

# installation and servicing

## icos system

Your Ideal installation and servicing guide

# m3080

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal Boilers.

**i** *Ideal* BOILERS  
ENGINEERED FOR PEACE OF MIND

## GENERAL

**Table 1 - General Data**

Gas supply		2H-G20-20mbar
Gas Supply Connection		22mm copper
Injector size		Stereomatic 5.6mm dia.
Flow Connection	Central Heating	22mm copper
Return Connection	Central Heating	22mm copper
Flue Terminal Diameter	mm (in)	100 (4)
Maximum Working Pressure (Sealed Systems)	bar (lb/in <sup>2</sup> )	2.65 (38.5)
Electrical Supply / Power consumption		230 V ~ 50 Hz. / 148 W
Fuse Rating		External : 3A Internal : 3.15A TL 250V
Water content	Central Heating litre (gal)	2.0 (0.44)
Packaged Weight	kg (lb)	47 (103)
Maximum Installation Weight	kg (lb)	40 (88)
Boiler Casing Size	Height mm (in)	687 (27)
	Width mm (in)	390 (15 3/8)
	Depth mm (in)	278 (11)

**Table 2 - Performance Data - Central Heating m3080**

Boiler Input :		Max.	Min.
Nett CV	kW	24.4	9.1
	(Btu/h)	(83 300)	(31 000)
Gross CV	kW	27.1	10.1
	(Btu/h)	(92 500)	(34 400)
Gas Consumption	l/s	0.70	0.26
	(ft <sup>3</sup> /h)	(89.1)	(33.2)
Boiler Output :			
Non Condensing	kW	23.4	8.8
	(Btu/h)	(80 000)	(30 000)
Condensing	kW	25.1	9.6
	(Btu/h)	(85 700)	(32 800)
Seasonal efficiency (SEDBUK)*		Band A [90.2]%	
NOx Classification		Class 4	

\*The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by a notified body.

**Note.** Gas consumption is calculated using a calorific value of 38.7 MJ/m<sup>3</sup> (1038 Btu/ft<sup>3</sup>) gross or 34.9 MJ/m<sup>3</sup> (935 Btu/ft<sup>3</sup>) nett

To obtain the gas consumption at a different calorific value:

- For l/s** - divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m<sup>3</sup>)
- For ft<sup>3</sup>/h** - divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft<sup>3</sup>)

### Key to symbols

**IE** = Ireland (Countries of  
**GB** = United Kingdom destination)

**PMS** = Maximum operating pressure of water

**C<sub>13</sub>C<sub>33</sub>C<sub>52</sub>** = A room sealed appliance designed for connection via ducts to a horizontal or vertical terminal, which admits fresh air to the burner and discharges the products of combustion to the outside through orifices which, in this case, are concentric. The fan is up stream of the combustion chamber.

**I<sub>2H</sub>** = An appliance designed for use on 2nd Family gas, Group H only.

**CAUTION.** To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

## GENERAL

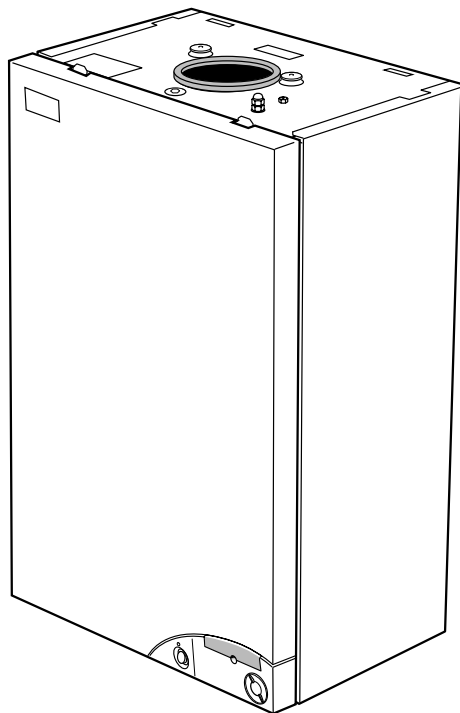
### **icos system**

Natural Gas only

G.C. Appliance No. 41-391-52

PI No.0063BM9802

Destination Countries: UK, IE



### **BENCHMARK LOG BOOK DETAILS**

<b>Boiler</b>	<b>Page</b>
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Appliance Serial No. on Data Badge .....	3
<b>Controls</b> .....	as applicable
<b>For all boilers</b>	
Flushing to BS.7593 .....	8 & 27
Inhibitor .....	8
Gas inlet working pressure .....	7
Burner operating pressure .....	Not applicable
Heat input .....	to be calculated
Temperature differential .....	measure and record
<b>For combination boilers only</b> .....	Not applicable
<b>For domestic hot water mode</b> .....	Not applicable
<b>For condensing</b> .....	20
<b>For all boilers: complete, sign &amp; hand over to customer</b>	
For assistance see Technical Helpline on the back page	

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**NOTE TO THE INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER. ALSO COMPLETE THE BENCHMARK LOG BOOK AND GIVE THIS TO THE CUSTOMER.**



## INTRODUCTION

The **icos system m3080** boiler is a fully automatically controlled wall mounted, low water content, fanned flue condensing gas boiler.

**Note.** Due to the high efficiency of the boiler a plume of water vapour will form at the terminal during operation.

The output is fully modulating with a range of:

8.8 to 23.4kW (30,000 to 80,000 Btu/h)

The boiler is supplied fully assembled with circulating pump, pressure gauge, safety valve and expansion vessel.

Variable temperature control is fitted on the user control.

The boiler casing is of white painted zintec coated mild steel.

The boiler temperature controls are visible at the bottom RHS of the front panel.

The heat exchanger is of aluminium.

The boiler is suitable for connection to fully pumped, sealed water systems ONLY.

The system pipework MUST include drain cocks in appropriate places.

Pipework from the boiler is routed downwards as standard, but may be routed upwards behind the boiler using the stand-off frame (supplied in a separate kit).

## OPERATION

When there is a demand for heat, the heating system is supplied at the selected temperature of between 42°C and 82°C.

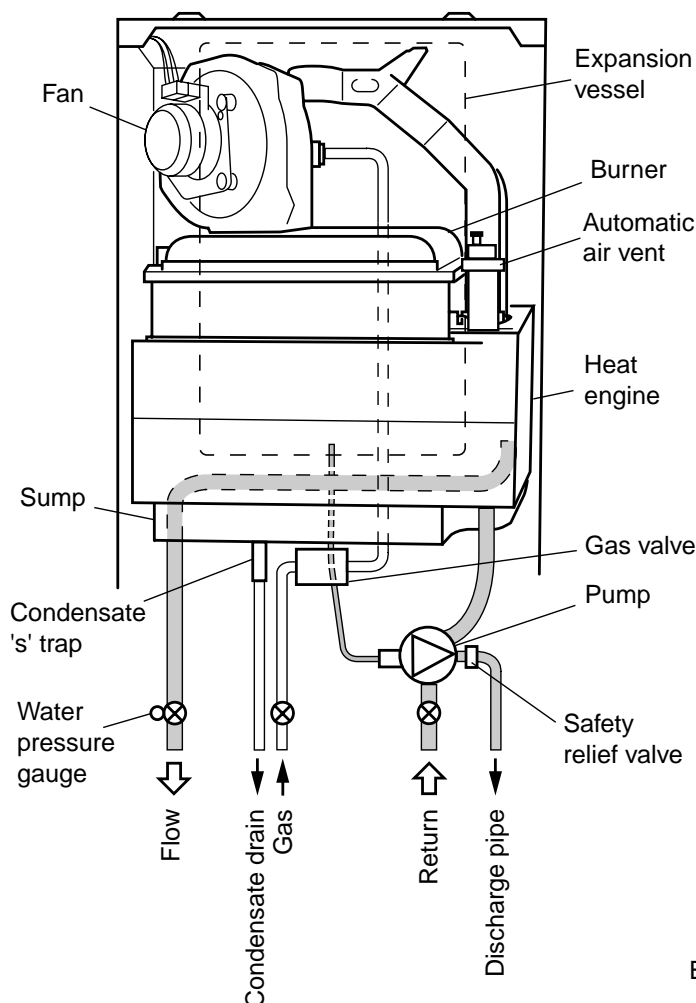
Refer also to Frame 1 - 'Boiler Water Circuit Diagrams'

The boiler features a comprehensive diagnostic system which gives detailed information on the boiler status when operating, and performance of key components to aid commissioning and fault finding.

## OPTIONAL EXTRA KITS

- **Flue Extension Ducts** Pack D up to 3m (122in).
- **Flue Elbow Kit** 90 degree pack.
- **Flue Elbow Kit** 45 degree pack (2 per pack).
- **Powered Vertical Flue Kit** (to a maximum primary flue length of 4m + a maximum secondary flue length of 5m)
- **Roof Flue Kit** (to a maximum of 5m)
- **Remote User Controls Kit**
- **Boiler Stand-off Kit**
- **Siphon Kit**
- **Concealment Panel Kit**
- **Flue Finishing Kit**

## 1 BOILER WATER CIRCUIT DIAGRAM



Ecl 2063

## SAFETY

**Current Gas Safety (installation and use) regulations or rules in force.**

It is law that **all** gas appliances are installed and serviced by a CORGI registered installer in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure the law is complied with.

The installation of the boiler MUST also be in accordance with the latest I.E.E (BS.7671) Wiring Regulations, local building regulations, bye-laws of the local water authority, the building regulations and the Building Standards (Scotland) and any relevant requirements of the local authority.

Detailed recommendations are contained in the following British Standard Codes of Practice:

- BS. 5440:1** Flues (for gas appliances of rated input not exceeding 70 kW).
- BS. 5440:2** Ventilation (for gas appliances of rated input not exceeding 70 kW).
- BS. 5449** Forced circulation hot water systems.
- BS. 5546** Installation of gas hot water supplies for domestic purposes (2nd Family Gases)
- BS. 6798** Installation of gas fired hot water boilers of rated input not exceeding 60 kW.
- BS. 6891** Low pressure installation pipes.

**Health & Safety Document No. 635.**

**The Electricity at Work Regulations, 1989.**

The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

**IMPORTANT.** These appliances are CE certificated for safety and performance. It is, therefore, important that no external control devices, e.g. flue dampers, economisers etc., are directly connected to these appliances unless covered by these Installation and Servicing Instructions or as otherwise recommended by **Caradon Ideal Limited** in writing. If in doubt please enquire.

Any direct connection of a control device not approved by **Caradon Ideal Limited** could invalidate the certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above regulations.

## SAFE HANDLING OF SUBSTANCES

Care should be taken when handling the boiler insulation panels, which can cause irritation to the skin. No asbestos, mercury or CFCs are included in any part of the boiler or its manufacture.

## LOCATION OF BOILER AND FLUE OUTLET

The boiler must be installed on a flat and vertical wall, capable of adequately supporting the weight of the boiler and any ancillary equipment.

The boiler may be fitted on a combustible wall and insulation between the wall and the boiler is not necessary, unless required by the local authority.

For electrical safety reasons there must be no access available from the back of the boiler.

**The boiler must not be fitted outside.**

### Timber Framed Buildings

If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the Institute of Gas Engineering document IGE/UP/7:1998.

Where installation will be in an unusual location, special procedures may be necessary and BS.6798 gives detailed guidance on this aspect.

### Compartment Installations

A compartment used to enclose the boiler should be designed and constructed specially for this purpose.

An existing cupboard or compartment may be used, provided that it is modified for the purpose.

In both cases, details of essential features of cupboard / compartment design, including airing cupboard installation, are to conform to the following:

- BS. 6798 (No cupboard or ventilation is required - see air supply for details).
- The position selected for installation MUST allow adequate space for servicing in front of the boiler.
- For the minimum clearances required for safety and subsequent service, see the wall mounting template and Frame 2. In addition, sufficient space may be required to allow lifting access to the wall mounting plate.

## GENERAL

### 2 BOILER DIMENSIONS, SERVICES & CLEARANCES all dimensions in mm (in)

The boiler connections are made on the boiler piping frame. Refer to Frame 17.

The following minimum clearances must be maintained for operation and servicing.

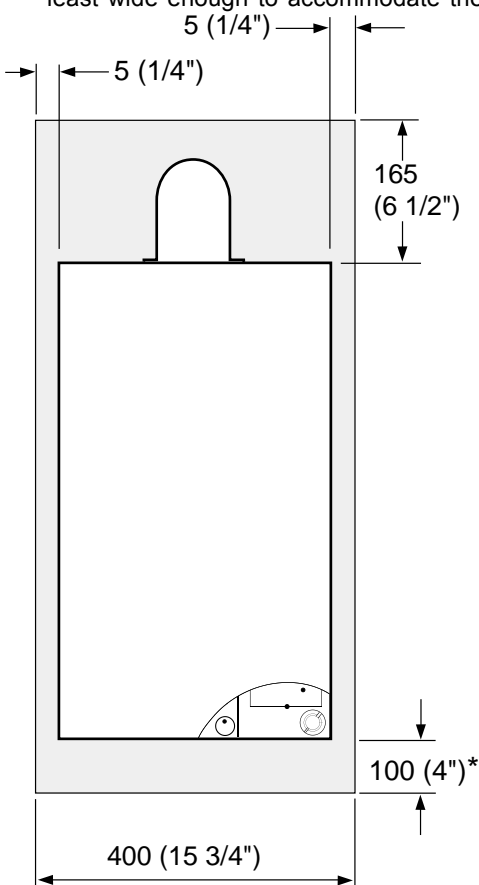
Additional space will be required for installation, depending upon site conditions.

#### Side and Rear Flue

- a. Provided that the flue hole is cut accurately, e.g. with a core drill, the flue can be installed from inside the building where wall thicknesses do not exceed 600mm (24"). Where the space into which the boiler is going to be installed is less than the length of flue required the flue must be fitted from the outside.

#### Installation from inside ONLY

- b. If a core boring tool is to be used inside the building the space in which the boiler is to be installed must be at least wide enough to accommodate the tool.



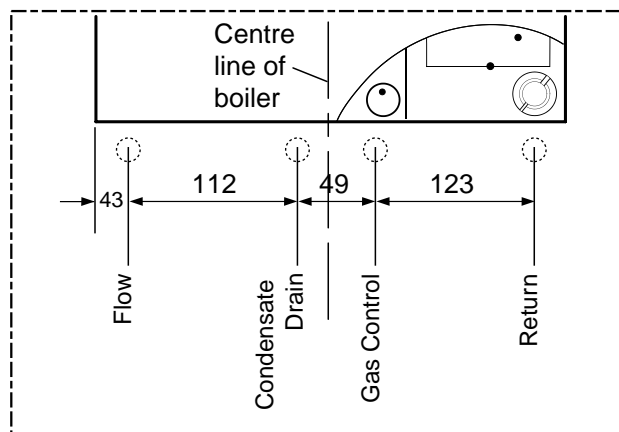
#### CLEARANCES

##### Front clearance

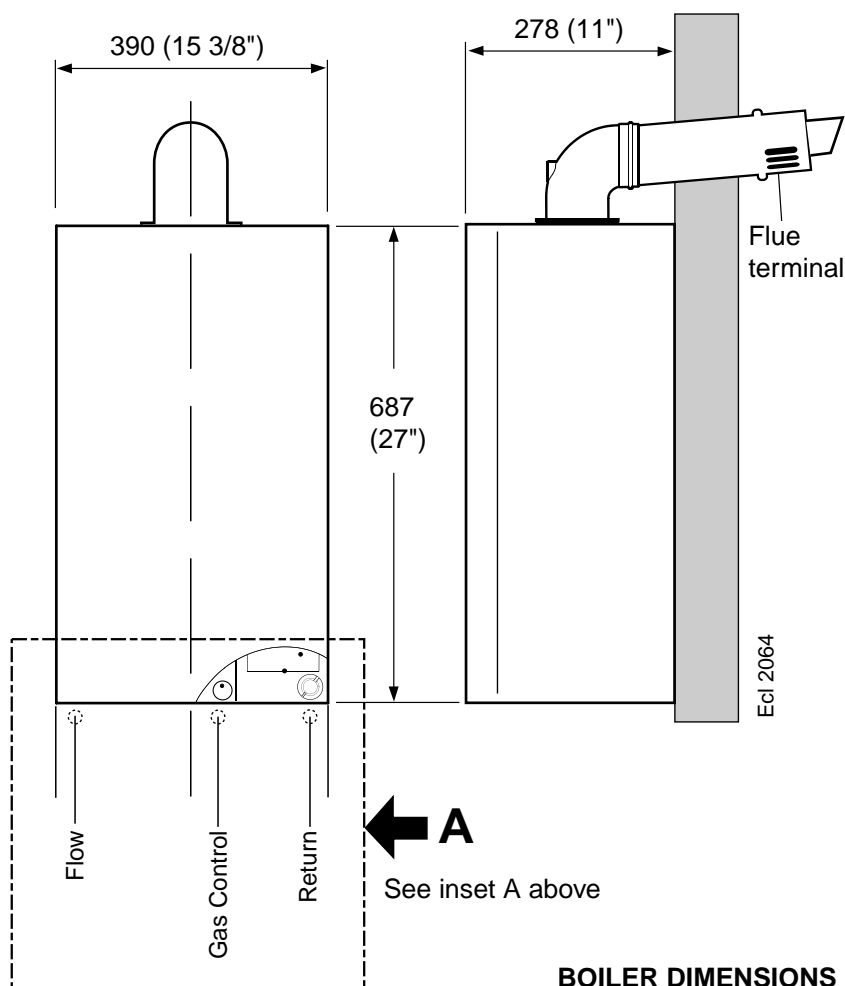
The minimum front clearance when built in to a cupboard is 5mm (1/4") from the cupboard door but 450mm (17 3/4") overall clearance is still required, with the cupboard door open, to allow for servicing.

##### \* Bottom clearance

Bottom clearance after installation can be reduced to 5mm. However, 100mm must be available for servicing.



Inset **A** Water Connections and Gas Connection



#### BOILER DIMENSIONS

## GAS SUPPLY

The local gas supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas. An existing service pipe must NOT be used without prior consultation with the local gas supplier.

The boiler MUST be installed on a gas supply with a governed meter only.

A gas meter can only be connected by the local gas supplier or by a registered CORGI engineer.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the rate of gas supply required. A minimum working gas pressure of 20 mbar should be available at the boiler inlet.

Do not use pipes of a smaller size than the boiler inlet gas connection.

### IMPORTANT.

Installation pipes MUST be fitted in accordance with BS. 6891. Pipework from the meter to the boiler MUST be 22mm O.D.

The complete installation MUST be tested for gas soundness and purged as described in the above code.

## FLUE INSTALLATION

Plumbing will occur at the terminal, so where possible, terminal positions where this could cause a nuisance should be avoided.

The flue must be installed in accordance with the recommendations of BS. 5440: Part 1, 2000.

The following notes are intended for general guidance:

1. The boiler MUST be installed so that the terminal is

**Table 4 - Balanced flue terminal position**

Terminal Position	Minimum Spacing
1. Directly below or alongside an opening window, air vent or other ventilation opening	300 mm (12")
2. Below guttering, drain pipes or soil pipes	75 mm ( 3")
3. Below eaves	200 mm ( 8")
4. Below balconies or a car port roof	200 mm ( 8")
5. From vertical drain pipes or soil pipes	150 mm ( 6")
6. From internal or external corners	300 mm ( 12")
7. Above adjacent ground, roof or balcony level	300 mm (12")
8. From a surface facing the terminal	600 mm (24")
9. From a terminal facing a terminal	1200 mm (48")
10. From an opening in a car port (e.g. door or window) into dwelling	1200 mm (48")
11. Vertically from a terminal on the same wall	1500 mm (60")
12. Horizontally from a terminal on the wall	300 mm (12")

exposed to external air.

2. It is important that the position of the terminal allows the free passage of air across it at all times.
3. Minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in Table 4.
4. Where the lowest part of the terminal is fitted less than 2m (6'6") above a balcony, above ground or above a flat roof to which people have access then the terminal MUST be protected by a purpose designed guard.

Terminals guards are available from boiler suppliers. In case of difficulty seek advice from:

Grasslin (UK) Ltd.,  
Vale Rise, Tonbridge, Kent TN9 1TB  
Telephone No. 01732 359 888

Ensure that the guard is fitted centrally.

5. Where the terminal is fitted within 850mm (34") of a plastic or painted gutter or 450mm (18") of painted eaves then an aluminium shield at least 750mm (30") long should be fitted to the underside of the gutter or painted surface fitted centrally above the flue.
6. The air inlet/products outlet duct and the terminal of the boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440: Part 1, 2000.

**IMPORTANT.** It is absolutely essential to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance MUST be turned OFF, labelled as 'unsafe' until corrective action can be taken.

## TERMINAL

The terminal assembly can be adapted to accommodate various wall thicknesses. Refer to Frame 8 - Unpacking.

## AIR SUPPLY

It is NOT necessary to have a purpose-provided air vent in the room or internal space in which the boiler is installed. Neither is it necessary to ventilate a cupboard or compartment in which the boiler is installed, due to the low surface temperatures of the boiler casing during operation; therefore the requirements of BS 6798, Clause 12, and BS 5440:2 may be disregarded.

## WATER CIRCULATION SYSTEM

The central heating system should be in accordance with BS. 6798 and, in addition, for smallbore and microbore systems, BS. 5449.

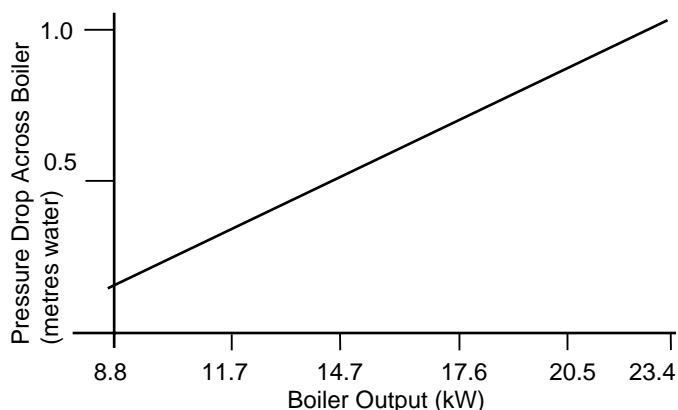
Draining taps MUST be located in accessible positions, which permit the draining of the whole system. They should be at least 1/2" BSP nominal size and be in accordance with BS 2879.

**WATER TREATMENT - see Frame 6**

## GENERAL

The hydraulic resistance of the boilers, at MAXIMUM OUTPUT, with an 11°C (20°F) temperature differential, is shown in Graph 1.

**Graph 1 - Water flow rate and pressure loss**



## THERMOSTATIC RADIATOR VALVES (TRV)

**Caradon Ideal Limited** recommend that heating systems utilising full thermostatic radiator valve control of temperature in individual rooms should also be fitted with a room thermostat controlling the temperature in a space served by radiators not fitted with such a valve as stated in BS. 5449.

When thermostatic radiator valves are used, the space heating temperature control over a living area having a heating requirement of at least 0.9kW (3000Btu/h) of the boiler heat output should be achieved using a room thermostat whilst other rooms are individually controlled by thermostatic radiator valves. A higher proportion of TRVs may be used, provided that

a bypass between the boiler flow and return is fitted, to ensure adequate flow when all TRVs are closed - however this is NOT recommended as a large proportion of TRVs can restrict water circulation and inhibit the condensing mode of condensing boilers, reducing fuel economy.

For further information refer to the 'Good Practice Guide 143', a publication of the Energy Efficiency Office, available from the Building Research Establishment, Garston, Watford WD2 7JR. Tel: 01923 664258.

## ELECTRICAL SUPPLY

Wiring external to the appliance MUST be in accordance with the current I.E.E. (BS.7671) Wiring Regulations and any local regulations which apply.

The point of connection to the mains should be readily accessible and adjacent to the boiler.

## CONDENSATE DRAIN - Refer to Frames 28, 48

A condensate drain is provided on the boiler. This drain must be connected to a drainage point on site. All pipework and fittings in the condensate drainage system MUST be made of plastic - *no other materials may be used.*

### IMPORTANT.

Any external runs must be insulated

The drain outlet on the boiler is standard 3/4in (21.5mm) overflow pipe.

## 3 SYSTEM REQUIREMENTS

### Notes

- The method of filling, refilling, topping up or flushing sealed primary hot water circuits from the mains via a temporary hose connection is only allowed if acceptable to the local water authority.*
- Antifreeze fluid, corrosion and scale inhibitor fluids suitable for use with boilers having aluminium heat exchangers may be used in the central heating system.*

*Advice should be sought from a local water treatment company.*

<b>Safety valve setting</b>	bar	3.0	
<b>Vessel charge pressure</b>	bar	0.5 to 0.75	
<b>System pre-charge pressure</b>	bar	None	1.0
<b>System volume (litres)</b>		<b>Expansion vessel volume (litres)</b>	
25		1.6	1.8
50		3.1	3.7
75		4.7	5.5
100		6.3	7.4
125		7.8	9.2
150		9.4	11.0
175		10.9	12.9
190		11.9	14.0
200		12.5	14.7
250		15.6	18.4
300		18.8	22.1
<b>For other system volumes multiply by the factor across</b>		0.063	0.074



## 4 SYSTEM REQUIREMENTS (continued)

### General

1. The installation must comply with all relevant national and local regulations.
2. The installation should be designed to work with flow temperatures of up to 82 °C.
3. All components of the system must be suitable for a working pressure of 3 bar and temperature of 110 °C. Extra care should be taken in making all connections so that the risk of leakage is minimised.

The following components are incorporated within the appliance:

- a. Circulating pump.
  - b. Safety valve, with a non-adjustable preset lift pressure of 3 bar.
  - c. Pressure gauge, covering a range of 0 to 6 bar.
  - d. A 8-litre expansion vessel, with an initial charge pressure of 0.75 bar.
4. **'Make-up' Water.** Provision must be made for replacing water loss from the system, either :

- a. From a manually filled 'make-up' vessel with a readily visible water level. The vessel should be mounted at least 150mm above the highest point of the system and be connected through a non-return valve to the system, fitted at least 150mm below the 'make-up' vessel on the return side of the radiators.

**or**

- b. Where access to a 'make-up' vessel would be difficult, by pre-pressurisation of the system.

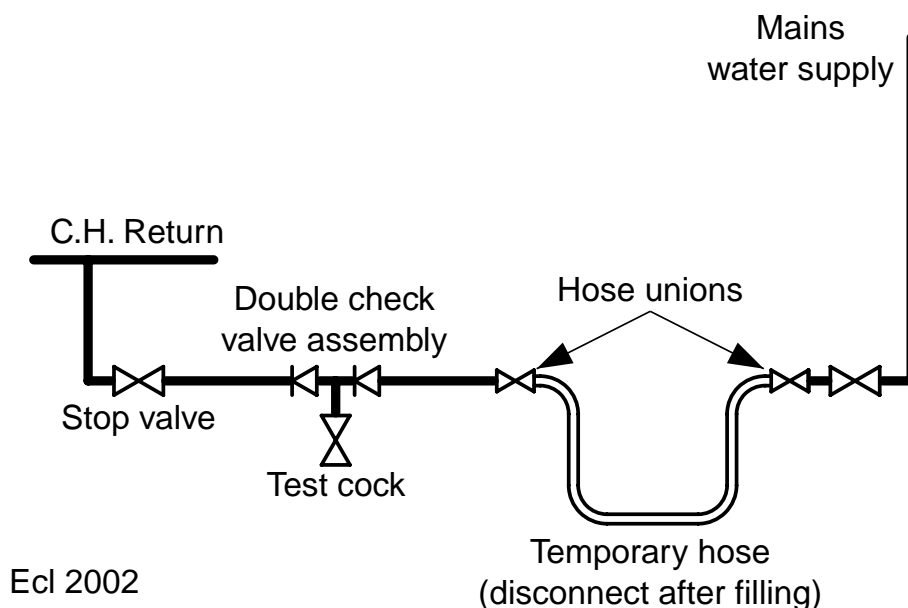
The maximum cold water capacity of the system should not exceed 143 litres, if not pressurized. However, if the system is to be pressurized, the efficiency of the expansion vessel will be reduced and a larger vessel (or smaller system volume) may be necessary. If the capacity of the vessel is not considered sufficient for this, or for any other reason, an additional vessel **MUST** be installed on the return to the boiler.

Guidance on vessel sizing is given above.

5. **Filling.** The system may be filled by the following method:

Through a temporary hose connection from a 'draw-off' tap, supplied from a service pipe under mains pressure. Where the mains pressure is excessive, a pressure reducing valve must be used to facilitate filling.

- i. Thoroughly flush out the whole system with cold water.
- ii. Fill and vent the system until the pressure gauge registers 1.5 bar, and examine for leaks.
- iii. Check the operation of the safety valve by raising the water pressure until the valve lifts. This should occur within 0.3 bar of the preset lift pressure.
- iv. Release water from the system until the minimum system design pressure is reached; 1.0 bar if the system is to be pre-pressurised.



## GENERAL

### 5 SYSTEM BALANCING

The boiler does not normally need a bypass but at least some radiators on the heating circuit, of load of at least 10% of the minimum boiler output must be provided with twin lockshield valves so that this minimum heating load is always available. See note regarding thermostatic radiator on pages 8.

#### Note.

Systems incorporating zone valves which could completely cut off the flow through the system, must be wired such that the boiler will not fire or continue to fire when this occurs.

### BALANCING

1. Set the programmer to ON.

Close the manual or thermostatic valves on all radiators, leaving the twin lockshield valves (on the radiators referred to above) in the OPEN position.

Turn up the room thermostat and adjust these lockshield valves to give boiler flow and return temperatures not more than 20 °C apart.

These valves should now be left as set.

2. Open all manual or thermostatic radiator valves and adjust the lockshield valves on the remaining radiators, to give around 11 °C temperature drop at each radiator.
3. Adjust the room thermostat and programmer to NORMAL settings.

### 6 WATER TREATMENT

The icos boiler has an ALUMINIUM alloy heat exchanger

#### IMPORTANT.

The application of any other treatment to this product may render the guarantee of Caradon Plumbing invalid.

If water treatment is used **Caradon Ideal Limited** recommend only the use of FERNOX-COPAL or SENTINEL X100 water treatment products, which must be used in accordance with the manufacturers' instructions. For further information contact: Fernox Manufacturing Co. Ltd.

Tandem House, Marlowe Way, Croydon, Surrey, CRO  
4XS  
Tel: 0870 5601 5000

Sentinel Division  
Betz Dearborn Ltd., Widnes, Cheshire, WA8 8UD  
Tel: 0151 424 5351

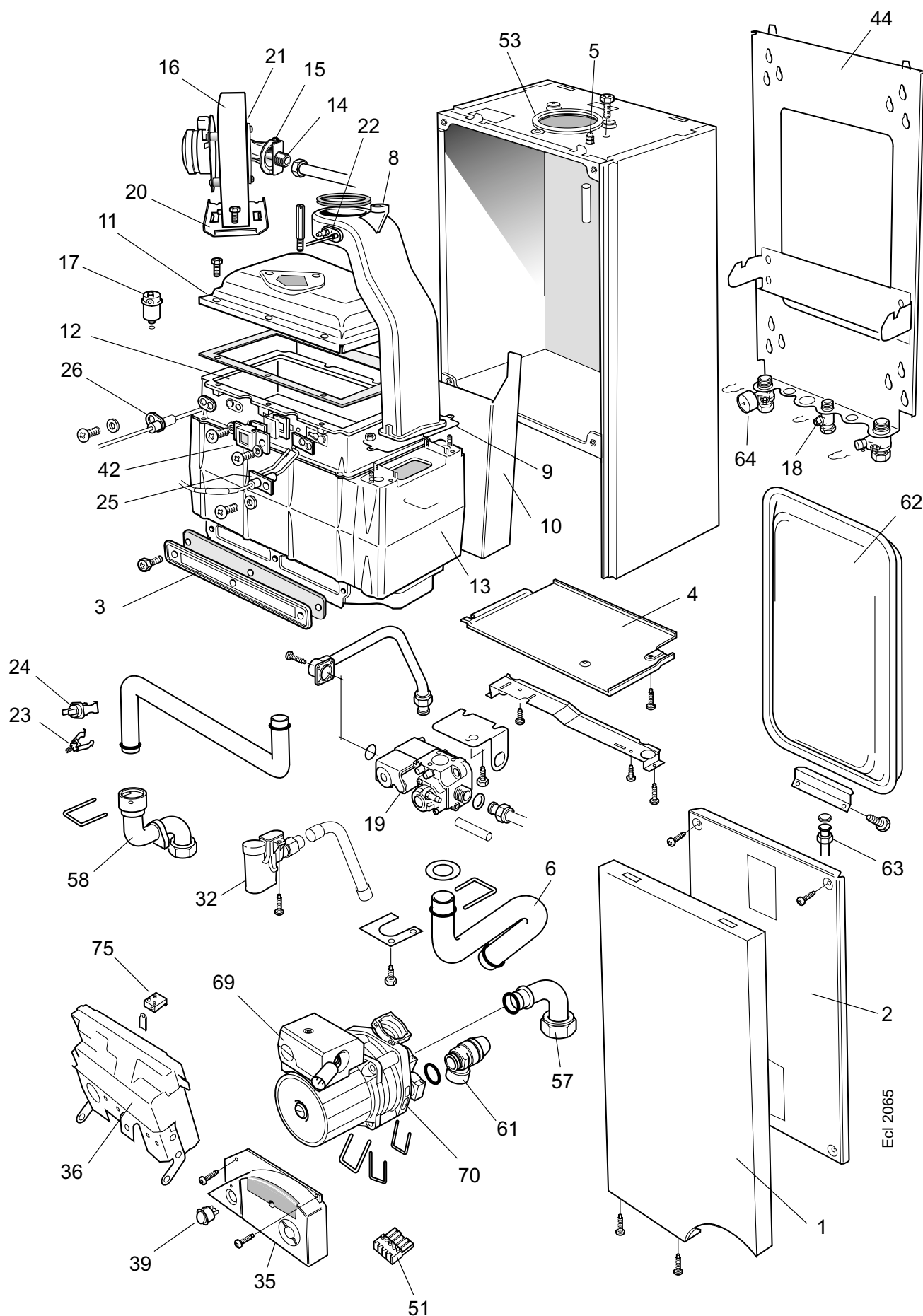
#### Notes.

1. It is most important that the correct concentration of the water treatment product is maintained in accordance with the manufacturers' instructions.
2. If the boiler is installed in an existing system any unsuitable additives **MUST** be removed by thorough cleansing.  
BS. 7593:1992 details the steps necessary to clean a domestic central heating system.
3. In hard water areas, treatment to prevent lime scale may be necessary - however, the use of artificially softened water is **NOT** permitted.
4. Under no circumstances should the boiler be fired before the system has been thoroughly flushed.

### 7 BOILER ASSEMBLY - Exploded View Legend

- |                              |                          |                              |                            |
|------------------------------|--------------------------|------------------------------|----------------------------|
| 1. Front panel.              | 13. Heat engine.         | 24. Overheat thermostat.     | 57. CH return stub.        |
| 2. Boiler sealing panel.     | 14. Injector assembly.   | 25. Ignition electrode.      | 58. CH flow stub.          |
| 3. Sump cover.               | 15. Venturi assembly.    | 26. Flame sensing electrode. | 61. Pressure relief valve. |
| 4. Bottom panel.             | 16. Fan assembly.        | 32. Condensate 's' trap.     | 62. Expansion vessel.      |
| 5. Flue sensing nipple.      | 17. Automatic air vent.  | 35. User control.            | 63. Exp. vessel pipe assy. |
| 6. Return pipe.              | 18. Gas service cock.    | 36. Primary controls (PCB).  | 64. Pressure gauge.        |
| 8. Flue manifold.            | 19. Gas valve.           | 39. Mains switch.            | 69. Pump.                  |
| 9. Flue manifold fixing.     | 20. Fan bracket.         | 42. Sightglass.              | 70. Pump manifold.         |
| 10. Interpanel.              | 21. Orifice plate.       | 44. Piping frame.            | 75. Control box clamp      |
| 11. Burner.                  | 22. Dry fire thermostat. | 51. Mains connector.         |                            |
| 12. Comb. Chamb. insulation. | 23. Control thermistor.  | 53. Turret seal.             |                            |

## 7 BOILER ASSEMBLY - Exploded View



Ecl 2065

## 8 UNPACKING

The boiler is supplied fully assembled in one Pack A, together with a standard flue assembly for lengths up to 460mm, rear or side flue outlet, in Pack B.

Optional extras, if ordered, are available in separate boxes.

**Unpack and check the contents.**

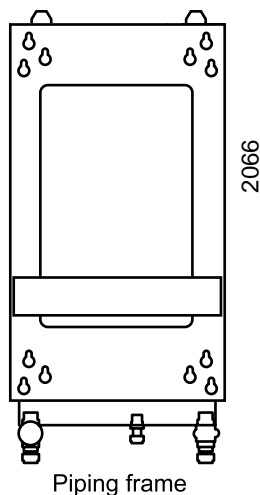
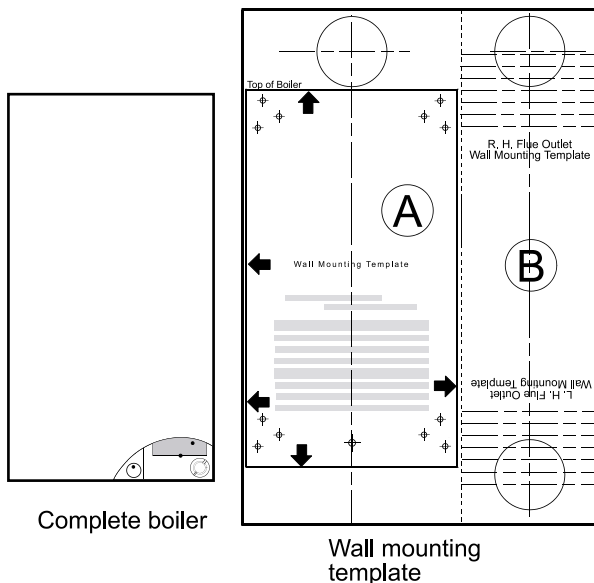
### Pack A Contents

Also contained in Pack A:

- Hardware Pack (listed below).
- These Installation & Servicing Instructions.
- The User's Instructions.
- The User Control.
- Benchmark log book.

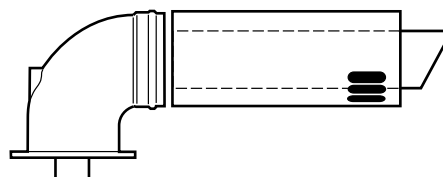
### Hardware Pack

- 50mm x No.10 wood screws - 3 off.
- Wall plugs (TP2B) - 3 off.
- Water treatment warning label.
- Turret clamp.
- M5 x 10 pozi Hex screw.
- 22mm compression nut and olive - 2 off.
- Safety drain pipe nut and olive.
- Flow isolating valve c/w pressure gauge.
- 22mm fibre washers - 2 off.



### Pack B Contents

- Flue turret.
- Flue terminal.
- Flue support cutting aid - 1 off.



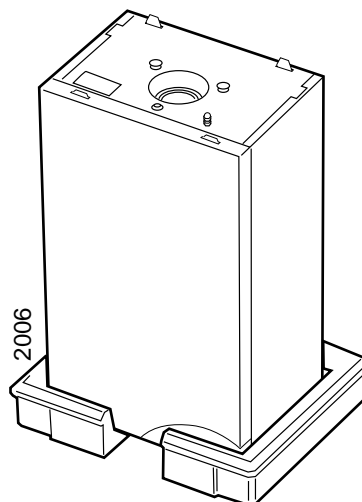
Flue turret assembly

Flue terminal

Ecl 1460

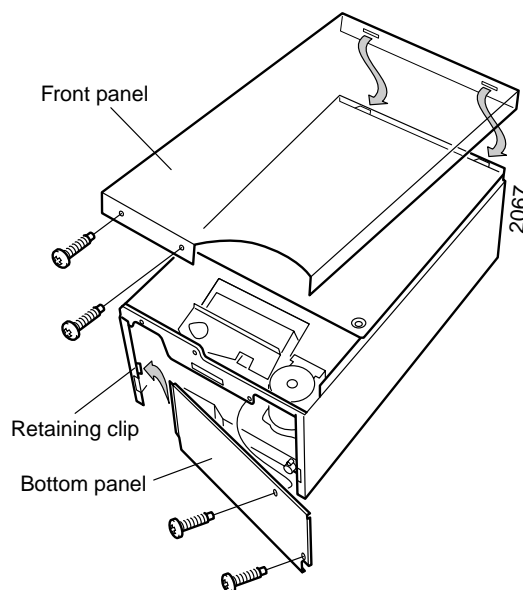
## 9 PACKAGING REMOVAL

1. Ensure the boiler is stood correctly as marked on the carton.
2. Remove the strapping.
3. Fold back the top flaps to gain access to the wall mounting plate, instructions, hardware pack and user control.
4. Remove the instructions and read thoroughly before unpacking the product. Unpack the user's control and hardware pack and retain in a safe place.
5. When ready for installation lift off the cardboard carton.
6. Dispose of packaging.



## 10 BOTTOM PANEL AND FRONT PANEL REMOVAL

1. Undo the 4 retaining screws.
2. Allow the RHS of the bottom panel to lower slightly.
3. Withdraw the LHS of the bottom panel from the retaining clips.
4. Lift front panel and remove.
5. Place bottom and front panel to one side to avoid damage.



## 11 DETERMINING THE FLUE LENGTH AND FLUE PACKS REQUIRED

**IMPORTANT.** The boiler MUST be installed in a vertical position

Dimension X - Wall thickness.

Dimension L - Wall thickness plus boiler spacing .

Dimension S - Stand-off kit depth = 33mm.

### FLUE KITS

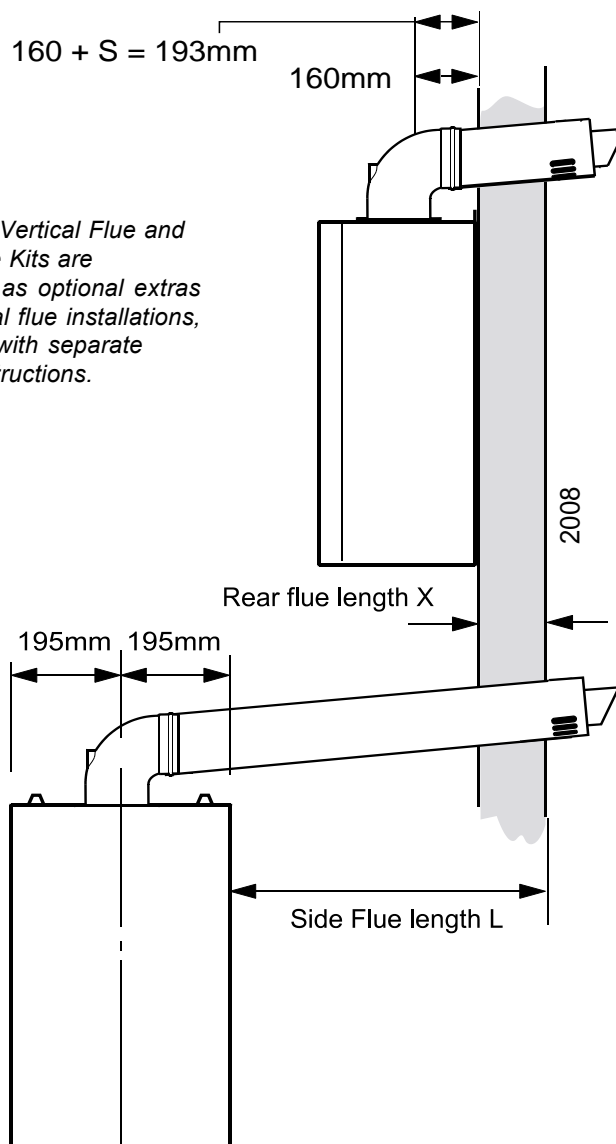
**Pack B** - supplied as standard

**Pack D** - optional extension kit for side flue or rear flue outlet.

Refer to 'Flue Extension Ducts'

### Note.

Powered Vertical Flue and Roof Flue Kits are available as optional extras for vertical flue installations, supplied with separate fitting instructions.



Total Flue length dimension		Flue
Rear flue dim. X+160	Side flue dim. L+195	Extra packs required
Up to 480 mm	Up to 480 mm	none
Up to 1430 mm	Up to 1430 mm	Pack D - 1 off
Up to 2380 mm	Up to 2380 mm	Pack D - 2 off
Up to 3000 mm	Up to 3000 mm	Pack D - 3 off

### Notes.

1. The flue duct MUST be inclined at 1.5 degrees to the horizontal to allow condensate to drain back into the boiler and out through the condensate drain.
2. If the boiler is to be installed with upward piping routed behind the boiler then the optional stand-off kit should be used. Care must be taken when cutting the ducts and marking wall to suit this condition.

## INSTALLATION

### 12 FLUE ASSEMBLY - Exploded View

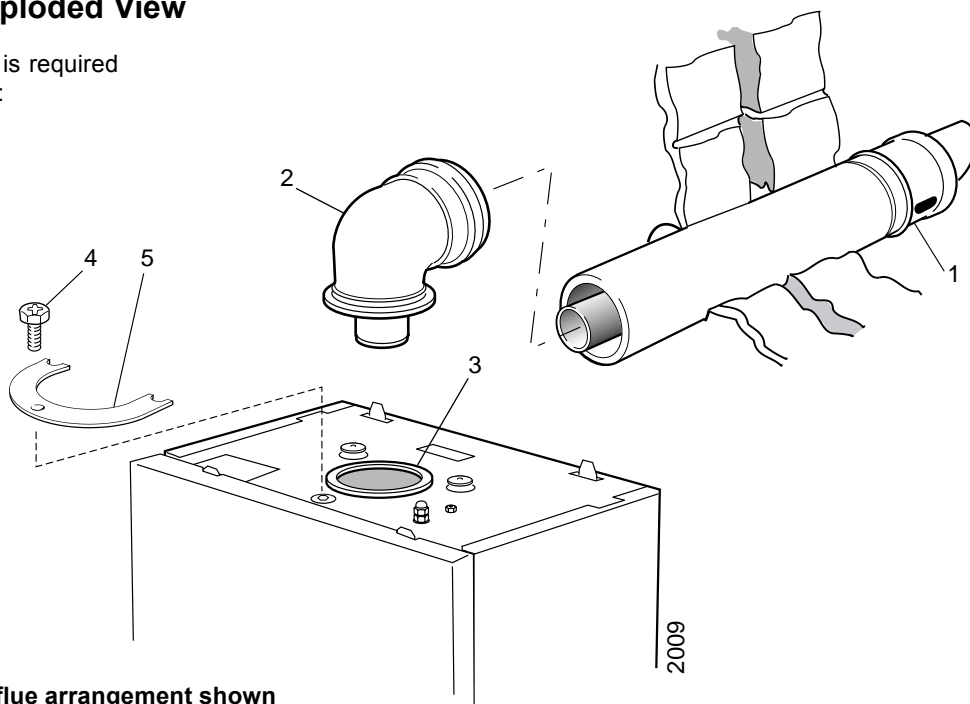
1. An optional flue duct extension kit is required for wall thicknesses greater than :

**Side** 300mm (11 3/4").

**Rear** 345mm (13 1/2").

#### LEGEND

1. Duct assembly.
2. Flue Turret.
3. Turret seal.
4. M5 x 10 pozi screw.
5. Turret clamp.



Rear flue arrangement shown

### 13 WALL MOUNTING TEMPLATE

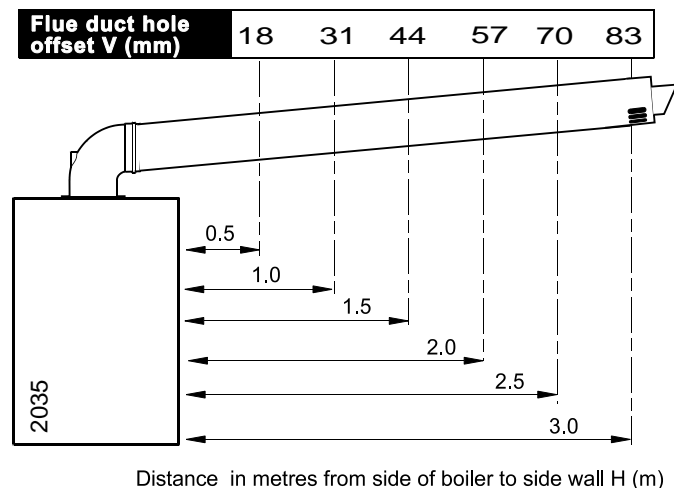
#### Note.

The template shows the positions of the fixing holes and the flue hole centres for standard installation and for using the stand-off. Care Must be taken to ensure the correct holes are drilled.

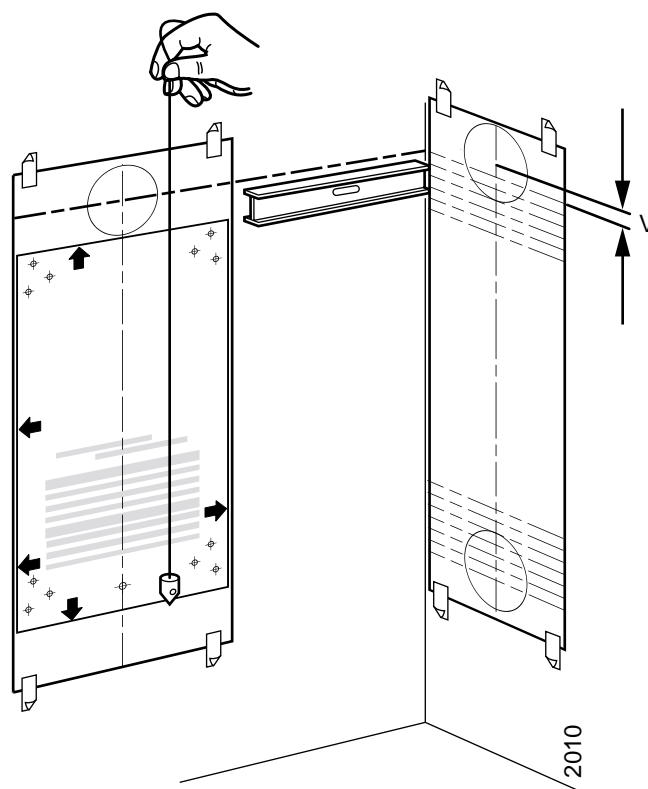
1. Tape template into the selected position.
2. Ensure squareness by hanging a plumbline as shown. If fitting a side flue extend the flue centre line onto the side wall.
3. Mark onto the wall the following:
  - a The piping frame screw positions (choose one from each group).
  - b. The position of the flue duct hole.
4. Remove the template from the wall.

**Note.** Mark the centre of the hole as well as the circumference

See wall mounting plate



Distance in metres from side of boiler to side wall H (m)



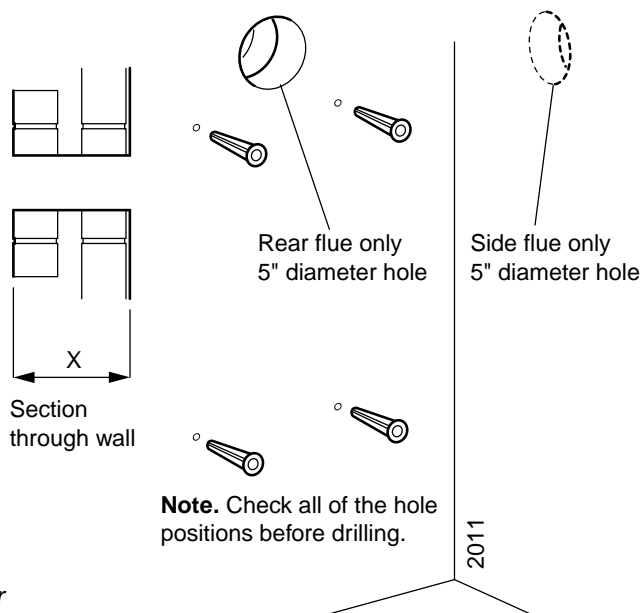
#### Note.

Side flue only. If the system pipework is to be routed up behind the boiler. The upward routing pipework frame supplied as a separate kit MUST be used secured to the piping frame. It is essential to use the wall mounting template to mark the holes to be drilled. Care MUST be taken to ensure the correct holes are drilled.

## 14 PREPARING THE WALL

**WARNING.** Ensure that, during the cutting operation, masonry falling outside of the building does not cause damage or personal injury.

1. Cut the flue hole (preferably with a 5" core boring tool), ensuring that the hole is square to the wall. Both wall faces immediately around the cut hole should be flat.
2. Drill 4 holes with a 7mm (1/4") masonry drill and insert the plastic plugs provided, for the piping frame.
3. Locate 4 No.10 x 2" screws in the wall mounting plate (one at each side, in any of the 3 holes provided at each side) and screw home.



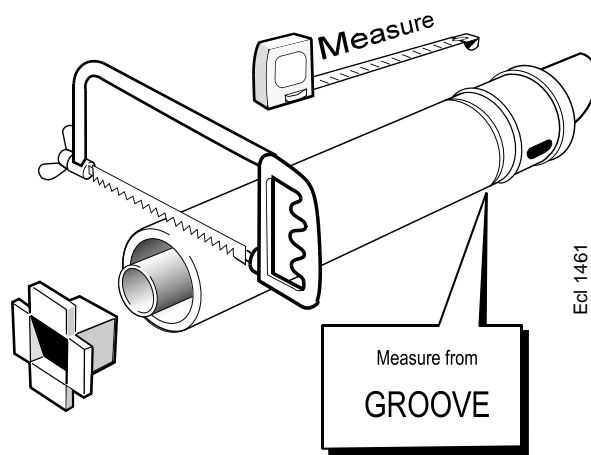
**Note.** If the terminal is to be sited within 25-40mm of a corner or vertical pipe then the hole **MUST** be accurately cut.

## 15 CUTTING THE FLUE - REAR Wall thicknesses of 114 to 345mm

### Note.

- a. If using the extension ducts go to Frame 21.
- b. If the upward routing pipe stand off brackets are used it is essential add 33mm to 'X' the measured wall thickness when marking the flue (this will allow for the fitted brackets).

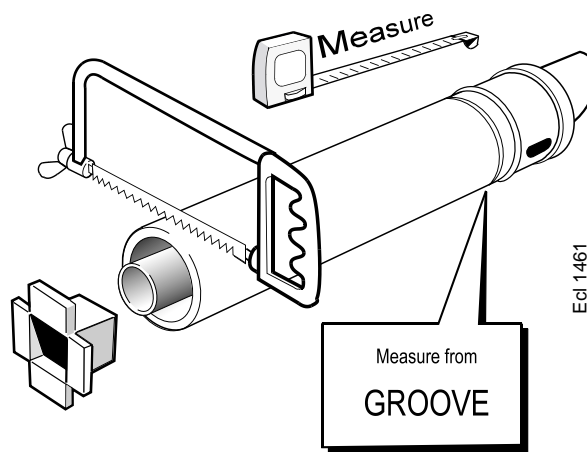
1. Measure and note wall thickness X - Refer to Frame 11.
2. Add 75mm (3 ") to dimension X and, measuring from the groove, cut the outer tube only.
3. To ensure the tube is cut square, mark the flue all the way round. Use the cardboard support.
4. Cut the inner tube to a length 20mm (3/4") longer to aid engagement.



## 16 CUTTING THE FLUE - SIDE Wall thicknesses of 114 to 300mm

### Note.

- a) If using the extension ducts go to Frame 21.
1. Measure and note wall thickness X - Refer to Frame 11.
  2. Add 115mm (4 1/2") to dimension X and, measuring from the groove, cut the outer tube only.
  3. To ensure the tube is cut square, mark the flue all the way round. Use the cardboard support.
  4. Cut the inner tube to a length 20mm (3/4") longer to aid engagement.



## 17 FITTING THE PIPING FRAME (Rear Flue outlet shown)

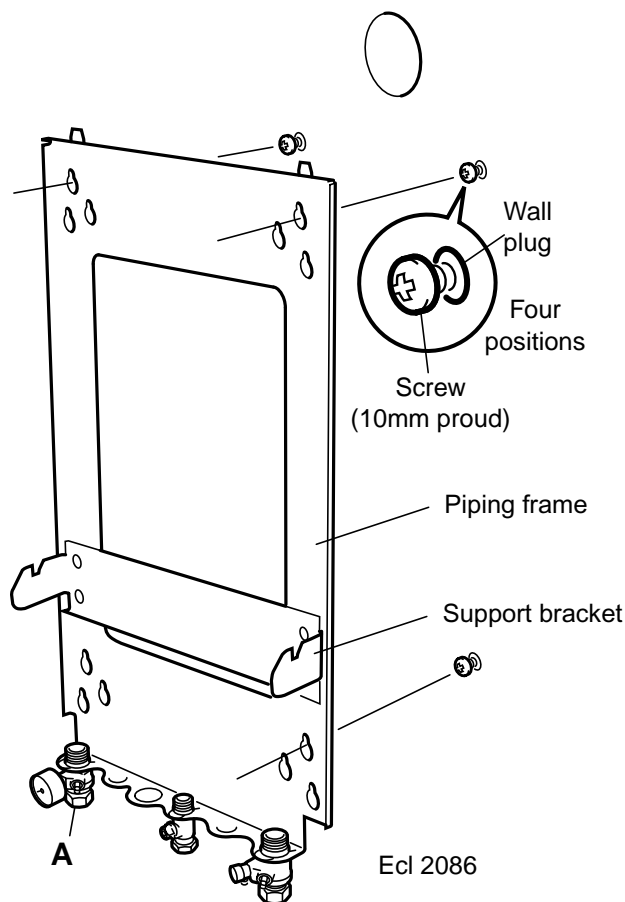
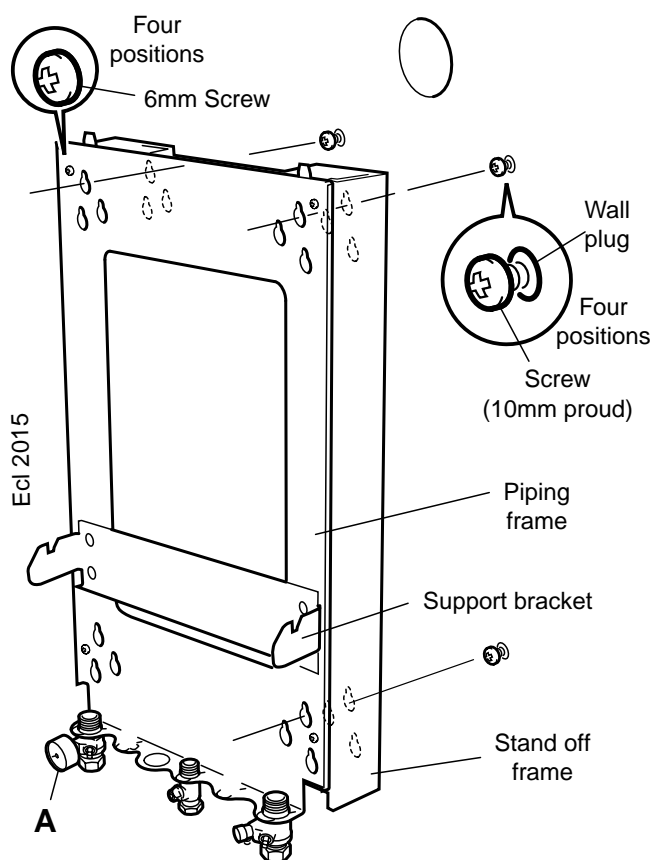
**Note.** The flow isolating valve (A), c/w pressure gauge, is supplied separately in the hardware pack. Fit to the piping frame BEFORE mounting the boiler.

Fit the wall mounting frame either:

### a. Directly to the wall

- Insert wall plugs.
- Put the screws into the wall plugs and leave 10mm proud
- Hang the frame onto the screws (take care to use the same hole position from each group as previously chosen with the wall template) and tighten up.
- Locate the support bracket on the piping frame.

or



### b. Use stand-off frame

(To allow pipework to be taken upwards).

- Insert wall plugs.
- Put the screws into the wall plugs and leave 10mm proud.
- Hang the stand-off frame onto the screws and tighten up.
- Fasten the piping frame to the stand-off frame with the 6mm screws and washers provided.
- Locate the support bracket on the piping frame.

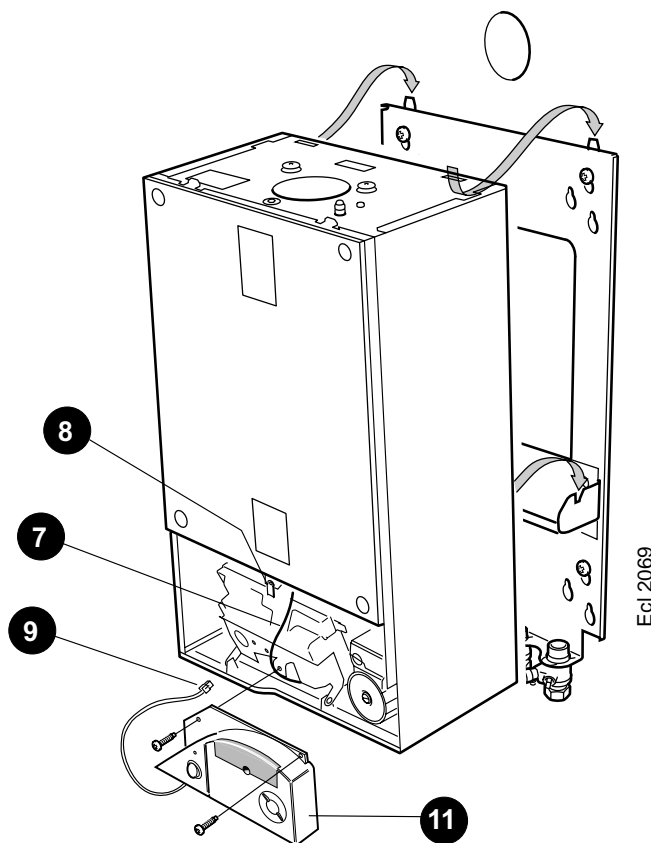
**Note.** If the clearances above and below the boiler are less than the length of the pipes it will be necessary to position the pipes behind the wall mounting plate BEFORE the plate is screwed to the wall.

Service connections may be made now, before mounting the boiler, if required - refer to Frames 24 to 27.



## 18 MOUNTING THE BOILER

1. Ensure that the plastic plugs are removed from both the pipes before mounting.
- N.B.** Some spillage of water may occur from the pipework when mounting the boiler to the frame.
2. Lift the boiler onto the wall mounting frame, locating it over the tabs at the top of the frame.
3. Lower the boiler into position.
4. Using the fibre washers supplied in the hardware pack, engage and then tighten the 2 water unions.
5. Engage and tighten the gas union, ensuring that the rubber seal is in place. **DO NOT** overtighten.
6. Connect a pipe to the safety drain outlet using the nut and olive supplied in the boiler hardware pack.
7. Disconnect the spark lead from the control box.
8. Turn the control box clamp and swing the control box into the servicing position.
9. Plug the user control (supplied in the hardware pack) into the control box. Refer to Frame 33.
10. Swing the control box back into its working position and secure.
11. Screw the user control into position.



## 19 CONNECTING THE FLUE TO THE BOILER

### Note.

- a.** *BEFORE fitting the flue turret, fill the condensate trap within the boiler by pouring a cupful of water into the flue outlet A.*
- b.** *Take care to ensure that the water is only poured into the flue outlet, and does not spill into the boiler casing.*

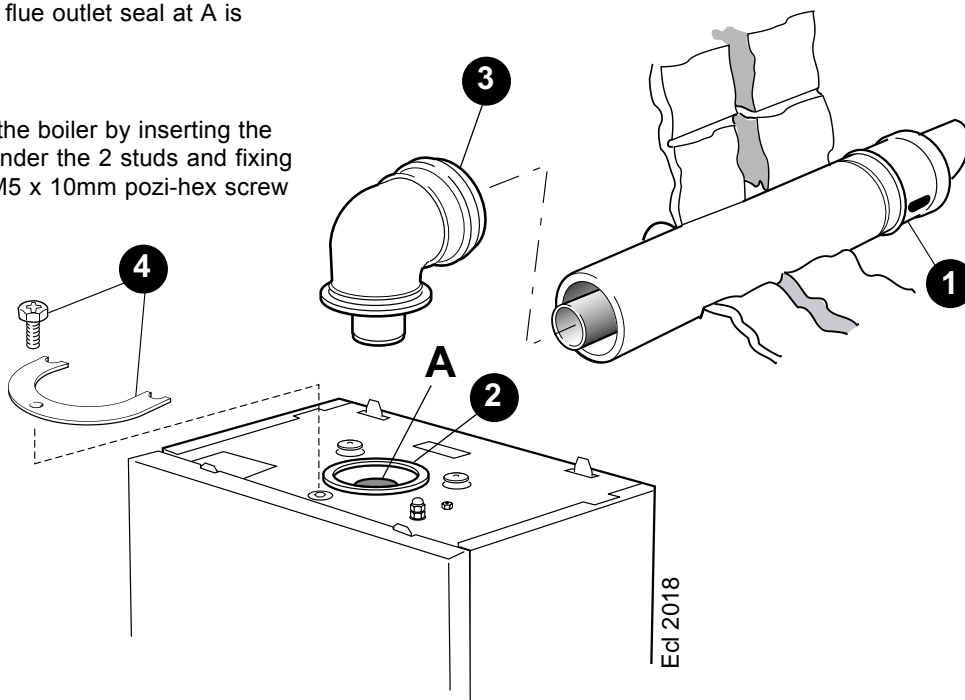
1. Insert the flue assembly through the prepared hole in the wall.
2. Locate the flue turret on the top of the boiler ensuring that the seal is in place and that the flue outlet seal at A is correctly located.
3. Locate the flue into the turret.
4. Secure the flue turret on top of the boiler by inserting the open ends of the turret clamp under the 2 studs and fixing it in the middle with the single M5 x 10mm pozi-hex screw

provided.

### 5. Flues over 1 metre long.

Fix the flue support bracket to the wall, using the wall plug and wood screw. For standard installations use the short wood screw.

If the stand-off option is used, secure the support bracket using the spacer bracket and long wood screw.



## INSTALLATION

### 20 TERMINAL WALL PLATE (optional)

This plate is supplied in the Flue Finishing Kit (together with one inner and one outer flue seal) it allows neat concealment and full compression of the outer seal (if fitted). Its use is not essential if the flue hole and flue ducts have been accurately cut and the outside wall face is flat.

1. Position the terminal wall plate over the terminal.

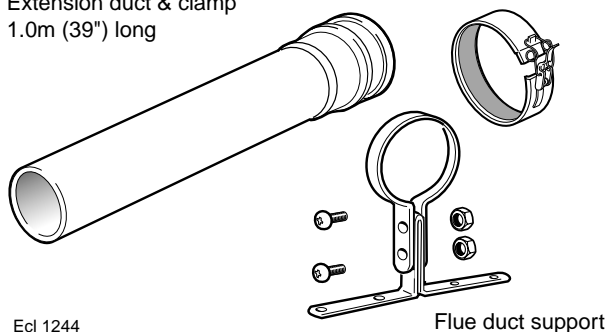
2. Drill 4 fixing holes with a 7mm (1/4") masonry drill.
3. Insert the 4 plastic plugs provided.
4. Secure the plate with 4 of the No.10 x 2" screws provided.

**Note.** If the terminal is less than 2m (6' 6") above ground level, an approved terminal guard should be fitted. Refer to the Flue Installation, Page 8.

### 21 FLUE EXTENSION DUCTS - For flue lengths greater than 480mm

Pack D Flue extension duct kit contents.

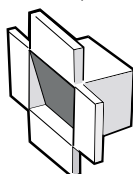
Extension duct & clamp  
1.0m (39") long



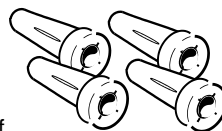
Ecl 1244

Flue duct support

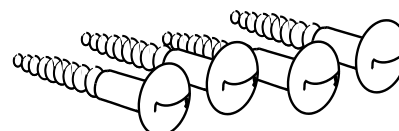
Flue support cutting aid  
(shown folded up)



Wall plugs - 4 off



No. 10 x2" wood screw - 4 off

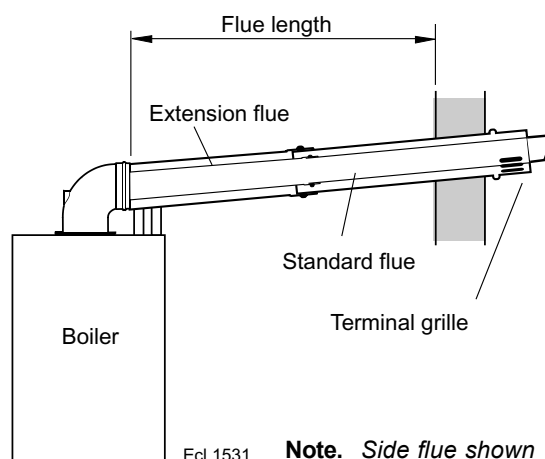


### 22 FLUE EXTENSION DUCTS - continued

**Use a maximum of 3m extended flue ONLY**

#### General arrangement

1. A **maximum** of 3 extension ducts (one suitably cut) plus the standard flue duct may be used together.
2. Flue extensions of greater length than 1m (39") should be supported with the bracket provided, suitably adjusted - refer to Frame 21.

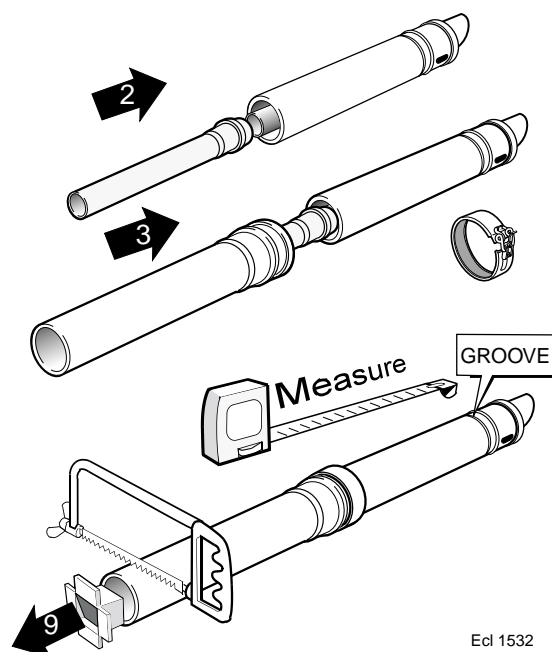


Ecl 1531

**Note.** Side flue shown

### 23 FITTING THE KIT

1. Remove the cardboard support aid from the flue and place safely to one side.
2. Fit the inner flue extension duct onto the inner flue duct.
3. Fit the outer flue extension duct onto the outer air duct.
4. Using the clamp provided clamp the flue lengths together.
5. Repeat steps 1-4 if a second flue extension is required.
6. Measure and mark the flue length required onto the flue, measuring from the groove near the terminal.
7. To ensure a square cut, mark the flue all the way round.
8. Cut to length using the cardboard support aid.
9. Remove the cardboard off-cut and deburr the metal edges.



Ecl 1532

## 24 SERVICE CONNECTIONS

### General Notes

1. Fitting the Piping Frame, top entry pipework is an option, as well as mounting from the bottom or through the wall.

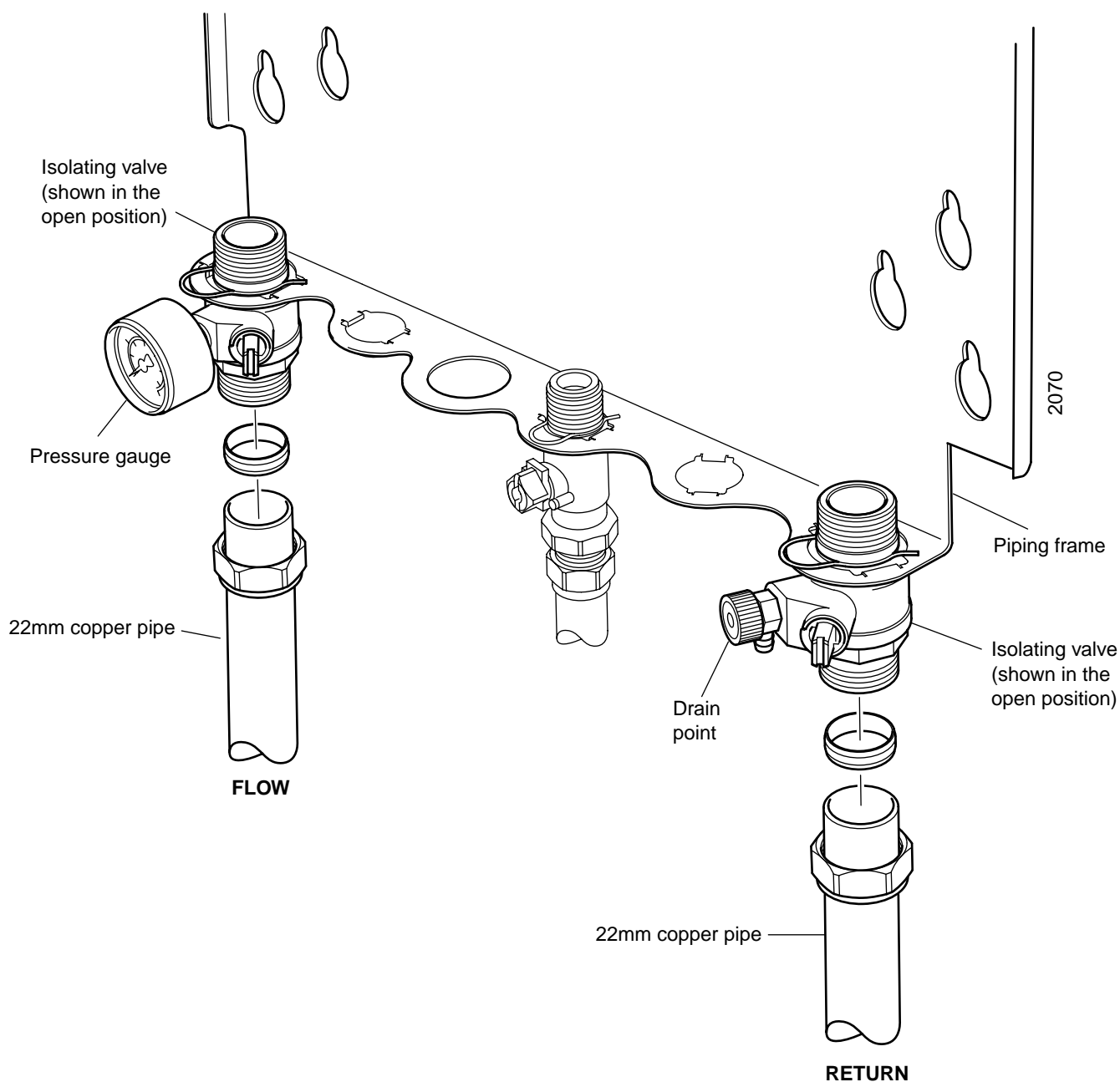
If pipes are run vertically within the boiler back space provided by optional stand-off frame positions they must avoid any obstructions imposed by the channels and by a rear facing flue, should this position be selected.

2. Horizontal connecting pipes, where used, must be run outside the limits of the boiler casing.

## 25 WATER CONNECTIONS

Refer to General Note, Frame 24, for guidance.

**Note.** Do not subject any of the isolating valves to heat as the seals may be damaged.



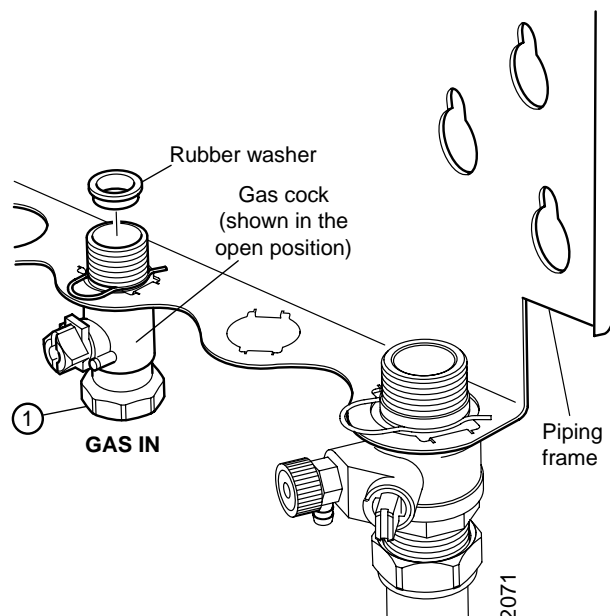
## 26 GAS CONNECTION

1. Extend a gas supply pipe of not less than 15mm O.D. copper to the boiler.

A working gas pressure of 20mbar (8" w.g) should be available at the boiler inlet, with the boiler firing at full output.

### IMPORTANT.

The gas service cock contains a non-metallic seal so must not be overheated when making capillary connections.



## 27 SAFETY VALVE DRAIN

The safety valve is located at the bottom RHS of the boiler.

The discharge pipe should be positioned so that the discharge of water or steam cannot create a hazard to the occupants of the premises or damage the electrical components and wiring.

## 28 CONDENSATE DRAIN

**Refer also to the British Gas document: 'Guidance Notes for the Installation of Domestic Gas Condensing Boilers' (1989).**

The condensate drain provided on the boiler must be connected to a drainage point, preferably within the building.

Ensure that the condensate trap is full of water before commissioning the boiler - refer to Frame 19.

The routing of the drain must be made to allow a minimum fall of 1 in 20 away from the boiler, throughout its length.

The drainage pipework must be arranged so that obstruction (e.g. through freezing) of external drainage pipe does not give rise to spillage within the dwelling.

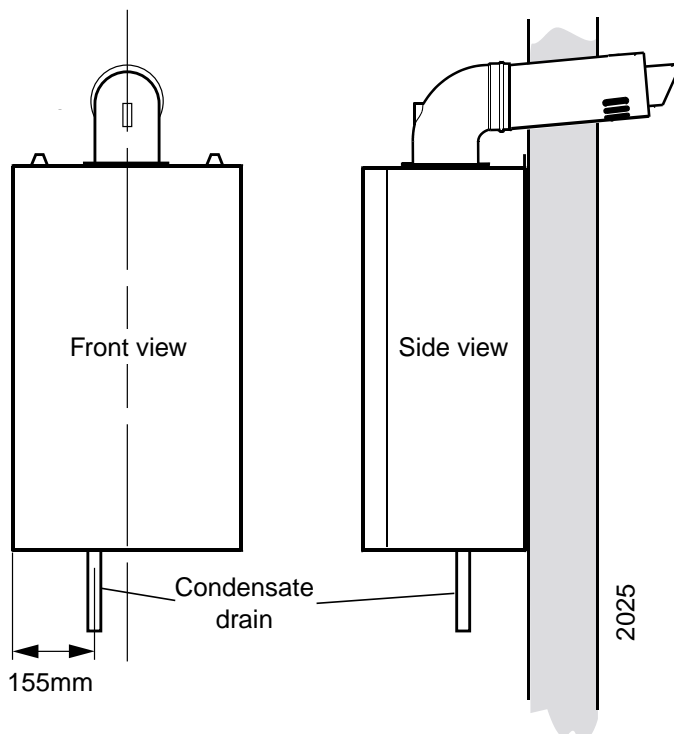
**IMPORTANT.** Any external runs must be insulated.

Excessive external pipe runs should be avoided in order to prevent possible freezing.

All pipework and fittings in the condensate drain system must be made of plastic. No other materials may be used.

The drain outlet on the boiler is standard 21.5mm overflow pipe. This size must not be reduced in any part of its length.

In order to defer the onset of freezing of the condensate drain when the pipe is run externally the pipe should be run as far



as possible within the building.

The boiler condensate drain connection is suitable for Marley 'Terrain' tubing.

A siphon kit is available to prevent freezing.

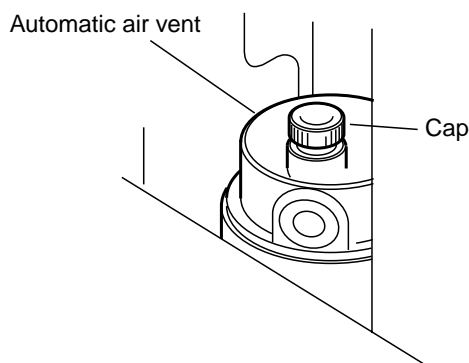
## 29 FILLING

1. Swing the control panel down into the servicing position - Refer to Frame 45.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Ensure that the isolating valves are open.
4. Fill and vent the system. Check for water soundness.

### IMPORTANT - when filling:

- a. The cap on the automatic air vent (refer to Frame 68) MUST be loose at all times.

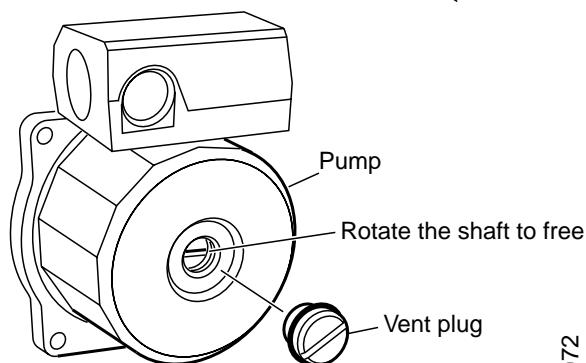
When filling, there may be a slight water leak from the vent therefore electrical connections should be protected.



- b. Bleed any air from the pump and ensure that it is free to rotate.

- i. Remove the vent plug
- ii. Using a screwdriver, rotate the shaft several times
- iii. Replace the vent plug.

**Note.** Some slight water leakage will occur.



2072

## 30 ELECTRICAL CONNECTIONS

**WARNING.** This appliance MUST be earthed.

A mains supply of 230 V ~ 50 Hz is required.

The fuse rating should be 3A.

Wiring external to the boiler MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations.

All external controls and wiring must be suitable for mains voltage.

Wiring should be 3 core PVC insulated cable, not less than 0.75 mm<sup>2</sup> (24 x 0.2mm), and to BS 6500 Table 16.

Connection must be made in a way that allows complete isolation of the electrical supply such as a double pole switch having a 3mm (1/8") contact separation in both poles, or a plug and socket, serving only the boiler and system controls. The means of isolation must be accessible to the user after installation.

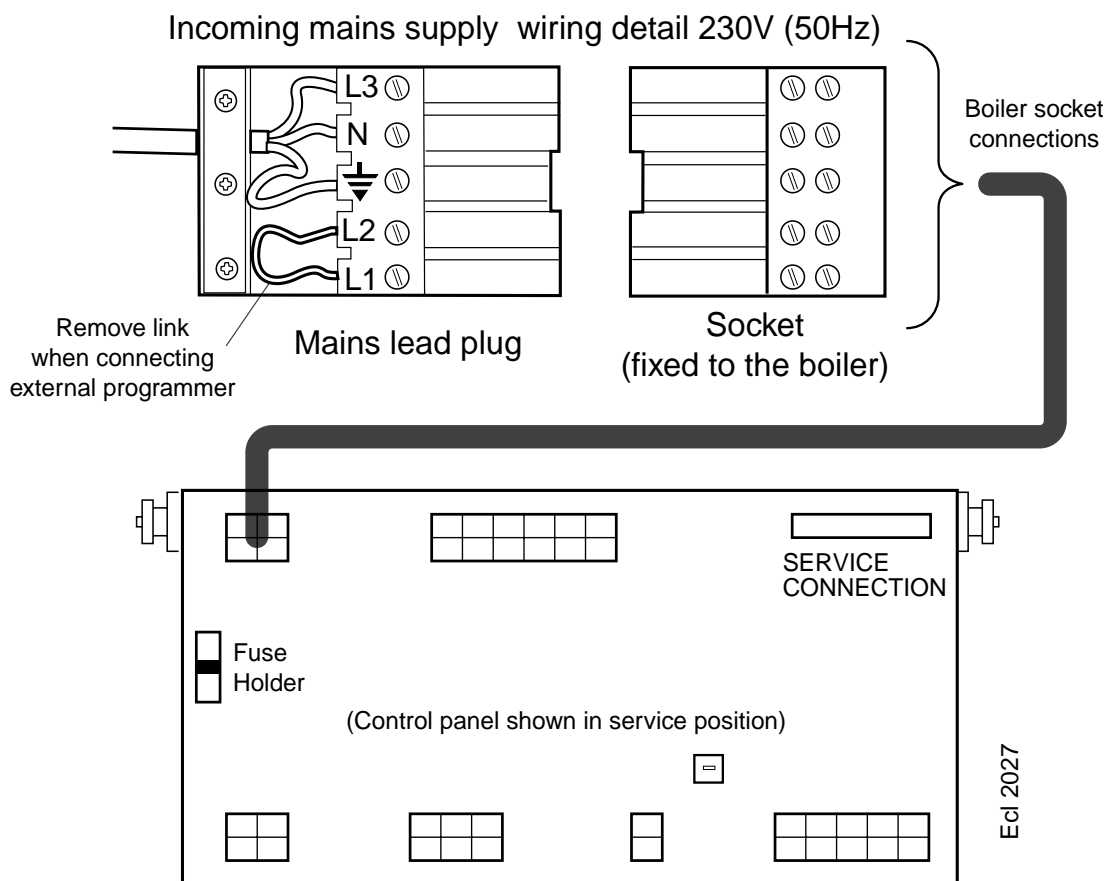
## 31 INTERNAL WIRING

1. Route the mains cable into the bottom rear centre of the boiler.
2. Wire the permanent live supply into the 5-way remote plug terminals, L3, N &  $\frac{1}{2}$ .

**Note.** Ensure that the lengths of the current carrying conductors are shorter than the earth conductor so that if the cable slips in its anchorage the current carrying conductors become taut before the earth

conductor.

3. Wire any switched live supply into terminal L2.
4. Secure the mains lead with the cable clamp.
5. Reconnect the mains lead plug. Ensure it is fully located.



## 32 EXTERNAL CONTROLS

### Wiring External to the Boiler

The fuse rating should be 3A.

Wiring external to the boiler MUST be in accordance with the current I.E.E. (BS.7671) Wiring Regulations and any local regulations.

### Room Thermostat

If the thermostat has a neutral connection, use it (it provides for more energy efficient operation by reducing switching temperature differentials).

### Frost Protection

If parts of the pipework run outside the house or if the boiler will be left off for more than a day or so then a frost thermostat should be wired into the system.

This is usually done at the programmer, in which case the programmer selector switches are set to OFF and all the other controls MUST be left in the running position.

The frost thermostat should be sited in a cold place but where it can sense heat from the system.

**Note.** If the boiler is installed in a garage it may be necessary to fit a pipe thermostat, preferably on the return pipework.

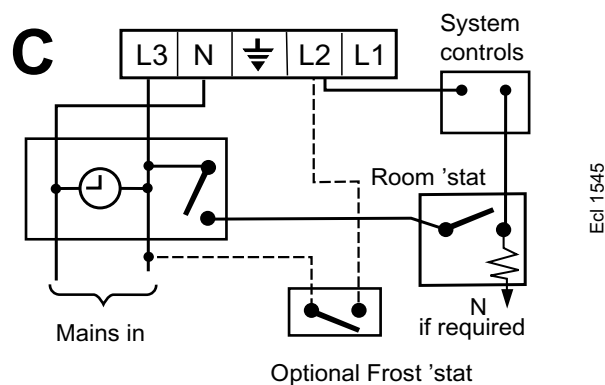
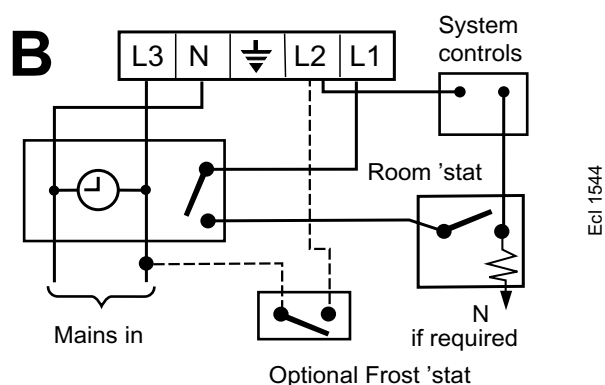
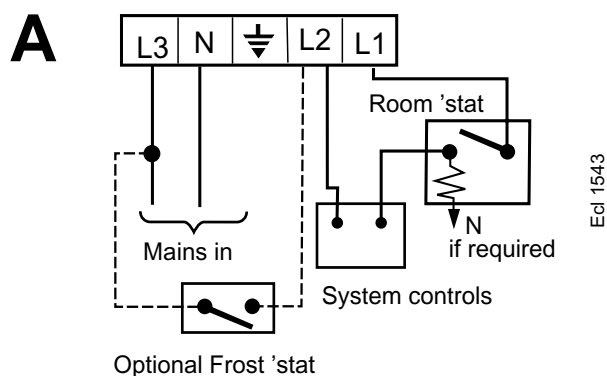
Wiring should be as shown, with minimal disturbance to other wiring of the programmer.

Designation of the terminals will vary but the programmer and thermostat manufacturers' leaflets will give full details.

**Diagram A** shows an application to boilers fitted with a room thermostat only.

**Diagrams B & C** show applications to boilers fitted with alternative time controls.

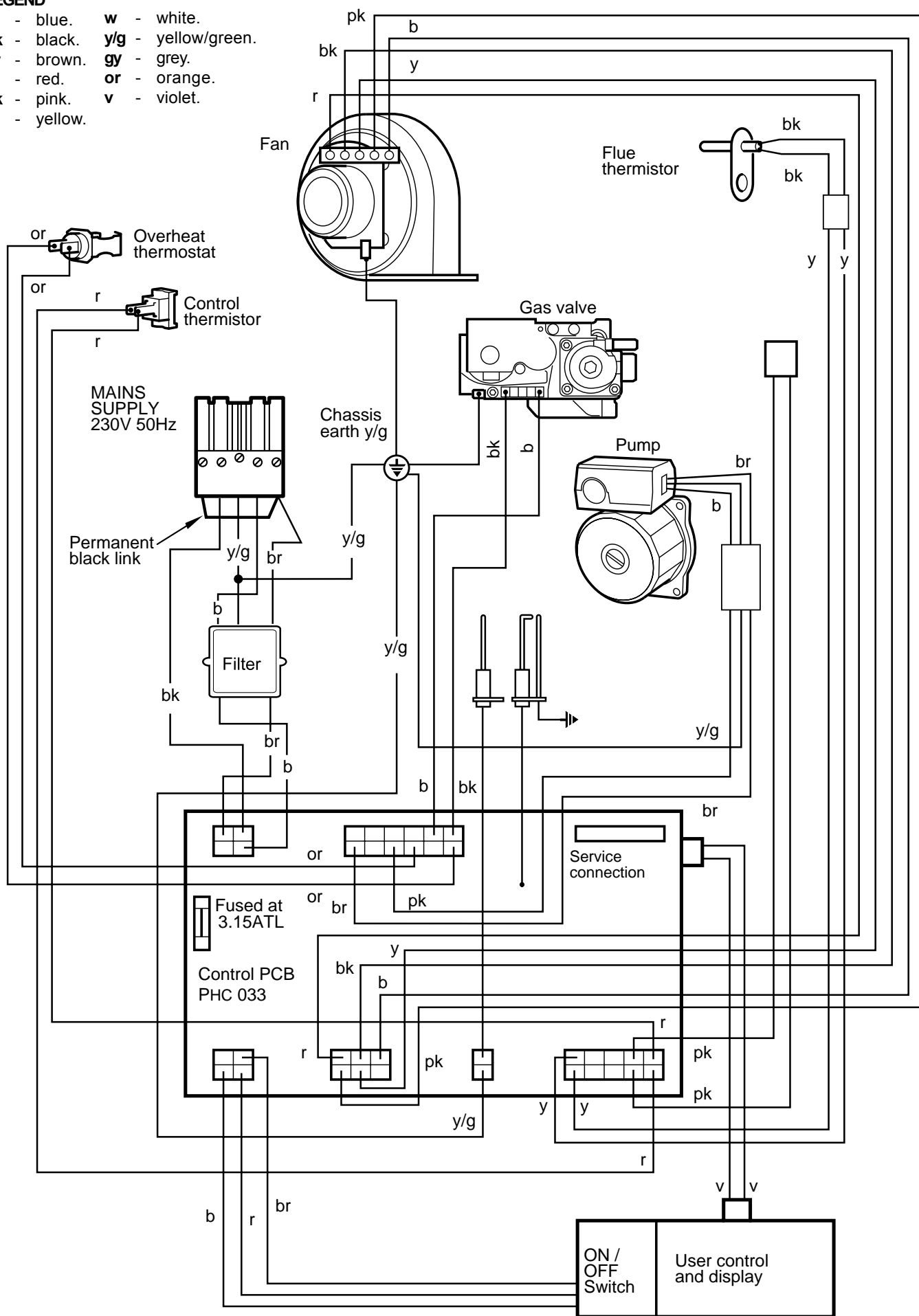
**Earths are not shown for clarity but must never be omitted.**



## 33 PICTORIAL WIRING DIAGRAM

### LEGEND

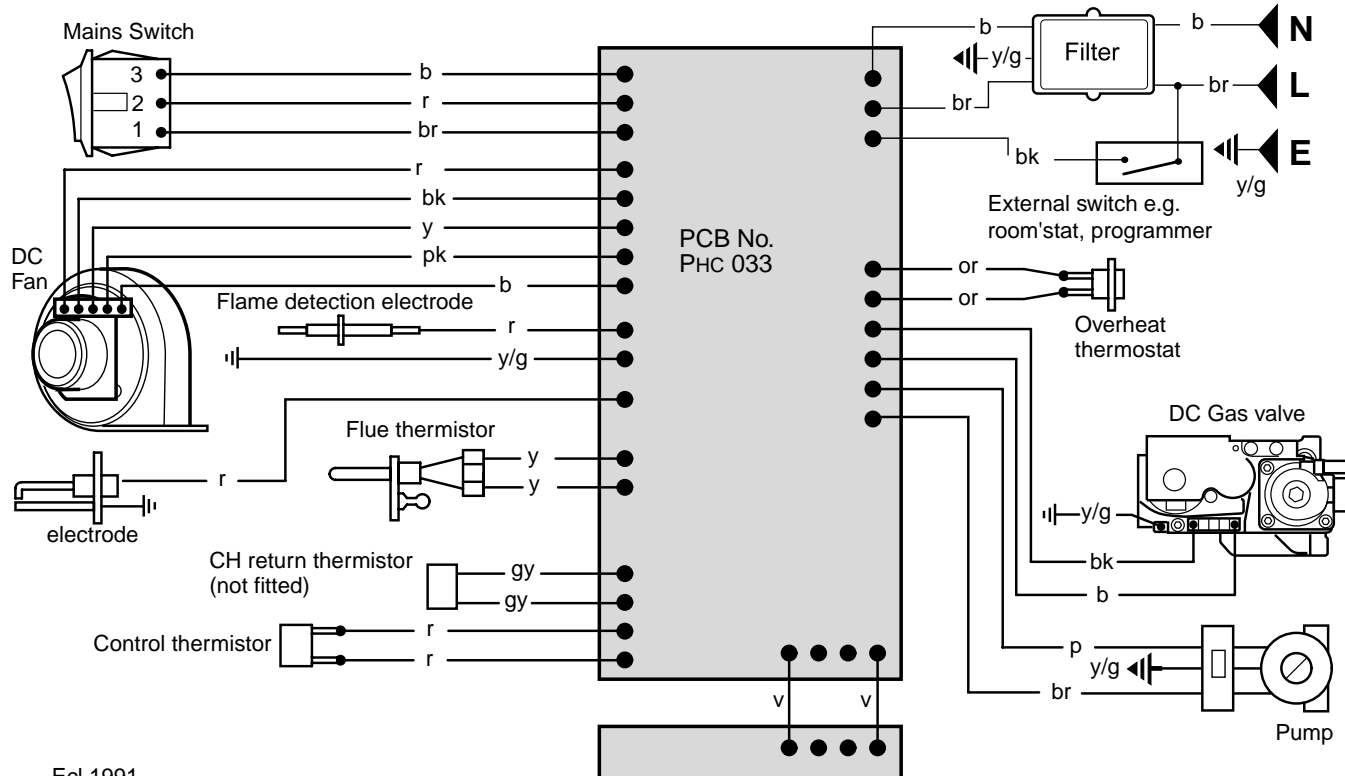
b	- blue.	w	- white.
bk	- black.	y/g	- yellow/green.
br	- brown.	gy	- grey.
r	- red.	or	- orange.
pk	- pink.	v	- violet.
y	- yellow.		



Ec1 1990



## 34 FUNCTIONAL FLOW WIRING DIAGRAM



### LEGEND

b - blue	y - yellow
bk - black	w - white
br - brown	y/g - yellow/green
r - red	gy - grey
pk - pink	or - orange

## 35 COMMISSIONING AND TESTING

### A. Electrical Installation

1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable test meter.

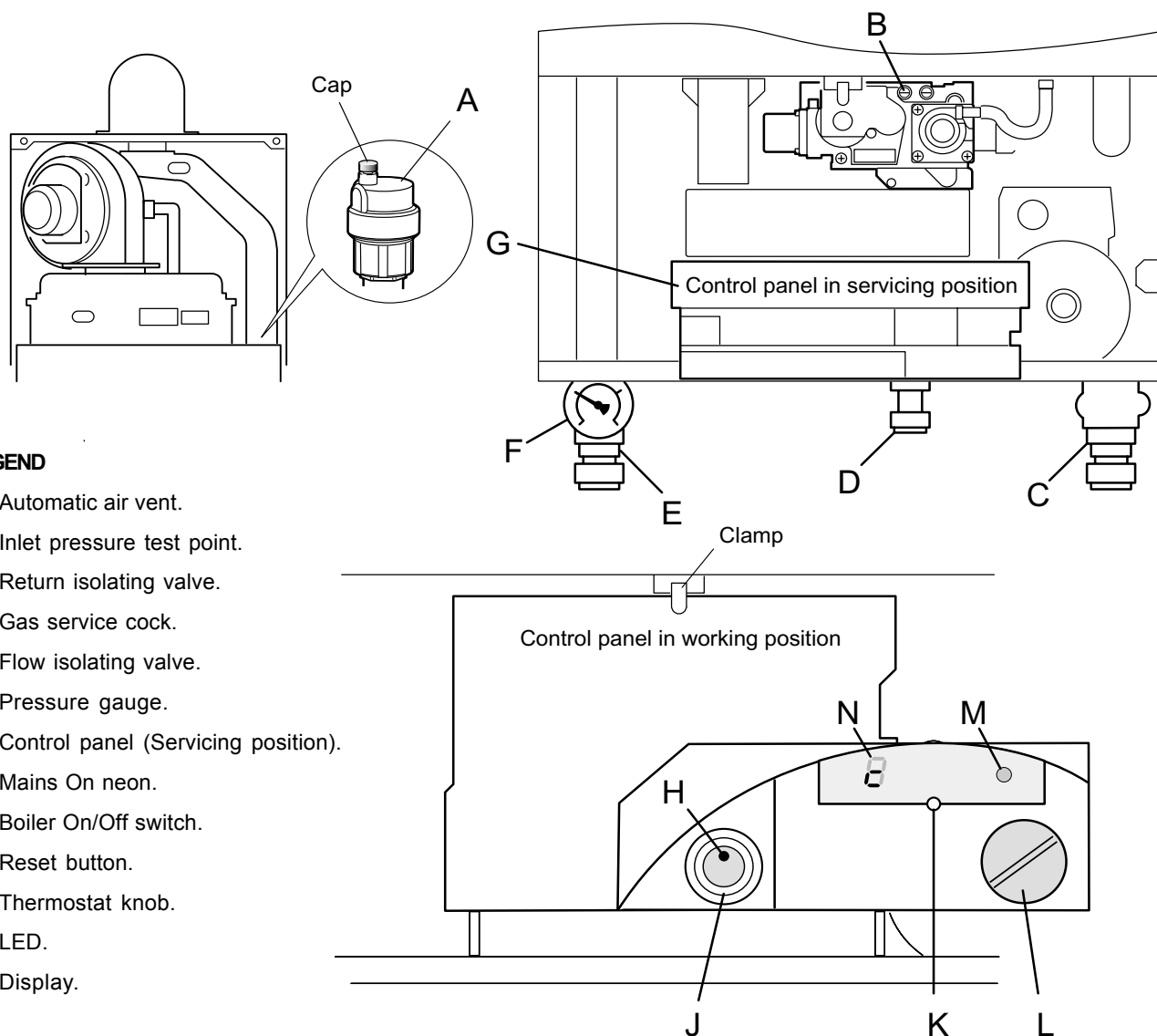
### B. Gas Installation

1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of BS. 6891.
2. Purge air from the gas installation by approved methods only.
3. Retighten the union and test for gas soundness.

**WARNING.** Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and **DO NOT SMOKE.**

### 36 INITIAL LIGHTING

Ecl 2075



#### LEGEND





- A. Automatic air vent.
- B. Inlet pressure test point.
- C. Return isolating valve.
- D. Gas service cock.
- E. Flow isolating valve.
- F. Pressure gauge.
- G. Control panel (Servicing position).
- H. Mains On neon.
- J. Boiler On/Off switch.
- K. Reset button.
- L. Thermostat knob.
- M. LED.
- N. Display.

1. Check that the system has been filled and that the boiler is not airlocked. Ensure the automatic air vent cap (A) is open.
2. Refit the boiler sealing panel - Refer to Frame 44.
3. Check that all the drain cocks are closed and that the isolating valves (C and E) are OPEN.
4. Check that the electrical supply is OFF.
5. Check that the boiler ON/OFF switch (J) is off.
6. Check that the gas service cock (D) is OPEN.
7. Slacken the screw in the inlet pressure test point (B) and connect a gas pressure gauge via a flexible tube.
8. Swing the control panel to the working position and secure with the clamp.
9. Reconnect the spark lead to the control box.
10. Connect the low voltage electrical lead from the user control to the control box (refer to Frame 45) and screw the control into position.
11. Switch the electricity supply ON and check all external controls are calling for heat.

#### The display

The user control has one LED and one display to inform the user about the status. The display will show the status of the boiler. The LED will show the status of the flame. If no flame is detected the LED is blinking. When the flame is detected the LED will be lit permanently.

Below is a list with function of the display in normal operation.

-  Standby, no demand for heat present.
-  Boiler is active for central heating.
-  Boiler is in lockout blocking for a specific error, display will be blinking alternating with a number or letter to show what kind of error is detected.
-  Boiler in lockout for a specific error, display will be blinking alternating with a number or letter to show what kind of error is detected.

## 37 INITIAL LIGHTING - continued

12. Set the boiler thermostat knob to maximum and set the boiler ON - OFF switch to ON. The RED mains ON neon (H) should now be illuminated. The boiler control should now go through its ignition sequence until the burner is established.

13. If the boiler does not light after 3 attempts the fault code  $\epsilon$  will be displayed, Press the reset button (K) and the boiler will repeat its ignition sequence.

When the burner is established the GREEN 'Burner On' LED (M) will be illuminated, the display (N) will show status  $\epsilon$ .

14. Ensure that with the boiler operating the dynamic gas pressure is 20 mbar.

**Note.** The boiler is designed to vary the heat input depending on the system load. The gas pressure and fan signal CANNOT be altered.

15. Set the boiler ON/OFF switch (J) to OFF.

16. Swing the control panel into the servicing position. Refer to Frame 45.

17. Remove the pressure gauge and tube. Tighten the sealing screw in the pressure test point. Ensure a gas tight seal is made.

18. Test for gas soundness around ALL boiler gas components, using leak detection fluid.

19. Swing the control panel back into its working position and secure. Reconnect the spark lead.

20. Refit the user control.

21. Refit the boiler front and bottom panels.

22. Switch the boiler on again.

## 38 GENERAL CHECKS

**Make the following checks for correct operation:**

1. Ensure that the external controls are calling for heat.

The display should read:

$\epsilon$  

2. **Gas Rate**

Check the boiler gas rate when the boiler is at full output.

The gas rate will normally be between:

51.9 to 57.4 litres per minute

1.8 to 2.0 cu/ft per minute

checked at the gas meter, with no other appliance in use.

**Note.**

*Long flue will reduce air flow, reducing the gas rate, slightly. If these rates are not obtainable consult the fault finding section.*

3. Set the external controls to OFF. The burner should go off and the pump continue to run for a few seconds.

The display should read:

$\epsilon$  returning to

 when the pump stops.

4. Check the correct operation of the programmer (if fitted) and all other system controls. Operate each control separately and check that the main burner corresponds.

### WATER CIRCULATION SYSTEM

1. With the system COLD, check that the initial pressure is correct to the system design requirements.

For pre-pressurised systems, this should be 1.0 bar.

2. With the system HOT, examine all water connections for soundness. The system pressure will increase with temperature rise but should not exceed 2.5 bar.

3. With the system still hot, turn off the gas, water and electricity supplies to the boiler and drain down to complete the flushing process.

**Note.** A flushing solution should be used during the flushing procedure. Flushing solutions, Fernox Superfloc, Sentinel X300 (new systems) or X400 (existing systems). Refer to Frame 6.

4. Refill and vent the system, add inhibitor (see Frame 6), clear all air locks and again check for water soundness. Affix the water treatment warning label, supplied in the hardware pack, in a prominent position on the system, to prevent the use of incorrect water treatment additives.

5. Reset the system initial pressure to the design requirement.

6. Balance the system. Refer to Frame 5.

7. Check the condensate drain for leaks and check that it is discharging correctly.

8. Finally, set the controls to the User's requirements.

**Note.**

*The pump will operate briefly, as a self-check once every 24 hours regardless of system demand.*

### WATER TEMPERATURE

The design water output temperature is as follows:

**Central Heating** 82 °C maximum

Water temperature can be selected via the thermostat (L).

Knob Setting	Flow Temp °C (°F)
Max	82 (180)
Min	42 (110)

### 39 HANDING OVER

**After completing the installation and commissioning of the system the installer should hand over to the householder by the following actions:**

1. Hand the User Instructions to the householder and explain his/her responsibilities under the relevant national regulations.
2. Explain and demonstrate the lighting and shutting down procedures.
3. The operation of the boiler and the use and adjustment of all system controls should be fully explained to the householder, to ensure the greatest possible fuel economy consistent with the household requirements of heating.  
  
Advise the User of the precautions necessary to prevent damage to the system and to the building in the event of the system remaining inoperative during frosty conditions.
4. Explain the function and the use of the boiler heating controls.
5. Explain the function of the boiler fault mode.  
  
Emphasise that if a fault is indicated, the boiler should be turned off and a registered local heating installer consulted.

6. Explain and demonstrate the function of time and temperature controls, radiator valves etc., for the economic use of the system.

7. If a programmer is fitted then draw attention to the Users Instructions and hand them to the householder.

#### 8. Loss of system water pressure

Explain that the dial on the control panel indicates the central heating system pressure and that if the normal COLD pressure of the system is seen to decrease over a period of time then a water leak is indicated. In this event a registered local heating installer should be consulted.

#### **WARNING.**

*Do not fire the boiler if the pressure has reduced to zero from the original setting.*

9. **After installation, commissioning and customer hand-over instructions please complete the *benchmark* appliance log book and leave this with the customer.**

#### 10. IMPORTANT

A comprehensive service should be carried out ANNUALLY.

Stress the importance of regular servicing by a Corgi registered installer.

As the installer you may wish to undertake the service contract yourself or alternatively offer to the customer the benefits of the **Ideal Care Scheme** details of which are outlined in the householder pack supplied with this boiler.

## 40 SERVICING SCHEDULE

To ensure the continued safe and efficient operation of the appliance it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage but should be carried out at least annually.

*It is the law that any service work must be carried out by a registered CORGI installer.*

**Note.** Some aluminium oxide build-up on the heat engine fins is usual with this type of condensing boiler. Though removal is recommended annually, the heat engine **MUST** be inspected and cleaned after a **MAXIMUM** of 2 years operation.

1. Remove the boiler bottom panel - refer to Frame 43.
2. Light the boiler and carry out a pre-service check, noting any operational faults.
3. Relight the boiler and operate for at least 10 minutes. Check the gas consumption.
4. Connect a suitable gas analyser to the sampling point on the top of the boiler (refer to Frame 41) or into the flue terminal if access is possible (optional test). For correct boiler operation, the CO/CO<sub>2</sub> content of the flue gas should not be greater than 0.004 ratio. If this is the case, and the gas input is at least 90% of the nominal, then no further action need be taken. If not, proceed to Step 5 but see note above.
5. Clean the main burner.
6. Clean the heat engine.

**Note.** This must be done with the heat engine and deposits in a dry condition - refer to Frame 49.

7. Check the main injector for blockage or damage.
8. Wherever possible remove and clean the condensate trap (refer to Frame 48) and check the drain for blockage.
9. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.

The servicing procedures are covered more fully in Frames 41 to 50 and **MUST** be carried out in sequence.

**Note.** In order to carry out either servicing or replacement of components the boiler front panel and sealing panel must be removed - refer to Frames 42 and 44.

**WARNING.** Always turn OFF the gas supply at the gas service cock, and switch OFF and disconnect the electricity supply to the appliance before servicing.

### IMPORTANT.

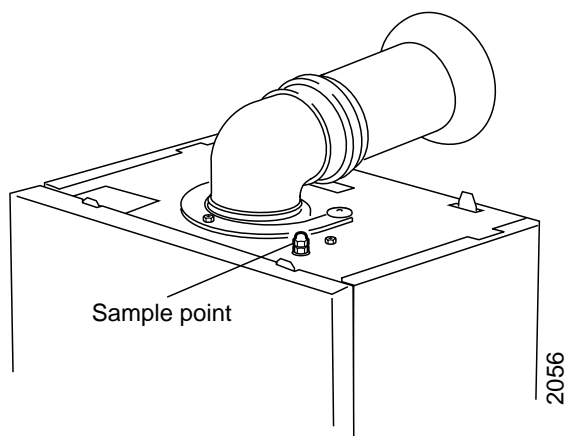
10. After completing the servicing or exchange of components always test for gas soundness and carry out functional checks as in 3 and 4 above.
11. When work is complete the sealing panel **MUST** be correctly refitted, ensuring that a good seal is made.

**Do NOT OPERATE the boiler if the sealing panel is not fitted**

12. If, for any reason, the condensate trap has been removed. Ensure that the trap is re-filled with water before re-assembly.

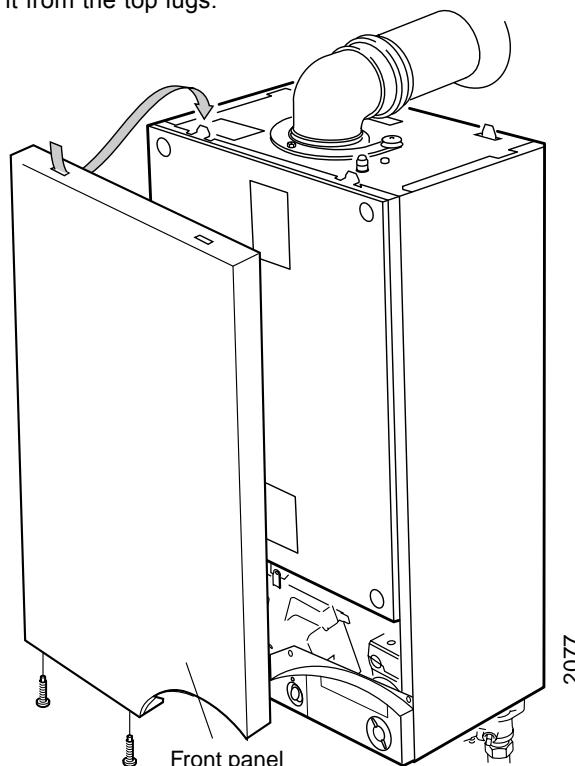
13. Complete the service section in the Benchmark log book.

## 41 SAMPLING POINT



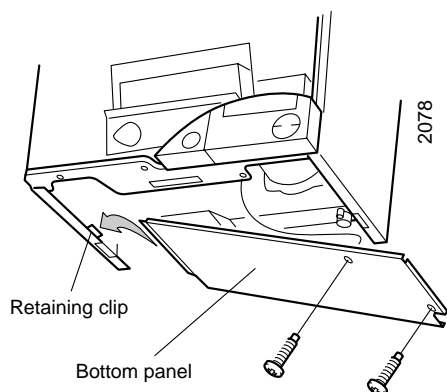
## 42 BOILER FRONT PANEL REMOVAL

1. Remove the 2 securing screws.
2. Pull the panel forward at the bottom and lift to disengage it from the top lugs.



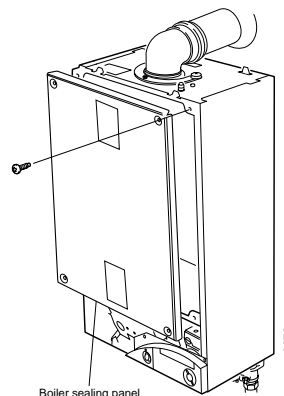
## 43 BOILER BOTTOM PANEL REMOVAL

1. Remove the 2 securing screws.
2. Pull the right hand side of the panel down, slide it to the right and withdraw.



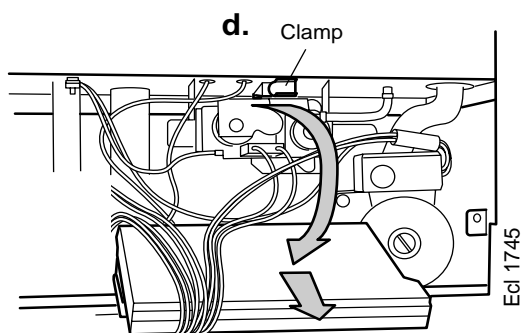
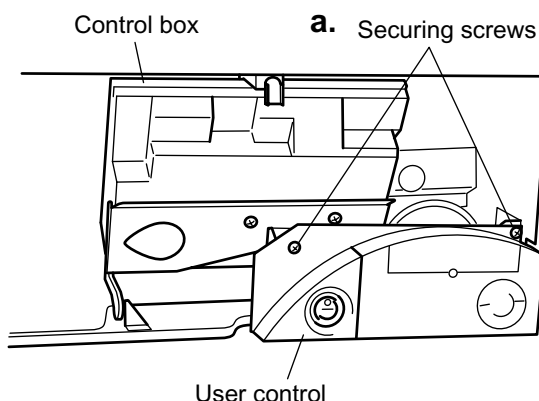
## 44 BOILER SEALING PANEL REMOVAL

1. Turn off the gas supply at the gas service cock and disconnect the electricity supply.
2. Remove the 4 securing screws and lift off the panel.

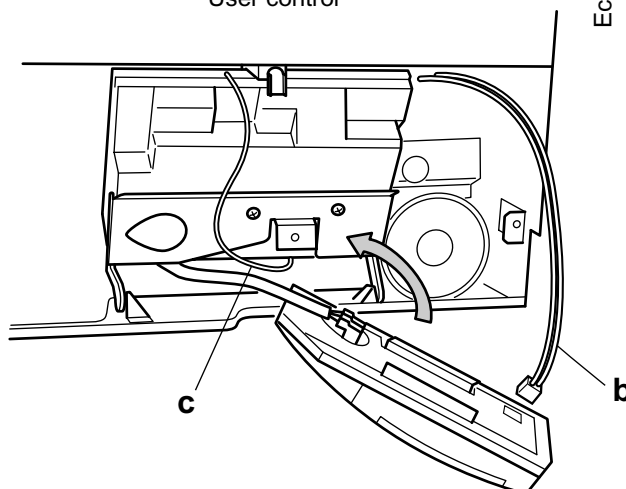


## 45 THE CONTROL PANEL IN THE SERVICING POSITION

1. Swing the control panel down into the servicing position
  - a. Remove the 2 securing screws and withdraw the user control.
  - b. Unplug the low voltage electrical lead from the back of the user control.
  - c. Unplug the spark lead from the bottom of the control box.
  - d. Turn the clamp, swing the control box down and pull slightly forward.

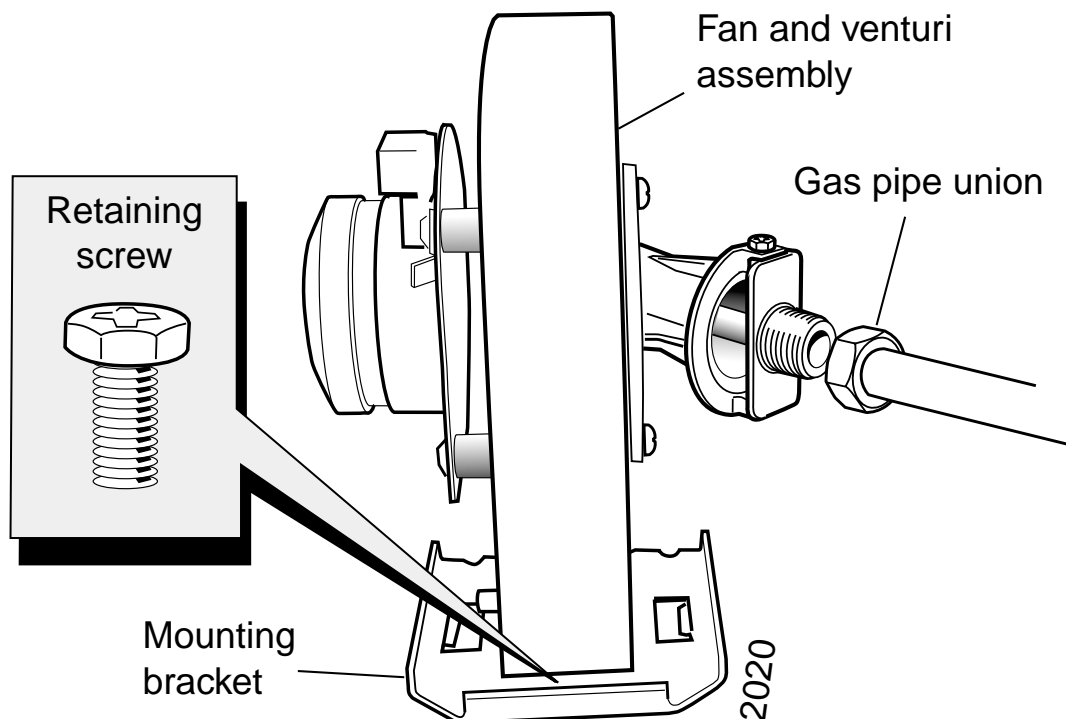


Swing control panel down and forward into service position



## 46 FAN, GAS INJECTOR AND VENTURI ASSEMBLY REMOVAL AND CLEANING

1. Disconnect the electrical leads from the fan.
2. Undo the gas pipe union connection to the injector housing.
3. Undo the single retaining screw on the fan mounting bracket.
4. Remove the mounting bracket.
5. Lift off fan and venturi assembly.



## 47 BURNER REMOVAL AND CLEANING

1. Undo and remove the 6 screws securing the burner. (the 3 screws at the rear are extended to ease access.)
2. Lift off the burner from the combustion chamber.

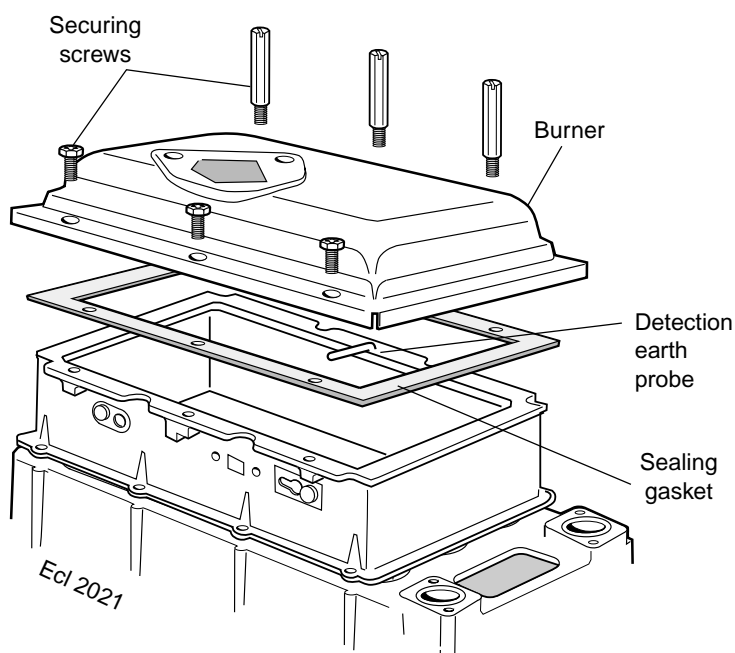
### WARNING

The burner head is a ceramic plaque construction. Care must be taken to ensure that the burner is not placed down upon its face as this may cause damage to the ceramic.

3. Brush off any deposits that may be on the ceramic with a SOFT brush.
4. Inspect the sealing gasket around the burner for any signs of damage. Replace if necessary.

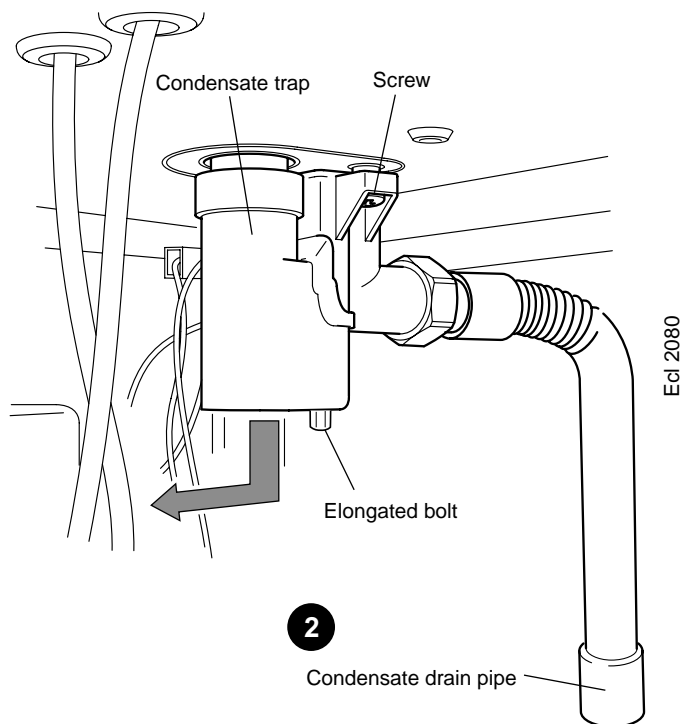
### Note.

Take care not to disturb the detection earth probe at the rear of the combustion chamber.



## 48 CLEANING THE CONDENSATE 'S' TRAP

1. Swing the control panel down into the servicing position - Refer to Frame 45.
2. Disconnect the condensate drain pipe.
3. Remove the securing screw and elongated bolt, pull the trap down and forwards to remove.
4. Flush out any deposits with clean water.
5. When re-assembling ensure that the trap is full of water.

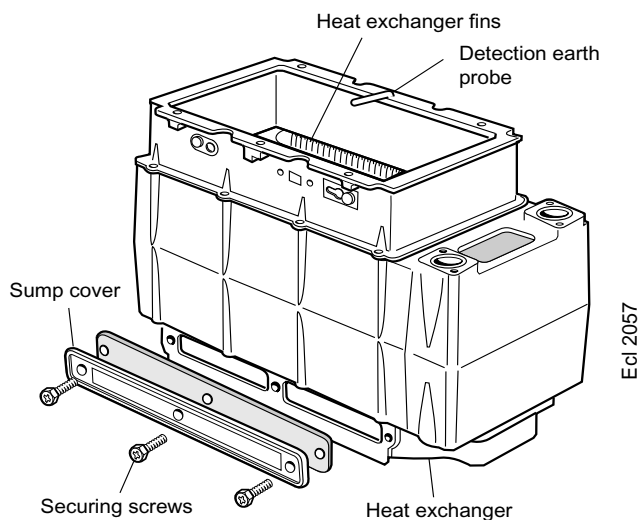


## 49 CLEANING THE HEAT EXCHANGER

1. Remove ignition and sensor electrodes (Frames 58 & 59).
2. Remove the 3 screws securing the sump cover and remove.
3. Using a suitable tool as supplied in the standard British Gas Flue brush kit, clean between the heat exchanger fins from the top of the heat exchanger.
4. Access to the base of the heat exchanger is now possible. Brush clean any deposits from the base of the heat exchanger and remove any loose deposits from the sump.
5. Inspect the spark and detection electrodes. Ensure that they are clean and in good condition - replace if necessary.
6. Check that the spark and detection gaps are correct.
7. Check the spark and detection leads are in good condition and renew as necessary.

### Note.

Take care not to disturb the detection earth probe at the rear of the combustion chamber.



## 50 RE-ASSEMBLY

Re-assemble the boiler in the following order:

1. Refit the condensate trap.
2. Refit the sump cover.
3. Refit the electrodes. (Check dimensions, see Frames 58 & 59).
4. Refit the burner, renewing any damaged or deteriorating sealing gaskets.
5. Refit the fan / venturi assembly.
6. Reconnect the fan electrical lead.
7. Refit the boiler sealing panel.

### IMPORTANT.

Ensure that the boiler sealing panel is correctly fitted and that a good seal is made.

8. Swing the control panel back into its working position and secure.
9. Refit the display unit.
10. Refit the boiler casing.
11. Turn on the gas supply at the gas service cock.
12. Reconnect the electrical supply.



## 51 REPLACEMENT OF COMPONENTS

### GENERAL

**When replacing any component :**

1. Isolate the electricity supply.
2. Turn off the gas supply.
3. Remove the boiler front panel, refer to Frame 42.

After replacing ANY component check operation of the boiler including gas soundness, gas rate and combustion test.

### IMPORTANT.

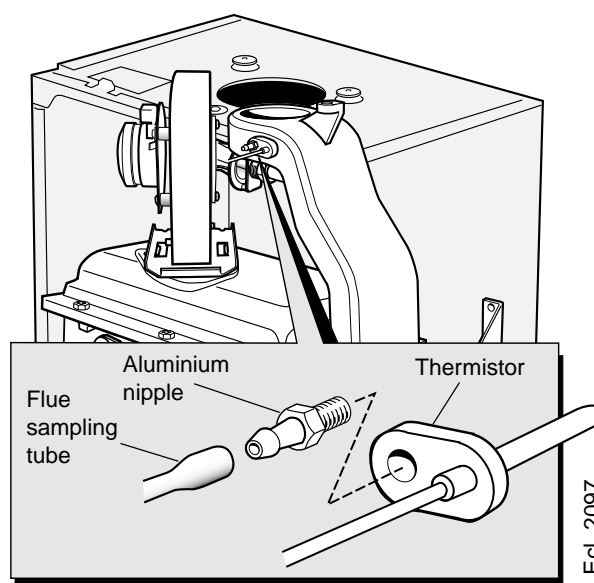
When work is complete, if the sealing panel has been removed, it must be correctly refitted - ensuring that a good seal is made.

**Note.** In order to replace components in Frames 66 to 72 it is necessary to drain the boiler. Refer to Frame 69.

**THE BOILER MUST NOT BE OPERATED IF THE SEALING PANEL IS NOT FITTED**

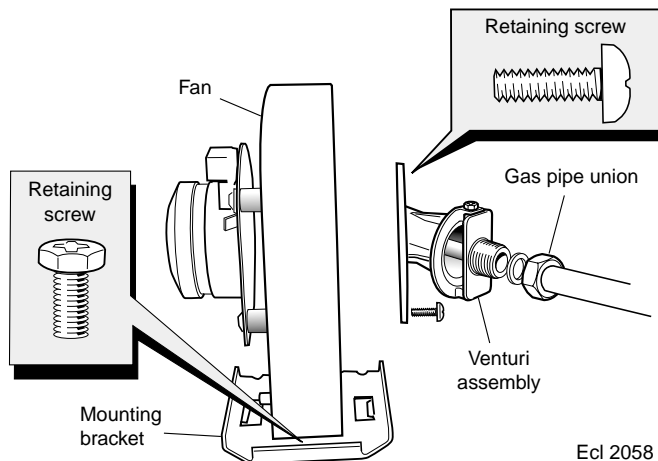
## 52 FLUE THERMISTOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel. Refer to Frame 44.
3. Unplug the electrical lead.
4. Disconnect the flue sampling tube from the thermistor housing.
5. Remove the aluminium nipple securing the thermistor to the flue manifold.
6. Withdraw the thermistor.
7. Fit the new flue thermistor, using the gasket supplied.
8. Re-assemble in reverse order.
9. Check the operation of the boiler. Refer to Frame 51.



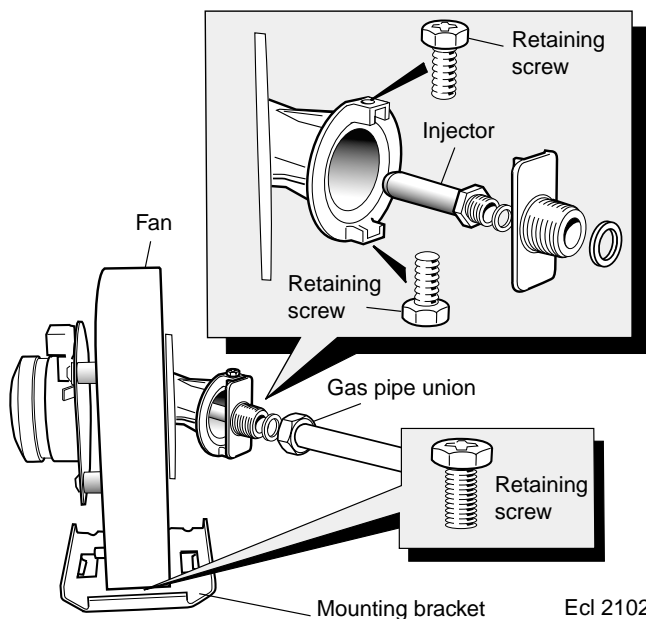
## 53 FAN REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Disconnect the electrical leads from the fan.
4. Undo the gas pipe union connection to the injector housing.
5. Remove the retaining screw and pull off the mounting bracket.
6. Remove the fan and venturi assembly.
7. Remove the 3 retaining screws and remove the venturi assembly, *noting the orientation of the venturi in relation to the fan body.*
8. Transfer the venturi assembly to the new fan, replacing the gasket if evidence of damage or deterioration is visible.
9. Fit the new fan / venturi assembly.
10. Re-assemble the boiler in reverse order taking care not to overtighten the single retaining screw on the fan mounting bracket.
11. Check the operation of the boiler. Refer to Frame 51.



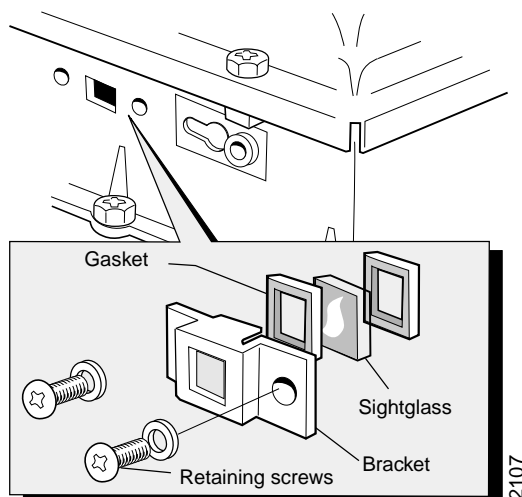
## 54 BURNER INJECTOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Disconnect the electrical leads from the fan.
4. Undo the gas pipe union connection to the injector housing.
5. Remove the retaining screw and pull off the mounting bracket.
6. Remove the fan and venturi assembly.
7. Remove the 2 injector housing retaining screws.
8. Withdraw the injector housing.
9. Fit the new injector housing complete with injector.
10. Re-assemble in reverse order, ensuring that the new gas seal supplied is located correctly in the injector housing.
11. Check operation of the boiler. Refer to Frame 51.



## 55 SIGHT GLASS REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Unscrew the 2 sight glass retaining screws.
4. Remove the sight glass, gasket and bracket.
5. Fit new sight glass, using the new bracket and gasket supplied.
6. Re-assemble in reverse order.
7. Check operation of the boiler. Refer to Frame 51.

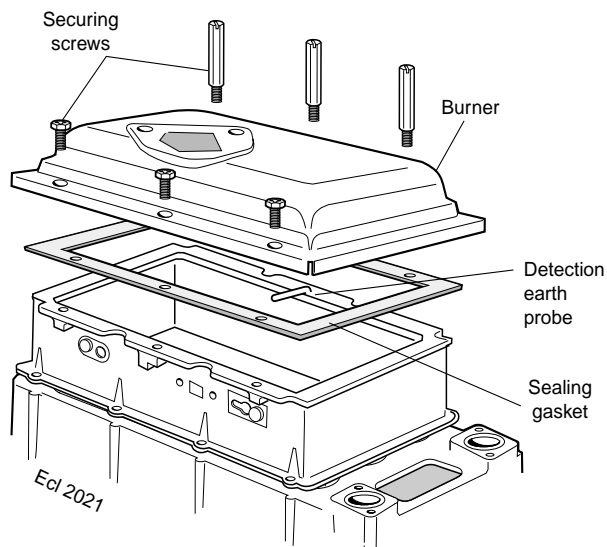


## 56 BURNER REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Remove the fan - Refer to Frame 53.
4. Remove the 6 securing screws and lift the burner off the combustion chamber.
5. Fit the new burner, replacing any damaged or deteriorating sealing gasket.
6. Re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 51.

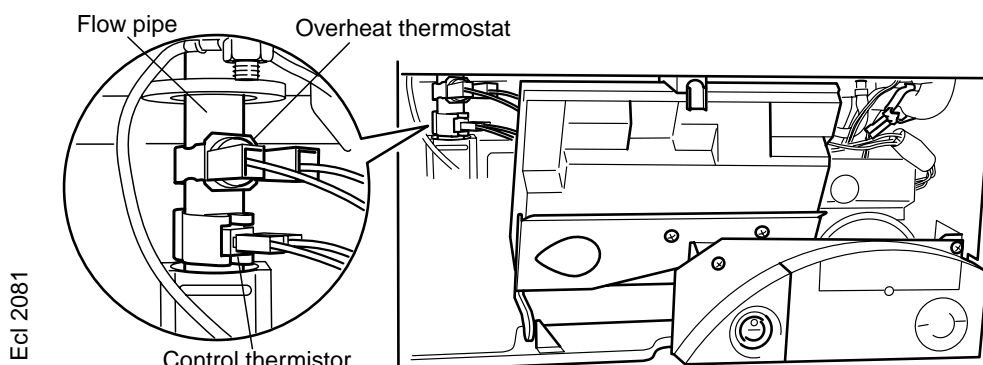
### Note.

Take care not to disturb the detection earth probe at the rear of the combustion chamber.



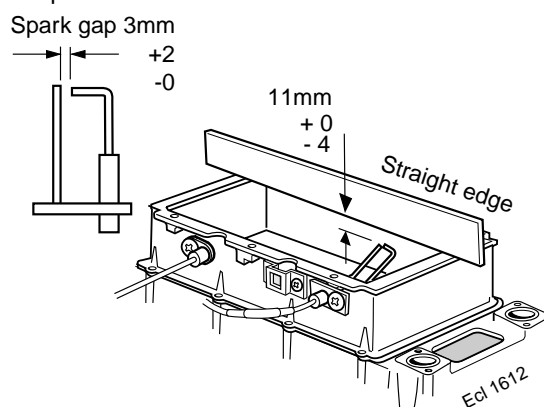
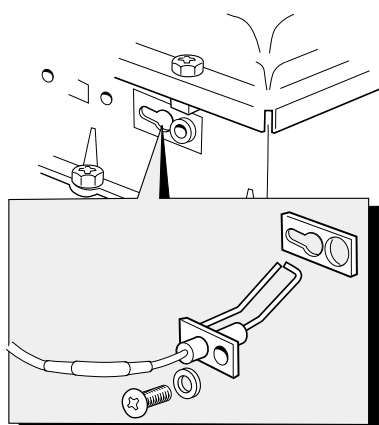
## 57 CONTROL THERMISTOR AND OVERHEAT THERMOSTAT REPLACEMENT

1. Refer to Frame 51.
2. Unclip the thermistor / thermostat from the flow pipe and withdraw it from the controls compartment.
3. Disconnect the electrical leads from the thermistor / thermostat.
4. Re-connect the electrical leads and re-assemble in reverse order ensuring that the spring clip is securely on the pipe.
5. Check the operation of the boiler. Refer to Frame 51.



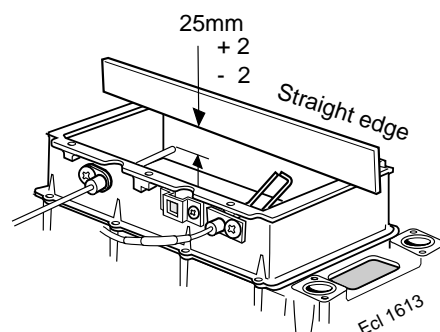
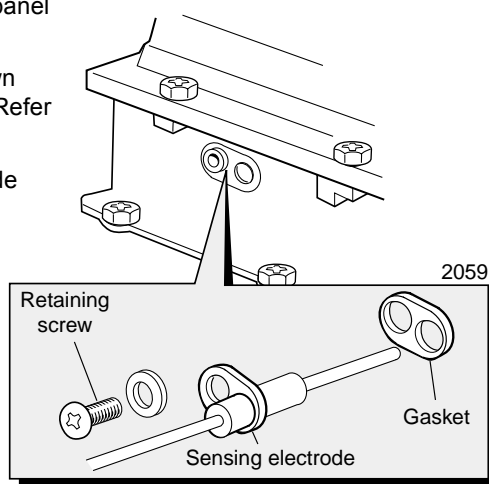
## 58 IGNITION ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Swing the control panel down into the servicing position - Refer to Frame 45.
4. Unplug the spark electrode lead from the control box.
5. Undo the single retaining screw holding the spark electrode to the combustion chamber.
6. Remove the electrode, taking care not to dislodge the grommet from the casing.
7. Fit the new ignition electrode, using the new gasket supplied, check dimensions as shown.
8. Re-assemble in reverse order.
9. Check the operation of the boiler. Refer to Frame 51.



## 59 FLAME SENSING ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Swing the control panel down into the servicing position - Refer to Frame 45.
4. Unplug the sensing electrode lead from the control box.
5. Undo the single retaining screw holding the sensing electrode to the combustion chamber.
6. Unbolt the sensing electrode earth lead from the earth point beneath the boiler.
7. Remove the electrode, complete with grommet.
8. Fit the new sensing electrode, using the new gasket supplied, check dimensions as shown.
9. Re-assemble in reverse order.
10. Check the operation of the boiler. Refer to Frame 51.



## 60 COMBUSTION CHAMBER INSULATION REPLACEMENT

The insulation boards used in the combustion chamber of this product are made of high temperature glass fibres with a binder of organic and inorganic materials.

Caradon Ideal Limited recommend that, for your own comfort and safety and to comply with good working practice, the procedure described below is followed:

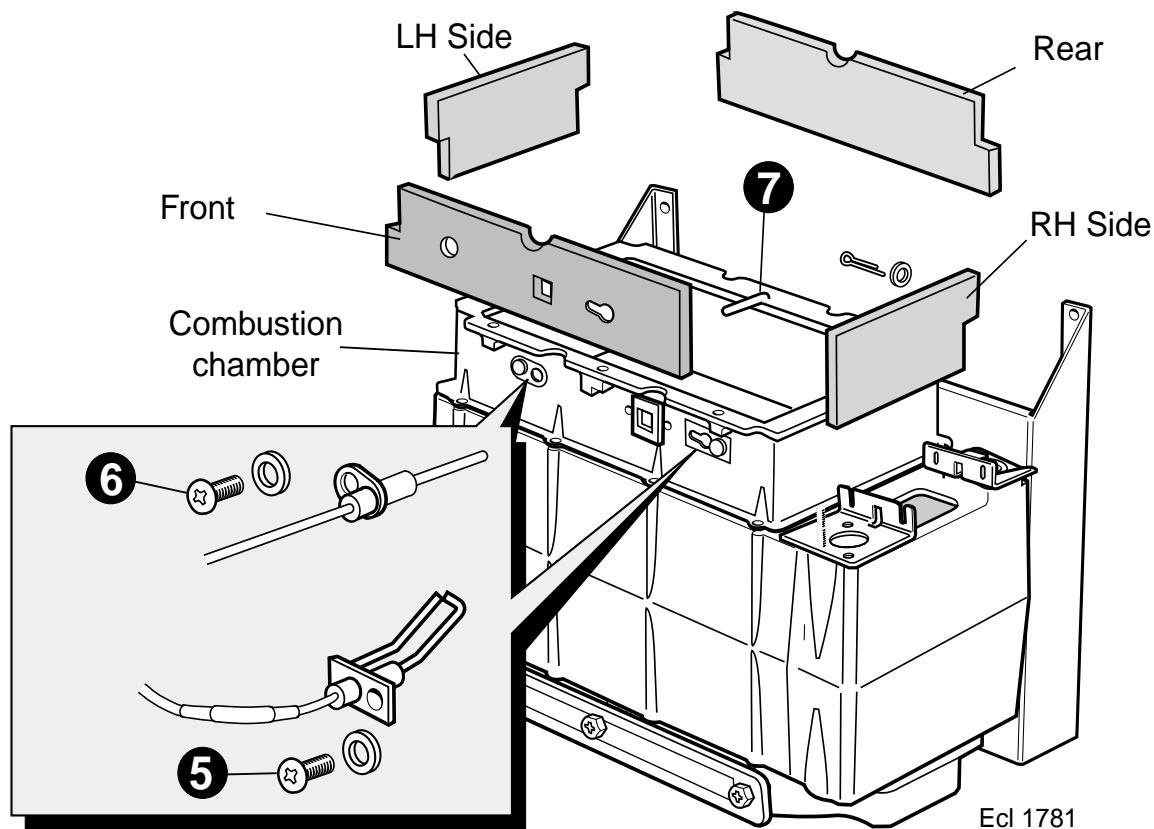
1. Refer to Frame 51.
2. Remove the boiler sealing panel - Refer to Frame 44.
3. Remove the fan / venturi assembly - Refer to Frame 46.
4. Remove the burner - Refer to Frame 47.
5. Undo the retaining screw from the ignition electrode and withdraw it from the combustion chamber
6. Undo the retaining screw from the detection electrode and withdraw it from the combustion chamber.

**Prior to removal of the board the following protective equipment should be worn:**

- Face mask supplied with the spare part
- Gloves supplied with the spare part

7. Remove the detection earth probe.
8. Damp down the combustion chamber area containing the insulation boards.

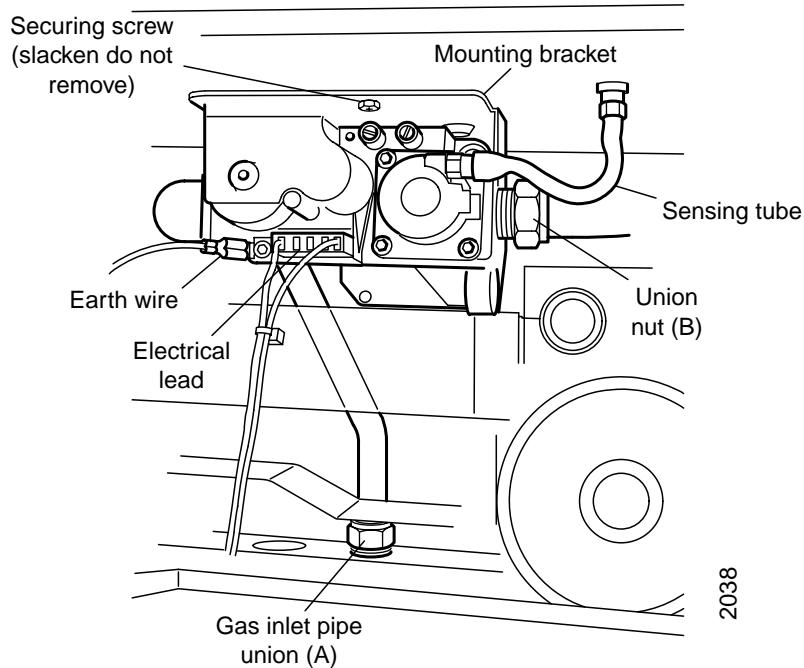
9. Remove the split pin and washer from the RHS of the combustion chamber.
10. Remove the insulation boards. The replacement boards are supplied in a plastic bag. This bag should be retained and the discarded boards should now be placed into it.
11. Sweep any dampened particles and place in the plastic bag.
12. Fit new insulation boards.  
**Note.** The boards are designed to be interlocking and should be fitted as shown.
13. Fit the new split pin and washer in RHS.
14. Remove the gloves and face mask and place them in the plastic bag.
15. Wash your hands and any areas of skin which may have come into contact with any of the particles from the insulation board.  
**Note.** Seal the plastic bag and dispose of it and its contents into a commercial tip.
16. Reassemble in reverse order.
17. Check operation of the boiler. Refer to Frame 51.



Fit in the following order: Front, LHS, Rear, RHS

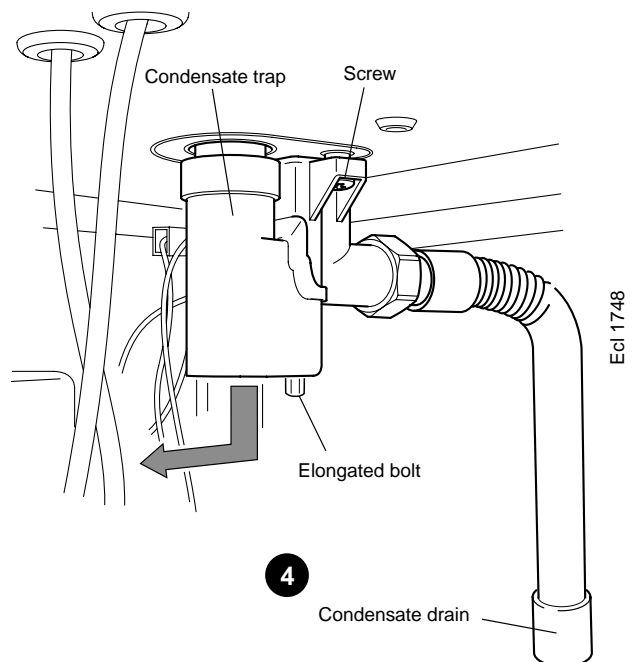
## 61 GAS CONTROL VALVE REPLACEMENT

1. Refer to Frame 51.
2. Remove the casing bottom panel. Refer to Frame 43.
3. Swing the control panel down into the servicing position - Refer to Frame 45.
4. Unplug the electrical lead from the gas control valve and disconnect the earth wire.
5. Remove the sensing tube from the gas control valve.
6. Undo the gas inlet pipe union (A) at the gas service cock.
7. Undo the union nut (B) on the RHS of the gas control valve.
8. Slacken the screw securing the valve mounting bracket and withdraw the valve, complete with bracket and inlet pipe.
9. Fit the new valve and re-assemble in reverse order.
10. Check operation of the boiler. Refer to Frame 51.



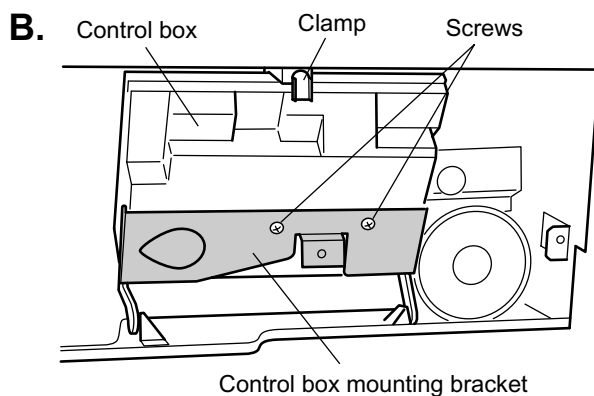
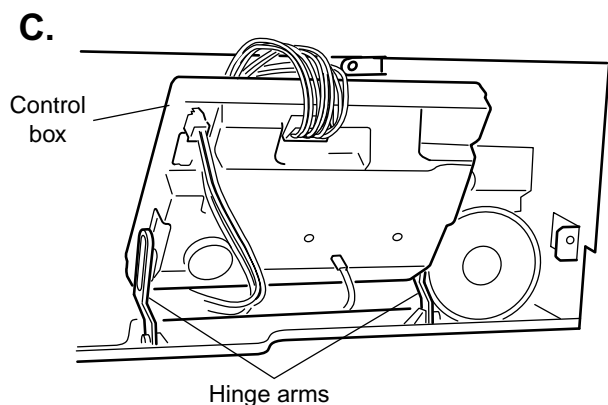
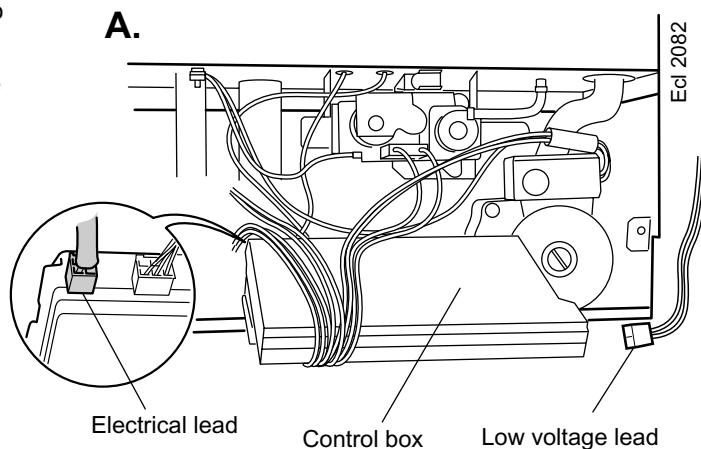
## 62 CONDENSATE 'S' TRAP REPLACEMENT

1. Refer to Frame 51.
2. Remove the casing bottom panel - Refer to Frame 43.
3. Swing the control panel down into the servicing position - Refer to Frame 45.
4. Disconnect the condensate drain pipe.
5. Remove the securing screw and elongated bolt, pull the trap down and forwards to remove.
6. Transfer the drain pipe to the new trap and re-assemble in reverse order.
7. When re-assembling ensure that the trap is full of water.
8. Check operation of the boiler. Refer to Frame 51.



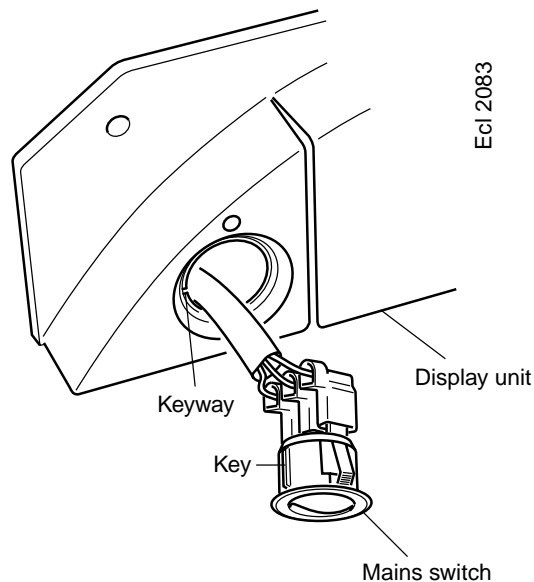
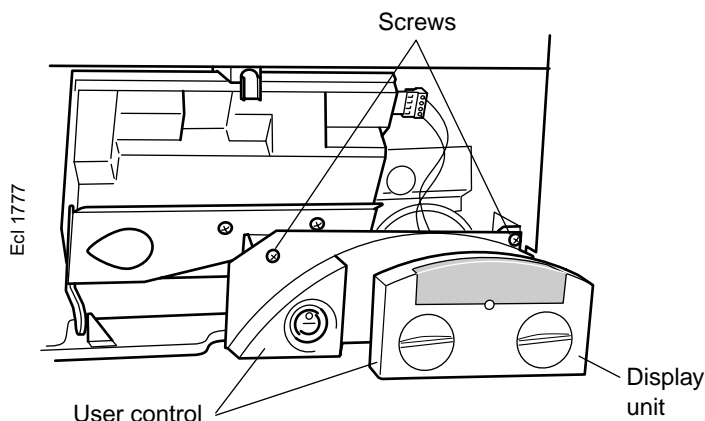
## 63 CONTROL BOX REPLACEMENT

1. Refer to Frame 51.
2. Swing the control panel down into the servicing position. Refer to Frame 45.
3. Unplug the user control electrical lead and low voltage lead from the control box and remove the control. Refer to diagram A.
4. Return the control box to the working position and secure with the clamp. Remove the mounting bracket securing screws to remove the bracket. Refer to diagram B.
5. Release the clamp and carefully remove the control box from the hinge arms. Refer to diagram C.
6. Unplug all the electrical wiring from the control box and remove.
7. Re-assemble in reverse order, ensuring that the control box is located correctly in the housing before reconnecting the electrical wiring.
8. Check operation of the boiler. Refer to Frame 51.



## 64 MAINS SWITCH REPLACEMENT

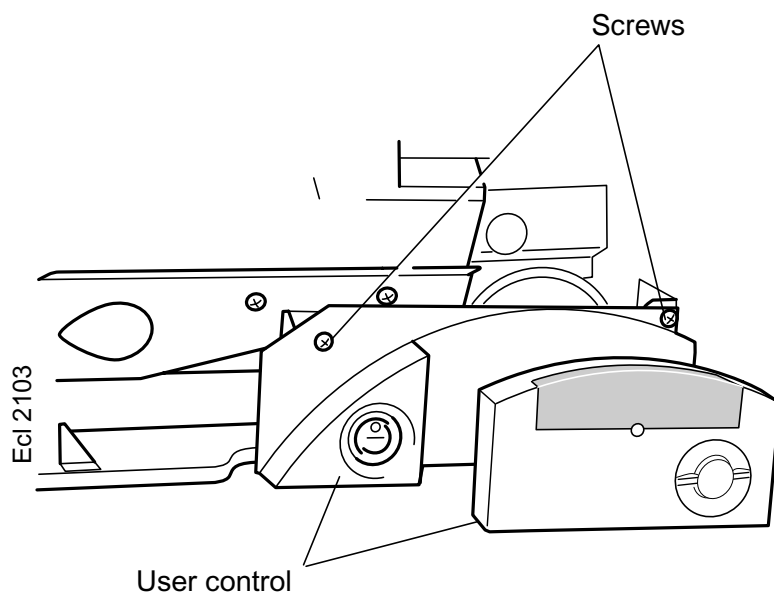
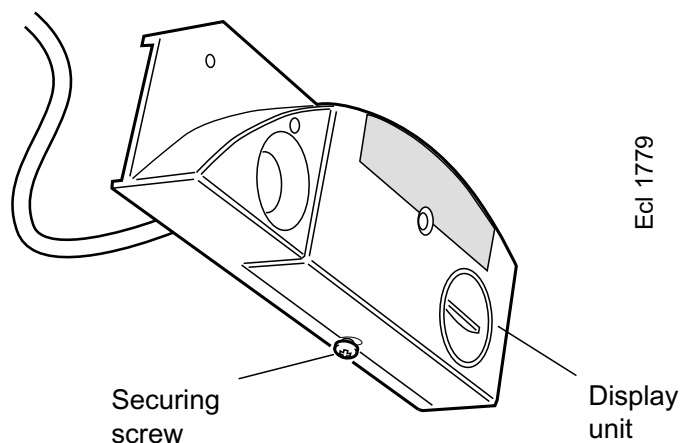
1. Refer to Frame 51.
2. Remove the 2 securing screws and allow the user control to lower.
3. Push out the mains switch from the rear, as shown.
4. Fit the new switch, ensuring that the electrical leads are replaced on the correct terminals (refer to Frame 34) and the key on the switch is correctly aligned with the keyway in the plastic moulding.
5. Re-assemble in reverse order.
6. Check operation of the boiler. Refer to Frame 51.



## 65 USER CONTROL REPLACEMENT

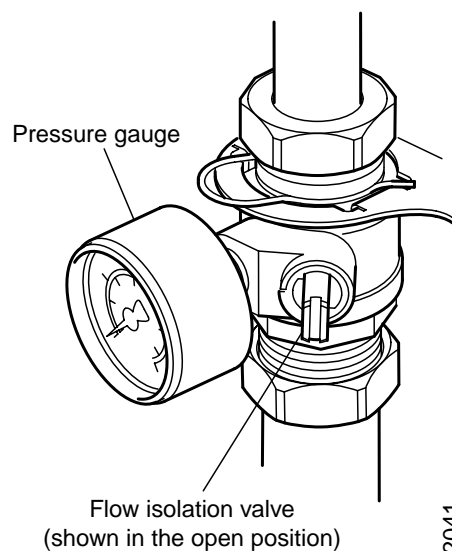
**Note.** Only the display unit is replaced.

1. Refer to Frame 51.
2. Loosen the securing screw on the underside of the user control.
3. Pull the display unit forward to remove.
4. Push the new display unit into position.
5. Re-assemble in reverse order.
6. Check operation of the boiler. Refer to Frame 51.



## 66 PRESSURE GAUGE REPLACEMENT

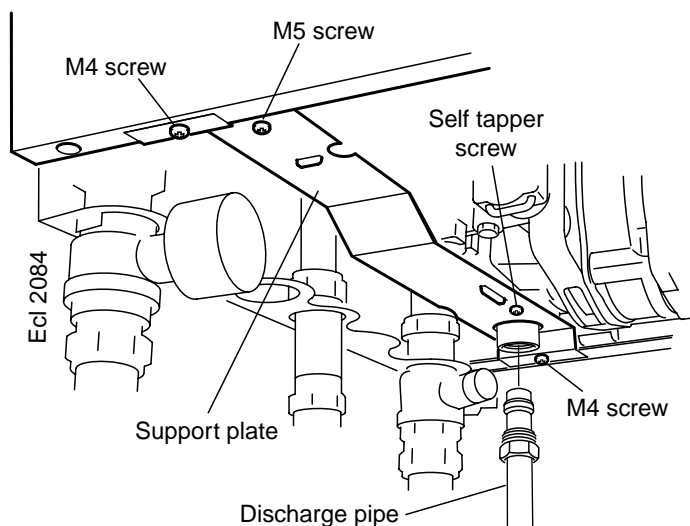
1. Refer to Frame 51.
2. Drain the boiler. Refer to Frame 69.
3. Unscrew the pressure gauge and discard.
4. Fit the new pressure gauge using a suitable jointing compound.
5. Refill the boiler. Refer to Frame 29.
6. Check operation of the boiler. Refer to Frame 51.



## 67 SAFETY RELIEF VALVE REPLACEMENT

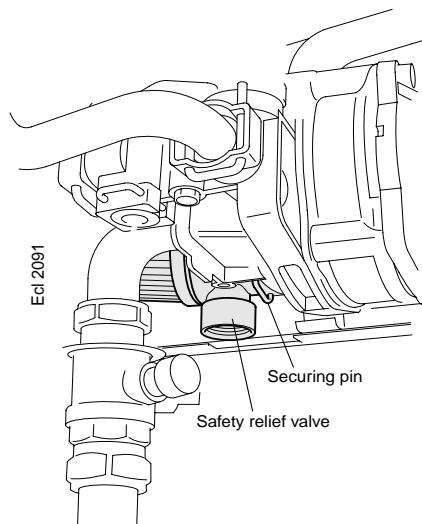
1. Refer to Frame 51.
2. Remove the casing bottom panel. Refer to Frame 43.
3. Drain the boiler. Refer to Frame 69.
4. Remove the discharge the pipe.
5. Remove the 4 screws securing the rear support plate and withdraw the plate.

**Note.** The M4 and M5 screws fit the casing and pipe bracket and the self tapping screw fits the plastic pump



housing.

6. Withdraw the securing pin.
7. Remove the safety valve.
8. Fit the new safety valve and refit the securing pin.
9. Re-assemble in reverse order ensuring correct location of screws in support plate and that tabs on the pump and valve housings engage in slots.
10. Reconnect the discharge pipe.
11. Check operation of the boiler. Refer to Frame 51.

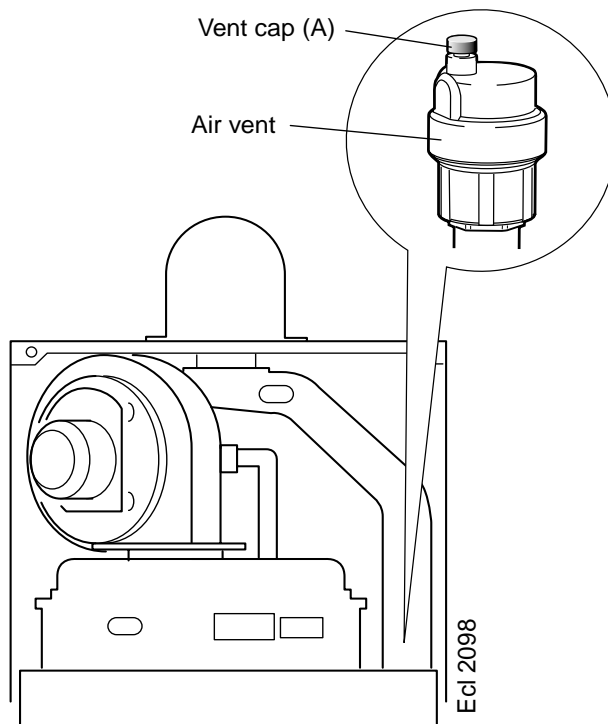


## 68 AUTOMATIC AIR VENT REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler sealing panel. Refer to Frame 44.
3. Drain the boiler. Refer to Frame 69.
4. Unscrew the air vent from the extension pipe on the boiler boss.
5. Fit the new air vent, complete with 'O' ring provided, and re-assemble in reverse order.

**Note.** In the event that the extension pipe is removed at the same time as the air vent, remove it from the air vent and refit it into the heat exchanger, ensuring that its 'O' ring seal is in place before fitting the new air vent.

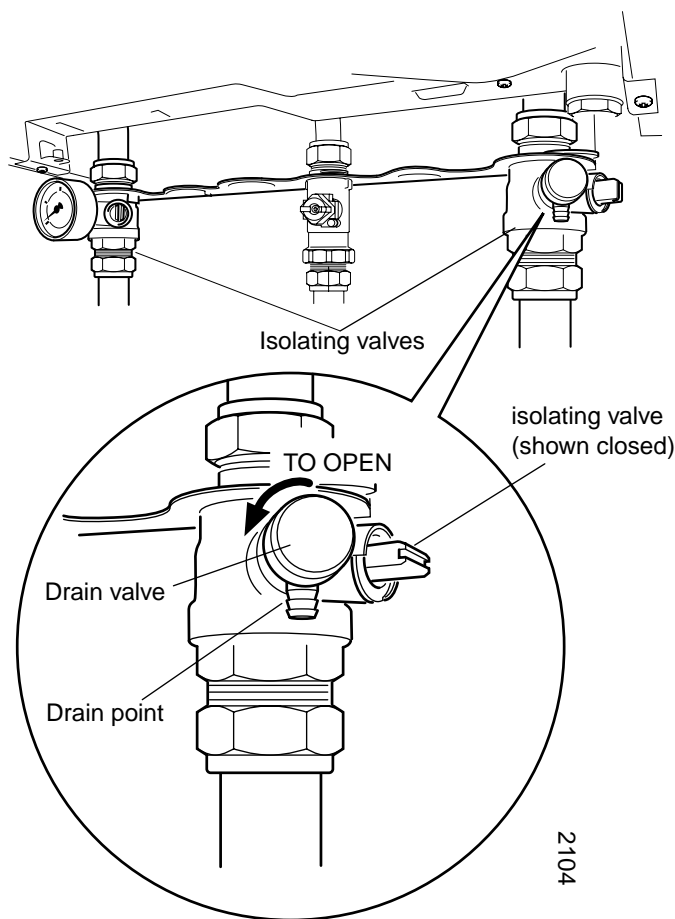
**IMPORTANT.** Ensure that the vent cap is loose (A).





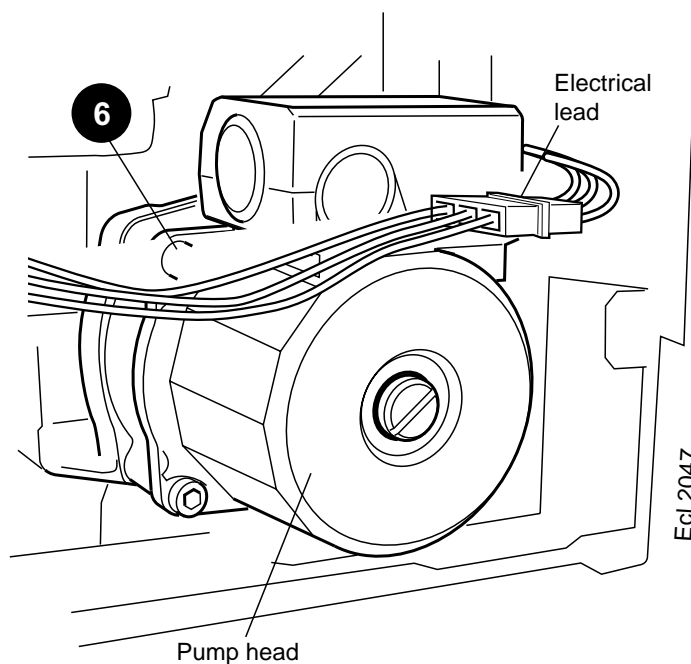
## 69 DRAINING THE BOILER

1. Refer to Frame 51.
2. Remove the boiler bottom panel. Refer to Frame 43.
3. Close all the water isolating valves on the piping frame.
4. Attach a length of hose to the drain point and open the drain valve.
5. **After replacing any component on the boiler, close the drain valve, remove the hose and open all system isolating valves before proceeding to check operation of the boiler.**



## 70 PUMP HEAD REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler bottom panel. Refer to Frame 43.
3. Drain the boiler. Refer to Frame 69.
4. Swing the control panel down into the servicing position. Refer to Frame 45.
5. Disconnect the electrical lead from the pump.
6. Remove the 4 Allen screws securing the pump head.
7. Remove the pump head.
8. Fit the new pump head.
9. Re-assemble in reverse order.
10. Check operation of the boiler. Refer to Frame 51.



## 71 HEAT ENGINE REPLACEMENT

Refer also to Frame 7 - 'Boiler exploded view'.

### IMPORTANT

Before starting the removal procedure, protect the gas and electrical controls with a waterproof sheet or plastic bag.

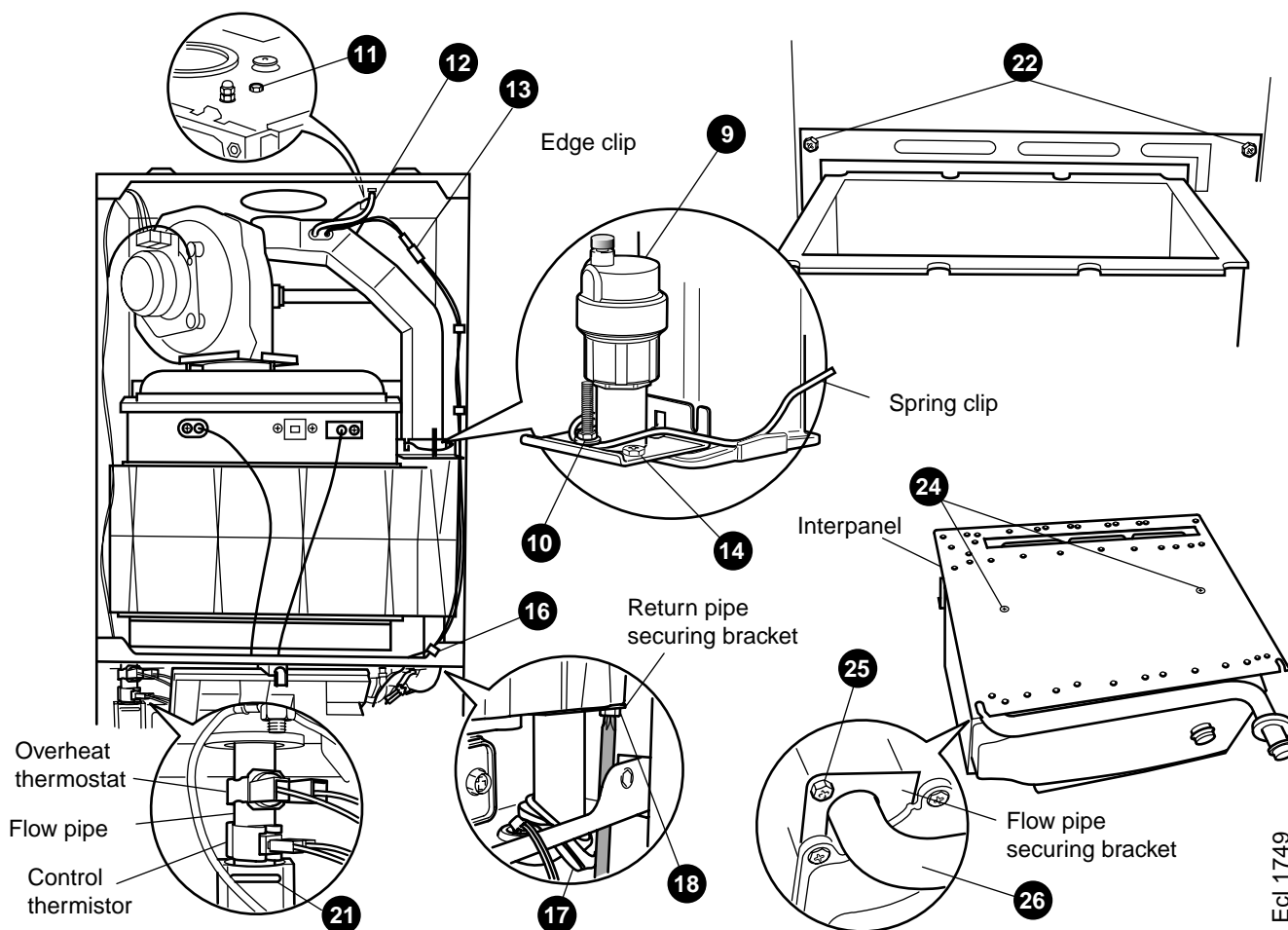
1. Refer to Frames 51 and 43.
2. Remove the control box and place on one side. Refer to Frame 63.
3. Drain the boiler. Refer to Frame 69.
4. Remove the fan / venturi assembly and place on one side. Refer to Frame 46.
5. Remove the burner and place on one side. Refer to Frame 47.
6. Remove the ignition and detection electrodes. Refer to Frames 58 and 59.
7. Release the flue from the turret. Refer to Frame 19.
8. Remove the turret from the boiler. Refer to Frame 19.
9. Unscrew and remove the automatic air vent complete with adapter.
10. Release the M5 nut retaining the flue casting spring clip and remove the spring clip.
11. Remove the M5 x 10 screw retaining the flue casting.
12. Release the silicone tubing from the sampling point.
13. Release the electrical connection to the flue sensor.
14. Undo the 2 M5 x 10 flue spring clip retaining bracket screws and remove the bracket.

15. Remove the flue.
16. Remove the edge clip securing the flue sensor wiring.
17. Remove the blind grommet to gain access to the return pipe securing bracket.
18. Undo the M5 screw and remove the return pipe securing bracket by sliding forwards.
19. Remove the overheat thermostat. Refer to Frame 57.
20. Remove the control thermistor. Refer to Frame 57.
21. Remove the securing pin to release the flow pipe.
22. Undo the 2 M5 screws securing the interpanel to the back panel.
23. Slide the heat engine and interpanel assembly upwards to disengage and remove from the casing complete with the return pipe.
24. Undo the 2 M6 countersunk screws, remove the interpanel and transfer to the new heat engine.
25. Undo the M5 screw and remove the flow pipe securing bracket.
26. Remove the flow pipe and transfer to the new heat engine.
27. Reassemble in reverse order, replacing gaskets or seals if any sign of damage or deterioration is evident.

### Note.

The heat engine is supplied with new combustion chamber insulation boards. These should be fitted (refer to Frame 60) before the burner and fan / venturi assembly and before the ignition and detection electrodes are replaced.

28. Check operation of the boiler. Refer to Frame 51.

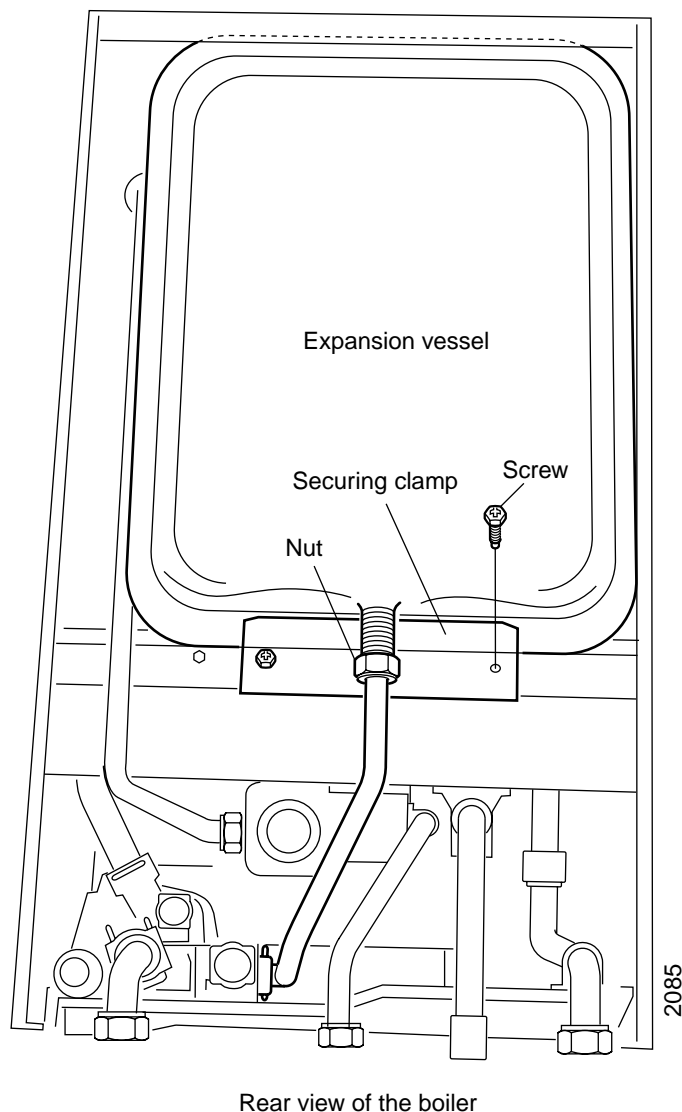


Ecl 1749

## 72 EXPANSION VESSEL REPLACEMENT

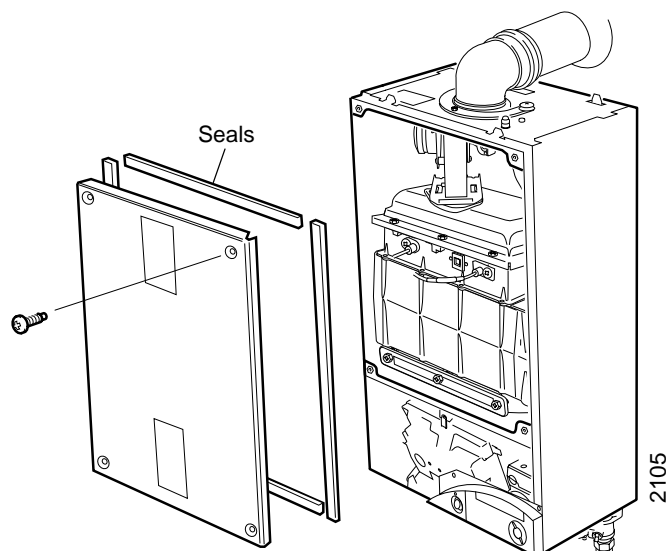
1. Refer to Frame 51.
2. Drain the boiler - Refer to Frame 69.
3. Undo all the gas and water connection unions on the boiler side of the valves.
4. Remove the turret screw and remove the turret clamp.
5. Remove the turret.
6. Lift the complete boiler from the wall mounting frame and place on a flat surface, face down, to expose the expansion vessel.
7. Undo the union nut on the vessel water connection pipe.
8. Remove the 2 screws and remove the securing clamp.
9. Remove the expansion vessel.
10. Fit the new expansion vessel.
11. Re-assemble in reverse order.
12. Check operation of the boiler. Refer to Frames 51.

**Note.** If preferred and for convenience, a new expansion vessel may be installed else where in the heating system providing it ensures equivalent system protection.



## 73 BOILER SEALING PANEL SEAL REPLACEMENT

1. Refer to Frames 51 and 44.
  2. Remove the old seal from the casing and thoroughly clean the casing surfaces.
  3. Fit the new adhesive seals, note that they are supplied to the correct length for the relevant sides.
  4. Reassemble in reverse order.
- Note.** Ensure that the boiler sealing panel is correctly sealed, compressing the seal to make an airtight joint.
5. Check operation of the boiler. Refer to Frames 51.

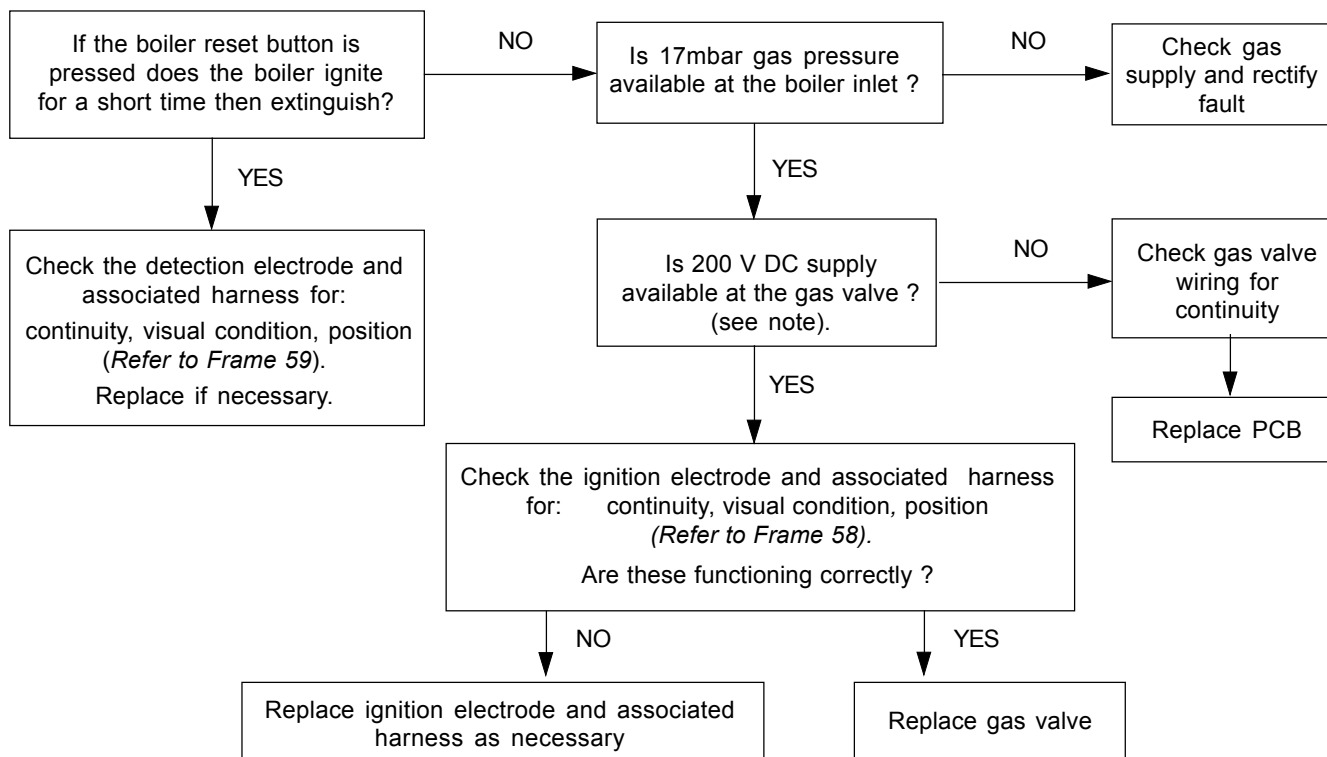


## 74 FAULT FINDING CHART MAIN MENU

In order to assist fault finding, the boiler has an LED diagnostic display. The key to the display codes is as follows:

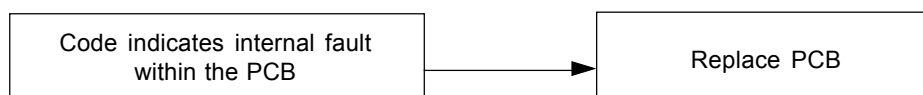
ALTERNATING 'L' 'F'	GO TO FRAME 75
ALTERNATING 'L' 'E'	GO TO FRAME 76
ALTERNATING 'L' 'A'	GO TO FRAME 77
ALTERNATING 'L' '8'	GO TO FRAME 78
ALTERNATING 'H' '1'	GO TO FRAME 79
ALTERNATING 'H' '4'	GO TO FRAME 80
ALTERNATING 'H' 'F'	GO TO FRAME 81
ALTERNATING 'H' 'n'	GO TO FRAME 82
ALTERNATING 'H' 'E'	GO TO FRAME 76

## 75 L.....F..... (FLAME DETECTION)



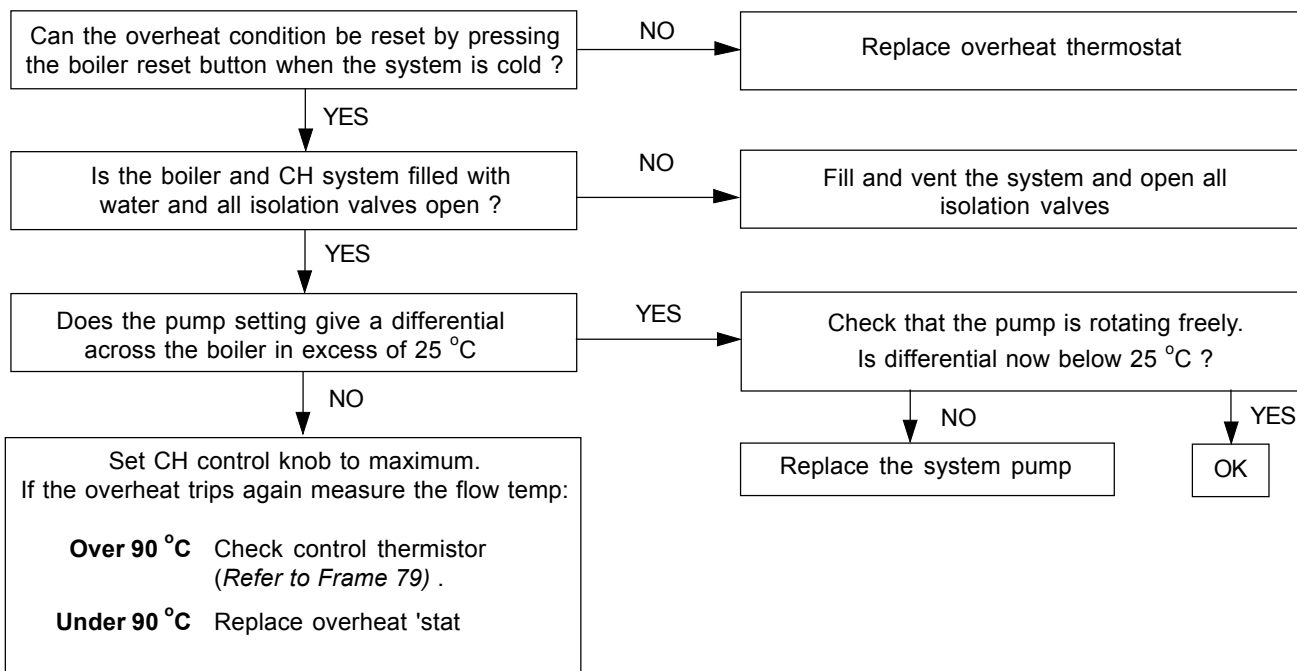
**Note.** Due to the wave form of the rectified voltage, the reading will vary depending on the type of meter used to measure the value (some may measure the possible peak voltage of 339V). In general terms a reading greater than 150V indicate that the correct voltage is supplied to the gas valve.

## 76 L.....E or H.....E..... (PCB)

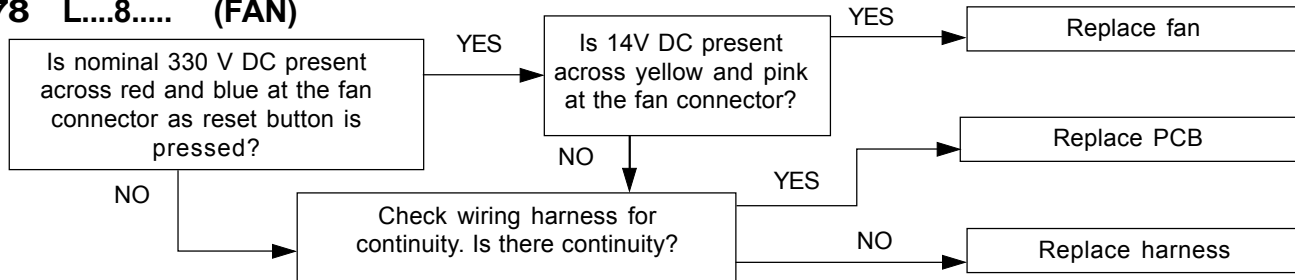


## FAULT FINDING

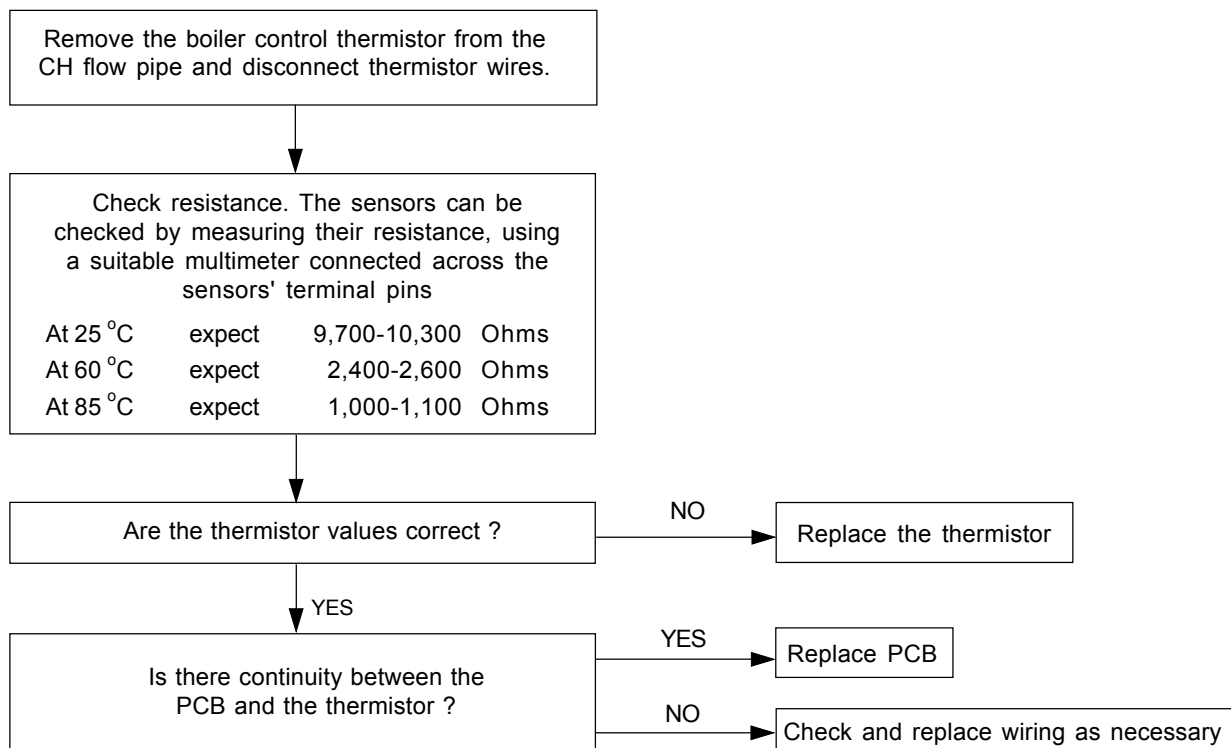
### 77 L.....A..... (OVER HEAT SENSOR)



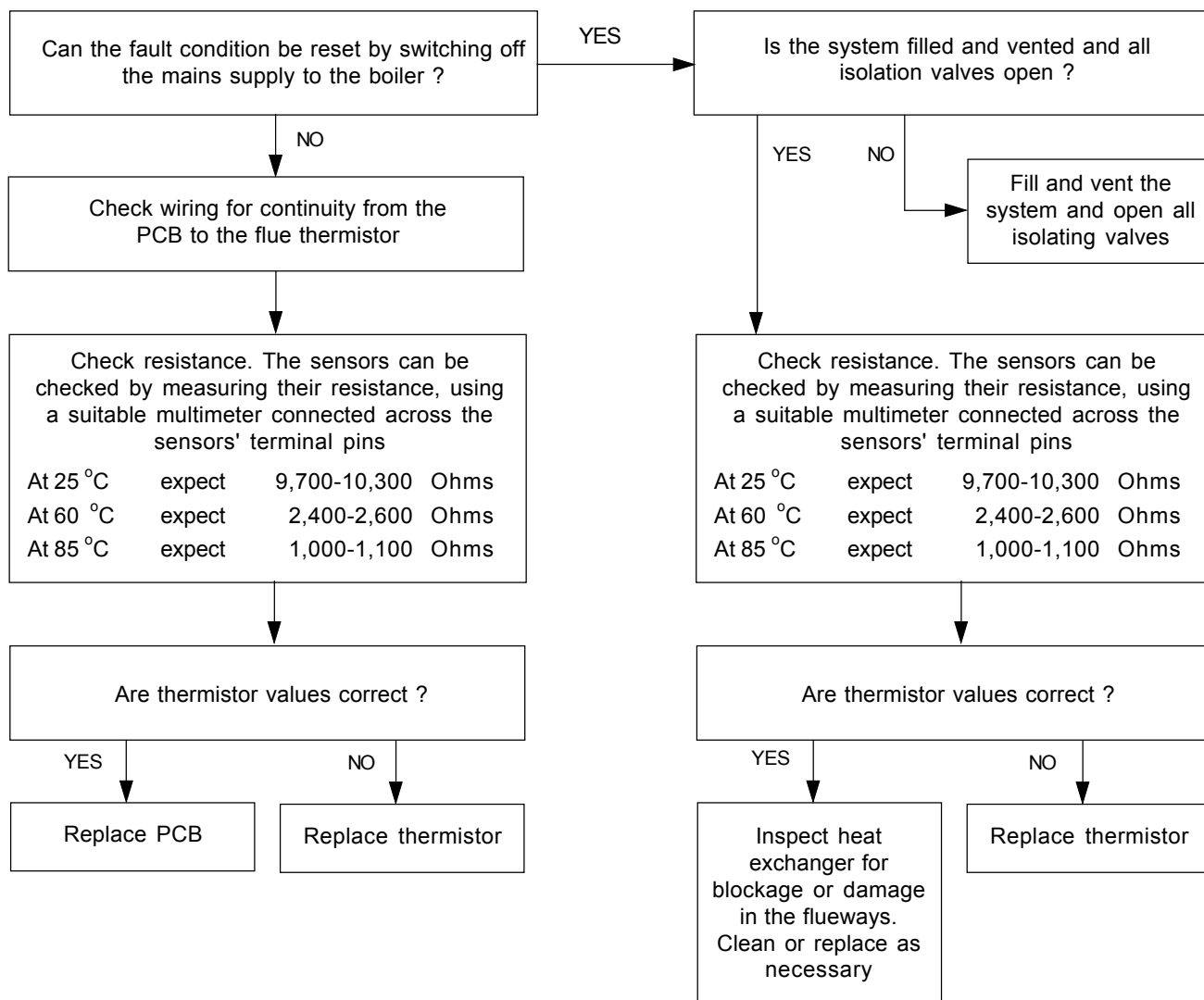
### 78 L....8..... (FAN)



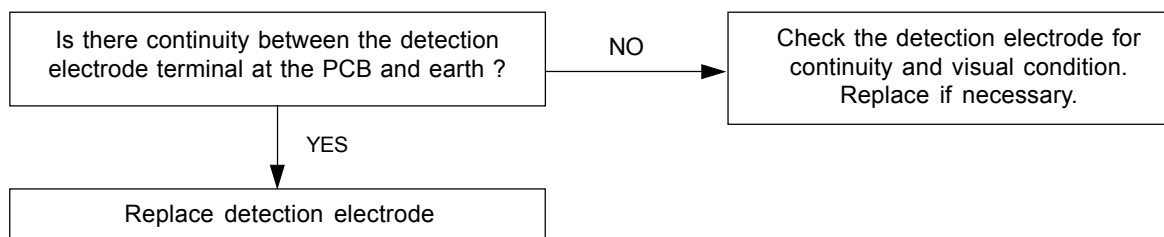
### 79 H.....1..... (CONTROL TEMPERATURE SENSOR)



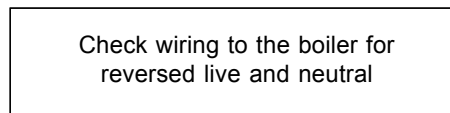
## 80 H.....4..... (FLUE SENSOR)



## 81 H.....F..... (FLAME DETECTION)



## 82 H.....n..... (PHASE REVERSAL)



## SHORT LIST OF PARTS

The following are parts commonly required due to damage or expendability. Their failure or absence is likely to affect safety or performance of this appliance.

The list is extracted from the British Gas List of Parts, which contains all available spare parts.

The full lists is held by British Gas Services, **Caradon Ideal Limited** distributors and merchants.

When ordering spares please quote:

1. Boiler model      icos system m3080
2. Appliance G.C. No.      41-391-52
3. Description.
4. Quantity.
5. Product number.

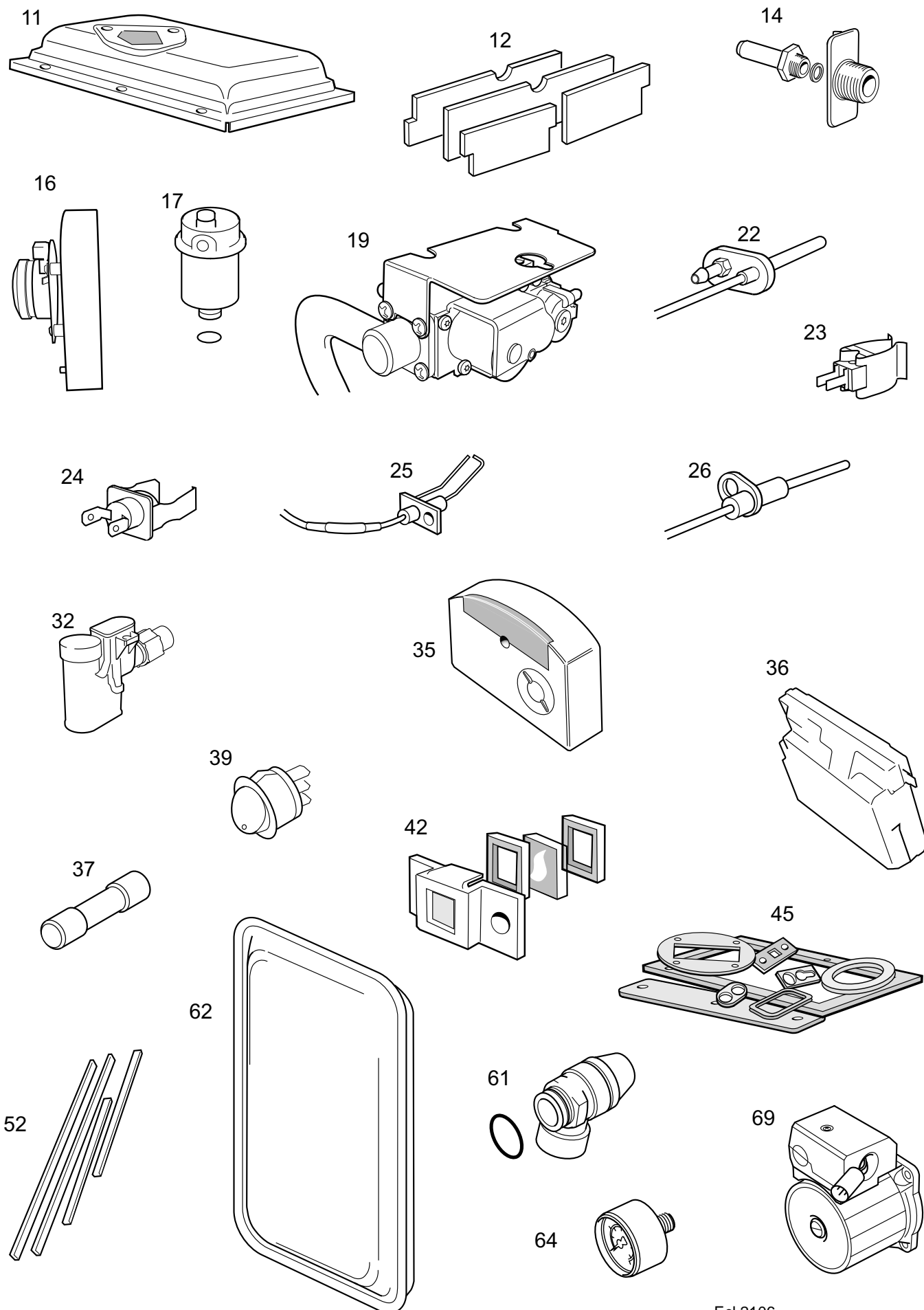
When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal Boilers.

Key No.	G.C. Part No.	Description	Qty.	Product Number
1	E69-280	Front casing panel	1	170 994
4	E69-282	Bottom casing panel	1	170 987
11	E67-489	Burner	1	170 905
12	E67-490	Combustion chamber insulation	1	170 906
14	E67-492	Injector and housing	1	170 908
16	E67-494	Fan assembly	1	170 909
17	E69-286	Automatic air vent	1	170 988
19	E69-288	Gas control valve Honeywell VK4115V	1	171 035
22	E67-500	Dry fire thermostat	1	170 916
23	E67-501	Control thermistor	1	170 917
24	E67-502	Overheat thermostat	1	170 918
25	E69-291	Ignition electrode and gasket	1	170 985
26	E67-504	Flame detection electrode and gasket	1	170 920
32	E67-511	Condensate 'S' trap	1	170 926
35	E67-517	User control (display unit)	1	170 929
36	E67-518	PCB primary controls (includes plastic housing)	1	170 930
37	E67-519	Fuse PCB (T3.15ATL 250V)	1	170 931
39	E67-521	Mains switch	1	170 933
42	E67-524	Sight glass	1	170 949
45	E67-527	Gasket kit (servicing)	1	170 938
52	E68-376	Seal kit (sealing panel)	1	171 014
61	E69-338	Pressure relief valve	1	170 992
62	E69-339	Expansion vessel	1	170 989
64	E69-341	Pressure gauge	1	170 991
69	E69-342	Pump	1	170 990



## SHORT LIST OF PARTS

### 83 SHORT PARTS LIST

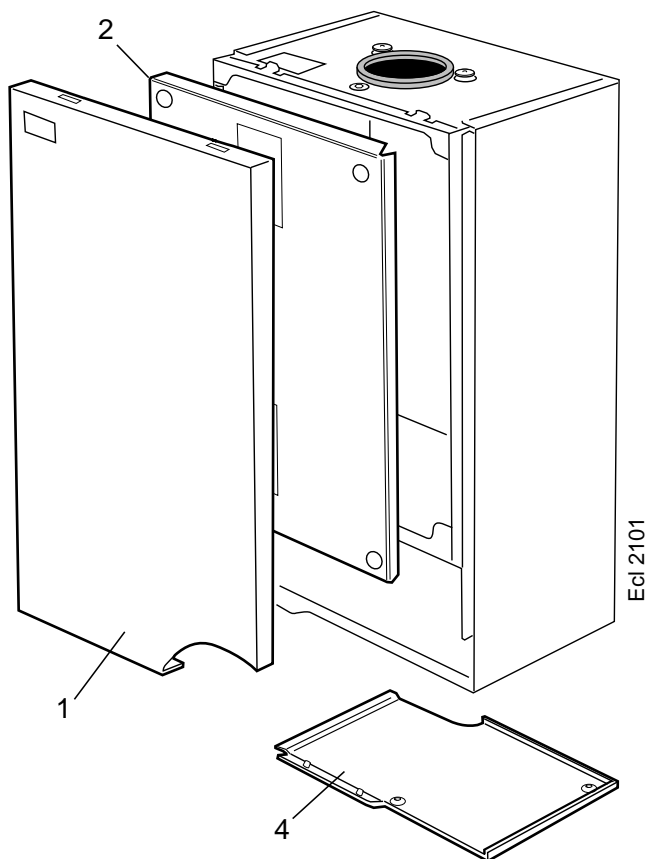


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## LIST OF PARTS

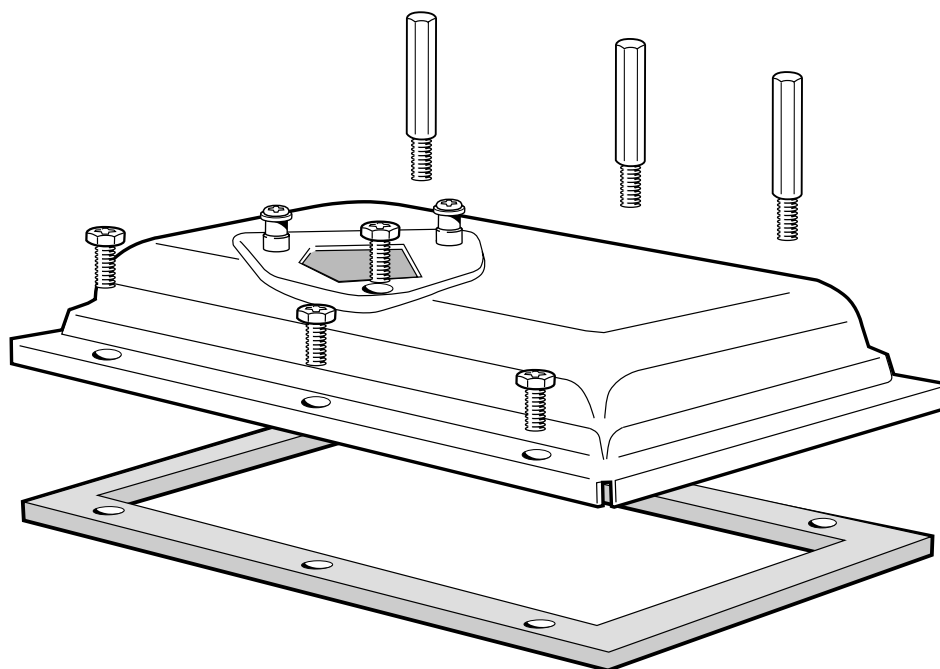
### 84 BOILER CASING ASSEMBLY

1. Front casing panel with screws.
2. Sealing panel with screws.
4. Bottom panel with screws.



### 85 BURNER ASSEMBLY

11. Burner assembly with screws and gasket.



Ecl 1598

## NOTES



*The code of practice for the installation,  
commissioning & servicing of central heating systems*

### Technical Training

The Ideal Boilers Technical Training Centre offers a series of first class training courses for domestic, commercial and industrial heating installers, engineers and system specifiers.

For details of courses please ring: ..... 01482 498 432



#### CERTIFIED PRODUCT

Manufactured under a BS EN ISO 9001:  
1994 Quality System accepted by BSI

**Ideal Boilers**, P.O. Box 103, National Ave, Kingston upon Hull,  
HU5 4JN. Telephone: 01482 492 251 Fax: 01482 448 858.  
Registration No. London 322 137.

**Caradon Ideal Limited** pursues a policy of continuing  
improvement in the design and performance of its products.  
The right is therefore reserved to vary specification without  
notice.



**i Ideal** BOILERS

**ENGINEERED FOR PEACE OF MIND**

October 2001

156 416 A04

**Caradon**  
Ideal Limited

***Ideal Installer/Technical Helpline: 01482 498 663***  
***www.idealboilers.com***

# users guide

## icos system

Your Ideal users guide

# m3080

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal

**i** **Ideal** BOILERS  
**ENGINEERED FOR PEACE OF MIND**

# icos system m3080 (Natural Gas Only)

G.C. Appliance No. 41-391-52

Destination Countries: GB, IE

## Introduction

The **icos system** is a wall mounted, room sealed, condensing boiler, featuring full sequence automatic spark ignition and fan assisted combustion.

Due to the high efficiency of the boiler, condensate is produced from the flue gases and this is drained to a suitable disposal point through the plastic waste pipe at the lower rear of the boiler. A condensate 'plume' will also be visible at the flue terminal.

## Safety

### Current Gas Safety (Installation & Use) Regulations or rules in force.

In your own interest, and that of safety, it is the law that this boiler must be installed by a CORGI registered installer, in accordance with the above regulations.

***It is essential that the instructions in this booklet are strictly followed, for safe and economical operation of the boiler.***

## Electricity Supply

***This appliance must be earthed.***

Supply: 230 V ~ 50 Hz. The fusing should be 3A.

Connection must be made in a way that allows complete isolation of the electrical supply such as a double-pole switch, having a 3mm (1/8") contact separation in both poles, serving only the boiler and system controls. Alternatively, a 3-pin UNSWITCHED socket may be used. The means of isolation must be accessible to the user after installation.

## Important Notes

- This appliance must not be operated without the casing correctly fitted and forming an adequate seal.
- If the boiler is installed in a compartment then the compartment **MUST NOT** be used for storage purposes.
- If it is known or suspected that a fault exists on the boiler then it **MUST NOT BE USED** until the fault has been corrected by a CORGI registered installer.
- Flammable materials must not be placed in close proximity to the appliance. Materials giving off flammable vapours must not be stored in the same room as the appliance.
- Under NO circumstances should any of the sealed components on this appliance be used incorrectly or tampered with.

In cases of repeated or continuous shutdown a CORGI registered installer should be called to investigate and rectify the condition causing this and carry out an operational test. Only the manufacturers original parts should be used for replacement.

## Minimum Clearances

Clearances of **165mm (6 1/2")** above, **100mm (4")** below, **5mm (1/4")** at the sides and **450mm (17 3/4")** at the front of the boiler casing must be allowed for servicing.

The minimum front and bottom clearance allowed when built into a cupboard is 5mm.

All CORGI Registered Installers carry a CORGI ID card, and have a registration number. Both should be recorded in your **Benchmark** Log Book. You can check your installer by calling CORGI direct on 0156 372 300.

**THE LOG BOOK SHOULD BE COMPLETED AFTER EACH SERVICE AND KEPT WITH THESE INSTRUCTIONS.**



## To light the boiler. Refer to Frame 1

If a programmer is fitted refer to separate instructions for the programmer before continuing.

1. CHECK THAT THE ELECTRICITY SUPPLY TO THE BOILER IS OFF.
2. Set the mains ON/OFF switch (A) to OFF and the thermostat knob (F) to maximum.
3. Switch ON the electricity supply to the boiler and check that all external controls, e.g. programmer, room thermostat, etc., are ON.
4. Set the mains ON/OFF switch to ON.

The mains on neon (B) will illuminate and the boiler will commence the ignition sequence, supplying heat to the central heating, if required.

**Note.** In normal operation the control unit display (G) will show the codes:

□ Standby - no demand for heat.

◁ CH being supplied.

During ignition, the LED (E) will flash.

During normal running the LED (E) will remain illuminated.

### Note.

If the boiler fails to light after 3 attempts the fault code L F will be displayed.

Press the reset button (D) for 2 seconds then release. The boiler will repeat the ignition sequence. If the boiler still fails to light consult a CORGI registered installer.

### Note.

The pump will operate briefly as a self-check, once every 24 hours regardless of system demand.

## Control of water temperature

The boiler controls the central heating radiator temperature to a maximum of 82°C, adjustable via the thermostat knob (F).

Approx. flow temperatures for the boiler thermostat settings are:

Knob Setting	Flow Temperature	
	°C	°F
Minimum	43	110
Maximum	82	180

## To shut down the boiler

### 1. For short periods

Set the mains ON/OFF switch (A) to OFF

### 2. For longer periods

Set the mains ON/OFF switch (A) to OFF, and switch the electricity supply to OFF.

For longer periods the entire system should be drained.

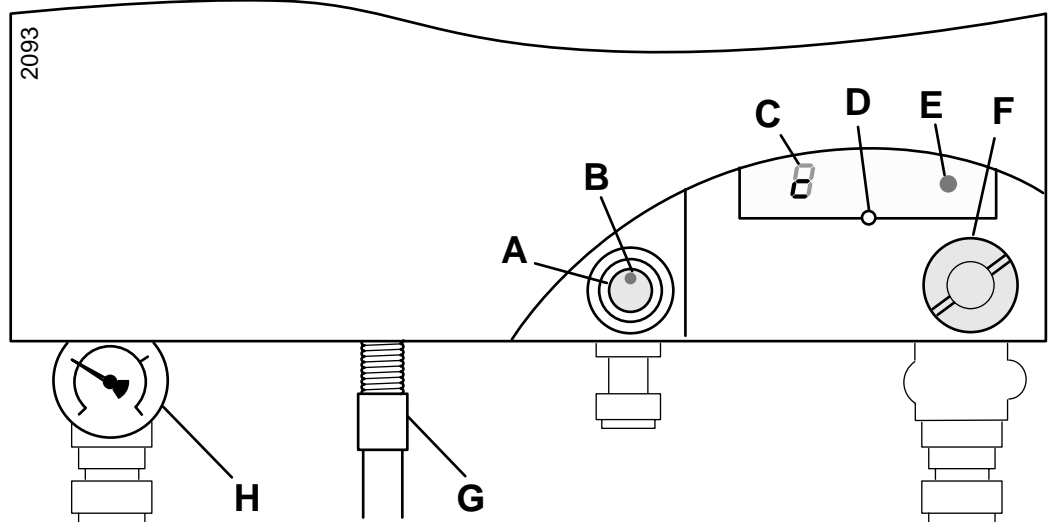
## To relight the boiler

Repeat the procedure detailed in 'To light the boiler'.

## 1 BOILER controls

### Legend

- A Boiler ON/OFF switch
- B Mains on neon
- C Display
- D Reset button
- E LED
- F CH thermostat knob
- G Condensate drain
- H Pressure gauge



**CAUTION.** To avoid the possibility of injury during the installation, servicing or cleaning of this appliance care should be taken when handling edges of sheet steel components.

## **Frost protection**

If no frost protection is provided and frost is likely during a short absence from home, leave the heating controls (if fitted) at a reduced temperature setting. For longer periods, the entire system should be drained.

If the system includes a frost thermostat then, during cold weather, the boiler should be turned OFF at the time switch (if fitted) ONLY. The mains supply should be left switched ON, with the boiler thermostat left in the normal running position.

## **Boiler overheat thermostat**

This thermostat will shut down the boiler in the event of overheating. Should this occur a fault code **L E** will be displayed. Press the reset button (D) and the boiler will re-light.

If the fault re-occurs, turn off the boiler and consult a CORGI registered installer.

## **Flame failure**

Should this occur a fault code **L-F** will be displayed. Press the reset button and the boiler will relight. If the fault recurs, turn off the boiler and consult a CORGI registered installer.

## **Loss of system water pressure**

The gauge (H) indicates the central heating system pressure. If the pressure is seen to fall below the original installation pressure of 1-2 bar over a period of time then a water leak is indicated. In this event a CORGI registered installer should be consulted.

**DO NOT FIRE THE BOILER IF THE PRESSURE HAS REDUCED TO ZERO FROM THE ORIGINAL SETTING.**

## **Condensate Drain**

The condensate drain (G) must not be modified or blocked.

Blockage of the condensate drain, caused by debris or freezing, can cause automatic shutdown of the boiler.

If freezing is suspected and the pipe run is accessible an attempt may be made to free the obstruction by pouring hot water over the exposed pipe and clearing any blockage from the end of the pipe. If this fails to remedy the problem the assistance of a CORGI registered installer should be sought.

## **Escape of gas**

Should a gas leak or fault be suspected contact your local gas supplier without delay.

**Do NOT search for gas leaks with a naked flame.**

## **Cleaning**

For normal cleaning simply dust with a dry cloth.

To remove stubborn marks and stains, wipe with a damp cloth and finish off with a dry cloth.

**DO NOT use abrasive cleaning materials.**

## **Maintenance**

The appliance should be serviced at least once a year by a CORGI registered installer.



**The code of practice for the installation,  
commissioning & servicing of central heating systems**

Caradon Plumbing Ltd. is a member of the Benchmark initiative and fully supports the aims of the programme. Benchmark has been introduced to improve the standards of installation and commissioning of central heating systems in the UK and to encourage the regular servicing of all central heating systems to ensure safety and efficiency.

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**iIdeal** BOILERS

April 2001

UIN 156415 A01

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***www.idealboilers.com***