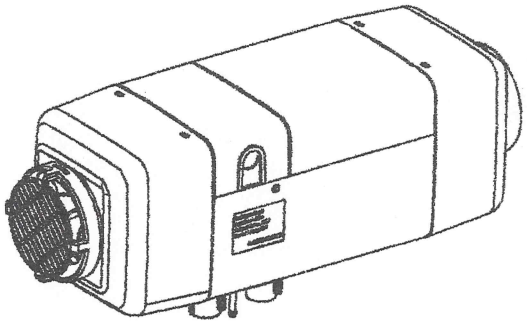
22020201300

2KW Air parking heater

Technical description,installation,operation
and maintenance instructions.



Product type		Order No.
Diesel	12V	4W2002 12C01
Diesel	24V	4W2002 24C01
Gasoline	12V	4W2002 12Q01

Air heater for operating independently of the engine.

Apr.30th,2016

Back to standby interface when receive remote shutdown signal.

Back to standby interface by pressing if in the remote control interface.

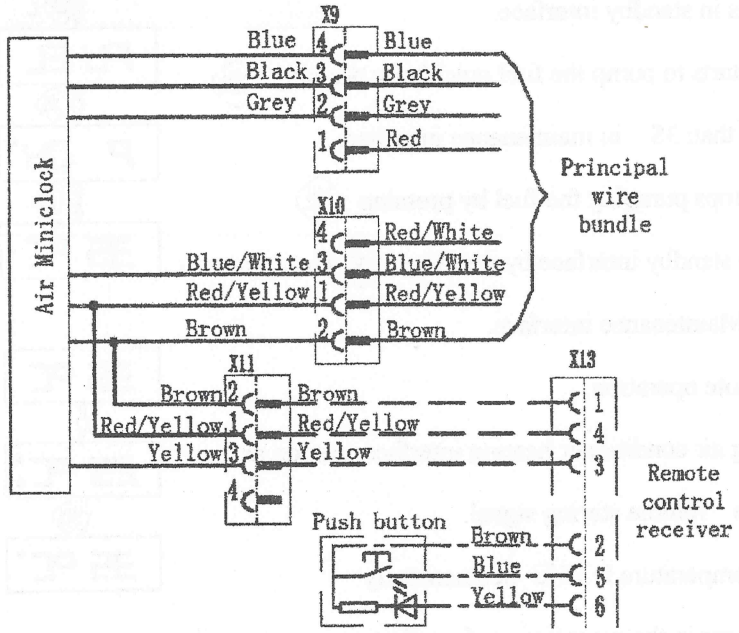
But "●"will continue appear until receive remote shutdown signal.

X.Connection method and the wiring diagram.

Two pin plugs and wiring harness of heater should be connected with same color or may influence normal use.

The third pin plug connect with remote control receiver through remote patch cord(X11-X13)in the case you have a remote control receiver.

Remote patch cord equipped with remote control receiver.



Preface

Thank you for choosing 2KW air 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.

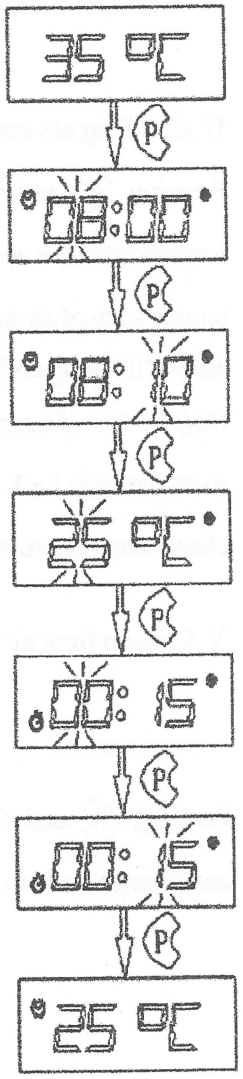
Attention:

- 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 our company. We shall do our best to provide service to you.

VI.Preset starting time and heating time.

Introduce preset method to "start after 8 hours 10mins,preset temperature 25℃and heating 15 mins " as an example.

Press (P) in standby interface and enter into preset interface.



Preset starting time

Adjust hour by pressing △ and ▽

Confirm hours by (P).

Adjust minute by pressing or △ and ▽.

Confirm minutes by (P).

Preset temperature.

Adjust temperature by pressing ▽ and △.

Confirm temperature by (P).

Preset heating time.

Adjust hour by pressing △ and ▽.

Confirm hours by (P)

Adjust minute by pressing or △ and ▽.

Confirm minutes by (P).

Attention!

"●"will appear or cancel by pressing .

"●"means set successfully.

Packing List (continued)

No.	Name	Specification	QTY	Purchase code
25	Self drilling tapping screw	ST5.5×30	1	12050003100
26	Self tapping screw	4×16	1	12050002700
27	Self tapping screw	3×20	1	12050002500
28	Cable ties	4×200	10	21990000000
29	Oil suction pipe	XYG-Ⅱ φ5*600	1	31000000500

Timer for Air heaters

Ⅰ.Functions.

1. Air conditioner mode, adjustable continuously from 5℃to 35℃.

2.Heating mode, adjustable continuously between 1KW and 2KW(grade1-7).

3.Set up starting time(countdown in 24 hours).

4.Set up heating time(from 15 mins to 99 hours).

5.Fault information query.

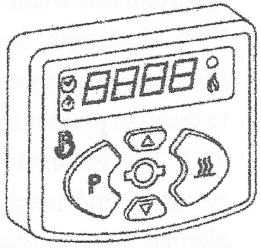


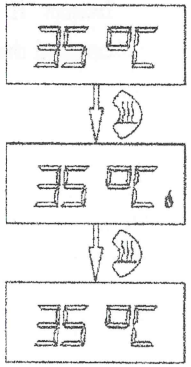
Fig.29

Ⅱ.Start up and shut down manually.

1.Start up immediately

Convert standby interface into heating interface by pressing ♨,

heater start up immediately.



Adjust preset temperature at heating interface by pressing △

or ▽

2.Shut down immediately

Convert standby interface into heating interface by pressing ♨,

heater stop working immediately.

Ⅲ.Preset remaining heating time.

Pressing P and ▽ at same time in heating interface and set remaining heating time.

Adjust hour by pressing △ and ▽..

Confirm hours by P

Adjust minute by pressing or △ and ▽ .

1 Introduction

The main equipment of Model 2KW air parking heater (hereinafter referred to as the heater) is a small fuel furnace controlled by a single-chip micro- processor. Its furnace body (the heat exchanger) is located in the hood-shape case, which serves as independent air passage. Cold air is sucked into the air passage by the heat supplying fan and blown out when it becomes hot, so as to form another heating system that is independent to the original heating system of the vehicles. In such a way, heat can be supplied by the heater to driver's cab and passengers' compartment no matter the engine is working or not working. The schematic diagram is shown in Fig. 1.

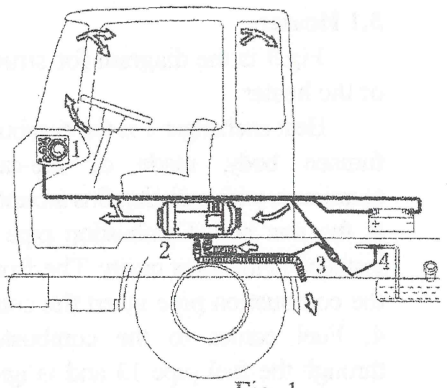


Fig. 1

1-Control switch 2- Heater

3- Fuel pump 4- Reducing T

The heater is fully automatically controlled. It features in compact structure, easy installation, energy-saving, environmental protection, safety and reliability, easy maintenance, etc.

2 Main Technical Specifications

Please refer to Table 1 for main technical specifications.

Table 1

Heat Power (W)	2000	
Fuel	Gasoline	Diesel
Rated Voltage	12V	12V/24V
Fuel Consumption	0.14~0.27	0.12~0.24
Rated Power Consumption (W)	14~29	
Working (Environment) Temperature	-40℃~+20℃	
Working height above sea level	≤1500m	
Weight of Main Heater (kg)	2.6	
Dimensions (mm)	Length323±2 width 120±1 height121±1	
Mobile phone control（Optional）	No limitation（GSM network coverage）	
Remote control（Optional）	Without obstacles≤800m	

7 Precautions

7.1 After the heater is installed, in order to remove air trapped in the fuel supply system thoroughly and fill the fuel route with fuel only we Specially designed for oil pump function alone:In the Ventilation mode, short connection external temperature sensor 3 times continuously,then the fuel pump (4hz) stop pump fuel after the fourth time.Only effective when each power on.

7.2 Trial operation is necessary for the heater before it is put into normal use. At trial operation, you have to check leakage from all connections and all safety issues. If discharge of dense smoke is observed or irregular combustion noise or fuel smell is sensed, 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 qualified professionals.

7.3 Before each heating season, check shall be performed by qualified professionals for maintenance works, details as follows:

(a)Check air inlet and air outlet to find any pollution or foreign matters.

(b) Clean the external of the heater.

(c)Check if there is any corrosion or loose connection for electric contacts.

(d)Check to find any clogging and damage to the air inlet pipe and exhaust pipe.

(e)Check to find any leakage on the fuel pipe.

7.4 If the heater will not work for a long time, you'd better run it once every four weeks and let it run for 10 minutes at least to prevent malfunction of mechanical parts.

7.5 The air inlet port and air outlet vent of the heater must be kept clean and unblocked to provide smooth route for air flow, so as to prevent overheating.

7.6 If fuel is replaced with low-temperature fuel, run the heater for at least 15 minutes to fill new fuel into the fuel pipe and fuel pump.

7.7 When fill fuel for the heater, you have to turn off the power first. To do this, just turn the control switch anticlockwise to position "0".

7.8 The heat exchanger of the heater can not work for longer than 10 years.

3.2 Hood-Shape Case

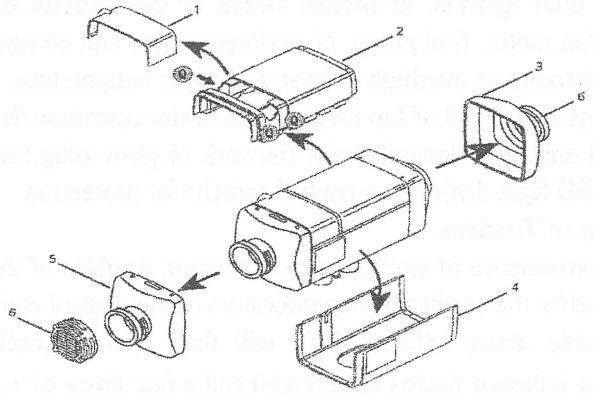


Fig. 4

1-Junction box cover 2-Top hood-shape cover 3-Hot air outlet
4-Bottom hood-shape cover 5-Air inlet of heater 6-Air inlet/exhaust hood

The structure of the hood-shape case is shown in Fig. 4. It consists of the top cover 2 (The junction box cover 1 can be fixed on 2), bottom cover 4, air inlet hood 6, air inlet of heater 5 and hot air outlet 3. They form an air heating passage. Blade wheel of heating fan (Fig.3-10) on the fan motor (the same for supporting combustion fan) sucks in cold air from the air inlet. The air is heated by the heat exchanger and sent out from the hot air outlet.

3.3 Controller

The controller (Fig. 3-9) is at the front of the heater and the back of the blade wheel of heating fan.This controller main including collect the circuit and exam the temperature circuit of the signal of a single-chip、drive circuit、frequency、rotational speed、voltage.Have the function of heating process automation、system surveillance automation、breakdown handling automation.

3.3.1 Control of Working Procedures

Adjustment and control on operational status are performed during the whole working cycle (start-operation-stop) of heater in terms of the rotation speed of fan motor, the frequencies of fuel pump, on-off of glow plug, to given time sequence and in consideration of the preset value and measured value of the temperature of the temperature control point, rotation speed of fan motor feedback signal、frequency of fuel pump, surface temperature of the heat exchanger and other random parameters.

Operation methods for digital control switch,remote controller and GSM controller(All of this three parts are optional) please see relevant instructions.

6 Treatment of Usual Troubles

6.1 During use, the heater may become unable to start normally or die out after start. Such troubles may lead to locking state. In such case,you can press the button which is lighting on then work indicator goes out. Turn off the heater and keep it in such state for at least 5 seconds. Then, restart the heater.

6.2 Circuit troubles may be caused by different reasons, such as corrosion of connectors, poor contact of connectors, wrong connection of wires, corrosion of wires or fuse, corrosion and looseness of battery poles, etc. Users need to check and prevent such troubles and offer good maintenance.

6.3 The reasons for the troubles to the heater can be indicated by the green LED on the control switch (see Section 3.3.3 for details). When the following troubles occur, users can take measures to solve:

(a)Failure to turn on the heater and the indicator light is not illuminating, the reason is open circuit of fuse or wrong connection of wires.

(b)The heater runs idly and no start process occurs after the heater is powered on, this indicates that the temperature of air inlet (or the ambient temperature around the external temperature sensor) is higher than the set heating temperature, or called hot start. In such case, you need to turn the control switch knob clockwise to have a higher set temperature.

(c)When the LED flashes once, troubleshooting can be solved by the methods list in table 4.

connection is made impossible.

3.4 Sensors and Safety Protection

3.4.1 Overheating Sensor

The overheating sensor(Fig.3-16) is installed on the back outer wall of the heat exchanger. If the temperature here becomes higher than upper limit , the fuel pump circuit will be cut off by the controller and supply of fuel is stopped and then the heater is turned off for purpose of overheating protection.

3.4.2 Temperature Sensor

The inside temperature sensor(in the controller) is installed on the air inlet of heater, it measures the air temperature at the air inlet ,according to the temperature change the working state of the furnace and adjust the output of the thermal power.

The outside temperature sensor is optional part which require extra configuration and can be put those heating places you want.Same working principle as inside temperature sensor.

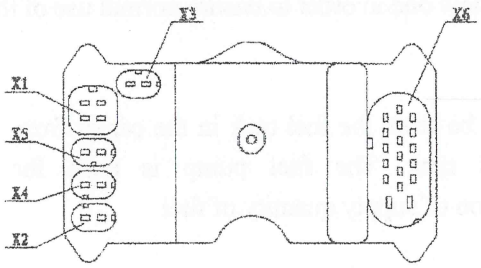


Fig.5

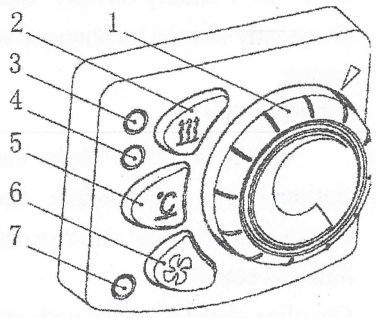


Fig.6

1-Control Knob
2- Heating(constant power)mode button
3-Heating(constant power)indication light
4-Air conditioner(constant temperature) indication light
5- Air conditioner(constant temperature) mode button
6- Ventilation mode button 7-Ventilation indicating light

3.5 Control Switches

The control switch is shown in Fig. 6. Its control knob is used for the following operations: turning on or off of the heater and eliminating locking of the heater due to trouble interrupt and converting working mode through the mode conversion button.

Heating(constant power)mode:Press air conditioner(constant temperature) mode button then the heating(constant power)indication light turns yellow, use the control knob adjust heater power.(adjustable continuously between

Air inlet pipe and exhaust pipe are easy to freeze in the use process and should be checked frequently.

4.6.7 If the section of the exhaust pipe inside the vehicle may be touched by passenger, a protective cover has to be installed to prevent human contact and scald.

5 Methods of Operation

5.1 The heater control with four ways. (1) Use the control switch(normal configuration).

(2)Control with extended function which use digital control switch(optional choice).

(3)Control with extended function which use remote controller or GSM mobile phone controller(optional choice).

(4)Control with extended function which use GSM mobile phone controller(optional choice).

5.2 Use the control switch

5.2.1Power on

Push air conditioner（constant temperature）button or heating(constant power) button, then illuminating the indicator light of air conditioner （constant temperature）or heating(constant power). At this moment, the heater comes to the start stage. The controller will run heating program according to the temperature control target set by the control knob. In the start stage, the time delay from switch-on to fuel supply to the fuel pump is 45 seconds.

5.2.2 Power control

After the combustor is ignited, if you want to regulate the heating temperature or the heater power, you can turn the control knob according to the arc mark around the control switch.

5.2.2.1 Air conditioner(constant temperature) mode

The air conditioner(constant temperature) mode indicating light turns red after pressing air conditioner (constant temperature)button. If you want to adjust the heating temperature,press the curve sign on the control switch and turn the control knob.

5.2.2.2 Constant power mode

The heating(constant power) mode indicating light turns yellow after pressing heating (constant power)button. If you want to adjust the heating power,press the curve sign on the control switch and turn the control knob.

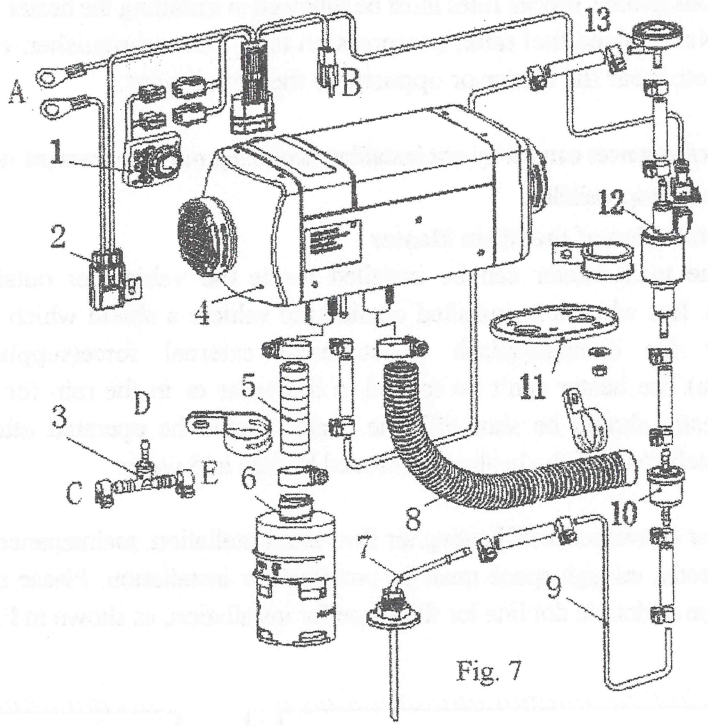


Fig. 7

1- Control switch 2- Fuse holder 3- Reducing T 4-Heater 5- Air inlet pipe 6-Air filter(optional choice) 7-Fuel suction pipe 8- Exhaust pipe 9- Fuel pipe 10-Filter 11-Gasket 12- Fuel pump 13- Damper

A Connect with battery
B Connect with external temperature sensor
C Connect with fuel tank
D Connect with heater
E Connect engine

4.1 Requirements for Installation and Places of Application of the Heater

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 or maintenance workshop without air ventilation) to avoid danger of poisoning due to exhaust from burning.

Attention: Under either of the above circumstances, it is not allowed to use the heater even at the stand-by state.

4.1.3 It is not allowed to install and use the heater in bedrooms.

4.5.5 Straighten the fuel pump leads (two 0.6mm^2 black wires and not distinguish positive and negative) with their protective pipes, which is made a coil inside the combustion supporting air inlet port , and put them through the opening on the wall of the air inlet pipe. Connect the insert of fuel pump connector with fuel pump(Insert the right position).Cutting fuel pump leads is forbidden.

4.5.6 Use four self-tapping screws to fix the control switch in a position for convenient operation and the arrangement shall make easy observation on the indicator on the case, so as to identify the working conditions (operation/stop) of the heater easily. The plugs on the leads from the control switch shall be connected with connector(X9 、X10)according to the colours on the main wire bundle and make self-locking mechanism.Note to remove the knob firstly, then install the knob after fixing the screw.

4.5.7 The surplus wires in the wire bundle at the moment are wires for fault diagnosis、information adjustment and function expansion. They shall be kept in good condition. Their ends shall be wrapped with electrician's insulating tape to avoid short-circuit or earthing.

4.6 Installation of combustion supporting air sucking pipe and exhaust discharge pipe

4.6.1 The combustion supporting air must be sucked in from external fresh air outside the vehicle. The exhaust from combustion must be discharged into the air through exhaust pipe. Measures must be taken to avoid the exhaust from re-entering the vehicle.

The pipes go through the outer wall or holes on the bottom of vehicle. Measures must be taken to prevent entering of splash water. The pipes must be protected and can resist shock permanently. 4.6.2 Only the air inlet pipe and exhaust pipe provided with the heater can be used. The air inlet pipe is a corrugated pipe made of a aluminum pipe that it's surface is covered by plastic and paper; The exhaust pipe is corrugated stainless steel pipe. Please identify air inlet pipe and exhaust pipe and do not make mistake at installation. To connect them with the heater, please use the supplied clamps to fix them tightly on the combustion supporting air inlet and exhaust pipe vent respectively. The protective hood on the vents of the air inlet pipe and exhaust pipe must be kept in good condition. Do not damage them or remove them. In order to meet the dust environment,an optional air filter is a good choice(Fig.21). A length of air filter can be cut in order to meet different thickness of air inlet pipes.

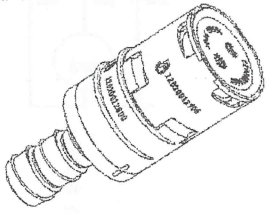


Fig.21

4.2.3 Good sealing is necessary between the main heater and the installation surface on the vehicle. A special gasket (as shown in Fig. 8) supplied by the manufacturer must inserted in between during installation. The installation surface must be smooth and steady enough. Its parts at the installation bases of the main heater shall have unevenness of less than 1mm. After drilling installation holes, evenness must be improved according to this requirement. At installation, please rotate the four M6 nuts, which provided by the manufacturer should be tighted. The torque for tightening shall be 6Nm+1Nm.

Please refer to Fig. 9 for positions of installation holes.

4.2.4If the sickness of the installation panel<1.5mm a mounting plate may need.Between mounting plate and the car body must also be sealed (use glass glue(Fig.10).

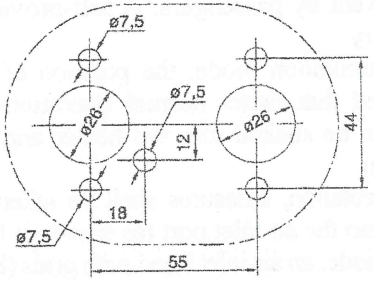


Fig 9

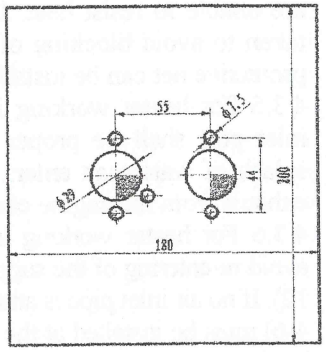


Fig 10

Attention: For re-installation of the heater ,a new gasket must be used to replace the old one.

4.2.5Direction for installation of the heater is shown in Fig. 11. Attention must be paid to that the inclination angle shall not exceed the limit, or normal operation will be affected.

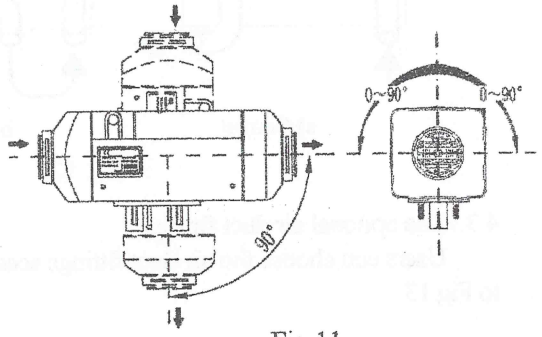


Fig.11

4.2.6 After installation of the main heater, please check and make sure that

the fuel tank to the fuel filter shall be disconnected and re-connected with the thicker pipes of the reducing T and the thinner pipe of the reducing T shall connect the fuel pump of the heater via oil pipe fitting and fuel pipe. Must ensure fuel extraction without any pressure and extract the fuel smoothly when the car is stopping.The angle for installation must in conformity with Fig. 19, or normal work of the heater will be affected.

After installation, the vehicle engine shall be started and then turned off after one minute's work to eliminate air trapped in the fuel sucking pipe.

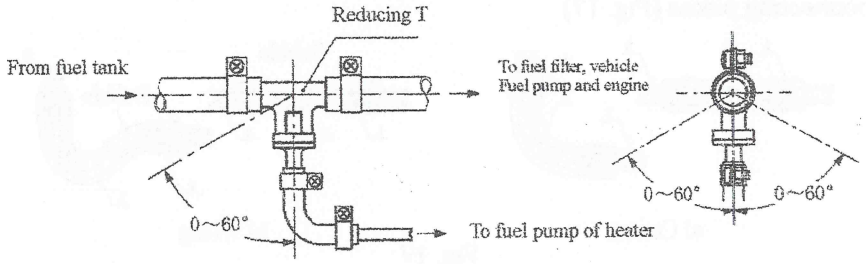


Fig. 19

4.5 Installation of Electrical System

4.5.1 The wiring diagram for the heater is shown in Fig. 20. The wires of the main 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 30cm. Attention: Any exposed wire bundle out of the vehicle body or out of the wiring groove must be protected by corrugated pipe.

4.5.2 Connection of the main wire bundle with the heater: Use a blunt tool to pry the places marked "Ⓠ"of Fig.4 gently to remove the junction box cover (Fig. 4-1). Connect the 18-wire connector X6 of the wire bundle to the controller socket. The wire bundle can come out from either the right side or the left side of the heater. Then replace the junction box cover. Make sure to have good sealing between the junction box cover and upper cover and between the junction cover box and the wire bundle sealing mat to avoid any thermal malfunction due to leak of air from the hood-shape case.

4.5.3 Insert sheet fuse into fuse holder F and replace the upper cover tightly. Use screws to fix it in a proper location in the vehicle.

4.5.4 Connect the 2.5mm^2 red wire and the 2.5 brown wire in the wire bundle to the hole terminals with springs and therefore connect to the "+" and "-" terminals of the vehicle battery.

Note: the above parts even if not in use, should also be inserted the terminal socket for future upgrade and prevent short circuit in the meanwhile.

No	Name	Specification
A	Grill	Φ90
		Φ60
B	Diameter changes joint	Φ90/60
		Φ56/60
C	Elbow	Φ60/90°
D	Clamp	Φ50～70
E	Ducting	Φ60/Φ64
F	Connector	Φ60-Φ60
G	Reducing T	Φ60

Table 3

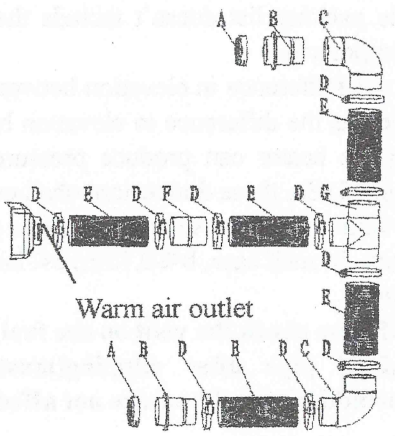


Fig. 13

4.4 Installation of Fuel Supply System

The fuel supply system for the heater is as shown in Fig. 14.

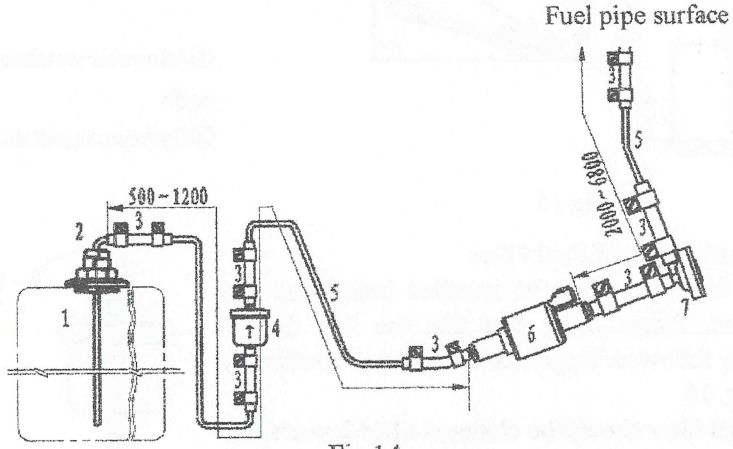


Fig.14

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

4.4.1 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°～35° (as shown in Fig. 15). When conditions permit, the fuel pipe between the fuel pump and the heater shall go up gradually.

4.4.2 Damper installation should be according to the practical situation.If