



Gas and Electric Space Heater Mk II SH2212B Underfloor

Thank you for purchasing this Propex product

The Propex Space Heater Mk II is a gas and electric blown air space heater. Nominal heat output is 2kW on gas and 2kW on mains electric. When on electric mode, heat output is adjustable to low, medium and high settings with an automatically adjusting fan speed which minimises noise and current draw. The compact design provides versatility in installation locations and needs minimal maintenance. The vehicle internal temperature is set by a room controller which can be manually adjusted to a wide range of temperature settings or to warm weather ventilation. Key enhancements to the Mk II design are improved insulation, improved service access and lighter more compact design.

Read the following carefully before installation

SH2212B (under-floor) Maximum dimensions: Height: 121mm, Width: 290mm, Length: 714mm
Countries of Destination: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, HR, IE, IS, IT, LT, LU, LV, MT, NL, NO, PT, SE, SI, SK, TR
Under-floor Installation 7.7kg

Gas: Butane 28-30mbar - CAT I3+ (28-30/37), Butane/Propane 30mbar - CAT I3B/P (30)
Propane 37mbar - CAT I3p (37)
Gas Consumption (M) 150g/h
Classification of Heater: Type: C53 (Fanned) Normal Installation
C13 Vehicle In Motion Installation

Nominal Heat Input: Gas 2.0kW
Nominal Heat Input Electric 2.0kW.

Mains Electric:
Nominal voltage: 230V a.c. 50Hz
Power options: 500/1000/2000W
Maximum current a.c.: 9 Amps

Battery Supply
Nominal voltage: 12V d.c.
Operating range: 10.0V d.c. min. to 15V d.c. max.
Maximum current d.c. gas operation: 1.7 Amps (0.01Amps on standby)
Maximum current d.c. electric operation: 2.2 Amps (0.01Amps on standby)

Dry Storage Temperature: -20°C to 70°C
Hot Air Duct Diameter: 60mm ID
Flue Diameter: 22mm ID

Maximum Exhaust Flue Length: 2m
Minimum Exhaust Flue Length: 0.75m
Maximum Combustion Air Flue Length: 2m
Minimum Combustion Air Flue Length: 0.75m

Ensure that the position allows access for servicing the Space Heater and that there is a minimum of 25mm distance around the heater to adjacent walls when mounted inside the vehicle.

The Propex Space Heater has been designed for caravan, motor home and mobile applications, and is more than adequate for typical recreational vehicle use. The Space Heater is designed to be installed in conjunction with a ducted hot air system.

Observe all warnings.

In the unlikely event of leaks in the gas system, or if there is a smell of gas:

- Extinguish all naked flames
- Do not operate any electrical switches
- Turn off all gas appliances
- Open windows and doors for ventilation
- Do not smoke
- Shut off gas connection

Get the system thoroughly checked by a registered gas engineer

The space heater shall not be operated in the following situations:

- When refuelling the vehicle, the vehicle towing the caravan, or other appliances
- When the vehicle in which the heater is installed is in motion; unless the vehicle in motion flue kit is installed (please see Appendix A for information on identifying flue type)
- When the vehicle in which the heater is installed is in a confined space such as a garage

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Ensure that a minimum of one of the hot air outlet vents is permanently open. This hot air vent should be the closest to Space Heater.

Any alteration to the appliance, including flue components, use of non-Propex spare parts/accessories and non observation of the installation and operation instructions shall lead to cancellation of the warranty and exclusion of liability claims and results in it becoming illegal to use the appliance.

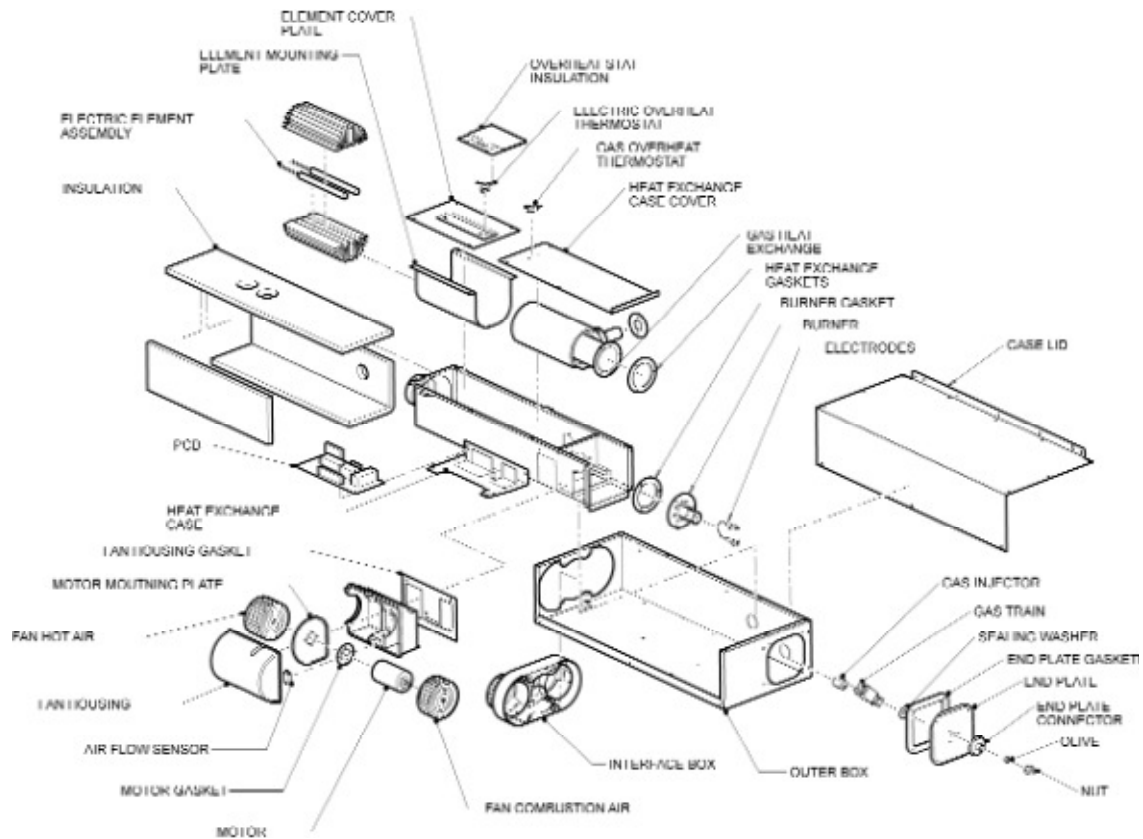
Please note that incorrect installation, misuse or use of non original Propex parts may invalidate the warranty. It also becomes illegal to use the appliance if incorrectly installed, and in some countries this even makes it illegal to use the vehicle.

When operating using gas, the combustion air inlet flue and outlet flue for the products of combustion (exhaust flue) shall never be obstructed. They should be checked regularly, and if necessary cleaned by the user (e.g. in winter, snow shall be removed from the combustion outlet and air intake).

Where the open end of the exhaust flue terminates, three sides of the under-floor space are to be kept open and not obstructed, and not contain through floor ventilation openings.

The heater, its gas supply, and flues for the products of combustion are to be inspected in accordance with national regulations or if these do not exist, the manufacturer's recommendations, however, it is advised that this should be done at least annually.

Please note: The heater and ducts will become hot. Please avoid anything directly touching the heater or ducts.



To the Fitter:

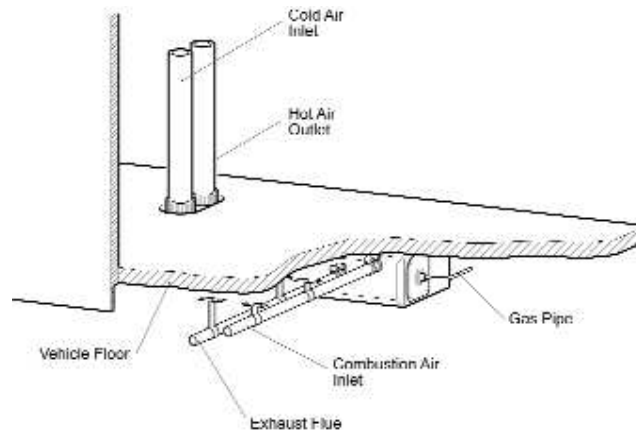
Installation and servicing of this appliance must only be carried out by competent persons registered with the Gas Safe Register (GB) or the relevant national organisation, in accordance with the relevant regulatory and safety requirements.

Before installation, ensure the appliance has been supplied in good condition and if damaged do not install.

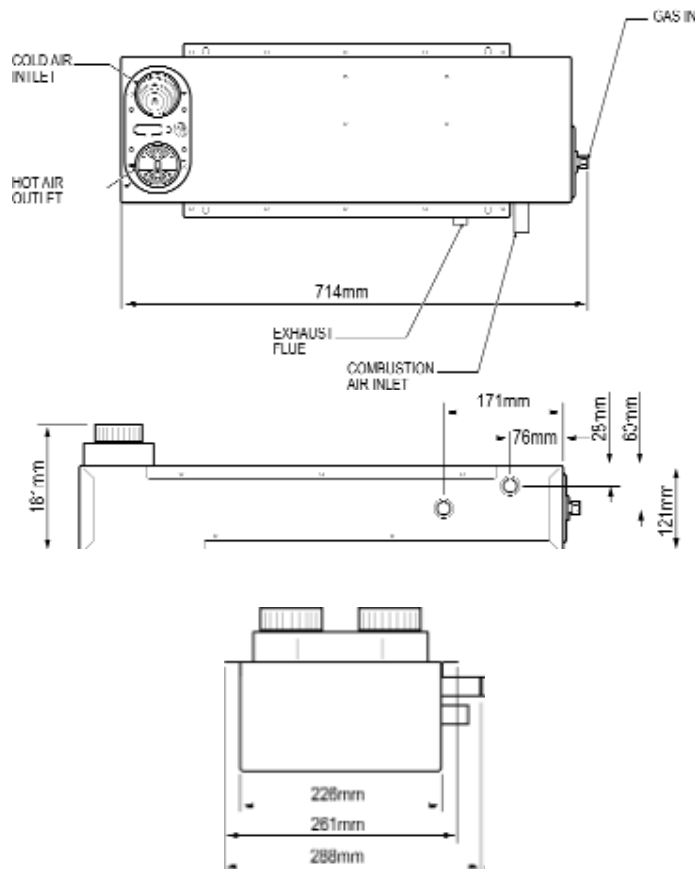
A competent person should install the appliance in accordance with the appliance installation instructions. This appliance is for use with LPG (see appliance data plate) and mains electricity (230V a.c.). Check that the product is suitable for the intended application, in particular the installer must check the compatibility of the data plate information with the LPG supply requirements of the vehicle. Follow these installation instructions and ensure all relevant personnel read the points listed below. Also ensure that these operating instructions are passed on to the end user.

Please note: The appliance should be installed in accordance with any relevant regulations in the country where the appliance is installed. For this appliance in Europe the standard is BS EN 1949:2002 "Specification for the installation of LPG systems for habitation purposes in leisure accommodation vehicles and in other road vehicles".

Ventilation must comply with relevant national and/or local requirements.



Under floor installation



Step 1 Find suitable location for Space Heater Installation

Consider the following points:

- i. For weight distribution in caravans, aim to position the Space Heater as near to the axle as possible. You should avoid (where possible) locating at the very rear and preferably avoid the very front. Also position the unit so it is not taking spray and debris flicked up directly from the road wheels
- ii. If mounting under the floor the heater should be positioned within the chassis members and close to the axle to help protect the appliance.
- iii. Please note: The heater, ducts and flues will become hot. Please avoid anything directly touching these.
- iv. Ensure the position allows access for servicing the Space Heater and that there is a minimum of

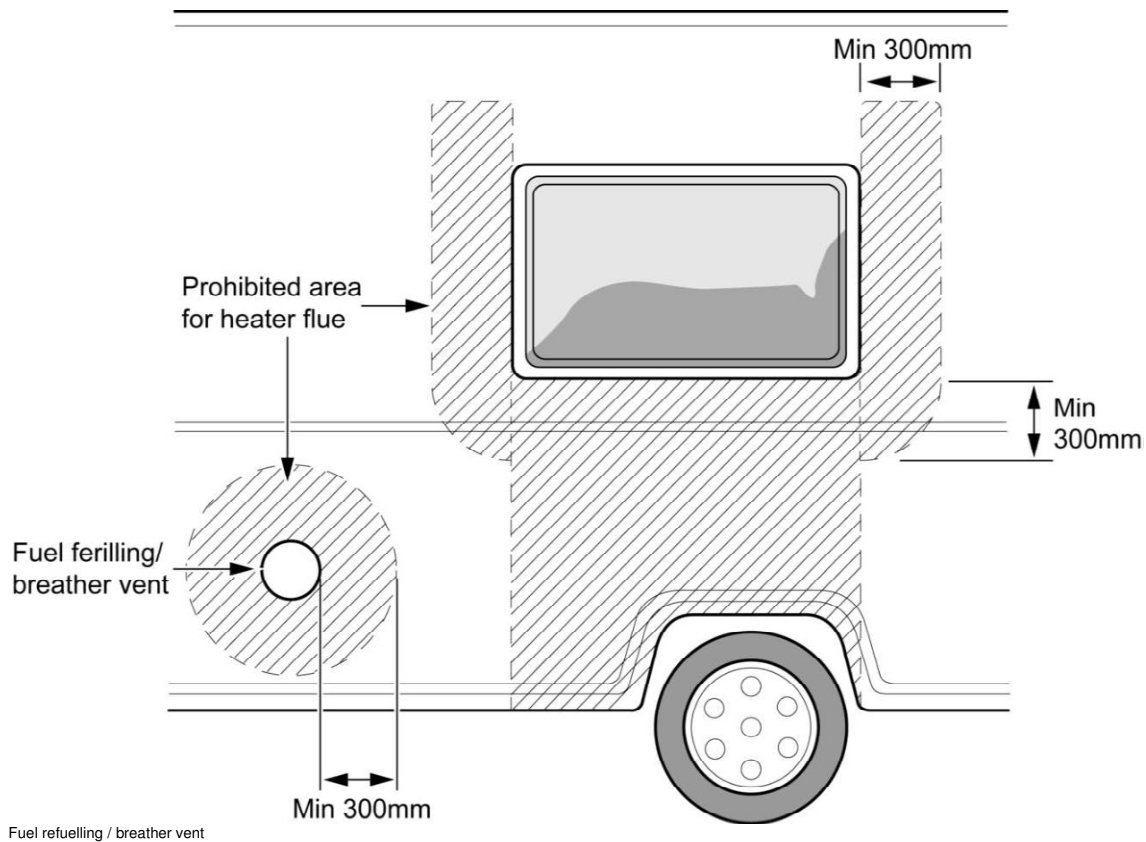
25mm distance around the heater to adjacent walls.

v. The hot air outlet of the heater is to be fitted to the hot air ducting system. The heater should be positioned to minimise the amount of ducting required and sharp bends in the ducting should be avoided.

vi. In selecting the position of the Space Heater, ensure that the exhaust flue and combustion air inlet flues can be installed avoiding all chassis members and gas pipes etc. that are located underneath the floor. Remove the flue template from the back of the instruction manual and use this to find a suitable location.

vii. The open end of the exhaust flue must not be fitted at the side of the caravan / motorhome where an awning may be fitted. It is thus preferable to install the heater on the opposite side of the caravan / motorhome to avoid routing the exhaust flue to the far side of the caravan / motorhome.

viii. Only Propex supplied flue components are permitted to be used. The open end of either flue must not be positioned within 300mm of a refuelling point or fuel tank breather outlet or any ventilator for the living space or an opening part of a window. The exhaust flue must not be fitted within 300mm of a ventilator for the living space or an opening part of a window. The open end of the exhaust flue must be positioned at least 500mm from the open end of the combustion air flue and be pointing in the same direction. The exhaust flue should be positioned at the side or end of the caravan / motorhome. The exhaust flue may be positioned vertically below an opening part of a window if the appliance is fitted with an automatic shut-off device, to prevent operation when the window is open.



ix. The combustion air inlet flue can be terminated underneath the vehicle. The open end of it must be at least 500mm away from the open end of the exhaust flue, and pointing in the same direction. Take care to ensure that both flues have a slight downward slope from as close to the heater as possible to prevent any possibility of water traps. Make sure neither the exhaust nor the combustion air inlet flues are terminated in an under-floor box section.

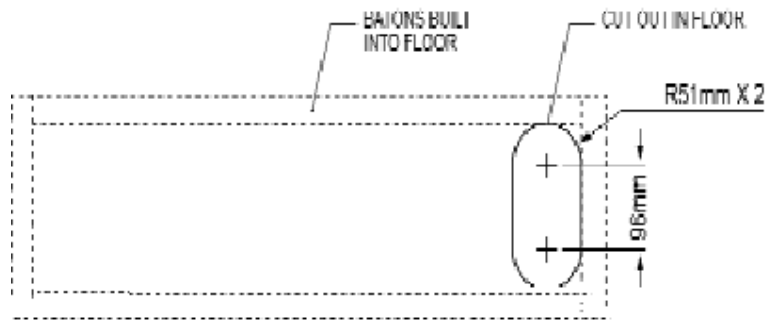
x. The minimum length of the exhaust flue is 0.75m, and maximum length 2m. The minimum length of the combustion air inlet flue inlet must be 1m, and maximum length 2m.

- xi. When operating using gas, the combustion air inlet flue and outlet openings for the products of combustion (exhaust flue) **must never** be obstructed. They should be checked regularly, and if necessary cleaned by the user (e.g. in winter, snow shall be removed from the combustion outlet flue and combustion flue intake).
- xii. Where the open end of the exhaust flue terminates, three sides of the under-floor space are to be kept open and not obstructed, and not contain through-floor ventilation openings.
- xiii. The heater, its gas supply, ducting and flues are to be inspected in accordance with national regulations or if these do not exist, the manufacturer's recommendations, however, it is advised that this should be done at least every year.
- xiv. The heater **must not** be used when the vehicle is in motion unless the vehicle in motion flues and bracket are fitted. The vehicle in motion kit is not standard and is available separately. Please refer to the vehicle in motion kit instruction for further fitting considerations or contact Propex Support for more information.

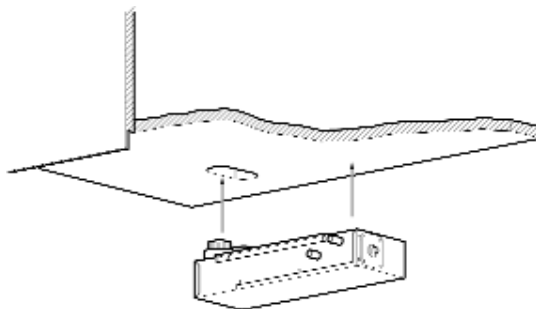
Proceed to Step 6

Step 4 Underfloor heater location

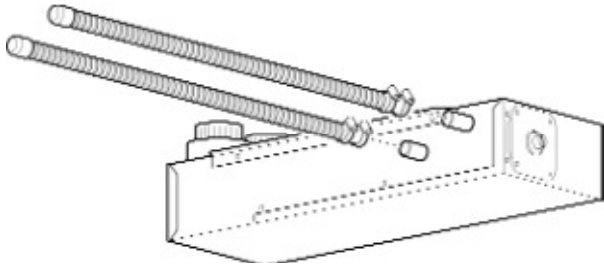
For under-floor installation the floor of the vehicle should be manufactured as per the diagram. It is important that wooden batons are incorporated in the floors construction to allow the screws to secure into.



Locate the heater in the correct position such that the screws will enter the batons, and attached with 10 screws (No. 8 x 5/8") provided. Ensure that the mains cable is fed through the rectangular cut out and is not trapped between the outer cover box and the floor.



Step 5 Securing the flues



Push on the ends of the flues with the blue adaptor to the pipes on the underside of the Space Heater ensuring they are fully pushed on, and secure with supplied hose clips.

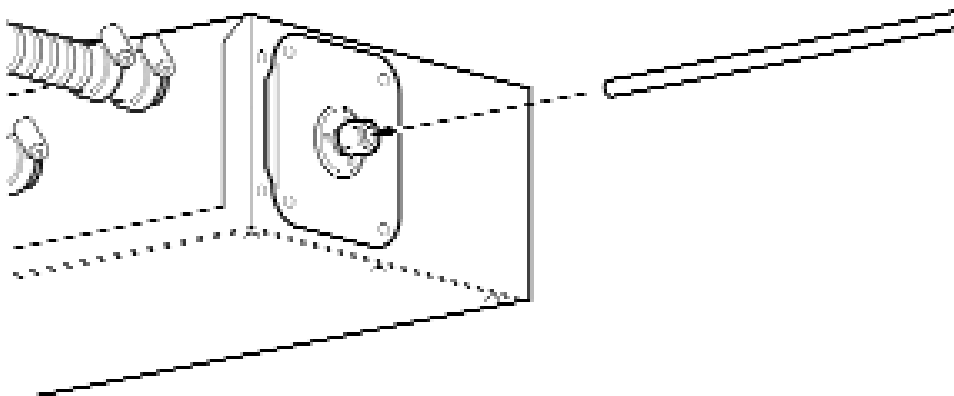
Step 6 Mounting the flues

When mounting the combustion inlet flue and exhaust flue, they should ideally run downwards from the heater to their open end to allow any condensation to drain out. The open ends should be angled downwards to prevent rain from entering. Care should be taken to route exhaust flues around chassis members and avoiding gas pipes and wires. The flues should otherwise be kept as straight as possible.

Please note: The exhaust flue should be positioned at the side or the rear end of the vehicle. The open end of the combustion air flue must be at least 500mm away from the open end of the exhaust flue and pointing in the same direction.

The combustion air inlet flue is attached to the underside of the floor with the P clips supplied. The remaining brackets supplied with the flue kit are used to attach the exhaust flue. Clip the bracket around the flue and use two screws (No.8 x $\frac{3}{4}$ ") to attach each bracket to the floor

Step 7 Connect to gas supply



The appliance should be installed by a competent person in accordance with the installation instructions and comply with any relevant regulations in the country where the appliance is installed. The Space Heater is supplied with a compression nut and olive for 8mm (5/16") pipe. The supply pipe should be checked and be free from dirt or other particles before connection to the compression joint on the space heater. The supply pipe should be routed so that the appliance can be removed for servicing.

A gas shut-off valve should be located in the vicinity of the space heater and all connections should be kept to a minimum.

It is recommended that a gas pressure test point is fitted to the inlet of the appliance.

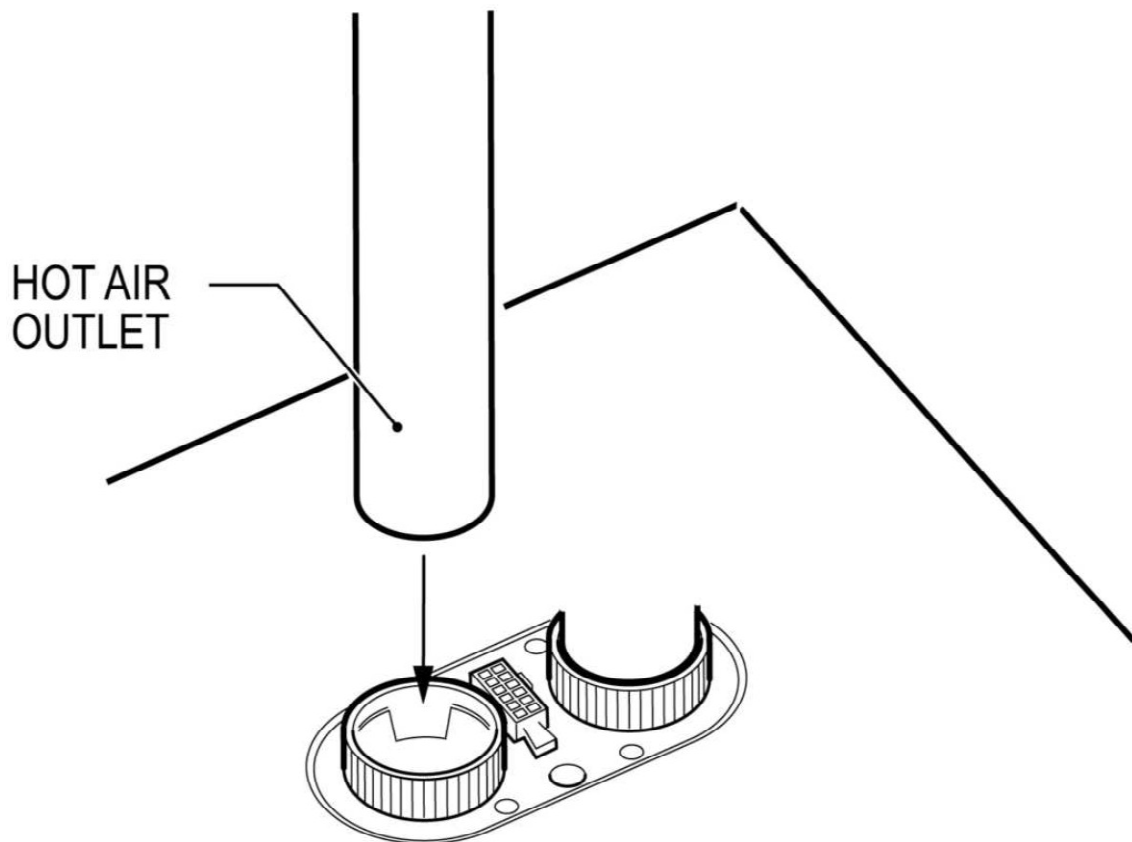
When the gas line is complete, all joints should be tested for leaks using leak detection solution – Never with a naked flame.

The gas pressure should be verified at the pressure test point.

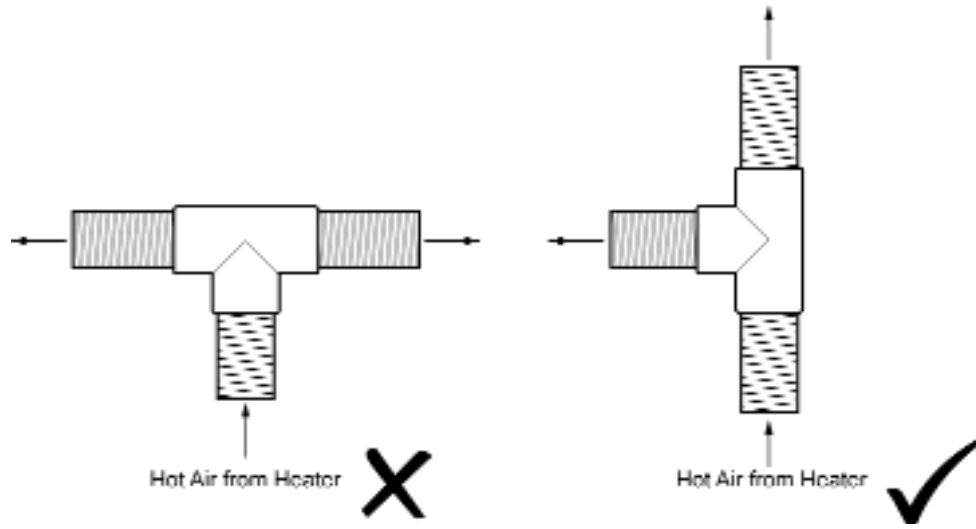
Please note: The operating pressure for the gas supply should be either 28-30mBar Butane or 30mbar/37mbar Propane.

Step 8 Fitting Hot Air Ducts

To fit the ducting push it onto the 'outlet' nozzle, where it will be gripped by the nozzle.

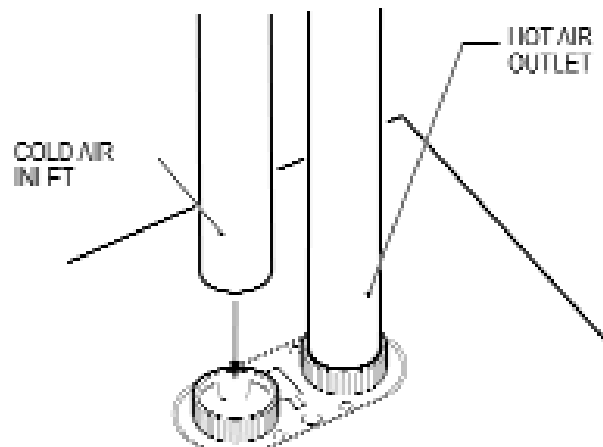


Important: At least one hot air outlet vent is to be permanently open. The hot air duct should not be fed into the centre branch of a Tee fitting as per diagram



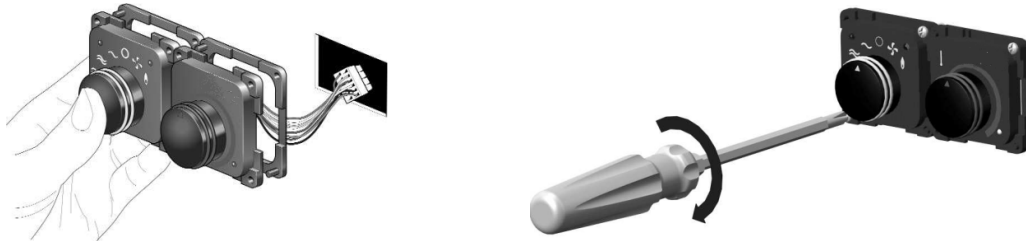
Step 9 Fitting Cold Air Supply

The Space Heater must be adequately supplied with cold air. If the heater is installed in a bed box or another confined space, either vents into the area **must be** fitted or ducting used to supply the heater with cold air. If a vent is fitted, it must be no smaller than one designed for use with 60mm ducting. If ducting is fitted it should supply air from the living space of the vehicle. To fit the ducting, push it onto the cold air inlet nozzle, where it will be gripped by the nozzle.



Step 10 Mounting of Control Panel

When mounting the control panel, find a suitable convenient and accessible position. For good temperature control, select a position away from draughts and approximately 1.5m above the floor. Ensure suitable access for wiring loom connection and cable. Note that the cable supplied with the retail heater to connect the control panel to the space heater is 3.5m long. The minimum depth behind panel for wiring must be 40mm.



The control panel requires a cut out 95mm wide x 42mm high. Feed the wires through the cut out in the wall and locate into desired position. Secure with 4 screws (No.4 x 3/4) provided, then clip on the surround frame. In some instances, it may be necessary to make the wiring connections in step 11 before securing the control panel to the wall.

Alternative mounting * A plinth is supplied in the kit to save cutting the 95mm x 42mm hole, requiring only a 30mm diameter hole and then surface mounting the control panel

WARNING: Always disconnect the appliance from the power supply prior to working on electrical components.

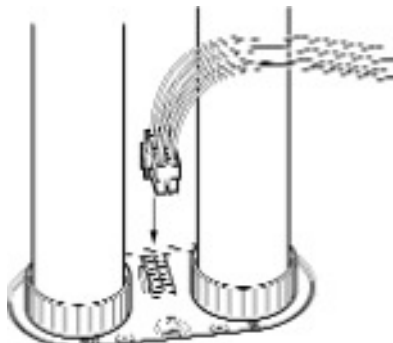
The space heater and control panel come complete with electrical connectors fitted.

Space Heater is provided with a JST VL series 12 way socket, and the control panel with JST VL 6 and 3 way sockets. 9 wires are required to connect the space heater to the control panel, and 12V and 0V power supply are to be connected to the 12 way socket at the heater.

Please note: We recommend that a 5 amp automotive fuse is fitted in the 12V supply.

Wiring connections

The space heater and control panel come complete with electrical connectors fitted. Connect the 12 way electrical connector with the flying red and white leads to the 12 way connector on the space heater. Then route the wire to the control panel and connect the 6 way electrical connector to the 6 way connector, and the 3 way electrical connector to the 3 way connector at the control panel. Secure the wire close to the control panel so there is no strain on the wires at the switches. Connect the red flying lead coming from the 12 way connector to a 12V supply, then connect the white flying lead to the vehicle 0V.



Step 12 Electrical Connection 230V

The appliance should be installed in accordance with the installation instructions and comply with any relevant regulations in the country where the appliance is installed. Electrical installation should be carried out by a suitably qualified electrician. The electrical supply **must be** connected to a 13 amp fused spur provided with an all-pole disconnection and the appliance **must be** earthed.

Manufacturer Installation Example

The mains supply cable is supplied with a JST LP series socket (terminal pins are JST slm-61T-2.0) and should be mounted in a housing with strain relief to prevent accidental disconnection and prevent access to the connector.



Please note: If the supply cable is damaged, it **must be** replaced by the caravan/motorhome/cable manufacturer or a Propex Approved Service Centre or Technician.

Warning:

The appliance must not be supplied through an external switching device, such as a timer, or a circuit that is regularly switched. This is to avoid an inadvertent resetting of the thermal cut out.
N.B. Ensure that the Space Heater is not located immediately below the electrical supply socket.

Please note: After completing the installation, carry out a full function check including gas soundness to ensure the appliance has been installed and operates correctly. The gas soundness check must be carried out by an accredited LPG gas engineer and a test certificate issued.

To the User:
Read the following instructions carefully.

Observe all warnings.

In the unlikely event of leaks in the gas system, or if there is a smell of gas:

- Extinguish all naked flames
- Do not operate any electrical switches
- Turn off all gas appliances
- Open windows and doors for ventilation
- Do not smoke
- Shut off gas connection

Get the system thoroughly checked by an Approved Service Centre / Technician.

- The space heater shall not be operated in the following situations:
 - When refuelling the vehicle, the vehicle towing the caravan, or other appliances
 - When the vehicle in which the heater is installed is in motion, unless a Vehicle In Motion kit is fitted.
 - When the vehicle in which the heater is installed is in a confined space such as a garage.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Ensure that a minimum of one of the hot air outlet vents is permanently open.

When using gas, the combustion air flue and outlet openings for the products of combustion (exhaust flue) **shall never be obstructed**. They should be checked regularly, and if necessary cleaned by the user (e.g. in winter, snow shall be removed from the combustion outlet and air intake).

Where the open end of the exhaust flue terminates, three sides of the under-floor space are to be kept open and not obstructed, and not contain through-floor ventilation openings.

The heater, its gas supply and flues for the products of combustion are to be inspected in accordance with national regulations or if these do not exist, the manufacturer's recommendations, however, it is advised that this should be done at least annually.

The Propex Space Heater should be checked periodically by an Approved Service Centre / Technician, or competent person, at least annually. This should be completed according to the practice in the country where it is used and according to these instructions. We recommend annual testing of gas soundness and combustion by an accredited LPG gas engineer. The appliance contains ESD sensitive components and therefore should only be opened by a Propex Approved Service Centre / Technician

When using operating switches provided by the installer or manufacturer, they are responsible for providing user instructions and identification of symbols on the control panel. The inlet vents of the heater should **never be** blocked and at least one hot air outlet vent is to be permanently open.

OPERATING INSTRUCTIONS



For operation of the heater, a 12V d.c. supply must be connected at all times.

To operate the heater's electric elements, it must also be connected to a suitable 230V a.c. supply.

Fan only operation. Turn the selector knob to the fan position

Gas operation. Turn the selector knob to the gas on (flame) position. There will be a pre-purge pause of approx. 30 sec's to allow any un-burnt gas to leave the flue. A green LED will light upon successful flame ignition. If there is air in the gas supply line it may take a few attempts for the gas to ignite. See section 9 for gas lockout re-setting. If the ignition is not satisfactory the red LED will flash, refer to the trouble shooting guide (see section 9).

Electric operation. The space heater is equipped with 3 power settings 500W / 1000W / 2000W.

Turn the selector knob to low power setting (~) for 500W.

Turn the selector knob to medium power setting for 1000W:

Turn the selector knob to high power setting for 2000W:

When operating on low and medium electric power settings the blown air fan runs at a reduced speed to minimise noise and current draw.

Note: The electric elements will still operate if the appliance is in gas ignition lock-out.

The appliance cannot be operated with both gas and electric.

Switching appliance off. Turn the selector knob to the Off position (O). Note that the fan will continue to run for 3 minutes to allow the heater to cool down.

Adjusting the temperature. Turn the temperature control knob clockwise to increase and anti-clockwise to reduce the room temperature. The heater will automatically turn itself on and off to maintain the desired ambient temperature.

Note that the controls incorporate a low frost protection setting. This can be activated by turning the temperature control knob fully anti-clockwise.

If the heater has not been used for some time, dust may have settled inside the heater and the ducting. Run the heater on the "Fan only" setting until it clears. The outside of the appliance should not normally require cleaning. If it does, isolate the electrical supplies and wipe down with a soft, damp cloth only. Allow to fully dry before reconnecting the electrical supplies.

The heater is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas or d.c. supply to internal heater malfunctions. In the unlikely event of a failure, the red light on the control panel will flash a number of times, pause, and repeat until switched off. Count the number of flashes and refer to the table below.

Number of Flashes	Fault	Remedy
1	No flame detected	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. Ensure propane is used at temperatures below +5°C. Clear lockout as described below.
2	Overheat	Check the air ducts and vents are not blocked or restricted. We recommend you wait at least 5 to 10 minutes to allow the heater to cool before clearing lockout as described below.
3	Low/High Voltage	Minimum operating voltage is 10V, maximum is 15V, when measured at the heater. Check battery voltage. If between 10V and 15V, check connections between heater and battery. Check alternator or external battery charging. Clear lockout as described below.
4	Combustion air fault	Check combustion air inlet flue and exhaust flue for blockages
5	Other/Internal fault	Attempt to clear lockout as shown below. If this fails, contact a Propex Approved Service Centre / Technician

Gas Lockouts

Gas lockouts must be cleared by turning the selector knob from gas on (flame) position to off position then back to the on position. The complete sequence of switch movements must be completed within 2.5 seconds for a lockout to be successfully cleared. If there is air in the gas line, e.g. after a gas bottle change, the space heater may require several attempts before it lights. Lockouts can also be cleared by switching to the 'fan only' position and then back to 'on' within this 2.5 second period.

Other Lockouts

If the lockout is caused when the unit is operated on electric, the lockout can be cleared by turning the selector knob from electric 'on' position to 'off' position then back to the 'on' position. The complete sequence of switch movements must be completed within 2.5 seconds for a lockout to be successfully cleared.

Note: A cycling of the power supply to the unit will not clear a lockout. Some gas lockouts, e.g. ignition lockout and combustion air faults will still permit use of the appliance in electric only operation. If the problem persists contact Propex

Heater is not going to be used for a long period of time, we recommend that the open end of the combustion air and exhaust flue are covered to prevent ingress of leaves, spiders etc.

Manufacturer's Declaration

We hereby declare, under our sole responsibility, that the above equipment complies with the provisions of the following EC Directives Gas Appliance Directive 2009/142/EC on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.
Low Voltage Directive 2006/95/EC on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
Electromagnetic Compatibility Directive 2004/108/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility.
Automotive EMC Directive 2004/104/EC (latest amendment 2009/19/EC) as per Regulation 10.03.

CE mark first affixed: **November 2009**

Basis on which conformity is declared

The above equipment complies with the protection requirements of the EMC Directive and the principal elements of the safety objectives of the Low Voltage Directive

This Space Heater is protected by the following patent and design registration applications:

UK Patent application number: 0902533.9 & 0915825.4

This product is manufactured by

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