

# Carver Fanmaster 230V electric element replacement instructions

## Document ref AE-D-00020 – Issue 2

### 1. Introduction

These instructions detail the correct procedure for installing replacement Carver Fanmaster 230V heating elements manufactured by Apuljack Electronics. These instructions are relevant to the coiled element types present in Fanmaster 2000, 4000 and 5500 series heaters. These instructions and the elements are not suitable for the older Fanmaster heaters that have the elements on the back in a cast aluminium block. Check which type you have before proceeding to avoid damage to property or injury.

#### 1.1 Disclaimer

The fitting of these elements involves the removal of the gas side of the heater. Under current UK law this must be performed by a Gas safe Engineer or Mobile Engineer trained in XYZ. These instructions assume that the gas elements of the fire are disconnected and reconnected by a suitably trained and qualified person.



#### 1.2 Warning

The removal of the heater and replacement of the elements will subject the fitter to a number of hazards:-

- Mains voltages
- Hot surfaces
- Sharp edges
- Gas leaks
- Heavy items

Appropriate measures need to be taken to ensure that these hazards are removed or minimised e.g. isolate the mains supply, get help with heavy objects etc.

#### 1.3 Tools required

1. Pozidrive PZ2 screwdriver
2. 3mm drill bit and drill

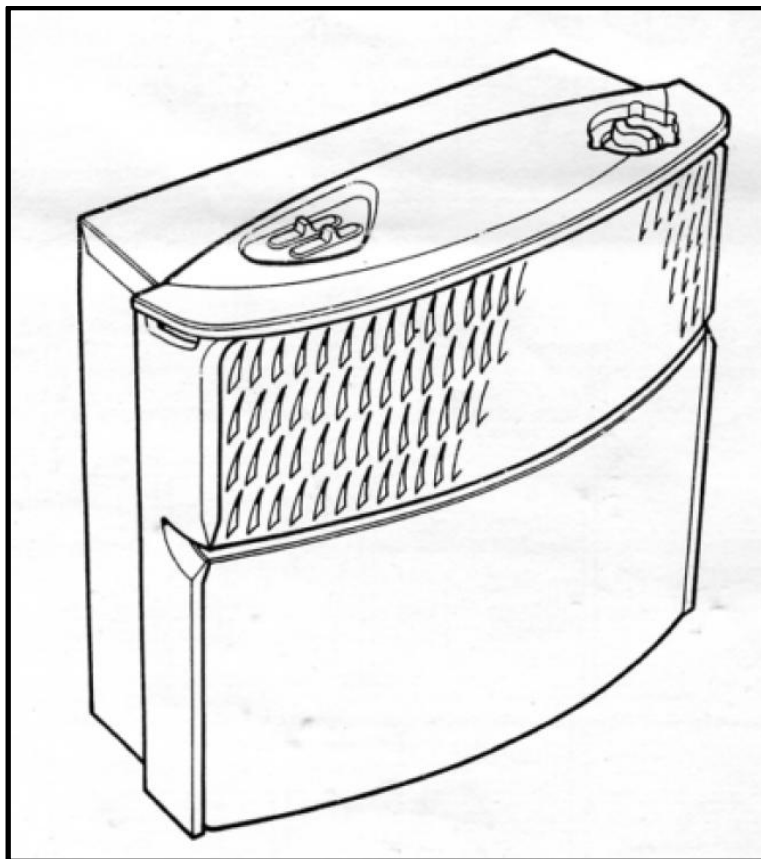
3. Rivet gun
4. Socket set
5. Long nose pliers
6. 16mm open ended spanner

#### 1.4 Materials required

1. 5 off 3x6mm rivets
2. 2 off replacement elements by Apuljack Electronics
3. 1 off element support by Apuljack Electronics (optional)

## 2 Installation instructions

### 2.1 Remove front cover



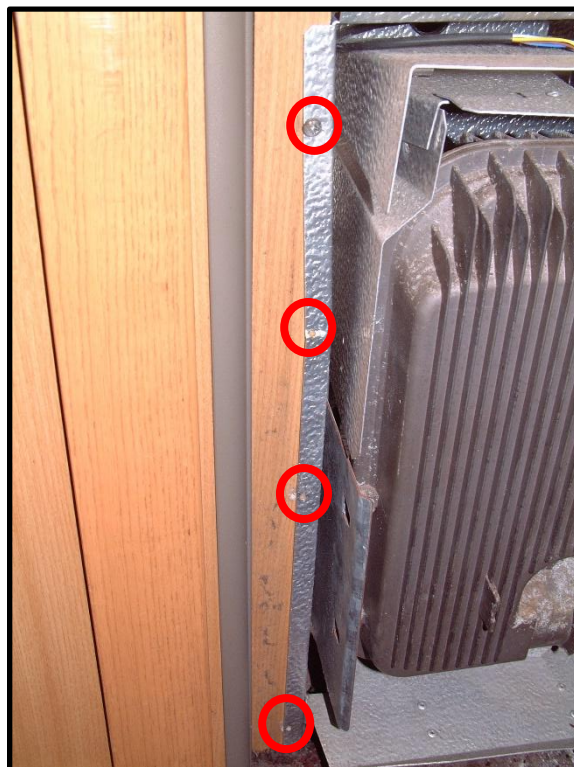
Remove front cover (be very careful as the slider control is still attached – disconnect carefully). This is achieved by pulling the bottom of the fire front away from the back and then lifting the top of the cover off the controls.

## 2.2 Disconnect the gas pipe underneath



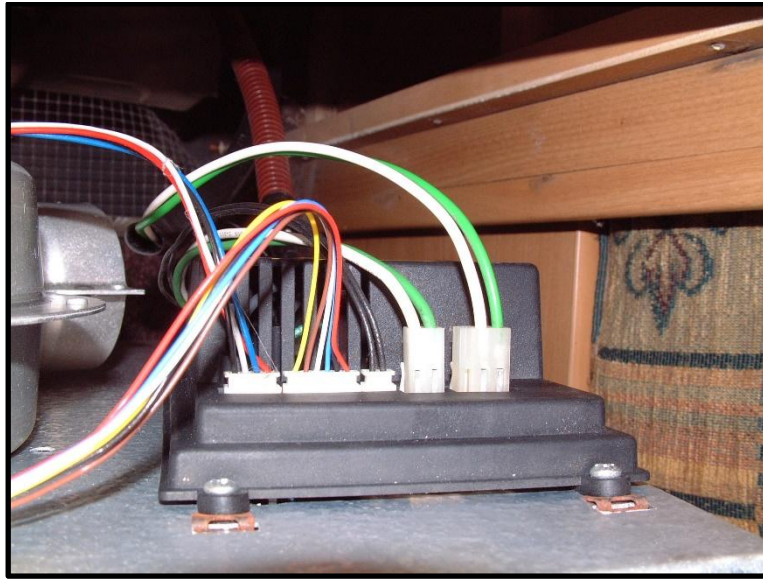
Isolate the gas supply. From underneath the vehicle remove the gas pipe by undoing the nut on the elbow fitting and pulling the pipe out from the elbow. The picture above shows the position of the gas pipe with the heater removed for clarity.

## 2.3 Remove the screws holding the unit into the cupboard



The units are usually held in by up to 4 screws on each side. Remove the screws and retain for refitting

## 2.4 Disconnect the external electrical wires



Remove the five 12V electrical connections from the main unit for ease of removing parts and to avoid damage. These are easily replaced later as they are polarised so you cannot fit the wrong one in the wrong location. You also need to remove the 'Kettle style' mains input cable from the bottom of the unit.

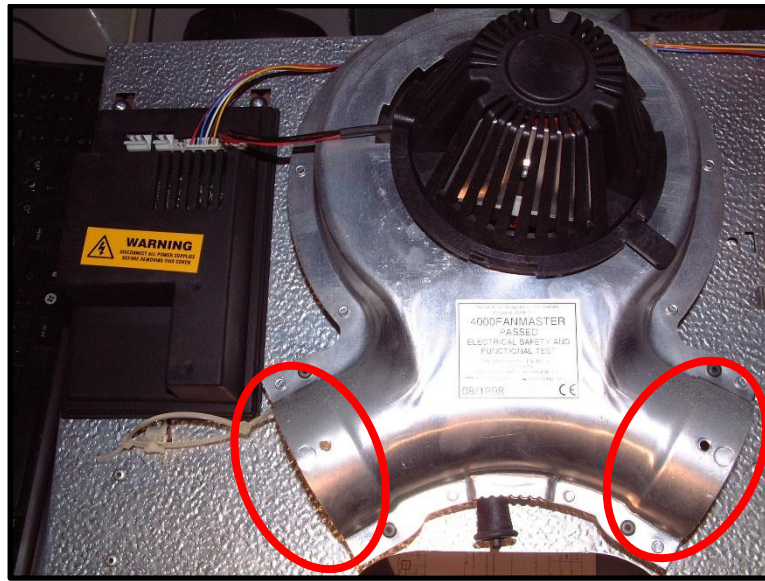
## 2.5 Disconnect the flue



Remove the pipe clip and gently pull the pipe back through the hole shown above

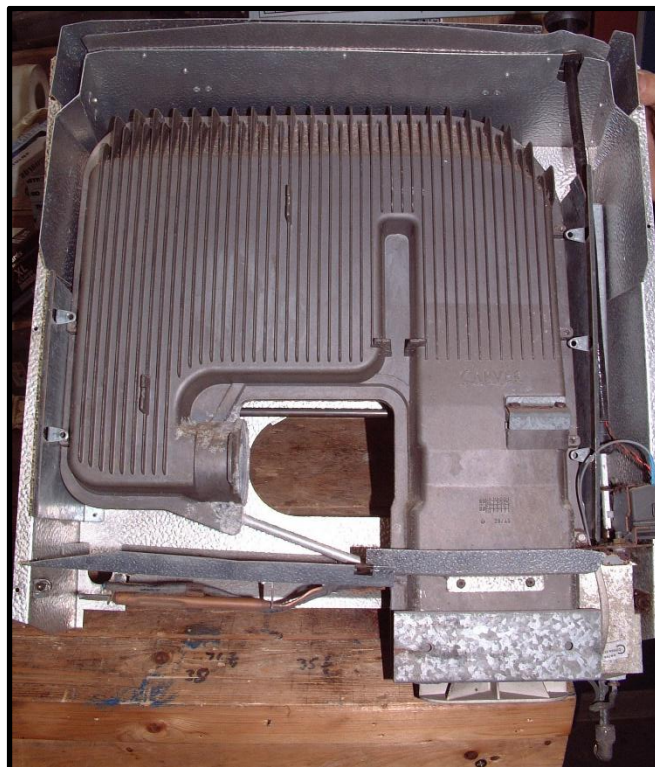


## 2.6 Disconnect the air outlet pipes



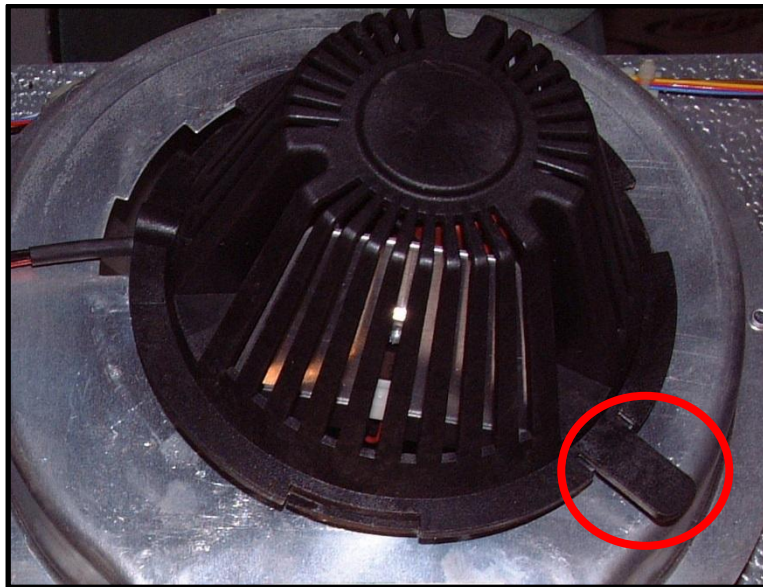
Remove the two outlet ducts from the motor housing, as shown above, by removing the two screws and pulling out.

## 2.7 Remove the unit from the van



All the external connections and wiring should now be removed from the unit. **WARNING – heavy.** This should allow complete removal of the unit from the vehicle. Remove the unit and initially lay front down on a suitable workbench (picture shows unit the front up).

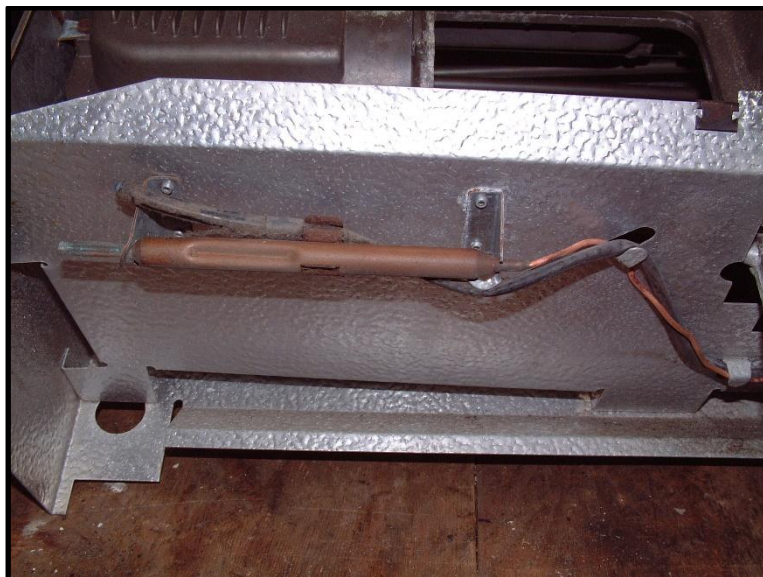
## 2.8 Prepare the unit



You need to work on the unit with the front upwards. However the back of the unit is not very flat. In order to avoid damage and provide a stable heater, first remove the fan unit by lifting the black tab, rotating the unit anti-clockwise and then withdrawing the motor and fan as a complete unit. Now is a good time to clean/vacuum the fan, motor and fan chamber to remove dust/dirt.

By finding suitable blocks/supports for the corners you should now be able to turn the unit front upwards whilst keeping the unit stable/steady.

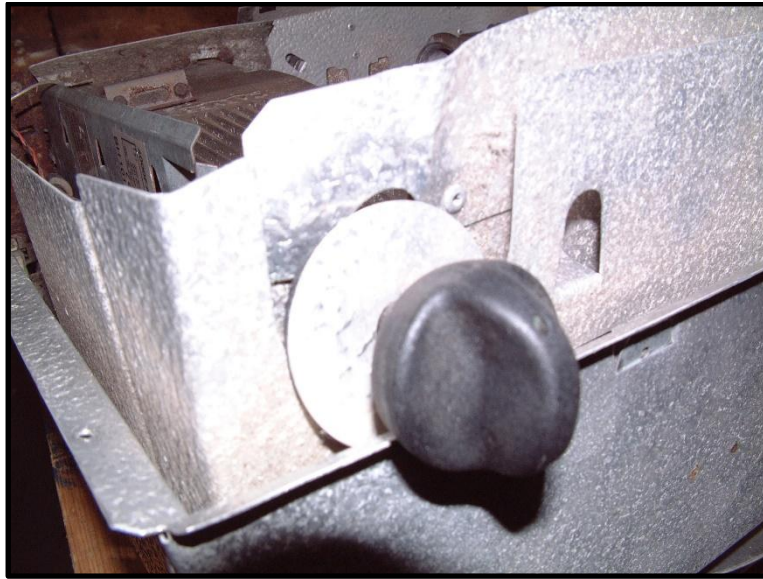
## 2.9 Remove the thermostats



Release the two clips holding the thermostat bulb. Bend the cable retaining clips out so you can remove the thermostats/bulb with the heat exchanger. Bend them as little as necessary to avoid breaking them off.



## 2.10 Release the gas controls



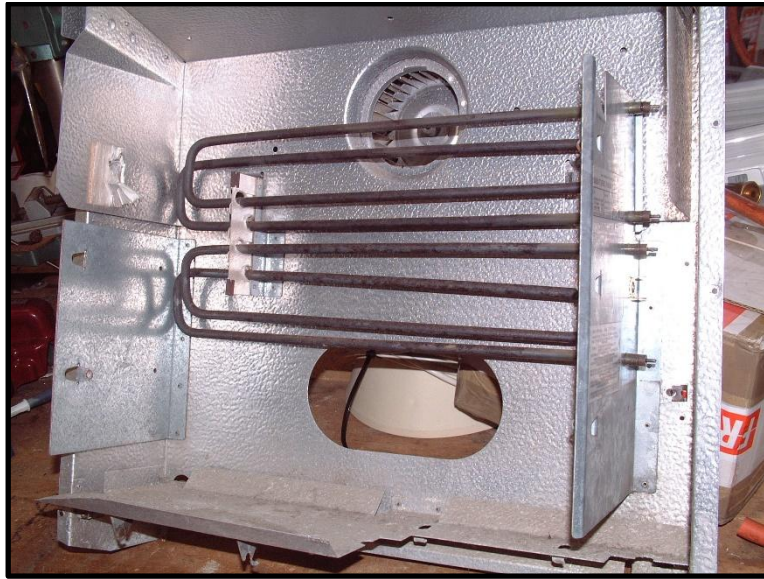
Fold back the half round metal tab so that you can release the gas control shaft and knob. Also unplug the electrical connector (with green and white wires) from the gas control unit.

## 2.11 Remove the gas heat exchanger



Remove the 5 bolts holding the large cast gas heat exchanger (the elements are behind) and remove the heat exchanger complete with thermostats/bulb, shaft and control knob.

2.12 You should now see the two coiled elements



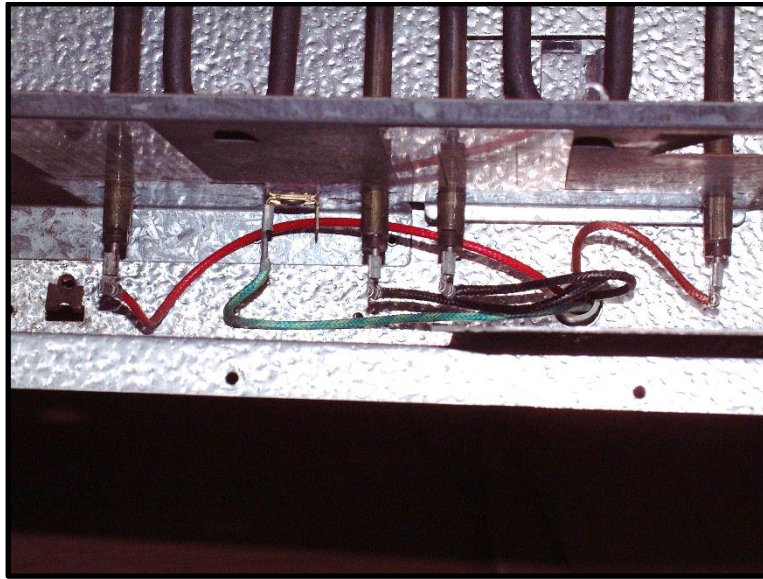
2.13 Remove the electrical cover



You can now see the elements as shown above. Remove the single screw at the bottom of the cover and slide the cover up and across to remove it.

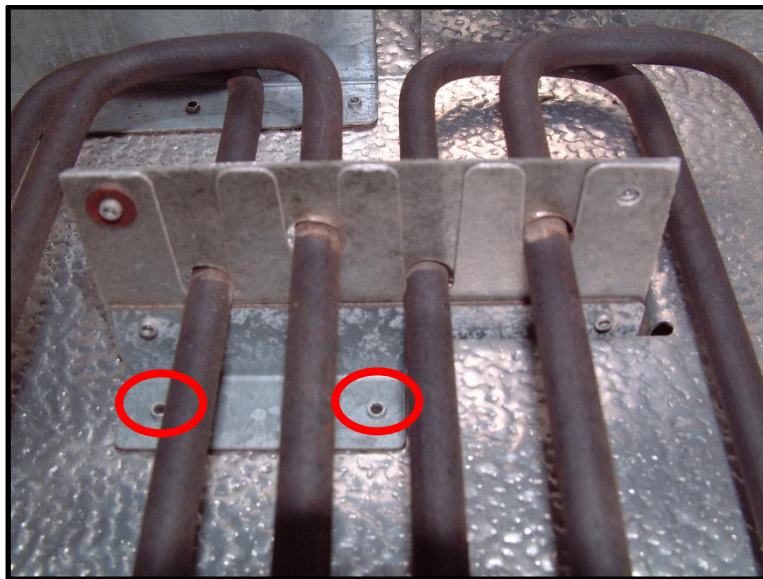


## 2.14 Remove electrical connections



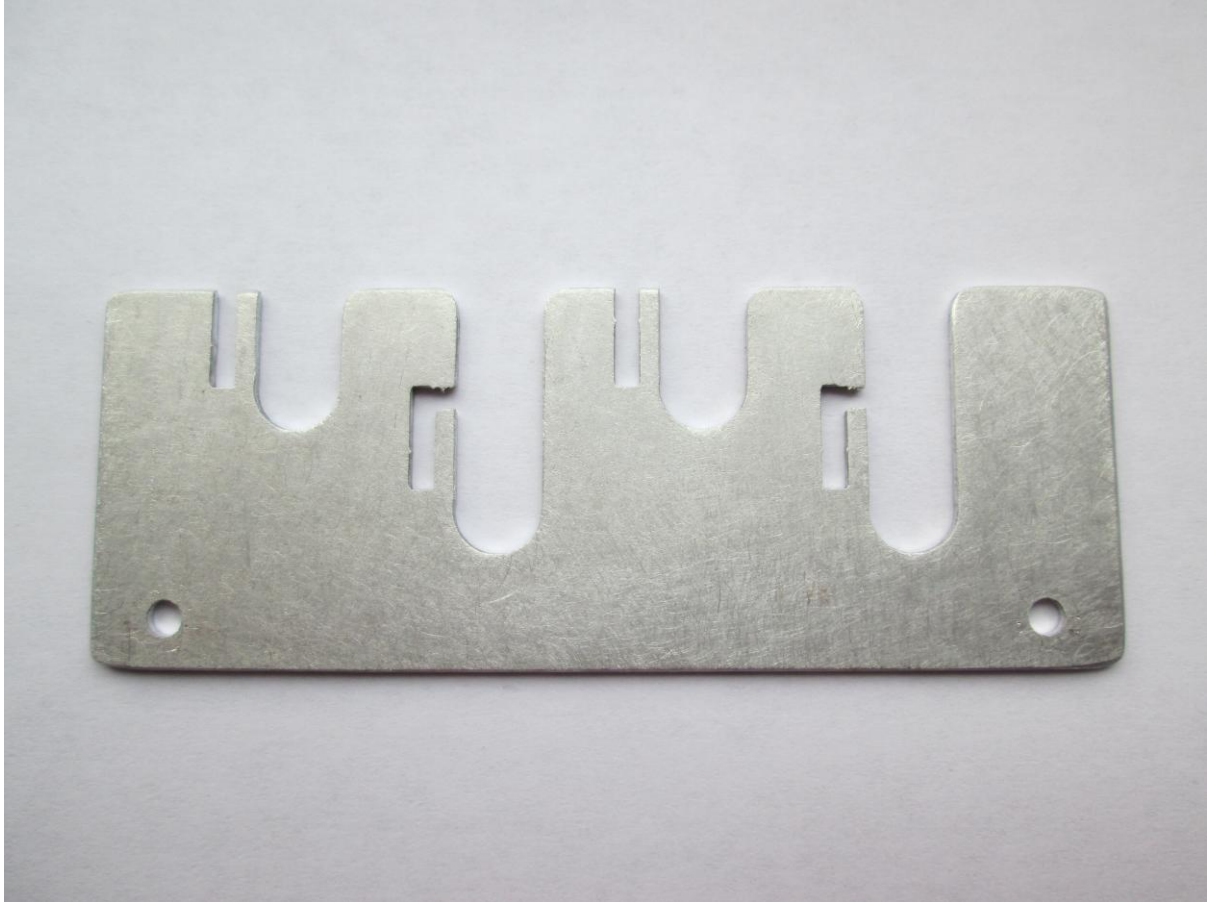
Pull off the 4 electrical connections from the ends of the elements noting the position each is connected to. There is no need to remove the green earth connection.

## 2.15 Detach element bracket



Drill out the two pop rivets in the metal L bracket holding it to the back (DO NOT remove the silvery mica spacers at this stage). You may find that the mica spacers are very badly damaged, in which case

we recommend you purchase a new design element holder from Apuljack Electronics.

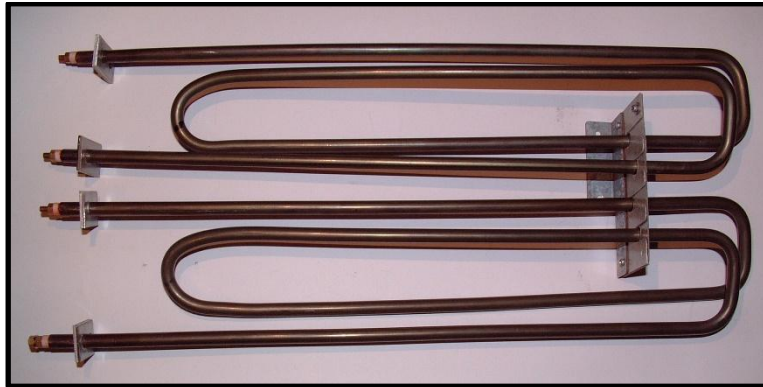


## 2.16 Remove elements from bulkhead



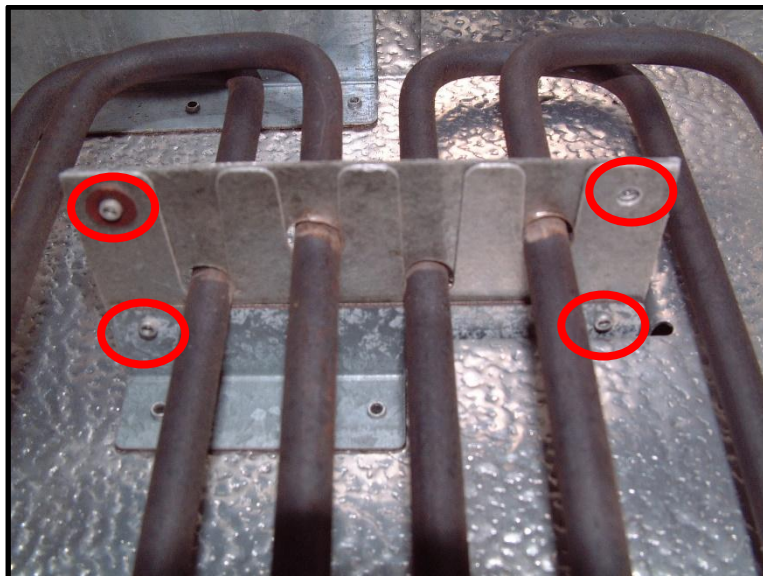
Remove the 4 screws attaching the element ends to the bulkhead

### 2.17 Extract elements from main unit



Remove the PAIR of elements together with the mica/metal spacer assembly

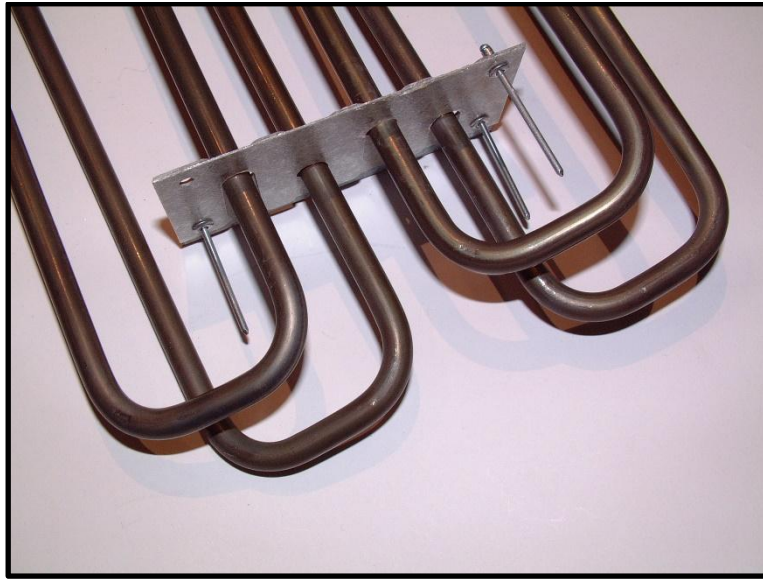
### 2.18 Remove the support bracket



Drill out the rivets/remove the clip from the two mica spacers to separate/free the two elements (USE EXTREME CAUTION as the mica is brittle!). Retain the clips and/or washer from the Mica for use in reassembly



## 2.19 Replace elements



Position the new elements (either way round – they are identical) into the mica supports and temporarily hold with bulldog clips or similar if required. Assemble the Mica supports and elements with the metal mounting bracket as shown. Using 3x6mm pop rivets reattach the Mica supports and metal bracket not forgetting the washer on the upper pop rivet. Refit the clip to the Mica support if fitted.

1. Refitting is essentially the reverse of removal – note, the spacer must be fitted to the elements before fitting the elements to the fire back due to access restrictions.

If you have any errors or amendments to these instructions please contact us at [info@apuljackelectronics.co.uk](mailto:info@apuljackelectronics.co.uk)