
Preface

Thank you for choosing 5KW water parking heater

This instruction book describes the structures, working principles, installation and operation of the parking heater. For correct use of the heater, please read this instruction book carefully before installation and use. The instruction book shall be saved in a convenient place for later reference.

Attention:

- This instruction book is subject to revision without notice, but the instruction book is in conformity to the purchased product.
- Our effort is to explain all questions the users may have through this instruction book. If you have any doubts or find anything incorrect in this instruction book, please contact our company directly.
- At first unpacking, please check the heater and its accessories against the packing list. Please contact the dealer immediately if any problem is found.
- If any trouble arises during application, please contact the Department of Marketing of our company or other customer service stations authorized by this company. We shall do our best to provide service to you.

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Note:

Comply with the operational manual for installation and use to ensure that the heaters can work for a long time.

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1 Introduction

The main equipment of Model YJH-Q5/□ environmental protective and highly intelligent remote control parking heater (hereinafter referred to as the heater) is a small fuel furnace controlled by a single-chip microprocessor. Its medium circulation system is connected with the cooling system of automobile engine. In such a way, the cooling liquid for engine can be heated by the heater while the engine is not working, so as to increase the temperature of the engine and the interior of automobile. The engine is made easy to start even at very low temperature and both the drivers and passengers can have a warmer environment.

The heater is fully automatically controlled for heating. It features in compact structure, small volume, remote control, energy-saving, environmental protection, dual security system, convenient installation, easy maintenance, etc.

2 Technical Specifications

Heating medium	Coolant	
Thermal power (W)	High power operation:5000W	
	Low power operation:1500W	Low power operation:2400W
Fuel	Gasoline	Diesel
Fuel consumption (l/h)	High power operation:0.69 l/h Low power operation:0.2 l/h	High power operation:0.62 l/h Low power operation:0.27 l/h
Power supply (Common battery for the engine)	DC12V	DC12/24V
Power consumption (W)	<100 at starting 37 for high power operation and 10 for low power operation.	
Working pressure(Mpa)	0.25	
Lowest working temperature	-40℃	
Net Weight (Only heater)	4.8kg	
Mobile phone control (Optional)	No limitation	
Remote control (Optional)	Without obstacles≤800m	
Temperature of coolant when warm blower is started	45℃	

3 Structures and Working Principles

The structures of the heater are shown in Fig. 1.

3.1 Cooling Liquid Circulation System

The cooling liquid of engine flows through water inlet pipe 20, the furnace cavity between the furnace inner casing 3 and outer casing 2, and water outlet pipe 19, forming a complete loop for the cooling liquid circulation system. The circulation is forced by water pump 13. In this way, the cooling liquid of engine can be heated again and again in the furnace and the temperature of engine, water-tank, heat-exchanger and cab can rise gradually.

The car should be started first for circulating the coolant after installation. Switch the A/C to warm blower mode, the bubbles can be eliminated after the warm air blows.

An air bleeding screw 16 is installed at upper level on water outlet pipe for eliminating bubbles from the system.

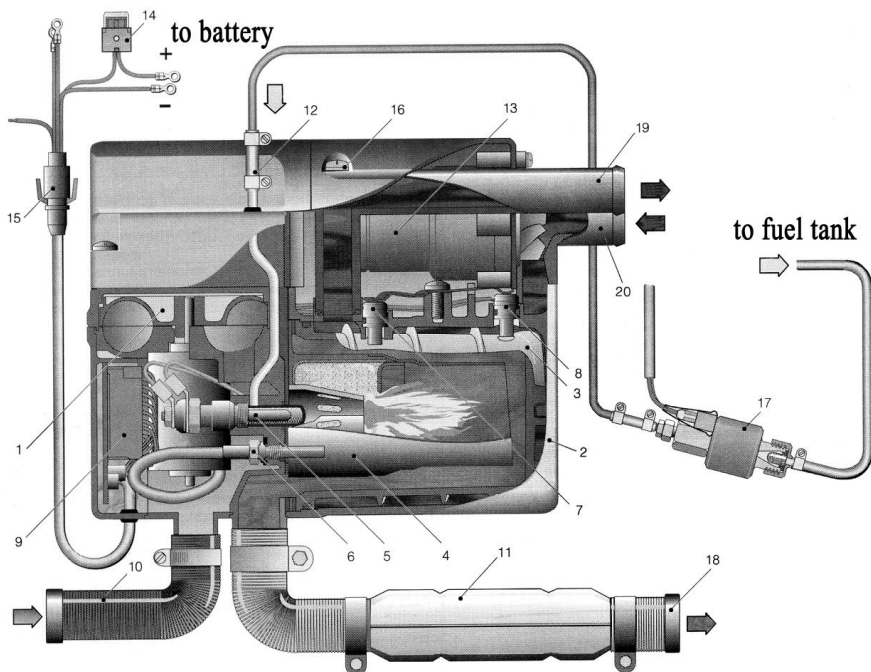


Fig. 1

1-Combustion supporting fan 2-Furnace outer casing 3-Furnace inner casing

4-Combustion chamber 5-Glow plug 6-Flame sensor 7-Water temperature sensor
8-Overheating sensor 9-Controller 10-Air inlet pipe 11-Muffler 12-Fuel pipe
13-Water pump 14-Fuse 15-Main wires bundle connector 16-Air bleeding screw
17-Fuel pump 18-Exhaust pipe 19-Water outlet pipe 20-Water inlet pipe

3.2 Furnace

The main body of furnace consists of furnace outer casing 2, furnace inner casing 3, combustion chamber 4, etc. Fuel pump 17 draws fuel from fuel tank and send it to combustion chamber to mix with combustion supporting air. The mixture is to be ignited by glow plug 5. The fresh air from air intake pipe is blown into combustion chamber by combustion supporting fan 1 for sufficient burning. The exhaust gas, after flowing through the muffler 11, is to be released to the air by the exhaust pipe 18.

3.3 Controller

Control and monitoring on working conditions of the heater is carried out by the single-chip microprocessor-based controller 9 according to preloaded programs. The control and monitoring tasks are in the below:

(1) Monitor the voltage of power supply and to decide if it can meet the requirements of work.

(2) Check if there is any open circuit or short circuit trouble with the combustion supporting fan, water pump, glow plug, flame sensor, overheating sensor, water temperature sensor, etc. before and during normal operation of the heater.

(3) Carry out control on voltage of power supply, conduction time and duration time of the glow plug.

(4) Carry out control on speed of rotation of the combustion supporting fan in heater's different phases of working.

(5) Adjust fuel feeding rate of fuel pump automatically according to heater's different phases of working.

(6) Determine (or adjust) working conditions of heater according to data collected from flame sensor, overheating sensor and water temperature sensor.

(7) Carry out control on working conditions of the water pump.

(8) Switch off the equipment automatically if some troubles arise during working. The equipment can be switched on again if necessary. But

if the equipment has been switched off for more than a fixed number of times, the equipment will be locked and cannot be restarted. The instrument can only be put into use after the trouble is analyzed and solved by the troubleshooting & diagnosis instrument.

3.4 Sensors and Safety Protection

3.4.1 The flame sensor 6 is used to measure the temperature of the combustion chamber so as to judge if the combustion chamber has been ignited and keeps burning after the ignition;

3.4.2 The overheating sensor 8 is used to measure the temperature of the furnace inner casing. The heater will be shut down automatically in case of overheating due to inadequate water in furnace cavity or other troubles.

3.4.3 The water temperature sensor 7 is used to measure the temperature of the cooling liquid and determine whether the warm blower of the heat exchanger in the car needs to be started and also determine the working conditions of the heater.

3.5 On/Off Operation

Switching on or off of the heater can be completed by a mini-meter or remote control unit or other operating units. Please refer to Chapter 5 Methods of Operation for details.

3.6 Power Supply

The power supply to the heater is the storage battery in the automobile. The power supply is with an independent security control device.

3.7 Fuel Supply

The fuel for the heater can be from the fuel tank for driven automobile.

4 Installation

Only special-purpose parts as shown in Fig. 2 can be used for installation of the heater. The positions and ways of fixing of various parts may vary from one automobile model to another, but the general principles shall be in conformity to the requirements of this chapter.

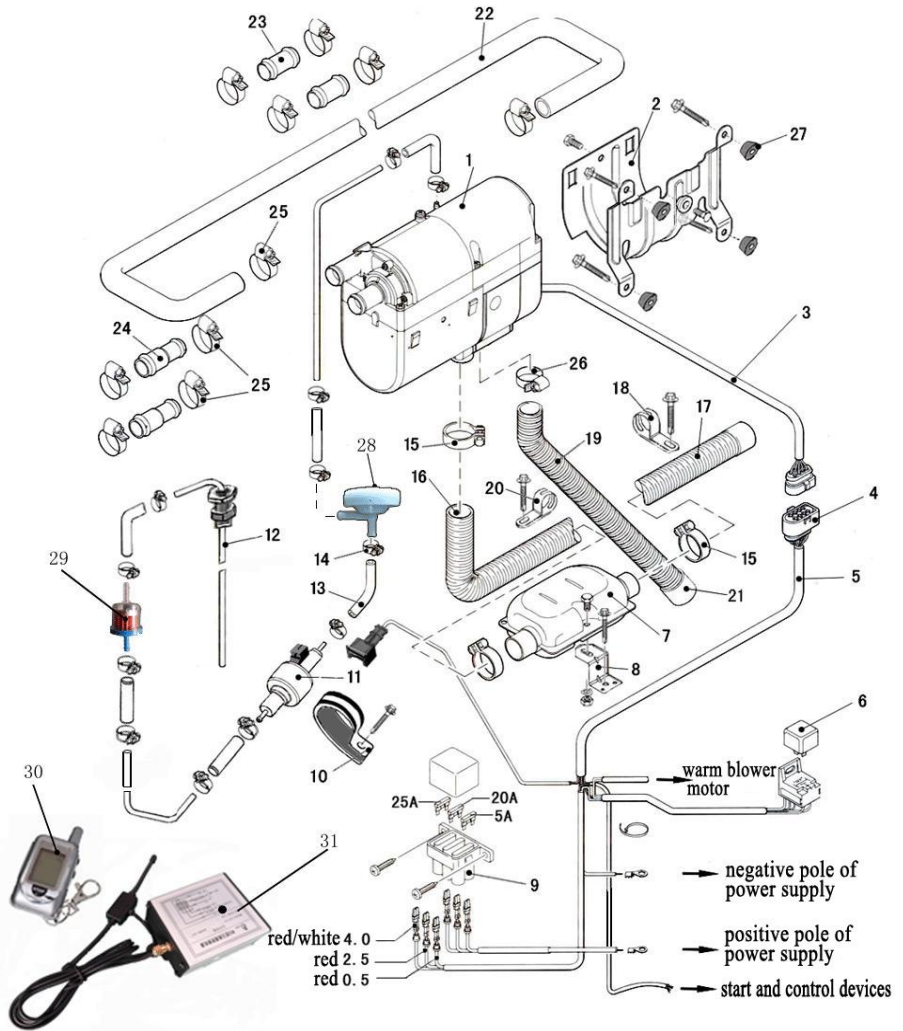


Fig. 2

- 1- Heater 2- Bracket for the heater 3- Connecting cable 4- Main wire bundle connector
 5- Main wire bundle 6- Relay for warm blower motor 7- Muffer 8- Muffer holder
 9- Fuse holder 10- Fuel pump clamp 11- Fuel pump 12- Fuel suction pipe 13- Fuel pipe
 14- Fuel pipe clamp 15- Exhaust pipe clamp 16- Exhaust pipe 17- Exhaust tail-pipe
 18- Exhaust pipe fixing clamp 19- Air inlet pipe 20- Air inlet pipe 21- Protective hood
 22- Water pipe 23- Water pipe joint 24- Special water pipe joint 25- Water pipe clamp
 26- Air inlet pipe clamp 27- Rubber shock absorber 28- Damper 29- Filter
 30- Remote controller 31- Remote control receiver or GSM receiver

4.1 Installation Site and Use of Heater Requirements

4.1.1 It is not allowed to use the heater in locations with inflammable or explosive substances such as flammable gas or flammable dust.

4.1.2 It is not allowed to use the heater in closed space (such as garage) to avoid danger of poisoning by exhaust from burning.

4.1.3 It is not proper to install and use the heater in house.

4.1.4 It is not allowed to use the heater in passenger compartment, cab or any other space where people are staying.

4.1.5 If the heater is installed in special-purpose vehicles (such as vehicles for dangerous goods), special rules must be followed.

4.1.6 Pay attention not to place fuel tank, gasoline tank, compression tank, fire extinguisher, clothes, paper, etc. near the heater.

4.2 Installation of the Main Equipment

The dimension of the heater is shown in Fig. 3.

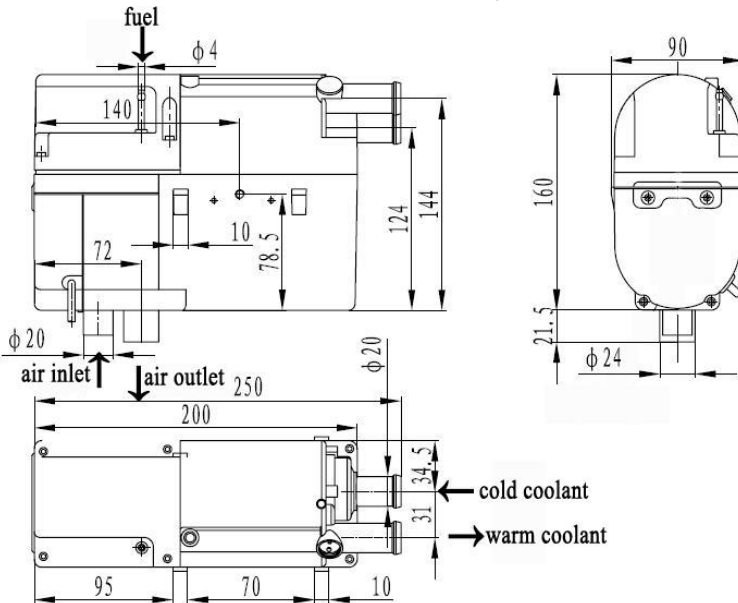


Fig. 3

4.2.1 The main equipment of the heater is mounted on automobile with a bracket. First, place the main equipment into the bracket. Keep its two protruding blocks on one side surface in line with the square holes of the bracket. Then use two M6×10 screws to tie up. When fixing the bracket

for the heater, please use rubber shock absorbers in the four corners.

4.2.2 The heater shall be installed in the engine chamber as deeply as possible, so as to facilitate heat conduction and enable the water pump to evacuate air automatically.

4.2.3 Choice of position for installation of the heater shall keep the air bleeding screw always on top, so as to facilitate release of air from the water pipe. It is allowed to incline to suit different arrangements for installation, but deviation from the “normal installation position” shall not exceed 90°, as shown in Fig. 4.

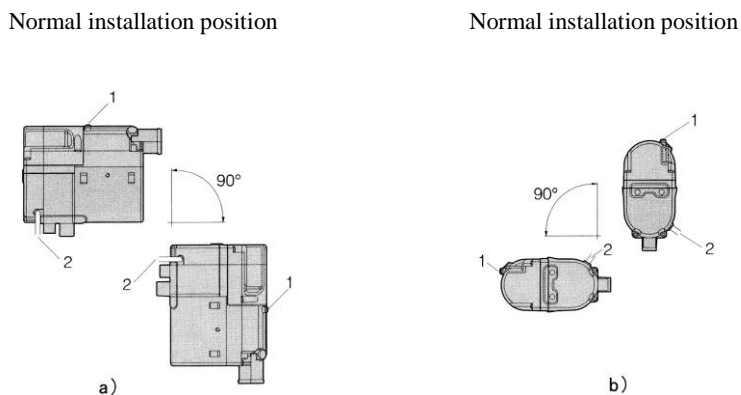


Fig. 4

1- Air-bleeding screw

2- Connecting cable

4.3 Installation of Cooling Liquid Circulation System

The installation of cooling liquid circulation system is shown in Fig. 5.

4.3.1 Use special-purpose rubber pipe and pipe clamps to connect the main equipment of the heater between the automobile engine and the hot-air exchanger.

4.3.2 Add cooling liquid to the system while keep the air-bleeding screw loose. When cooling liquid begins to overflow from the screw, it means the air is evacuated from the system. Tighten the air-bleeding screw again.

Attention: The cooling liquid in use must be in conformity with the specifications of the automobile manufacturers. Anti-freezer not only can improve anti-freezing quality of the cooling liquid, but also can prevent corrosion. Therefore water can not be added in any case and

4.4.1 The function of the air inlet pipe is to draw combustion supporting air into the main equipment for the furnace. It is required that the combustion supporting air must be drawn from the outside. It must be sufficient and fresh. Therefore, the vent of the air inlet pipe shall not be opposite to the air flow, and shall not be plugged by dust, rain or snow. The protective hood at the vent shall not be damaged.

4.4.2 The special-purpose exhaust pipe shall be cut off in proper position to form two sections: an exhaust pipe and an exhaust tail-pipe. The muffler shall be positioned in the middle and fixed with the muffler holder.

Attention: These parts are at high temperature when the heater is working. They shall be arranged far from the plastic parts and wires of the vehicle to avoid damage.

4.4.3 The exhaust (tail-) pipe shall not extrude out of the automobile contour. Its outlet position shall prevent intake of the exhaust by the air inlet pipe or convection fan (or far from the air inlet pipe and the air intake vent of the convector fan). Its outlet shall not be opposite to the air flow, and shall not be plugged by dust, snow or rain. The protective hood at the outlet shall not be damaged.

A small hole ($\phi 2\sim 5$) shall be drilled at the low end of the exhaust pipe for condensate to drain.

4.5 Installation of Fuel Supply System

The fuel supply system for the heater is as shown in Fig. 7.

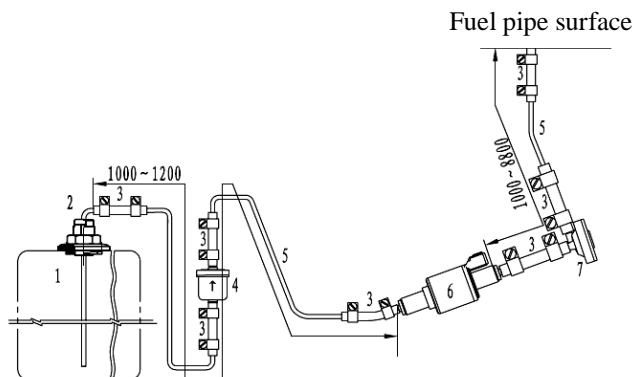


Fig. 7

1.Fuel tank 2.Fuel extractor 3.Fuel pipe connector 4.Filter 5.Fuel pipe 6.Fuel pump 7.Damper

4.5.1 The fuel pump shall be fixed in automobile with a fuel pump clamp with protective rubber cover. The outlet of the fuel pump shall tilt upwards. The tilt angle can be selected from the range of $15^{\circ}\sim 35^{\circ}$ (as shown in Fig. 8). When conditions permit, the fuel pipe between the fuel pump and the heater shall go up gradually.

4.5.2 The hole on the fuel tank cover is $\phi 10\pm 0.1$ for installation of the fuel drawing pipe. The hole shall be made smooth without any burrs on the verge. An O-ring shall be placed beneath the fuel pipe seat. The low port of the fuel drawing pipe shall be about $30\sim 40$ mm from the bottom of the fuel tank. If it is too low, it becomes liable to suck the precipitating impurities from the bottom of the fuel tank and send into the fuel pipe.

4.5.3 Difference in elevation between the level of fuel and the fuel pump as well as the difference in elevation between the fuel pump and the fuel feeding port of the main equipment can produce pressure (or suction) in the fuel pipeline. So, these dimensions shall conform to the requirements as follows:

$$a \leq 3\text{m};$$

$$b \leq 0.5\text{m};$$

(Avoid of negative pressure may be produced in sealed fuel tank. In such case, $b \leq 0.15\text{m}$);

$$c \leq 2\text{m}.$$

Please check the vent on the fuel tank when doing installation.

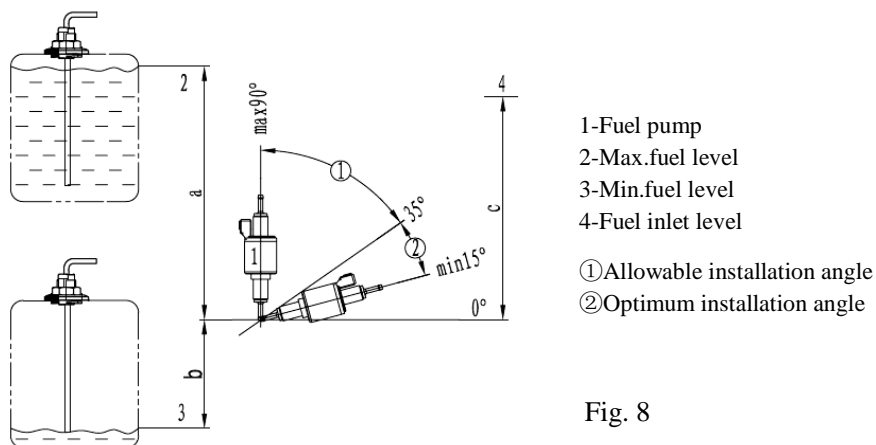


Fig. 8

4.5.4 Installation of fuel filter

Fuel filter should be installed before the fuel inlet of fuel pump, flow direction mark “A” should be correct when doing installation. The installation position of fuel filter should accord with requirement of Fig.9.

Fuel filter should be changed after 2 years, fuel pipe and clamps should also be changed.

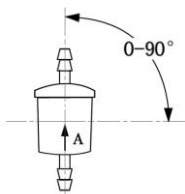
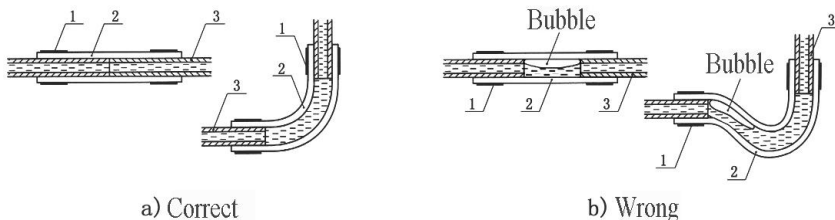


Fig.9

4.5.5 Connect fuel pipe, fuel pump, fuel inlet pipe of the heater and fuel extractor with fuel pipe joint which made of rubber. The connecting place shall be tight without any gap (as shown in Fig. 10). Therefore, the ends of the fuel pipe shall be cut off evenly with a sharp blade to make smooth ends.

Connections are not allowed on the fuel pipe from the fuel pump to the heater.



1-Fuel pipe clamp 2-Fuel pipe joint 3-Fuel pipe

Fig.10

4.5.6 Fuel pump and fuel pipes shall keep a distance from any heat source. They should not be installed close to the muffler or exhaust pipe. Fuel pipes shall be protected with corrugated pipe.

4.5.7 The fuel pipes shall be fixed in place with ties in proper locations. The distance between two ties shall not be longer than 50 cm.

4.6 Installation of Electrical Parts

The wiring diagram for the heater is shown in Fig. 10.

4.6.1 The wires of the main equipment of the heater for connection to outside circuits have been made into wire bundles. They can be laid according to the positions of various components and shall be fixed in some proper locations. The distance between two fixing points shall not exceed 30 cm. Attention: Any exposed wire bundle out of the automobile body or out of the wiring groove must be protected by corrugated pipe.

4.6.2 The positive line (4mm², red) of power supply of the heater shall be connected to the positive terminal of the battery of automobile. The negative (ground) line (2.5 mm², brown) shall be connected to the negative terminal of the battery of automobile.

4.6.3 Wire connections of the relay for the warm blower : The black wire of 4 mm² shall be connected to the fuse case of automobile. The black/purple wire of 4 mm² shall be connected to the “+” terminal of the warm blower .

4.6.4 All electrical components of the heater shall be connected to the wire bundles through connectors. You just need to plug in to make connections according to their corresponding relations.

4.6.5 For those components whose connecting wires may need to go through small holes (such as mini-meter and remote control receiver), you need to pass the wires through the holes before the connection is made to the connector. For such reason, the terminals of these components are not plugged in the sockets in the factory. You have to plug in the terminals according to Fig. 11. You have to keep correct relations for them. Connector for the remote control receiver: Plug connection shall be made according to wire color and serial number of terminals on the sockets. Connector for the mini-meter: Plug connection shall be made according to Fig. 12.

Attention: All terminals shall be plugged in, even for those above-mentioned components not in use, to avoid any short-circuit.

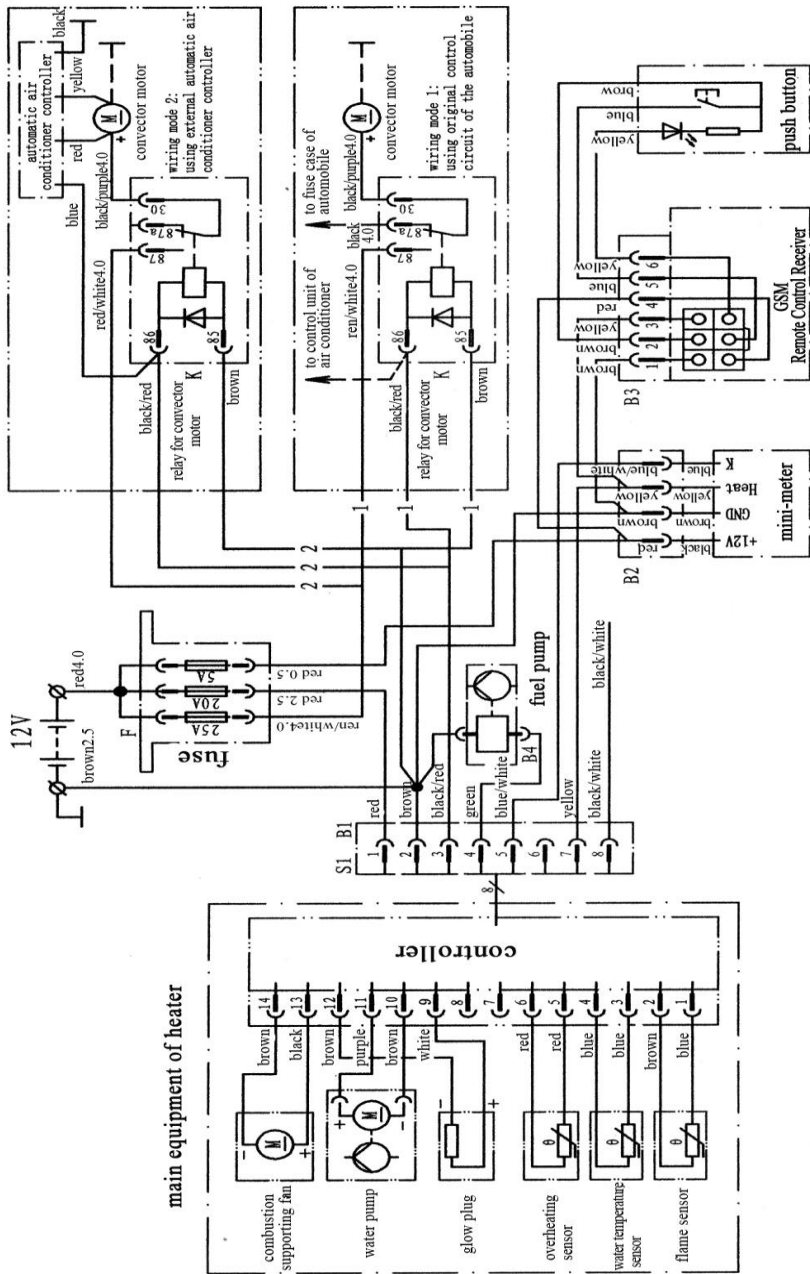


Fig. 11

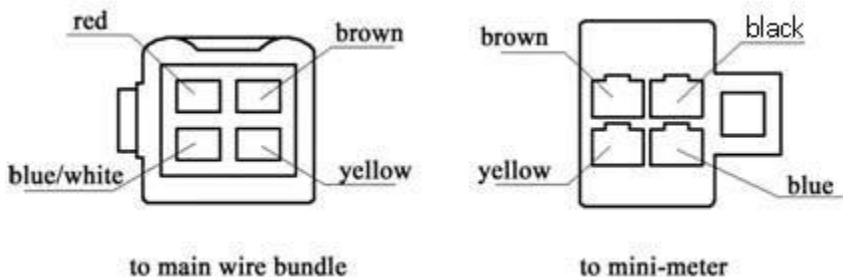


Fig. 12

5 Methods of Operation

5.1 The heater is operated by timer or a remote control unit. The timer is installed in the cab. The remote control unit consists of two parts: remote control receiver and remote controller (or cellphone). The receiver is installed inside the automobile. The transmitter is carried by the user for remote operation within a valid range.

5.2 The main modes of control on the heater include:

5.2.1 Manual power-on and manual power-off.

5.2.2 Manual power-on and automatic power-off when working time has come to a preset length.

5.2.3 Automatic power-on at preset time and automatic power-off when working time has come to a preset length.

5.3 Before turning off the engine, you should set the A/C as the warm air mode and keep I or II gear for the manual A/C, keep the A/C in “Open” position for automatic A/C. In such a way, it is convenient for heating the compartment next time.

5.4 Instructions to Operation of Timer

5.4.1 Panel functions



Key P: switching between functions.

Key \lll : To confirm or cancel the settings; Immediate power-on or power-off.

Keys \triangle and ∇ : To increase or decrease time; increase or decrease display brightness.

Attention: When power is switched on to the heater, the timer will

display $\overset{1}{2}{\underset{3}{BB:BB}}\Delta$. If no further operation is given, such state will keep unchanged. During such period, keys Δ and ∇ can be used to adjust display brightness.

5.4.2 How to set the present time

5.4.2.1 Press key **P**, the screen will display $12:00$. Now you can use keys Δ and ∇ to adjust display brightness.

5.4.2.2 Pressing key **P** one more time, the characters for hour are blinking. You can use keys Δ and ∇ to adjust the time to the present time.

5.4.2.3 Pressing key **P** again, the characters for minute are blinking. You can use keys Δ and ∇ to adjust the time to the present time.

5.4.3 How to preset power-on time

Each day, three power-on times can be preset, represented by the three small digits 1, 2 and 3 on the left of the screen.

5.4.3.1 Presetting the first power-on time:

5.4.3.1.1 Press key **P**. The display shows small digit “1” and $6:00$. The characters for hour are blinking. Use keys Δ and ∇ to adjust the hours for the power-on time.

5.4.3.1.2 Press key **P** again. The characters for minute are blinking. Use keys Δ and ∇ to adjust the minutes for the power-on time.

5.4.3.1.3 Press key \llcorner , and “●” is displayed on the top right corner of the screen. It is confirmation to the set time.

5.4.3.2 Presetting the second power-on time:

5.4.3.2.1 Press key **P**. The display shows small digit “2” and $12:00$. The characters for hour are blinking. Use keys Δ and ∇ to adjust the hours for the power-on time.

5.4.3.2.2 Press key **P** again. The characters for minute are blinking. Use keys Δ and ∇ to adjust the minutes for the power-on time.

5.4.3.2.3 Press key \llcorner , and “●” is displayed on the top right corner of the screen. It is confirmation to the set time.

5.4.3.3 Presetting the third power-on time:

5.4.3.3.1 Press key **P**. The display shows small digit “3” and $18:00$. The

characters for hour are blinking. Use keys \triangle and ∇ to adjust the hours for the power-on time.

5.4.3.3.2 Press key **P** again. The characters for minute are blinking. Use keys \triangle and ∇ to adjust the minutes for the power-on time.

5.4.3.3.3 Press key \lll , and “●” is displayed on the top right corner of the screen. It is confirmation to the set time.

5.4.4 How to preset heating time.

Heating time can be set between 1 minute and 1 hour 59 minutes.

5.4.4.1 After the power-on time is set, press key **P**. The screen will display $0:30 \blacktriangle$. Now the characters for hour are blinking. Use keys \triangle and ∇ to adjust the hours for heating time.

5.4.4.2 Next press key **P** again and the characters for minute are blinking. Use keys \triangle and ∇ to adjust the minutes for heating time.

5.4.4.3 Press key **P** again. The present time is displayed on the screen again. The three small digits 1, 2 and 3 will be displayed on the left of the screen, indicating three automatic power-on times have been preset.

5.4.5 Immediate power-on and power-off.

5.4.5.1 In the state when the present time is displayed on screen, when you press key \lll , characters $0:30 \blacktriangle$ are displayed on the screen. That means the heater has been started. The heating time can be adjusted to be between 1 minute and 1 hour 59 minutes immediately. With the passage of time, the time displayed on the screen will decrease too, until zero, and the heater is switched off automatically at last.

5.4.5.2 If you want to switch off the heater immediately, you can press key \lll to switch off the heater immediately. The present time will be displayed on the screen.

5.4.6 Checking and eliminating fault code.

Press key **P** in the heating mode, 6 pieces of breakdown information XEXX will be displayed on the screen, X indicates the breakdown number, XX indicates the failure code (Fault code see page 27). Use key \triangle 、 ∇ to look at the failure information. Hold down key **P** and then press key \lll , all the failure information will be eliminated. Press key \lll the screen will go back to display the present time.


Note:Please press the key within 10 seconds,after 10 seconds the screen will go back to display the time automatically and enter the power save mode state.If no operation within 10 seconds at the present time state,the timer will also enter the power save mode automatically.


5.5 Remot control instruction (Optional device)

5.5.1 Remote controller (See Fig.13)

Display Symbol

①Signal intensity: ▽,|||

②Heating symbol: 


③Successfully set symbol: 


④Heating 15 minutes: 15

⑤Heating 30 minutes: 30

⑥Heating 45 minutes: 45

⑦The rest heating time: XX(minute):XX(second)

⑧Key lock: 

⑨The rest power of the battery: 


⑩The end of heating: 



Fig.13

5.5.2 Manual button (See Fig.14)

5.5.2.1 The indication light of manual button goes out when the heater is in the standby status.

At this time,press the manual button,heater will work and the indication light of manual button will be lights up.The default heating time is 45 minutes of starting by manual button.

5.5.2.2 The indication light of manual button lights up when the heater is in the heating status.At this time press the manual button or the heating 45 minutes is finished,the heater will stop heating and the indication light of manual button will be went out.



Fig.14

5.5.3 Remote control receiver (See Fig.15)

Indication light Receiving / Transmitting antenna



Fig.15

5.5.4 Instruction for installation

According to the diagram of the wireless remote control receiver connect the wiring of remote control receiver、 manual button and install (tight) the receive/transmitting antenna before use.

5.5.5 Instruction for operation

5.5.5.1 Light up and go out of the screen

5.5.5.1.1 Screen and all the symbols light up after the battery is installed , then the remote controller enters the standby state(Screen goes out and none of the symbols are displayed after 2 seconds).

5.5.5.1.2 In all processes ,the remote controller will enter the key lock state automatically if no operation within 10 seconds .Key lock symbol occurs and the screen goes out.

5.5.5.1.3 Unlocking method: When the screen goes out, hold down the stop key for 3 seconds ,it will be unlocked. Then the screen lights up and the symbol of the key lock disappeared.

5.5.5.1.4 In the heating state, the heating symbol、 rest of heating time、 whole heating time and screen state(lock or unlock) occurs on the screen .Press any key,the screen will be lighted up (key lock symbol will be displayed).

5.5.5.2 The autocode function of remote controller and wireless remote control receiver

5.5.5.2.1 Press the encoding button of the wireless remote control receiver, the indication light will turn red and the remote controller will enter into the encoding state.

5.5.5.2.2 In the encoding process of wireless remote control

receiver ,encode the four different remote controllers by pressing each four different keys(in the unlocked status)of the remote controllers .Heating symbols(15mins 、 30mins 、 45mins) will all light at the same time if the encoding operation is correct. All the heating symbols will go out after 1 seconds and indication light turns green if encoding set up successfully.

5.5.5.3 The starting of parking heater

5.5.5.3.1 In standby and unlocking status,press the key of“heating 15 minutes”,then the screen is lighted up and the indication light flashes one time.If the Heating 15 minutes symbol is lighted up,the operation is finished.The time of heating 15 minutes is displayed on the screen and the heater enters into the heating status.If the heating 15 minutes symbol is not lighted up,the operation failure.Please re-press the key of heating 15 minutes.

5.5.5.3.2 In standby and unlocking status,press the key of“heating 30 minutes”,then the screen is lighted up and the indication light flashes one time.If the Heating 30 minutes symbol is lighted up,the operation is finished.The time of heating 30 minutes is displayed on the screen and the heater enters into the heating status.If the heating 30 minutes symbol is not lighted up,the operation failure.Please re-press the key of heating 30 minutes.

5.5.5.3.3 In standby and unlocking status,press the key of“heating 45 minutes”,then the screen is lighted up and the indication light flashes one time.If the Heating 45 minutes symbol is lighted up,the operation is finished.The time of heating 45 minutes is displayed on the screen and the heater enters into the heating status.If the heating 45 minutes symbol is not lighted up,the operation failure.Please re-press the key of heating 45 minutes.

5.5.5.4 The shutdown of parking heater

5.5.5.4.1 In the heating status,the remaining heating time is gradually decreased by the heating process.The heater will stop heating when the remaining heating time is cleared to zero or press the stop key in the unlocking status.when the stop operation is set,the screen will be lighted up and heating symbol will be went out.The heating process will be stop after the end of heating symbol occurs and the buzzer rings two times.

5.5.5.4.2 In the heating end of unlocking status,press stop key,the remote controller will return to the standby and locking status immediately.

5.5.5.4.3 In the heating end of locking status, the remote controller will return to the standby and locking status after 60 seconds.

5.5.5.5 Heating key operation in the heating status

5.5.5.5.1 In the heating of unlocking status,press the key of heating 15

minutes,the screen is lighted up and the heating 15 minutes symbol is displayed.The remaining heating time can't be accumulated,the cutdown from 15 minutes to begin again.

5.5.5.5.2 In the heating of unlocking status,press the key of heating 30 minutes,the screen is lighted up and the heating 30 minutes symbol is displayed.The remaining heating time can't be accumulated,the cutdown from 30 minutes to begin again.

5.5.5.5.3 In the heating of unlocking status,press the key of heating 45 minutes,the screen is lighted up and the heating 45 minutes symbol is displayed.The remaining heating time can't be accumulated,the cutdown from 45 minutes to begin again.

5.6 GSM remote control instruction(Optional device, Initial password:2530666).

GSM remote controller is an extended function device of parking heaters which can be started and stopped through voice and SMS by phones or cellphones.

5.6.1 GSM remote controller as shown Fig.16.

5.6.2 SIM card should be put into GSM remote controller before use.Refer to Fig.19

(Heater manual instruction),fix controller and manual button in a proper position.

5.6.3 Heating process can be cancelled by pressing

manual button.Same as 5.5.2

5.6.4 Voice Control

Dial the SIM card phone number of GSM remote controller by phone or cellphone.

According to voice prompt,operate each step.

If your cellphone had binded with controller,you can operate directly without password(Cellphone binding method see 5.6.7.1).

If not,you have to input the right password after voice “Please input the password and press #”. You will hear “Password is wrong,please input again” if wrong password used.Your phone will be hung up automatically after second wrong password.

In the heating mode you can hear voice prompt: “The heater is heating” ,**xx** minutes have been heated” , “**XX** minutes have been left” ,



- 1-SIM card button
- 2-SIM card socket
- 3-Indicatin light(red and green colours);
- 4-Socekt; 5-GSM antenna

Fig.16

“Press 0 to stop heating” , “Press 8 for language change” .

In the non-heating mode you can hear voice prompt: “Press 1 to heat 15 minutes” , “Press 2 to heat 30 minutes” , “Press 3 to heat 45 minutes” , “Press 8 for language change” , “Press 9 to change the password” .You can hear “The heater starts heating process for 15 minutes” by pressing 1 key. “The heater starts heating process for 30 minutes” by pressing 2 key. “The heater starts heating process for 45 minutes” by pressing 3 key.

5.6.5 Password Setting

5.6.5.1 In the non-heating mode change password by pressing 9.

5.6.5.2 According to prompting input 7 numbers as your new password after hearing “Please input the new password and press #” .Input new password again after hearing “Please input the new password again and press #” .If two passwords are consistent you will hear voice: “The password is changed,new password: XXXXXXXX” .If not,voice prompt “Wrong password,please re-enter the password” .After setting up successfully controller will return previous mode automatically.

5.6.5.3 Hold down manual button for 3s green indication light flashes 3 times,new password will be cancelled automatically,system restore initial password: “2530666” .

5.6.6 Language Conversion

5.6.6.1 In the heating or non-heating mode change languages by pressing 8 key.

5.6.6.2 In the Chinese voice status you can hear “Press 2 change to English,press 3 change to English, press 0 to return” , in the English voice status you can hear “Press 1 change to Chinese,press 3 change to Russian, press 0 to return” , in the Russian voice status you can hear “Press 1 change to Chinese,press 2 change to English, press 0 to return” .After setting up successfully you will hear “Language changed successfully” in language which has been converted.

5.6.7 SMS Control Method (Use phone number 139333444411 as an example)

5.6.7.1 SMS Binding.

One GSM controller can be binded with only 2 cellphones, send

message to GSM controller: *2530666**13933344411#

You will receive the message from controller: “13933344411 is commanded successfully” or “Command is full,command unsuccessfully” (When you want to bind the third cellphone).

5.6.7.2 SMS cancel the bindings.

Send message to GSM controller: *2530666*#13933344411#

If your cellphone had been binded with GSM controller you will receive the message from controller: “Relieved the command of 13933344411 successfully” .If not,you will receive the message: “No command cellphone” .

5.6.7.3 SMS cancel all the bindings.

Send message to GSM controller: *2530666*##

If your two cellphones had both been binded with GSM controller you will receive the message from controller: “All the commands are relieved successfully ”.If not,you will receive the message:“No command cellphone” .

5.6.7.4 SMS set heating time (Only this time effective) .

5.6.7.4.1 If you want to start the heater in **hh** hours and **mm** minutes and heat **xx** times.

Setting time:**hh** hours and mm minutes shouldn't less than 1 hour.Heating time:**xx** should between 15-45 and can't more than 45 minutes.

Binding cellphone send message to GSM controller: ***hhmm*****xx**# or *2530666***hhmm*****xx**#

Non-binding cellphone send message to GSM controller : *2530666***hhmm*****xx**#

Eg:Heat 30 minutes in 2 hours and 15 minutes later:

Binding cellphone send message to GSM controller: *0215*30# or *2530666*0215*30#

Non-binding cellphone send message to GSM controller: *2530666*0215*30#

5.6.7.4.2 System default heating time are 45 minutes.

Eg:Heat 45 minutes in 2 hours and 15 minutes later:

Binding cellphone send message to GSM controller: *0215# or *2530666*0215#

Non-binding cellphone send message to GSM controller : *2530666*0215#

5.6.7.4.3. GSM controller reply SMS.

GSM will reply the SMS “The heater setting time successfully! The heater will turn on after hh hours and mm minutes and heat for xx minutes” after right operation.Both the red indication light of GSM controller and manual button light will flash continuously.

When heater starting at the setting GSM controller will reply SMS: “The heater has started, estimated heating time are xx minutes” .

5.6.7.5 SMS start the heater immediately (Only this time effective) .

5.6.7.5.1 Setting time:xx minutes.

Heating time:xx should between 15-45 and can't more than 45 minutes.

Binding cellphone send message to GSM controller: *01*xx# or *2530666*01*xx#

Non-binding cellphone send message to GSM controller : *2530666*01*xx#

Eg:Heat 30 minutes immediately:

Binding cellphone send message to GSM controller: *01*30# or *2530666*01*30#

Non-binding cellphone send message to GSM controller: *2530666*01*30#

5.6.7.5.2 Heat 45 minutes immediately(System default heating time).

Binding cellphone send message to GSM controller : *01#or*2530666*01#

Non-binding cellphone send message to GSM controller : *2530666*01#

5.6.7.5.3 GSM controller reply SMS.

GSM will reply the SMS “The heater has started, estimated heating time are xx minutes” .If the heater has been heating you will receive SMS “The heater is heating now, xx minutes have been heated, xx minut

es are left” .

5.6.7.6.SMS Cancel time setting.

Binding cellphone send message to GSM controller: *0000# or *2530666*0000#

Non-binding cellphone send message to GSM controller: *2530666*0000#

GSM will reply the SMS “Time heating has been canceled” .

5.6.7.7.SMS shut off the heater immediately.

Binding cellphone send message to GSM controller: *02# or *2530666*02#

Non-binding cellphone send message to GSM controller: *2530666*02#

If the heater is heating now GSM controller will reply SMS “The heater has stopped and heated **xx** minutes”.

If the heater has stopped heating GSM controller will reply SMS “The heater has turned off”.

5.6. 7.8 Failure SMS notice.

If incorrect format SMS has been sent(must start with*and end with#),GSM controller will reply: “Failure command, please reply *88# if you would like to get more help information”

If you reply message:*88# you will get: “*2530666**13933344411#; *2530666*#13933344411#; *2530666*##; *2530666*hhmm*xx#; *2530666*01#; *2530666*02#”(This messages just remind users the right message formats).

6 Treatment of Usual Troubles

If the heater is started by an operator but it does not work properly, the operator can try the following methods for a treatment.

6.1 Turn off the heater and start it again. But pay attention. Do not re-start more than twice.

6.2 Check if the fuse connection between the battery and the heater is correct.

Protected circuit	Rated current of fuse DC12V	Rated current of fuse DC24V
Warm air blower motor circuit	25A	25A
Main circuit of heater	20A	15A
Operation circuit of heater	5A	5A

6.3 If the temperature of cooling liquid is higher than 70°C, the heater can only be started after the temperature is reduced through pump circulation.

6.4 In case of overheating, please check the level of cooling liquid. If it is not sufficient, please fill up cooling liquid after its temperature lowers down. Start the heater again.

If normal start is still impossible after above-mentioned examination, please contact our service station.

Fault code

Code	Fault	Code	Fault
10	The voltage is too high>15(29)V	11	The voltage is too low,<10.2(20.5)V
12	The temperature of software is too high	13	Second starting failure
15	The heater is dead locked (overheat more than 10 times)		
17	The temperature of the hardware is too high		
20	Glow plug has a broken circuit	21	There is a short in circuit of the glow plug
30	The rotate speed of the fan is too low	31	The fan has a broken circuit
32	A short circuit of the fan	33	Fan speed is too low
38	There is a broken circuit of the blower	39	A short circuit of warm air blower
41	A broken circuit of the water pump	42	A short circuit of the water pump
47	A short circuit of the oil pump	48	There is a broken circuit of the oil pump
50	The heater is dead locked(The twice failure to start more than 10 times)		
51	Flame sensor check overhigh temperature during the starting time		
52	Combustion interrupt		
60	There is a broken circuit of the temperature sensor		
61	There is a short circuit of the temperature sensor	64	A broken circuit of the flame sensor
65	Flame sensor is short-circuited	71	A broken circuit of the overheating sensor
72	There is a short in circuit of the overheating sensor		

Checking and eliminating fault code see 5.4.6

7 Precautions

7.1 Trial operation is necessary for the heater before it is put into normal use. If lasting dense smoke is observed or irregular combustion noise or fuel smell is sensed or overheating happens to electrical components, the heater must be turned off. Please take out the fuse, making the heater unable to operate.

The heater can only be put into use after it is tested by professional workers.

7.2 After power-on of the heater, the furnace does not ignite immediately. Ignition can only be started when the system self-testing is completed and the temperature of furnace cavity and temperature of cooling liquid are reduced to allowable level.

When the heater is turned off, the combustion supporting fan and water pump do not stop working immediately and they shall keep working for about one minute for purpose of heat dissipation

7.3 When you are going to add fuel, you have to turn off the heater in advance.

7.4 If any leakage is found in the fuel supply system, you should take the heater to an authorized customer service station for repair.

7.5 If the heater is left unused for long time, it shall be started once every month and work for ten seconds, to avoid blocking-up of pump or combustion supporting fan.

7.6 Attention: To avoid danger, when the cooling liquid becomes frozen, it is not allowed to start the heater.

7.7 If welding is carried out to the automobile, in order to protect the heater, you should disconnect the positive line of power supply from the battery and connect it to ground.

7.8 Only authorized customer service stations are allowed to provide repair and installation for the heater. It is prohibited to make repair by yourself or use non-manufacturer's parts or components so as to avoid danger.

7.9 The manufacturer shall not be held responsible for any damage to the heater if such is caused due to operations with violation against the regulations.