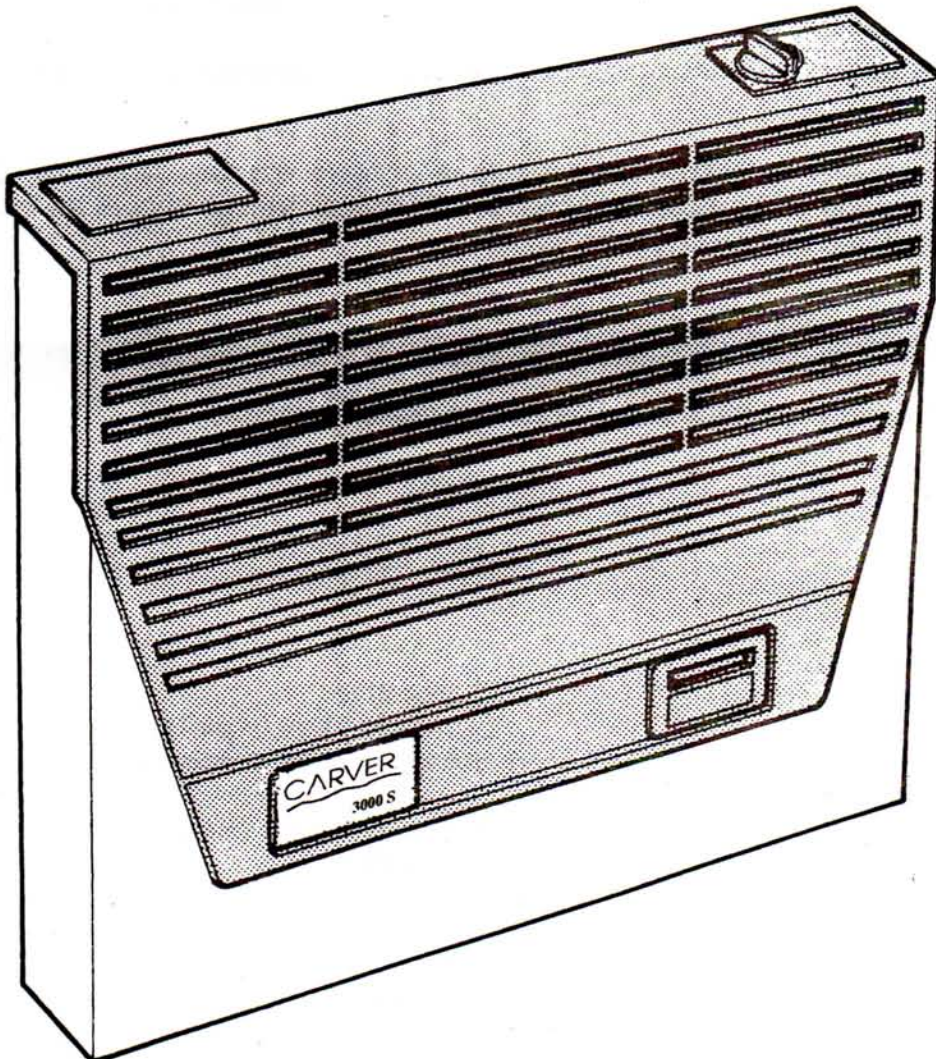


# CARVER

## INSTALLATION AND SERVICING INSTRUCTIONS

### FOR THE 3000 S CARAVAN HEATER



#### **LEAVE THESE INSTRUCTIONS WITH THE APPLIANCE**

**WARNING** THIS HEATER MUST BE INSTALLED AND SERVICED BY A COMPETENT GAS FITTER WORKING TO THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS 1990, THE HEALTH AND SAFETY AT WORK ACT AND THESE FITTING INSTRUCTIONS.

## **1. WARNINGS AND INFORMATION.**

- 1.1 The heater is suitable for installation into caravans complying with B.S. 4626.
- 1.2 Always ensure the underfloor air intake is positioned so that it cannot be blocked by mud or snow.
- 1.3 Where children, the elderly or the infirm are present we recommend that a guard be fitted around the heater when in use.
- 1.4 There **MUST NOT** be a mantelpiece or shelving sited above the heater.
- 1.5 Curtains **MUST NOT** hang within 150mm of the sides of the heater or within 300mm above the top of the outlet grille.
- 1.6 Adjacent furniture or upholstery must be clear of the heater case by at least 5 millimetres.
- 1.7 The Carver 3000 heater is approved to the relevant sections of B.S. 5258 part 13 1986 under the National Measurement Accreditation Service (NAMAS) and is manufactured to B.S. 5750 part 2./ ISO 9002 1987.
- 1.8 The Data Badge is located on top of the floorplate, at the opposite end to the control rod.
- 1.9 Aerosols and highly flammable materials **MUST NOT** be stored in compartments behind or adjacent to the heater.
- 1.10 The gas supply to the heater must be from a regulator of adequate capacity giving a working pressure of 28 mbar Butane or 37 mbar Propane. In NO circumstances should an industrial or adjustable regulator be used on caravans applications.
- 1.11 The heater **MUST NOT** be operated while refuelling or when the vehicle is in a confined space such as a garage.
- 1.12 This heater does not contain asbestos or any asbestos related products.

## **2. THE HEATER KIT**

- 2.1 The heater kit is one box containing:-

- 1 Heat Exchanger Assembly
- 1 Front Case
- 1 Blanking bezel
- 1 Control Bezel c/w blanking plug
- 1 Control rod/Piezo ignitor assembly
- 1 Flame view moulding
- 1 Name plate
- 3 Screws No. 8 X 30mm Long (Brown)
- 5 Wood Screws No 8 X 20mm Long
- 6 Wood Screws No 6 X 12mm Long
- 1 Screw (M5) - Exhaust clamp
- 1 O Ring (Red)
- 1 Clamp ring
- 1 Locking ring

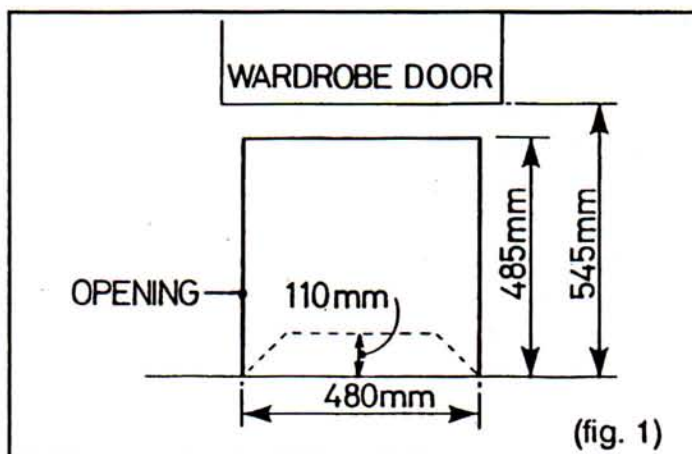
- 1 Clamp strip
- 1 Installation box (2 parts)
- 1 Set of literature in polythene bag

The flue duct kit is one box containing:-

- 3 Flue duct clips
- 1 Cowl
- 1 Flange head screw
- 1 UR Insulating duct
- 1 AE3 Stainless Steel Flue duct.

### 3. CHOOSING THE POSITION FOR THE HEATER.

The heater is normally fitted into the panel below the wardrobe door. Before commencing any fitting ensure that the appliance will fit into the desired position (see fig. 1.) . The installation box will be recessed into the panel of the wardrobe by 110mm.

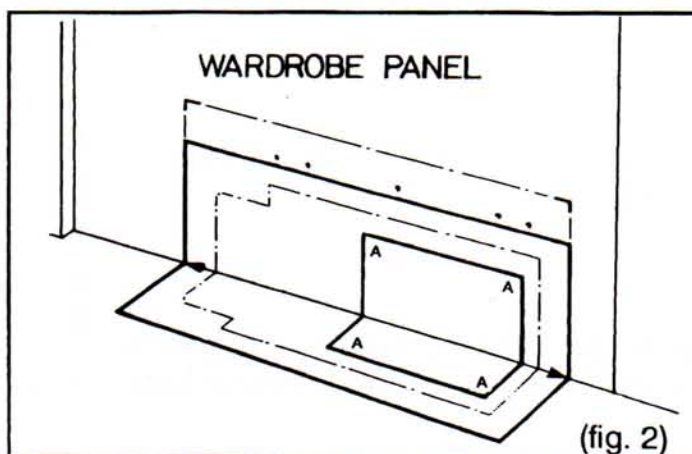


### 4. FITTING THE HEATER.

4.1 TURN OFF the gas supply at the cylinder.

4.2 If possible lift away the floor covering from the front of the panel or wall into which the heater is to be fitted. If this is not possible the template will have to be positioned on top of the floor covering.

4.3 Fold the template upwards along the arrows marked 'Wall Cutout' front face RH' and place in position as shown in fig. 2. with the rectangular cutout to the right. Mark and drill two small holes at the front corners (A & A on the template). Drop a nail or similar through the two holes and check below the caravan that the area between the nails is free of obstruction.

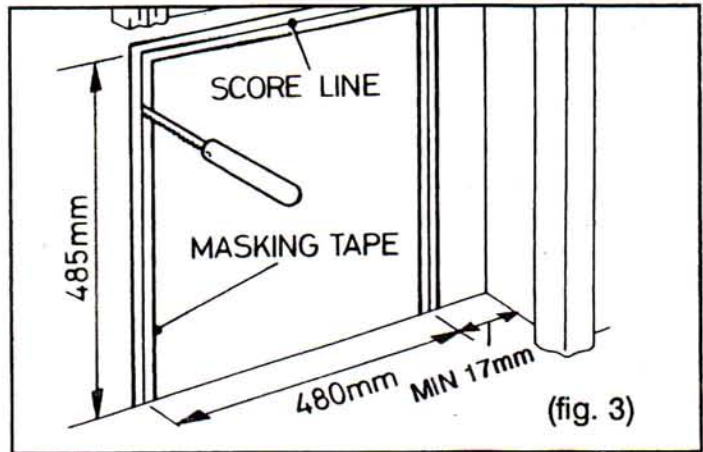


4.4 If any obstruction is found then refold the template along the arrows marked ' Wall cutout front face LH ' and place in position with the rectangular cut out to the left. Mark and drill two small holes at the front corners (A & A on template). Drop a nail or similar through the two holes and check below the caravan that the area between the nails is free of obstruction.

NOTE: If the heater is to be fitted in this position (called "Left Hand") the thermostat phial on the Gas Control Valve has to be repositioned. See section 4.13 for instructions.

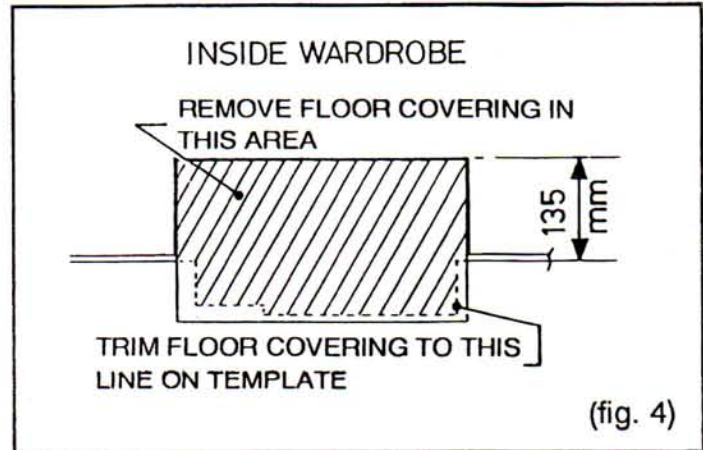
4.5 If an obstruction is still evident, the heater must be repositioned in another area in the vehicle.

4.6 When satisfactory, mark the hole to take the installation box. This will require a hole to be cut in the panel 485mm high (from the floor, below floor covering) X 480mm wide. It is recommended that the panel surface is protected by masking tape. Score the line to be cut with sharp knife, to stop the veneer lifting (see fig.3) .If the panel is of the hollow type, then the void must be filled locally along the opening with wood.



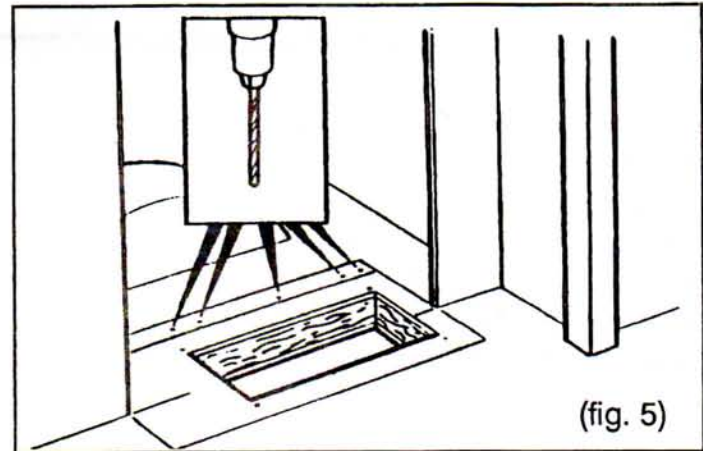
(fig. 3)

4.7 Trim the floor covering from inside the wardrobe or panel to a depth of 135mm from the front (see fig. 4.). If the floor covering is not wanted behind the installation box remove as required. Also trim the floor covering in front of the panel or panel to the lines on the template.



(fig. 4)

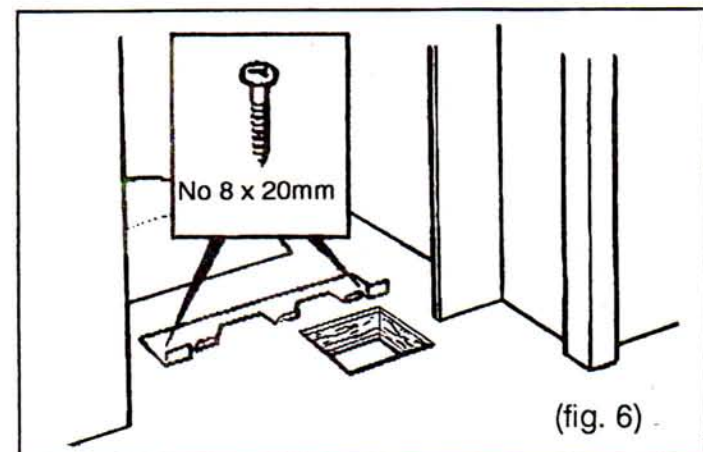
4.8 Open out the template making sure that the arrows remain in their relative positions. Mark and cut the floor hole at A, A, A, & A. on the template. Remove some of the insulation and insert timber liners for added security of the fixing screws, and to seal off the caravans floor insulation. The liners must be secured to the floor using suitable adhesive or screws and their size must be such that all holes marked on the template fall within the inserts. Do not use screws where they will contact the floorplate cork gasket of the heater.



(fig. 5)

4.9 Drill five 2mm dia. holes, as labelled 'B', at the rear of the template. (see fig. 5.).

4.10 Line up the floorplate clampstrip with the five pre-drilled holes, ensuring that the overhung edge is facing forward. Secure with 20mm screws provided. Tighten down the two outer screws firmly (see fig. 6) leave the three inner screws loosely driven at this stage.



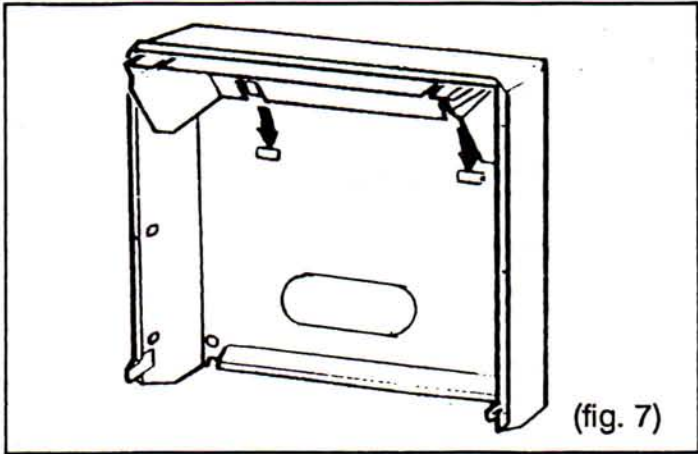
(fig. 6)

#### 4.11 Assembly of the installation Box.

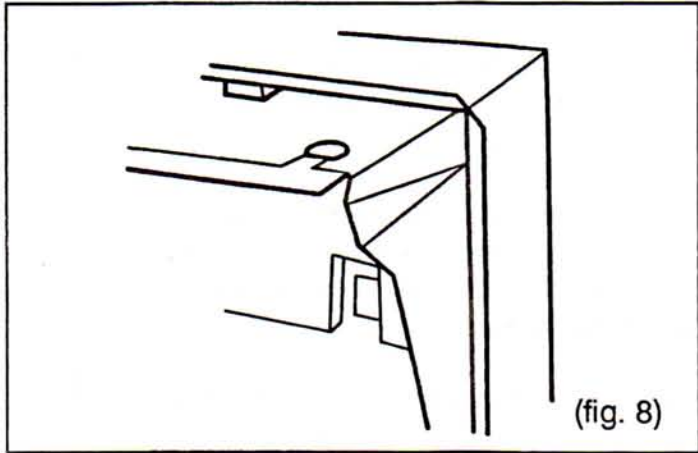
Locate the inner box on the rear tabs (see fig. 7.) Fit the top brackets of the inner box through the slots in the outer box top flange (see fig. 8.).

In no circumstances must the heater be installed without both inner and outer installation boxes being fitted correctly as this can cause damage to the heater and its surrounding cabinets and may invalidate the warranty.

Remove the bold central oval knock-out (see fig. 7.).



4.12 Position the installation box into the opening ensuring that the bottom edge of the box is on to the floor. Secure the box to the panel with the six woodscrews provided. (see fig. 9.)

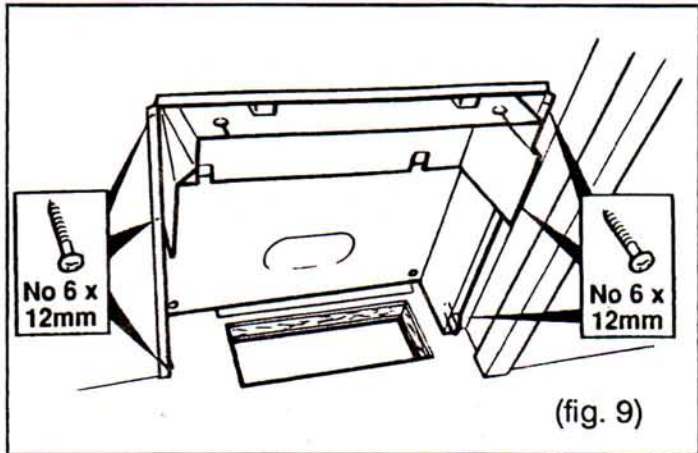


#### 4.13a Moving Phial Bracket

Carefully slide the bracket, carrying the thermostat sensor, from the steel heat exchanger shield, retaining the spring clip for further use. (See fig 10).

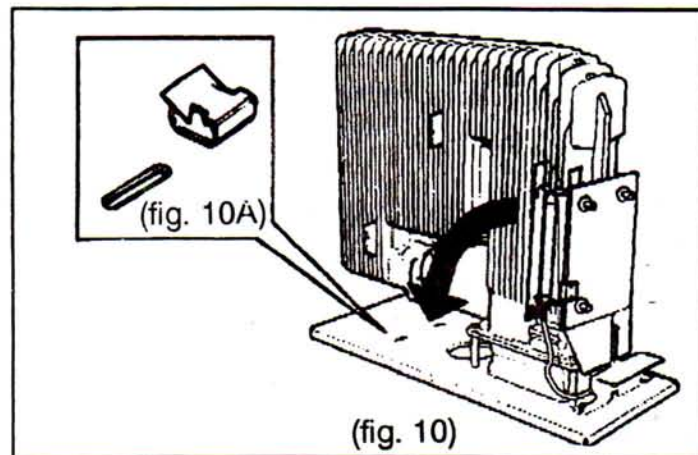
#### 4.13b Fitting Spring Clip

Fit the spring clip in the pressed slot in the top of the floorplate as shown in fig. 10. Ensure that the clip is fitted with the barbs uppermost and on the side of the floorplate intended to face into the caravan living space.



#### 4.13c Fitting Phial Carrier

Taking care not to trap, damage or kink the thermostat capillary, relocate the sensor and bracket assembly on the top of the floorplate on the same side as the spring clip. Fit the forked end of the bracket on the heat exchanger support leg, then push fully home while ensuring the spring clip flange grips the bracket bottom flange through its square hole. (See fig. 11).



4.14 Lower the heater into the floor hole and position the heater centrally in the installation box, ensure that the rear edge of the floorplate is pushed under the floorplate clampstrip. (see fig.12 point 1.)

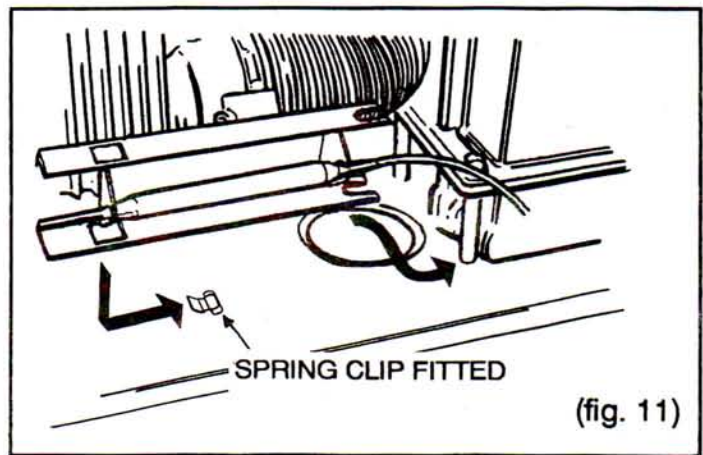
Check that the thermostat phial and its carrier face out into the living space.

4.15 Once the heater is in position use the three brown screws provided to secure it via the holes in the front edge of the floorplate (see fig. 13). Drill 2 millimetre pilot holes when screwing into solid wood.

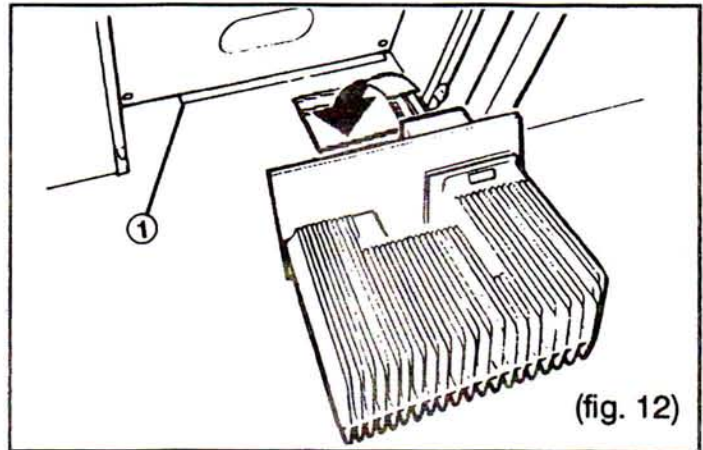
4.16 Working inside the wardrobe tighten the remaining three 20mm screws to the floorplate clampstrip.

4.17 It is important that all the screws are tightened evenly to avoid distortion of the heat exchanger floorplate, and to ensure an air tight seal to the floor.

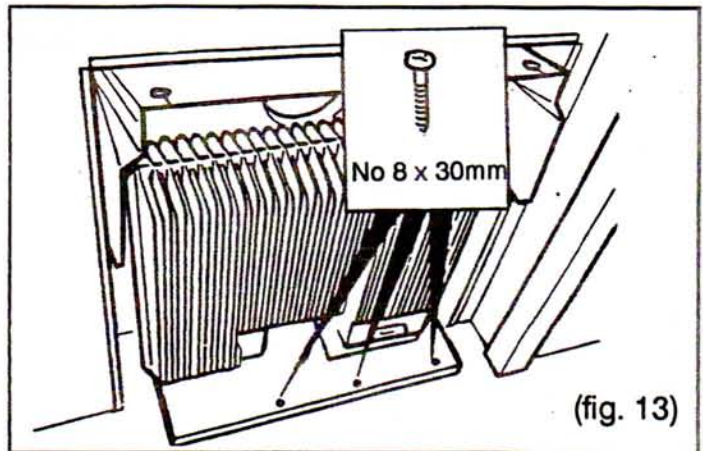
4.18: **IMPORTANT** : The floorplate **MUST NOT** be positioned on top of any floor covering, as this would prevent a satisfactory airtight room seal.



(fig. 11)



(fig. 12)



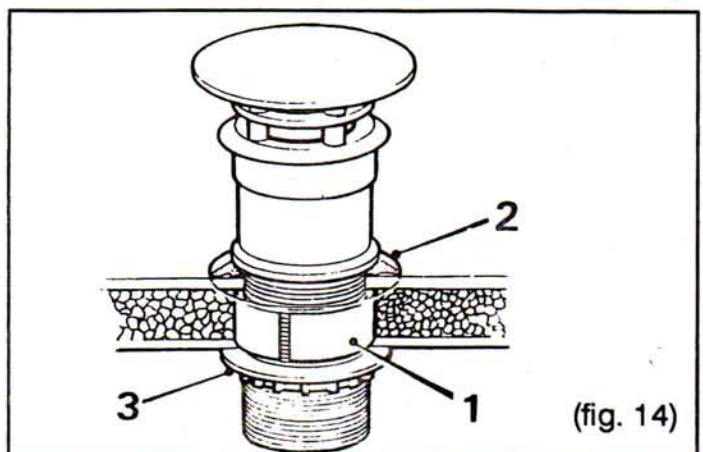
(fig. 13)

## 5. FITTING THE FLUE AND COWL.

**NOTE:- The cowl must be fitted to the roof of the caravan only and the whole installation must conform to BS5440 Part 1.**

5.1 The centre of the cowl should be at least 80mm from the edge of the caravan. If the caravan has a sloping roof ensure that no part of the cowl overhangs the edge of the caravan. The flue direction should be as straight as possible and should rise continually from the heater to the cowl. It should run against the panel to which it will be screwed

5.2 Cut a 60mm diameter hole in the roof at the required position. To avoid distortion in insulated or double roofs insert a band (1) of aluminium of the same width as the gap. Fit the cowl from the outside ensuring the rubber seal (2) is in place and then, from inside, fit and firmly tighten the plastic nut



(fig. 14)

- 5.3 **Be very careful when handling the flue duct as the edges are extremely sharp.** Bend one end of the inner flue duct sharply to 90° as shown in fig.15.

**NOTE:-**

To help you fit the flue the following tools are available from Carver Spares Department:-

Cutting Jig Part Number R701067  
(Jig to assist in cutting the flue square.)

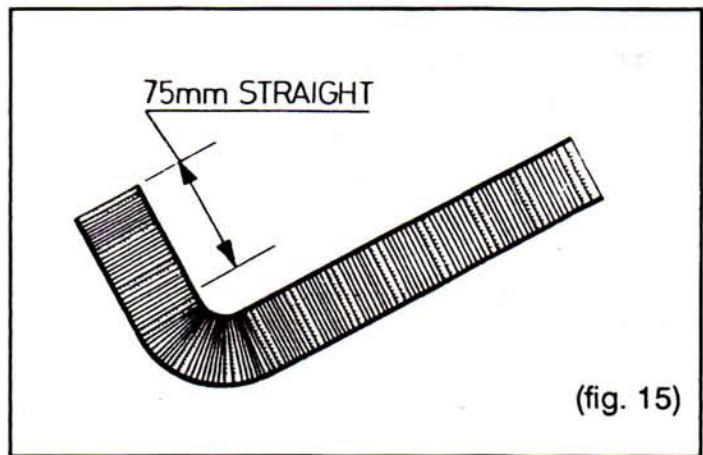
Mandrel Part Number R701063  
(To assist in the bending of the flue.)

- 5.4 From inside the wardrobe feed the bend end of the inner flue duct through the knock-out in the installation box. Slide the locking ring (1), the clamp ring (2) and the O ring (3) over the end of the duct end. (see fig. 16.)

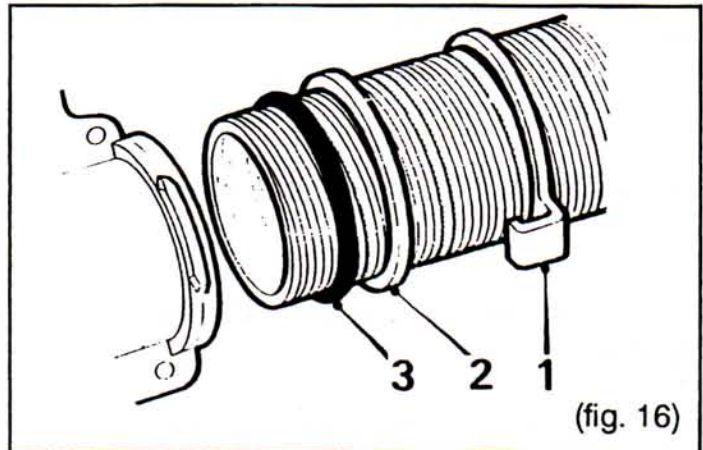
- 5.5 Firmly push the duct into the heat exchanger up to the stop. Slide the O ring, clamp ring and locking ring up to the heat exchanger making sure the tapped hole in the locking ring is towards the top. Engage the ears of the locking ring behind the projections on the heat exchanger and rotate it so that the ears are near horizontal. Insert and tighten the M5 screw. This will compress the O ring and fix the exhaust duct to the heater. **This joint is critical for the safe operation of the heater** (see fig. 17.)

- 5.6 Lay the inner flue duct along its required route to the outside cowl taking into account the attachment to the flue support, (para. 5.8.) Allow 110mm for insertion into the cowl and cut to length, erring on the long side. Slide the insulating duct over the flue until the lower end is inside the installation box and cut so that its upper end is flush with the inner duct.

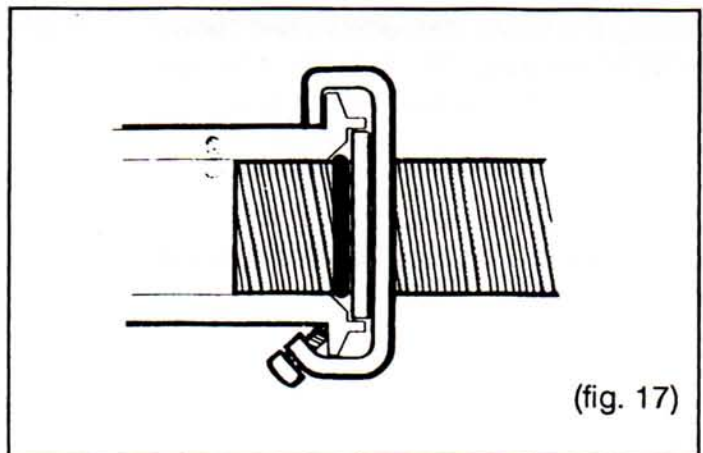
- 5.7 Push back the end of the outer duct and firmly insert the inner duct into the cowl right up its stop (about 110mm ). Allow the outer duct to spring over the outside of the cowl up to the nut. Just below the nut drill a 3mm hole through both ducts and the cowl and fit the flange head screw through all 3 items. (see fig. 18.)



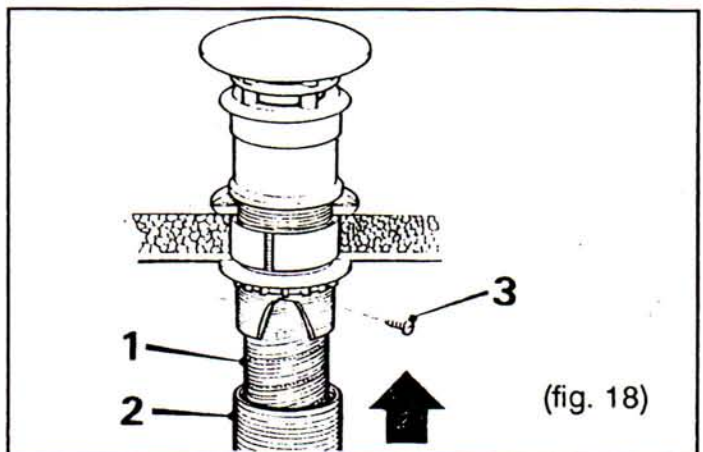
(fig. 15)



(fig. 16)



(fig. 17)



(fig. 18)

- 5.8 Inside the wardrobe fit the main flue support bracket in a position which prevents the flue sagging. Secure the flue to it with the strap provided. Secure the flue along its length against the caravan structure using all of the 3 duct clips provided. (see fig. 19.)

It is important that the flue rises continually from the heater to the cowl and that there are as few bends as possible along its length.

**It is extremely important that the flue system is sound and that it has been correctly fitted at both ends. The safety of the occupants depend on the integrity of the flue system.**

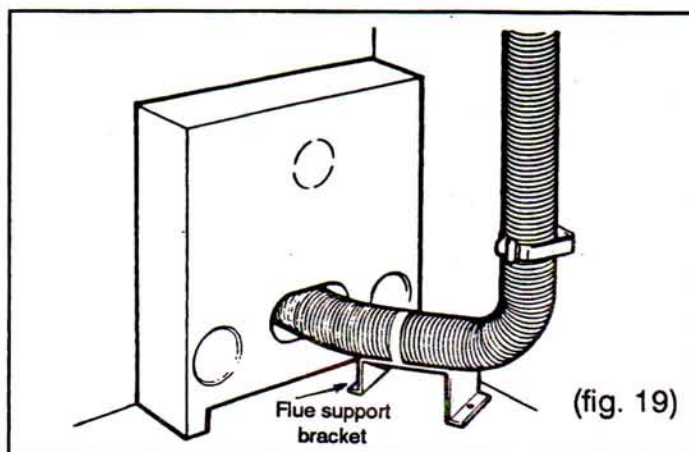
## 6. CONNECTION TO THE GAS SUPPLY

Ensure that the gas supply is turned OFF at the cylinder.

Connect the 8mm diameter caravan heater feed pipe to the gas valve under the caravan, using the nut and olive provided. When tightening the valve connection, two spanners **MUST** be used: one to tighten the nut and the other, for steadying purposes, on the flat surfaces of the valve itself.

The gas pipes or valve **MUST NOT** be placed under any strain while fitting to the heater.

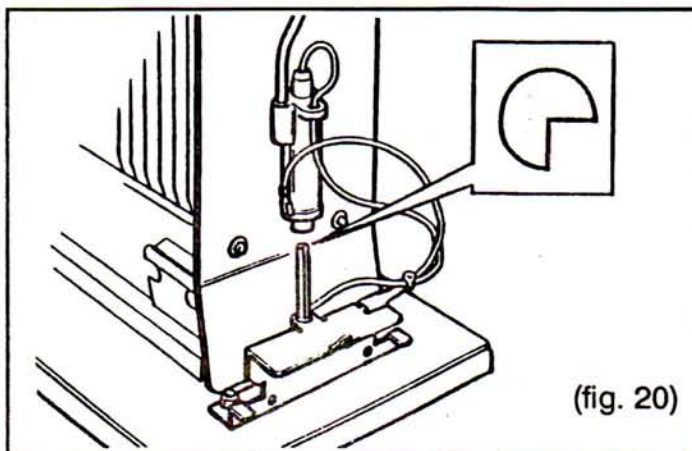
**NOTE :** The size of the supply pipe **MUST NOT** be less than 6mm (1/4 ") O.D. For heater servicing purposes an approved isolating valve, mounted in an accessible position is recommended. After connecting, turn on the gas at the cylinder and check the system up to the appliance gas valve for leaks using soapy water or other approved leak testing methods.





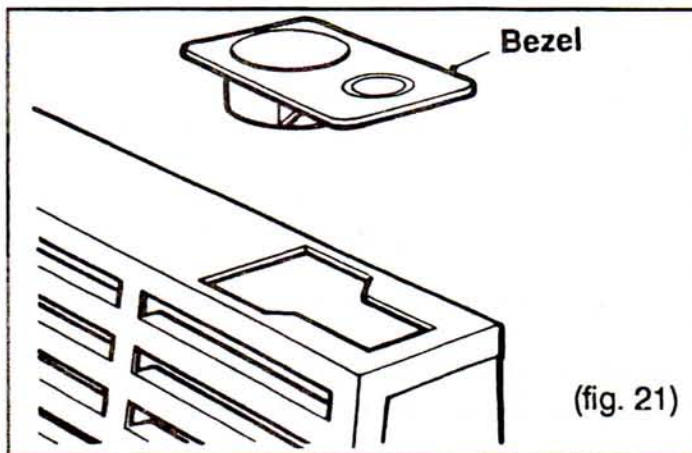
## 7. FINAL ASSEMBLY

7.1 First fit together the control rod / piezo assembly. Pass the end of the control rod upwards through the hole in the top of the installation box. Add the disc, rubber side down, and securely press on the knob, aligning its "G" shaped hole with the flat on the rod. Locate the igniter ball joint over the shaped gas control rod extension and push securely together. (see fig. 20)

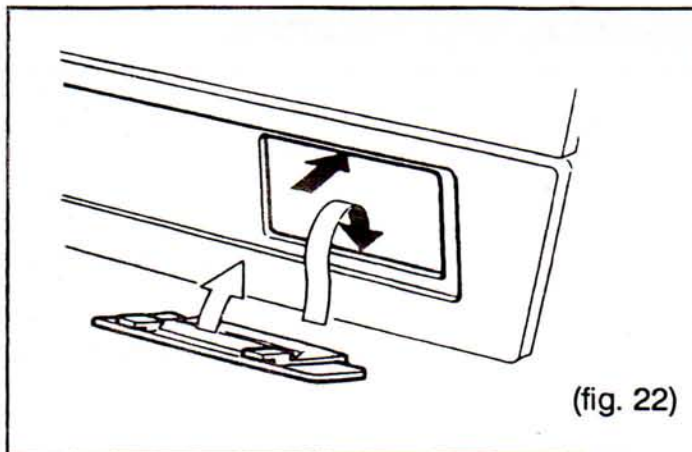


7.2 Firmly push the small insulated female connector on the igniter lead through the guide hole and on to the male terminal on the igniter unit. Connect the free end of the earth lead to the tab on the side of the piezo igniter housing (see fig. 20).

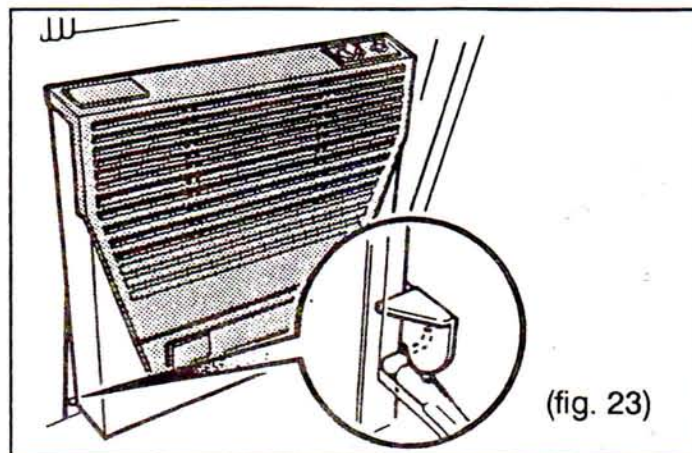
7.3 For right hand heaters snap the control knob bezel into the right hand aperture in the top of the front case and the blanking plate into the left. Reverse for left hand heaters. (see fig. 21.)



7.4 For right hand heaters snap the viewing plate into the right hand aperture in the front of the case and the name plate into the left. Reverse for the left hand heaters. (see fig. 22).



7.5 Locate the heater case over the top edge of the installation box and the control knob. Press in the bottom of the case onto the spring clips located at the bottom of the installation box. (see fig 23). It will be useful, at this stage, to check the piezo operation, by pressing the control knob firmly downwards several times and observing the spark at the burner, on each operation. If a spark is not present, check assembly procedure in section 7.2.



## 8. TESTING THE HEATER

- 8.1 Purge any air from the system by pressing down and turning the control knob to the ignition position ("↗") and firmly holding it down, for approximately 20 seconds.
- 8.2 Turn the control knob clockwise to the off ("O") position and release.
- 8.3 **WAIT 3 MINUTES TO CLEAR ANY RESIDUAL GAS.**
- 8.4 Press down and turn the control knob to the "↗" position and then press igniter firmly downwards. A click will be heard as the igniter operates to light the pilot burner.
- 8.5 Continue holding the gas control knob down whilst checking that pilot the burner is alight by observation through the viewing window. If the pilot burner does not light immediately, push the igniter down repeatedly until it does light.
- 8.6 Continue to hold the control knob down for 20 seconds while the flame failure protection device operates, then release the control knob and the pilot burner will remain alight. To operate the main burner, turn the knob anti-clockwise and set at the desired position between high and low.
- 8.7 If the burner does not remain alight, repeat operation from stage 8.3. **but always wait 3 minutes before attempting to relight the heater.**
- 8.8 To turn off, return the control knob to '●' position.

## 8.9 TO ADJUST THE ROOM TEMPERATURE

Turn the Gas Control Knob to the setting that gives the required comfort level. The main burner will 'cycle' on and off automatically as required by the thermostat to maintain to the set temperature but the pilot flame will always remain alight.

## 9. TECHNICAL SPECIFICATION.

HEAT INPUT	MAX MIN	3.75 kW 0.40 kW
HEAT OUTPUT	MAX	3.2 kW
GAS CONSUMPTION	BUTANE MAX MIN	274 grams/hr 29.3 grams/hr
	PROPANE MAX MIN	270 grams/hr 29.3 grams/hr
EFFICIENCY MAX.	GROSS	86.0 %
GAS SUPPLY PRESSURE	BUTANE PROPANE	28 mbar 37 mbar
GAS FEED PIPE TO HEATER		8mm O/D
MINIMUM SUPPLY PIPE SIZE		6mm O/D
IGNITION		PIEZO
WEIGHT		12.6kg
CARAVAN SIZE RECOMMENDATIONS (UK).		7.9 metres (26 ft) March to October 6.4 metres (21 ft) All Year

## SERVICING INSTRUCTIONS

The Gas Safety and Use Regulations 1990 and various British Standards lay down strict requirements for the installation and servicing of LPG appliances installed in domestic premises and mobile homes, such as caravans or motor vans. Carvers operate special training schemes for Dealers and their staff to ensure that they understand these legal and technical requirements when working on Carver LPG appliances. This facility is backed up by a 24 hour on-call system operating from Carver's HQ at 0543 452127.

The installer of the LPG appliance, be it at the Caravan Manufacturer's factory or at the Dealer's site or on the Caravan site itself, carries the first responsibility for the correct installation according to Regulations and these Carver Instructions but this responsibility is carried forward to any service engineer who is required to service or repair the appliance.

If therefore, you are called to a site to service or repair the LPG heater you must ensure that there have been no adverse changes of installation or use since the time of installation or last servicing and complying with Regulations applies just as importantly even if the service engineer's operation is only disconnecting and re-connecting the appliance for attention off the site.

These requirements understandably are directed at the SAFE and EFFICIENT use of the heater. There are no short cuts to safety and you are reminded that you must be properly trained before you work on LPG appliances.

The Carver 3000 S is a reliable well tried appliance and should give years of satisfactory and trouble free use but like all gas appliances, it needs servicing on a routine schedule. The following schedule covers work on the appliance, both in the caravan and when removed from the caravan for attention in the workshop. These are the main headings of the schedule but other work may be required depending on the circumstances at the time of dealing with the heater.

- (i) **When serviced in the caravan itself and normally working**
  - (1) Check that the appliance is being used correctly, i.e. there are no fire risks through proximity to shelves and clothing.
  - (2) Check that the air inlet and flue outlet are not blocked in any way and are in the correct position on the van; (refer to BS5440 Part 2 for guidance)
  - (3) Check the systems for gas tightness;
  - (4) Check the flue system for soundness during operation.
  - (5) Check that the heater has been installed correctly. Refer to these Installation Instructions especially on the need for proper clearances around the heater;
  - (6) Check that the gas supply system is correctly installed and working;
  - (7) Check that there are no dangerous hot spots on the heater when in operation; indicated by burnt areas of decorative paintwork;
  - (8) Check that the controls operate smoothly and correctly and that the flame failure system works correctly;
  - (9) Check the flame structure on the burner itself and see that the ignition system works satisfactorily;
  - (10) Now remove the case from the heater, replace any faulty components, clean away all extraneous dust, check the operation of all components and safety devices;
  - (11) Check the gas tightness of the installation at the end of the servicing schedule;
  - (12) Confirm that the user understands the operation of the heater.
- (ii) **When the appliance is serviced away from the caravan**

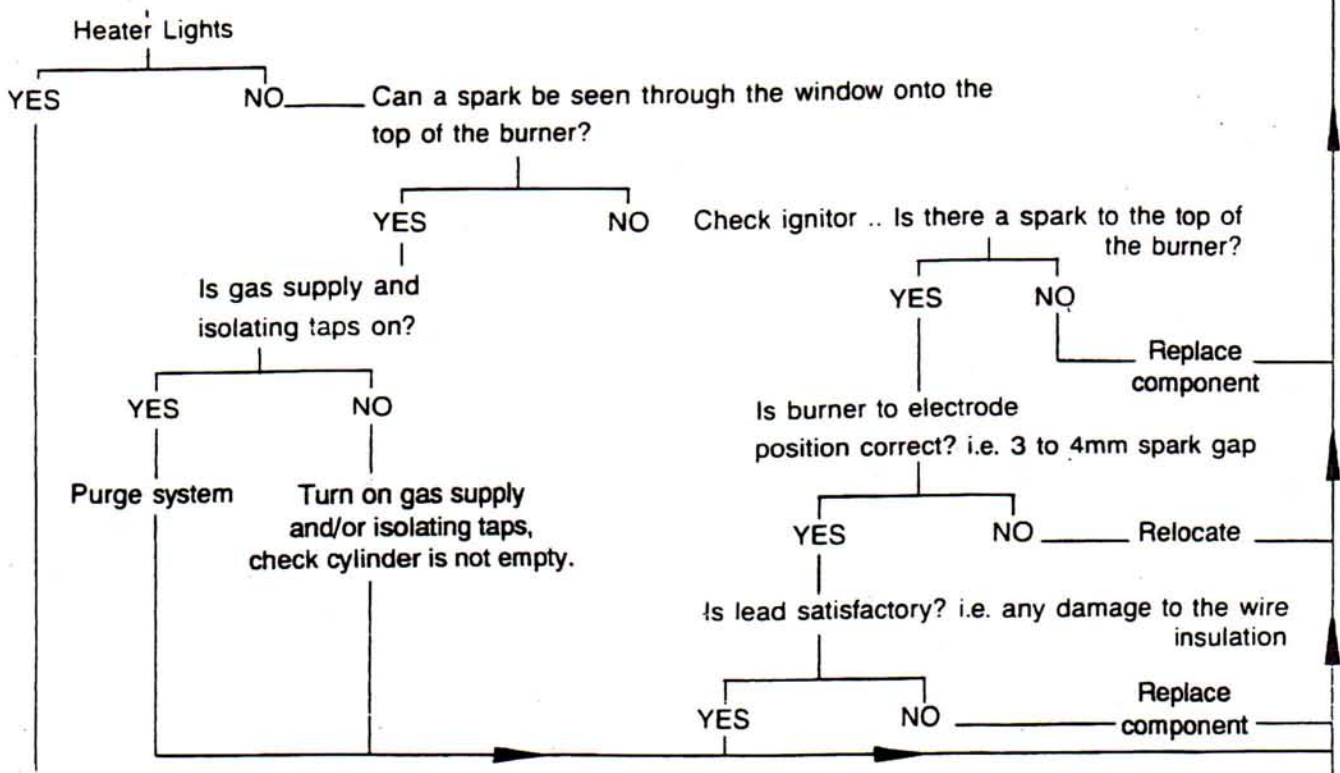
Servicing the appliance itself in a separate workshop will require, where appropriate, attention to items 2-10 above.
- (iii) **Fault diagnosis**

When called in to diagnose and repair any working fault, even a simple correction will still require you to carry out the standard servicing schedule in case one detectable fault has cloaked other potential faults.

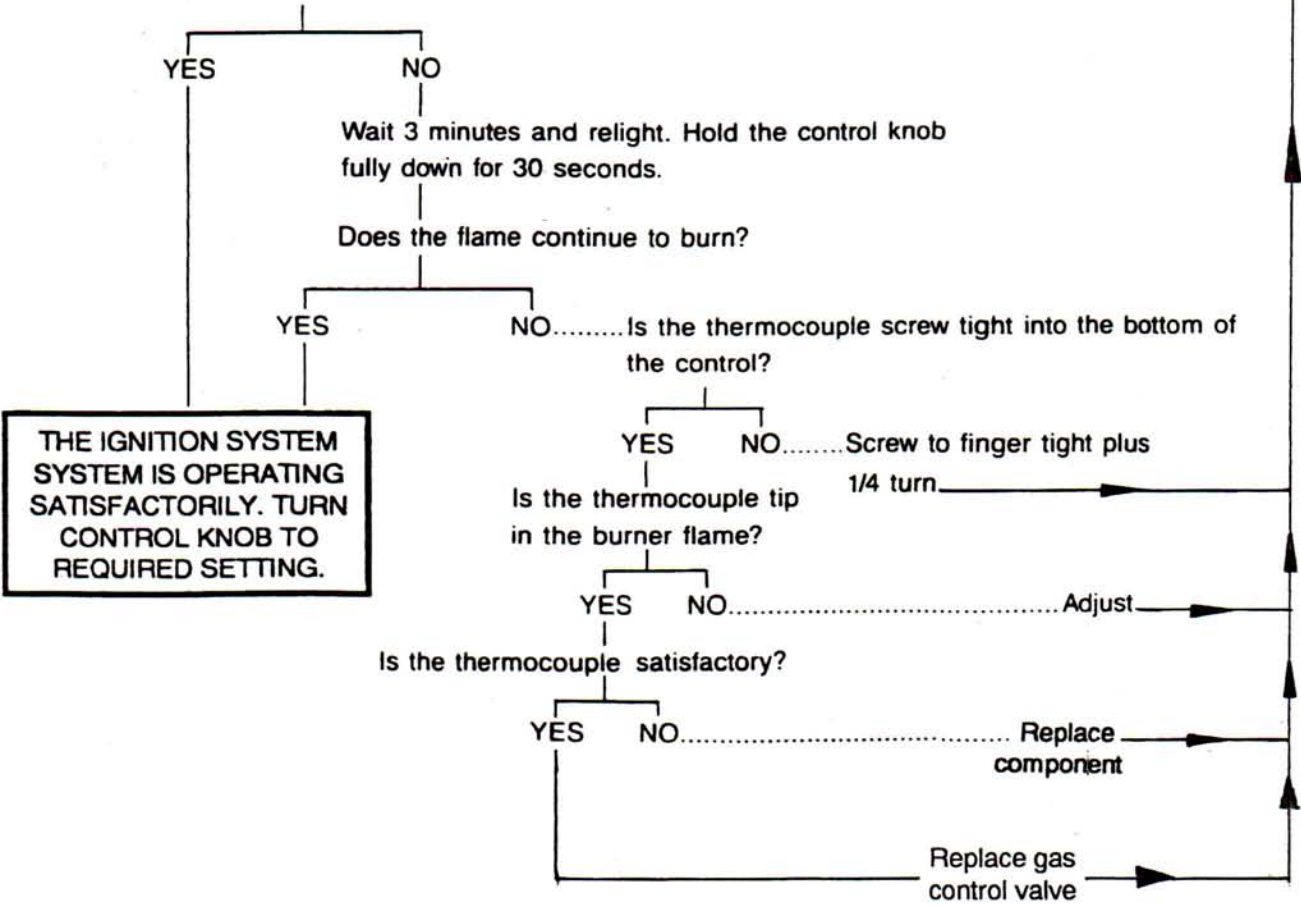
We have included here a fault diagnostic chart to help you to trace faults in the ignition system.

# FAULT FINDING

Turn the control knob to pilot / ignition, position and press firmly down



Continue to hold the control knob down for a minimum of twenty seconds. On release of the knob does the flame continue to burn?



### **WARRANTY**

**Carver Products are fully warranted for a period of 2 years from date of first purchase against faulty workmanship or materials.**

**We will repair or replace any such faulty items "FREE OF CHARGE" provided they have been installed and used in accordance with our instructions.**

**This warranty applies only to the United Kingdom.**

**Acceptance of this warranty does not in any way diminish your rights enjoyed under the Sale of Goods Act, 1979.**

**NOTE: The customer must wherever practical return the product to the Carver Dealer from whom it was purchased. In special circumstances, however, it may be taken to another Carver Main Dealer.**

**CUSTOMER SERVICE DEPARTMENT  
CARVER & CO. (ENGINEERS) LIMITED  
COPPICE SIDE INDUSTRIAL ESTATE,  
BROWNHILLS, WALSALL, ENGLAND, WS8 7ES.  
TEL: 0543 452127 FAX: 0543 452950**

