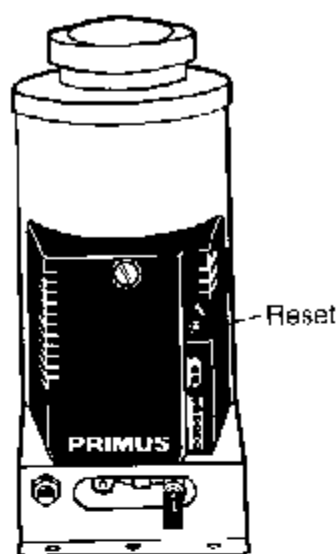


## SYSTEM 2480



The system's heat source is the model 2480 boiler, which has an output of  $3 \times 2.1$  kW, giving a maximum output of 6.3 kW. Two of the three burners are operated by solenoid valves. The third burner is operated manually.

Ignition is by means of a glow plug. One burner ignites. If more heat is required, the second and/or third burner will come into operation. The monitoring system is electronic, and features an ionization flame sensor that "senses" the flame within 0.5 seconds. Except for the flame sensor, the whole of the monitoring system is contained in the black box built into the front of the boiler.

The operating voltage can vary between 10.5V and 14.0V. The boiler must not be directly connected to a battery charger.

Many caravans are fitted with electric in-line heaters, either complete with pump (Part No. 7148 21) or without (Part No. 7149 61), with an output of  $2 \times 1.0$  kW.

The heat emission system consists of convection radiators, an indirect cylinder and a circulating pump (Part No. 8082 02).

The heat control equipment consists of an electronic control panel Part No. 7147 21, with thermistor Part No. 7140 01.



### OTHER INFORMATION

The boiler features a shorter safety cut-off time than models 2450 or 2470, maximum cut-off time being 30 seconds.

If the boiler reverts to safety mode it can be reset by pressing in the button on the front of the black box.

The model 2480 boiler is fitted with a permanent positive supply, which means that a small amount of current is consumed all the time, even when the appliance is not in use. If this current is interrupted, the boiler must be reset before it will start to operate.

### FAULT TRACING

Start by trying to establish in which of the sectors the fault has developed. Apply Service Hints Nos. 1-4 (and see page 11). If the problem still remains unsolved, a more extensive inspection must then be carried out to trace its cause.

For fault tracing schedules for the components included in System 2480, please refer to the following pages:

	Page No
Model 2480 Boiler	23
Model 8000 Indirect Cylinder	41-44
Model 8082 Circulating Pump	36
Control Panel Part No. 7147 21	31
Control Panel Part No. 7149 81	34
Electric In-line Heater Part No. 7148 21	38
Electric In-line Heater Part No. 7149 61	38



## FAULT TRACING SCHEDULE FOR MODEL 2480 BOILER

Start signals for the boiler are through the yellow lead, which opens the first of the two solenoid valves. The lead must be conducting a voltage of at least 10.5V.

Once the first of the two solenoid valves has been opened and the flame sensed, the second valve will open. The voltage for the second valve is conducted through the grey/brown lead, and must be at least 10.5V.

The red lead must always be conducting a voltage of at least 10.5V. These voltages can be measured between the black lead (neutral) and the respective cables with the s-x-pin plug disconnected from the boiler.

FAULT	CAUSE	REMEDY
A. There is no click from the solenoid valve, and the boiler does not start		
1. Fault in the glow plug		Check the glow plug (see Checking the Glow Plug, page 31), and replace it if it is defective
2. Fault in the first solenoid valve		Check the solenoid valve (see Checking the Solenoid Valve, page 31), and replace it if it is defective
3. Fault in the electronic control system		Replace the electronic control unit
B. There is a click from the solenoid valve, but the boiler does not start		
1. There is air in the gas cylinder		Bleed the air from the cylinder
2. Fault in the glow plug, or wrong type		Check the glow plug (see Checking the Glow Plug, page 31), and replace it if it is defective
3. The gas is of the wrong type		Fit correct gas cylinder
4. Fault in the electronic control unit		Replace the electronic control unit
C. The boiler starts, but stops again after 10-20 seconds		
1. Fault in the first solenoid valve		Check the solenoid valve (see Checking the Solenoid Valve, page 31), and replace it if it is defective
2. Fault in the connection between the cable and the electrode		Check the cable terminal, and recompact it if necessary
3. The electrode is not working (NOTE: Damage to the porcelain does not affect the function of the electrode)		Replace the electrode
4. Fault in the electronic control system		Replace the electronic control unit
D. The boiler starts and operates until the boiler thermostat stops and starts. The boiler does not reignite (reverts to safety mode) and /symbol/ is lit		
1. Fault in the electronic control unit		Replace the electronic control unit
2. Fault in the boiler thermostat		Replace the thermostat
E. The boiler operates, but the circulating fluid does not warm up		
1. Insufficient air flow in the caravan (page 38)		Check that all air ducts are free of obstructions
2. Insufficient fluid circulation in the radiator system		Check that the circulating pump is running, and bleed the system
3. Fault in the second solenoid valve		Check the solenoid valve (see Checking the Solenoid Valve, page 31), and replace it if it is defective

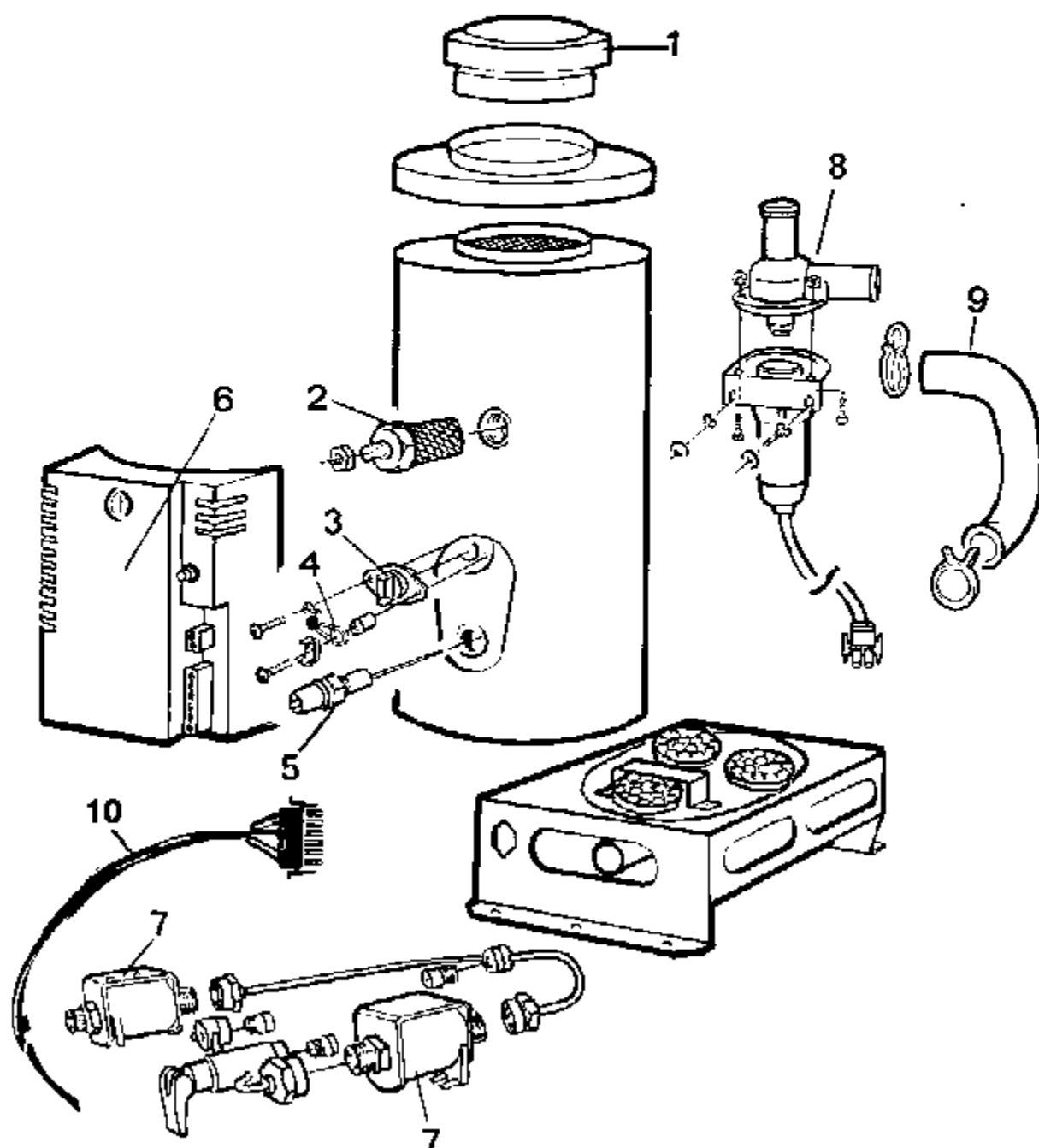
Faults that cannot be attributed to A-D above should be remedied by replacing the electronic control unit



# SPARE PARTS

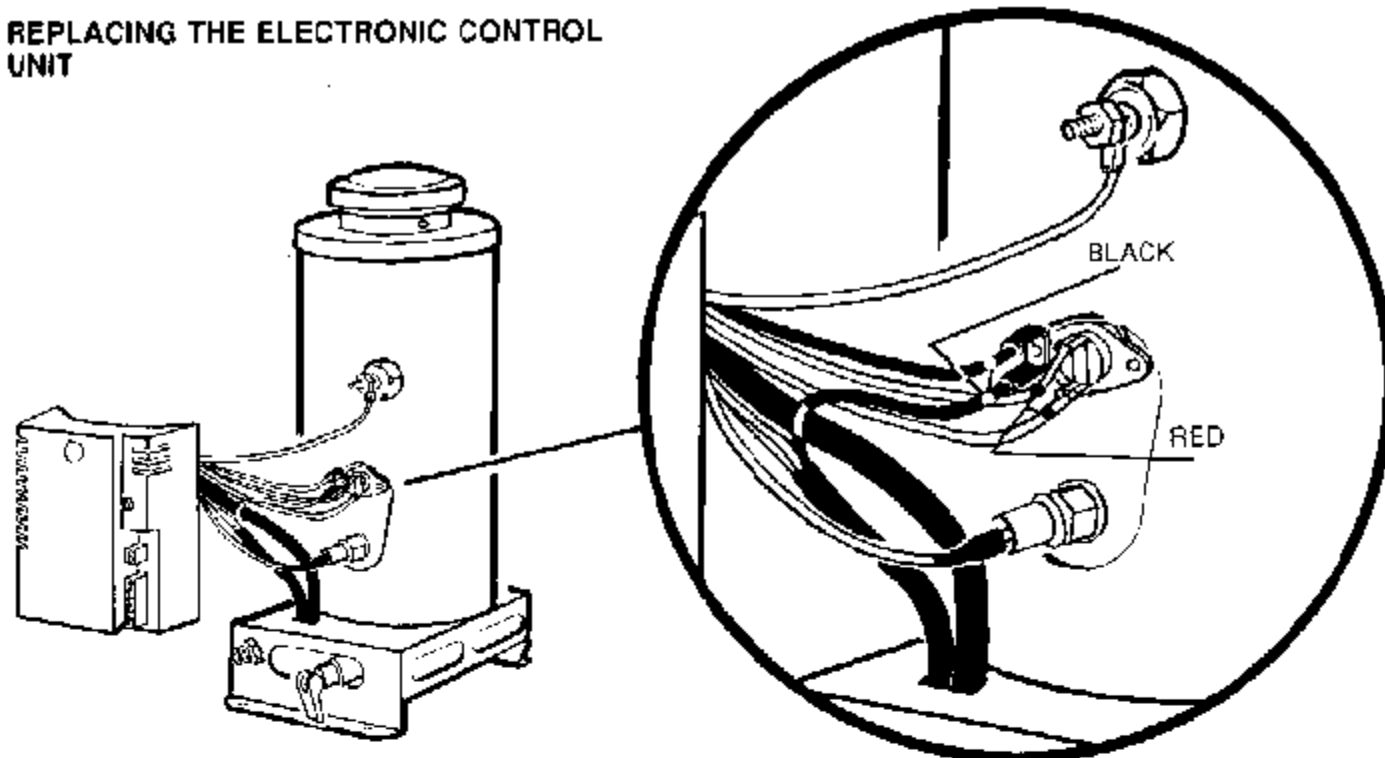
FOR MODEL 248C BOILER

- |                              |         |
|------------------------------|---------|
| 1. Protective Cover          | 8587 01 |
| 2. Glow Plug                 | 7151 91 |
| 3. Boiler Thermostat         | 7110 31 |
| 4. Fuse                      | 8959 01 |
| 5. Flame Sensor              | 7150 61 |
| 6. Electronic Control System | 7168 01 |
| 7. Solenoid Valve            | 7144 81 |
| 8. Pump Body                 | 7149 51 |
| 9. Moulded Hose              | 7152 81 |
| 10. Connecting Cable         | 7150 71 |



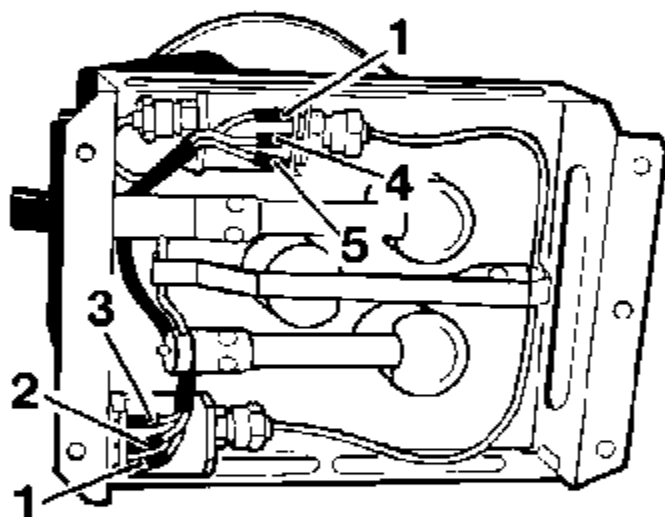


## REPLACING THE ELECTRONIC CONTROL UNIT



### SEEN FROM UNDERNEATH

BLACK	1
BLUE	2
YELLOW	3
BROWN	4
GREEN	5



Apply the fault tracing schedule for the model 2480 boiler on page 23. If this indicates that it is the electronic control unit in the black box that has developed a fault and should be replaced, proceed as follows:

- Disconnect the incoming electrical cable and the connecting cable for the circulating pump from the electronic control unit
- Disconnect the electronic control unit from the boiler
- Remove the gas pipe from the boiler
- Remove the boiler fastenings in the bottom of the compartment, but do not disconnect the rubber hoses

- Now turn the boiler carefully to one side (with the rubber hoses still connected), so that the terminal connections for the solenoid valves can be checked
- Disconnect the leads for the boiler thermostat, glow plug etc. and withdraw the two cable ends through the hole in the base of the boiler

Disconnect the other leads for the boiler thermostat, glow plug etc.

Insert the leads of the replacement electronic control unit through the hole in the base, and connect to the solenoid valves as shown in the diagram above



**NOTE: CONNECTING THE LEADS INCORRECTLY  
MAY RESULT IN THE ELECTRONIC CONTROL UNIT  
BEING DAMAGED**

- Turn the boiler carefully back to its correct position, and connect the new electronic control unit as shown in the diagram on page 25
- Fit the replacement electronic control unit in place, and reconnect the electrical cables and gas pipe
- Test start the boiler
- It may sometimes be difficult to replace the electronic control unit with the boiler still connected to the rubber hoses. Where it proves necessary to remove the boiler from the compartment, use a pair of pliers to clamp the hoses, to avoid having to drain the system completely. Then replace the electronic control unit and fit the boiler back in position.

**FITTING ELECTRONIC CONTROL UNIT PART  
NO. 7168 01**

Part No. 7168 01 is designed to fit all versions of the model 2480 boiler. The boiler base is available in either of two versions, one with two slots and one with four.

Where the base is the four-slot version, the electronic control unit's lugs should be fitted into the outer slots (see diagram below). The control unit should then be screwed to the glow plug with the screw provided.

Where the base is the two-slot version, with inner slots only (see diagram below), fit the electronic control unit's lugs into the slots.

The electronic control unit should then be screwed to the glow plug with the screw provided. The unit will be at a slight angle, but this does **not** affect its operation.

1. Screw
2. Lugs
3. Electronic Control Unit
4. Glow Plug
5. Inner Slots
6. Outer Slots
7. Base

