensor c check heater sensor
51	Communication failure	a check the connection cable
61	Open circuit of oil pump	a check whether the oil pump lead is damaged b check whether the oil pump lead connection is reliable. c replace oil pump d replace motherboard
62	Oil pump short circuit	a check whether the oil pump lead is damaged b check whether the oil pump lead connection is reliable. c check oil pump d replace motherboard
63	Open circuit of glow plug	a check power supply voltage b check the normal temperature resistance of glow plug (0.2Ω/12V) c clean up carbon deposits in glow plug d replace motherboard
65	Glow plug has no drive	a replace motherboard
71	Gas valve failure	a Check gas valve coil and lead
72	Gas valve power failure	a Replacement motherboard
81	Open circuit of combustion-supporting fan	a check combustion-supporting fan
82	Combustion-supporting fan failed to	a check motor lead connection

	start	b check combustion-supporting fan
83	The speed of combustion-supporting fan is too low.	a check combustion-supporting fan
84	Open circuit of heater fan	a check the heater blower.
85	The warm air blower failed to start.	a check motor lead connection b check the heater blower
86	The speed of warm air blower is too low.	a check the heater blower.
91	High voltage package failure	a Check the ignition coil and lead
92	High voltage power supply failure	a Replacement motherboard
93	High voltage circuit failure	a Replacement motherboard
94	Gas valve circuit failure	a Replacement motherboard
110	Window opening alarm	a check window switch connection cable
120	Low voltage alarm	a recommend charging
220	220V no connection	A check AC 220V power supply system

If these measures cannot correct the fault, or the fault code is displayed, it cannot be found in the fault code table guide, please contact the service provider.

Table 2 continued