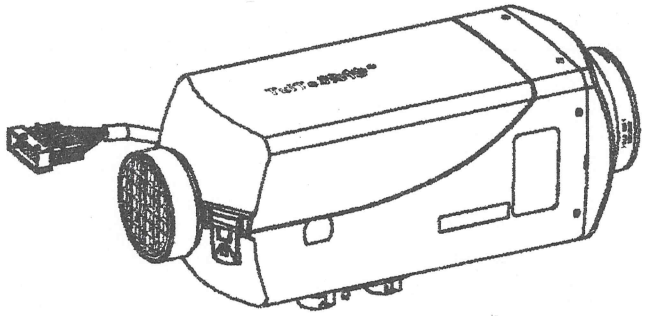
22020201500

Air parking heater

Technical description,installation,operationand maintenance instructions.



Product type	Order No.
Diesel 2.2KW 12V	4A2002 12C14
Diesel 2.2KW 24V	4A2002 24C14
Diesel 4KW 12V	4A2004 12C14
Diesel 4KW 24V	4A2004 24C14

Air heater for operating independently of the engine.

Jul. 15th,2016

Preface

Thank you for choosing 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.

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

Version No. 20151118

Packing list				
No.	Name	Specification	QTY	Order No.
1	Parking heater	FJH-2.2/1C ( )	1	4A200212C14
		FJH-2.2/2C ( )		4A200224C14
		FJH-4.0/1C ( )		4A200412C14
		FJH-4.0/2C ( )		4A200424C14
2	Main wiring harness	12V ( )	1	12031000100
		24V ( )		12031000200
3	Fuel pump	12V ( )	1	33000003100
		12V with damper ( )		33000007600
		24V ( )		33000003200
4	Filter	Only diesel	1	33000000400
5	Fuel pipe(from pump to heater)	φ4/φ2 L=6800	1	12060004200
6	Fuel pipe(from pump to fuel tank)	φ5/φ2 L=1200	1	31010602300
7	Control switch		1	31010700400
8	Protective gasket(control switch)		1	12040600900
9	Air inlet pipe	φ29/φ25*600	1	31010202700
10	Exhaust pipe	φ24*700 ( )	1	31010602500
		φ24*1000 ( )		31010202800
11	Gasket	81×110×6	1	12040600100
12	Reducing T	10-6-10	1	12020015700
13	Reducing T	12-6-12	1	12020015800
14	Fuel pump clip	φ32	1	12010007100
15	Exhaust pipe clip	24-28	1	12010004400
16	Air inlet pipe fixing clip		2	29010003700
17	Exhaust pipe fixing clip		2	29010002300
18	Fuel pipe connector	φ3.5/φ9.5 L=50	2	12060003900
19	Fuel pipe connector	φ4.1/φ10.5 L=50	4	12060003800
20	Fuel pipe clip	φ8/φ10（9）	4	12010004300
21	Fuel pipe clip	φ9/φ11（10）	8	12010004200
22	Fuel pipe clip	φ12/φ14	2	12010004600

1.Introduction

Application scope

This air heater is not affected by the engine, for in compliance with its heating power under the premise of installation in the following vehicles:

Various properties of the car (at most 9 people) and its trailer.

Building and machinery

Agriculture working machinery.

Boats、steamer and yacht（Limited to diesel heaters）.

Motor homes.

Heater purpose

Preheating and defrosting the glass.

Heating and keeping the following warm:

Driver and working cabs.

Freight compartments.

Passenger and crew compartments.

Motor homes.

On account of its functional purpose,the heater is not permitted for the following applications:

Long-term continuous operation,e.g. for preheating and heating of:

Residential rooms and garages.

Work huts,weekend homes and hunting huts.

Houseboats,etc.

Heating or drying

Living creatures(people or animals) by blowing hot air directly at the subject

Objects.

Blowing hot air into containers.

Safety instructions for application and proper purpose!

Instructions for installation

Parts of the structure and other components near the heater must be protected from excess heat exposure and possible contamination from fuel or oil

The heater must not pose a fire hazard even when it overheats.This requirement is deemed to be fulfilled when adequate clearance to all parts is observed during installation,sufficient ventilation is provided and fire-proof materials or heat plates are used.

All appropriate precautions must be taken when arranging the heater to minimize the risk of injuries to persons or damage to other property.

Exhaust system

The exhaust outlet must be arranged so as to prevent any penetration of exhaust fumes into the vehicle interior through the ventilation system,warm air intakes or open windows.

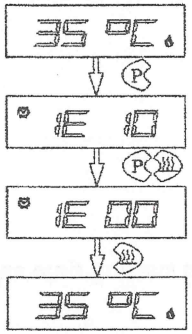
Combustion air intake

The air for the heater combustion chamber must not be sucked in from the passenger compartment of the vehicle.The air intake must be arranged or protected in such a way that it cannot be blocked by other objects.

Adjust hour by pressing △ and ▽ .
Confirm hours by P .
Adjust minute by pressing or △ and ▽ .
Confirm minutes by P .

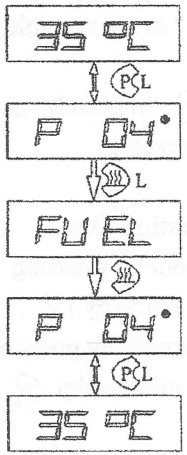
Attention!
"●"will appear or cancel by pressing ♨ .
"●"means set successfully.

Ⅶ.Checking and eliminating fault information.
Convert heating interface into fault display interface by pressing P .
6 fault information can be checked circularly by pressing △ and ▽ .
Eliminate all the fault information by pressing P and ♨ in the back to heating interface from fault display interface by pressing ♨ .



Ⅷ.Function of pump the fuel quickly.

First installation and use
Enter into maintenance interface by pressing P more than 3s in standby interface.
Pump starts to pump the fuel quickly by pressing ♨ more than 3S in maintenance interface.
Pump stops pumping the fuel by pressing ♨
Back to standby interface by pressing P more than 3s in maintenance interface.



Technical specification

Table 1

Heater Model	FJH-2.2/1C	
Heater grade	Min	Max
Heating value（w）	850	2200
Fuel	Diesel	
Fuel consumption（l/h）	0.1	0.28
Power supply	DC12V	
Run time consumption power	7w	20w
Starting consumption power	≤100 w	
Weight	About 2.7Kg	

Table 2

Heater Model	FJH-2.2/2C	
Heater grade	Min	Max
Heating value（w）	850	2200
Fuel	Diesel	
Fuel consumption（l/h）	0.1	0.28
Power supply	DC24V	
Run time consumption power	7w	20w
Starting consumption power	≤100 w	
Weight	About 2.7Kg	

Timer for Air heaters

Ⅰ.Functions.

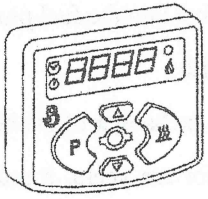
1. Air conditioner mode, adjustable continuously from 5℃to 35℃.

2.Heating mode, adjustable continuously between 1KW and 5KW(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.



Ⅱ.Start up and shut down manually.

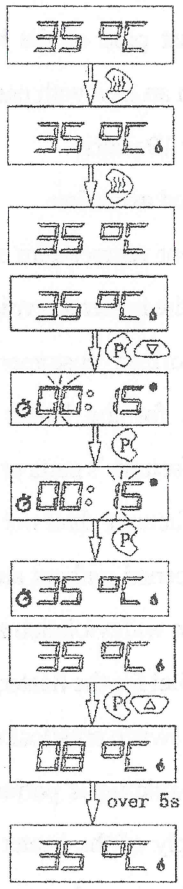
1.Start up immediately

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 and at same time in heating interface and set remaining heating time.

Adjust hour by pressing and .

Confirm hours by .

Adjust minute by pressing or and .

Confirm minutes by .

Attention!

"●"will appear or cancel by pressing .

"●"means set successfully.

Ⅳ.Checking environment temperature.

Pressing and at same time in heating interface and display actual temperature of air inlet or external temperature sensor(if configured).

Display 0℃ if temperature lower than 0℃.

FJH-2.2/□C Main dimensions

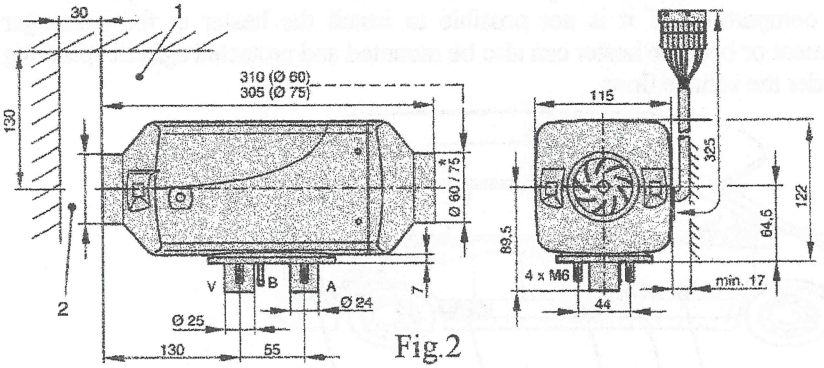


Fig.2

FJH-Q3/□C、FJH-Q4/□□Main dimensions

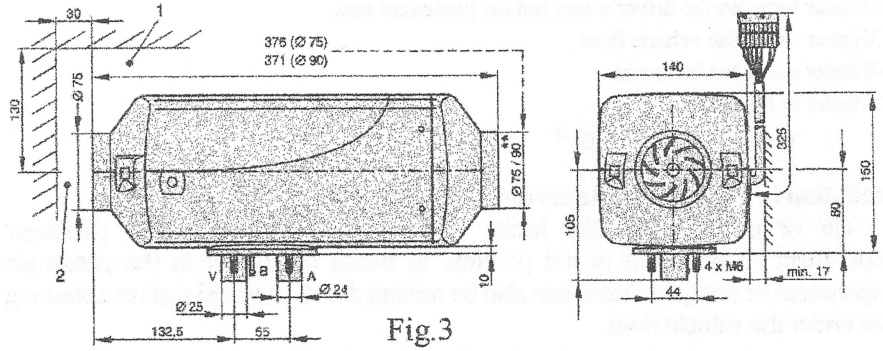


Fig.3

1.Minimum installation clearance(space) for opening the lid and for dismantling the glow plug and the controller.

2.Minimum installation clearance (space)for intake of heater air.

Installation and location

The heater is suitable and certified for installation in parts of vehicles used by persons.

Installation in the cab or passenger compartments of coaches or buses with more than 9 seats is not allowed.

When installing in compartments used by persons,the exhaust ,combustion air and fuel pipes in these areas must not have any detachable connections and must be routed splash-water proof in the breakthroughs.For this reason,the heater can be mounted with its foot using the flange seal in the foot to the vehicle floor or to an outer wall of the vehicle.

Note

When installing the heater,always make sure there is sufficient clearance left for intake of the heater air and for dismantling the glow plug and controller(See Main dimensions 2)

First installation

After the heater is first 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 2 times continuously,then the fuel pump (4hz) stop pump fuel after the third time.Only effective when each power on.

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.

Some smell maybe occurs in the first time using heater within a short time which is a common phenomenon and does not mean heater not working properly.

Seasonal maintenance

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

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

Clean the external of the heater.

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

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

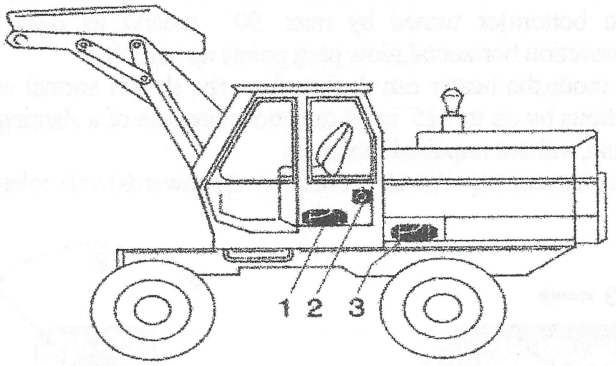
Check to find any leakage on the fuel pipe.

Not working for a long time

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.

Installation in an excavator cab

In an excavator,the heater is preferably installed in the cab.If it is not possible to install the heater in the cab,the heater can also be installed in a storage box outside the cab.

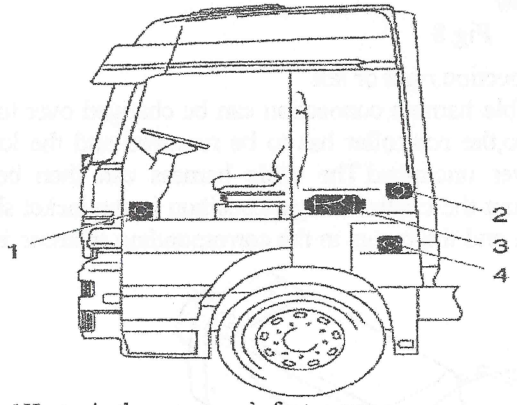


1Heater in the seat box
2Heater on the cab rear wall
3Heater in a protective case

Fig.6

Installation in a truck

In a truck,the heater is preferably installed inside the driver's cab.If it is not possible to install the heater inside the driver's cab,it can also be mounted in the tool box or in a storage box.



1Heater in the passenger's foot room
2Heater on the cab rear wall
3Heater under the bed
4Heater in the tool box

Fig.7

Note

The installation suggestions made in the installation instructions are just examples.Other installation locations are possible as long as they correspond to the installation requirements stated in these instructions.

If the heater does not ignite within 90 seconds after starting the fuel pump,the start is repeated.If the heater still does not ignite after another 90 seconds of pumping fuel,the heater is switched off,i.e.the fuel supply is off an the fan runs on for approx.3 minutes.

If the flame goes off by itself during operation,the heater is restarted.If the heater does not ignite within 90 seconds after the fuel pump has started or ignites and goes off again within 15 minutes,the heater is switched off,i.e.the fuel supply is off and the fan runs on for approx.3 minutes.This status can be remedied by briefly switching off and on again.Do not repeat the switching off/on routine more than twice.

In the case of overheating,the combined sensor(flame sensor/overheating sensor)triggers,the fuel supply is interrupted and the heater switched off.Once the cause of the overheating has been switching off and on again.

If the lower or upper voltage limit is reached,the heater is switched off after 20 seconds.

The heater does not start up when the glow plug is defect of when the electric lead to the dosing pump is interrupted.

If the combined sensor (flame sensor/overheating sensor) is defect or the electric lead interrupted,the heater starts up and is then switched off again during the start phase.

The speed of the fan motor is monitored continuously.If the fan motor dose not start up or if the speed deviates by more than 10%,the heater is switched off after 30 seconds.

When the heater is switched off,the glow plug is switched on for 40 seconds(after-glowing)while the fan runs on to clean off any combustion residues.

Emergency shutdown

If an emergency shutdown is necessary during operation,proceed as follows:

Switch the heater off with the control or

Pull the fuse out of

Disconnect the heater from the battery

Note

Do not switch the heater off and on again more than twice.

Treatment of Usual Troubles

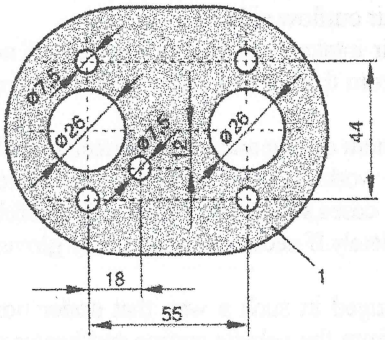
Circuit troubles may be caused by different reasons, such as corrosion of connectors, poor contact of connectors, wrong connection of wires, corrosion of wires or fuse, corrosion and looseness of battery poles, etc. Users need to check and prevent such troubles and offer good maintenance.

The reasons for the troubles to the heater can be indicated by the green LED on the control switch.In trouble status, indicator light will flash circularly,each circulation include 2 seconds extinguishing and a few 0.5 seconds times of slow flashes appear alternately.During the period between two long extinguishing, the times of slow flashes represent the types of troubles.

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

Mounting and fastening

Make the necessary breakthroughs for exhaust,combustion air and fuel as shown in the hole diagram.The support surface for the heater foot must be flat. The hole Φ 10.5mm for the cable harness "dosing pump" is not included in the picture drawing and must be drilled after installation.



Contour of the bearing surface

Fig.10

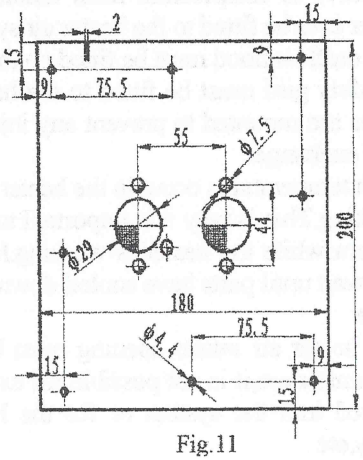
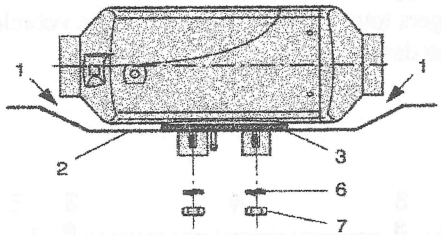


Fig.11

If the sheet metal of the support surface is thinner than 1.5mm,an additional reinforcement plate will have to be fitted.(Fig.11)

Fastening the heater on the vehicle floor



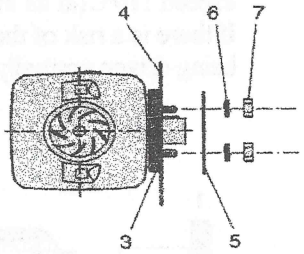
1There must be sufficient clearance between the heater and the vehicle floor-also check that the fan wheel runs freely

2The mounting surface must be flat and smooth

3The flange seal must be mounted

Fig.12

Fastening the heater horizontally to the vehicle wall



4The vehicle wall must be flat and smooth

5Reinforcement plate(if required,see above)

6Spring washer

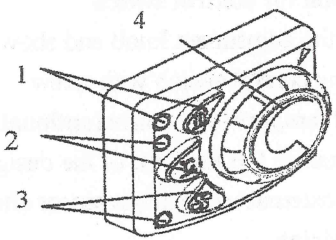
7Hexagon nut M6

Fig.13

Operation and function

There are four methods to starting heater

Digital control switch (Optional device)



1 Heating(constant power)indication light

2 Air conditioner(constant temperature) indication light

3 Ventilation indicating light

4 Control Knob Fig.25

Digital control switch (Optional device)

Display set temperature

Set heat starting time

Set heat time

Display fault information

Eliminate fault code

Digital display power level

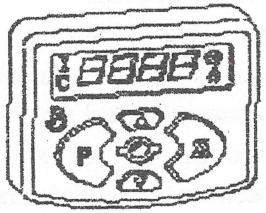


Fig.26

Remote controller (extended function)

Remote control the heater,Without obstacles≤800m

Power on and power off heater immediately,three times

can be seted:15mins,30mins and 45mins.

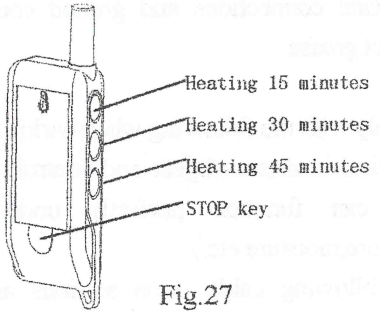


Fig.27

GSM remote controller(extended function)

Function device of parking heaters which can be started and stopped through calling or sending message to the number of SIM card in the GSM remote cotroller by phones or cellphones.

Control ways include voice and short message.

It can start and power off heater immediately.

No limits.

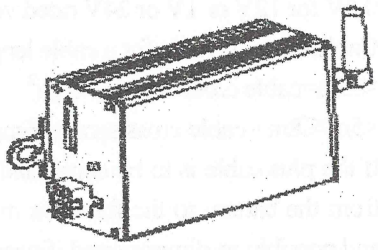


Fig.28

The optional air duct fittings

Users can choose the air duct fittings according to the situation.Please refer to Fig.13.

Table 5

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

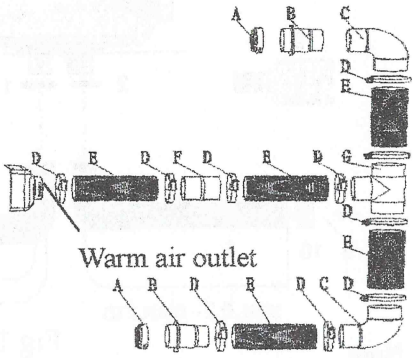


Fig. 15

Exhaust system

The flexible exhaust pipe can be shortened to 20cm or lengthened to max.2m depending on the installation conditions.

Fasten the exhaust silencer (if have)to a suitable position in the vehicle.Cut flexible pipe off a long part and a short part.

Route the flexible exhaust pipe from the heater to the exhaust silencer and fasten with pipe clips.Use a pipe clip to fix a short exhaust pipe end(with end sleeve)to the exhaust silencer.

Note

The whole exhaust system gets very hot during and immediately after the heater has been working.This is the reason why the exhaust system must be installed according to these instructions.

The exhaust outlet must end in the open air.

The exhaust pipe must not protrude beyond the lateral limits of the vehicle.

Install the exhaust pipe sloping slightly downwards.If necessary ,make a drain hole approx. Φ5mm at the lowest point to drain off condensation.

Important functional parts of the vehicle must not be impaired(keep sufficient clearance).

Mount the exhaust pipe with sufficient clearance to heat-sensitive parts.Pay particular attention to fuel pipes(plastic or metal),electrical cables and brake hoses etc.

Exhaust pipes must be fastened safely(recommended clearance of 50cm)to avoid damage from vibrations.

Route the exhaust system so that the emitted fumes are not sucked in with the combustion air.

The mouth of the exhaust pipe must not get clogged by dirt and snow.

The mouth of the exhaust pipe must not point in the direction of travel.

Risk of injures and burns!

Every type of combustion produces high temperatures and toxic exhaust fumes.This is the reason why the exhaust system must be installed according to these instructions.

Do not perform any work on the exhaust system while the heater is working.

Before working on the exhaust system,first switch the heater off and wait until all parts have cooled down completely,wear safety gloves if necessary.

Do not inhale exhaust fumes.

Circuit diagram

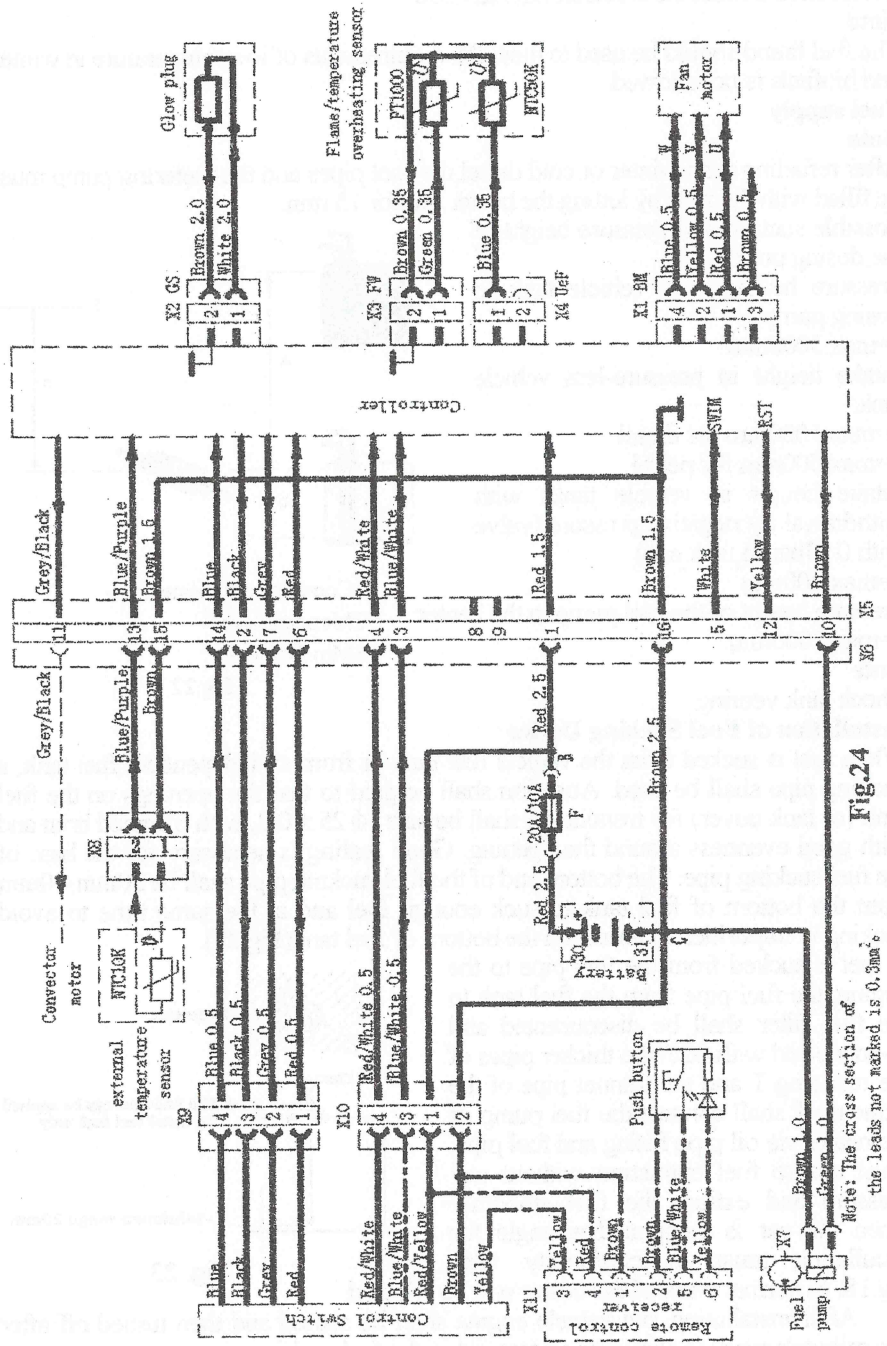


Fig.24

Do not inhale fuel vapours.

Note

Safety instructions for routing the fuel pipes

Only use a sharp knife to cut off fuel hoses and pipes,interfaces must not be crushed and must be free of burrs.

The fuel pipe from the dosing pump to the heater should be routed at a continuous rise.

Fuel pipes must be fastened safety to avoid any damage and/or noise production from vibrations(recommended clearance of approx.50cm).

Fuel pipes must be protected from any mechanical damage.

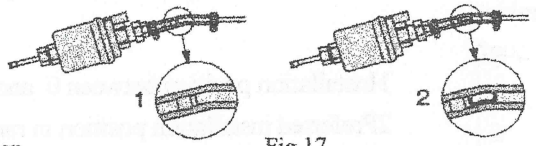
Route the fuel pipes so that any distortion of the vehicle,engine movements etc.cannot have any lasting effect on the service life.

Parts carrying fuel must be protected from interfering heat.

Never route or fasten the fuel pipes to the heater or vehicle exhaust system.At crossings,always ensure adequate heat clearance,if necessary attach heat deflection plates protective hose.

Dripping or evaporating fuel must never be allowed to collect on hot parts or ignite on electric systems.

When connecting fuel pipes with a fuel hose,always mount the fuel pipes in a butt joint to prevent any bubbles from forming.



1Correct connection

2Incorrect connection-bubble formation

Fig.17

Safety instructions for fuel pipes and fuel tanks in buses and coaches

In buses and coaches,fuel pipes and fuel tanks in buses and coaches

In buses and coaches,fuel pipes and fuel tanks must not be routed through the passenger compartment or driver's cab.

Fuel tanks in buses and coaches must be positioned in such a way that the exits are not in direct danger from a possible fire.

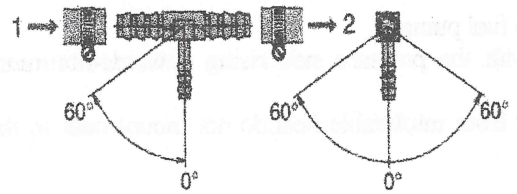
Note

For noise reasons,do not rigidly fit fuel pipes onto structural sound transferring components.

A sponge rubber hose can be pushed over the fuel tubes for nose reduction.

Installation position of the T-piece

Use the installation positions shown in the diagram 18 when inserting a T-pipe



1Direction of flow from the fuel tank

2Direction of flow to the vehicle engine

Fig.18