

# evo HE

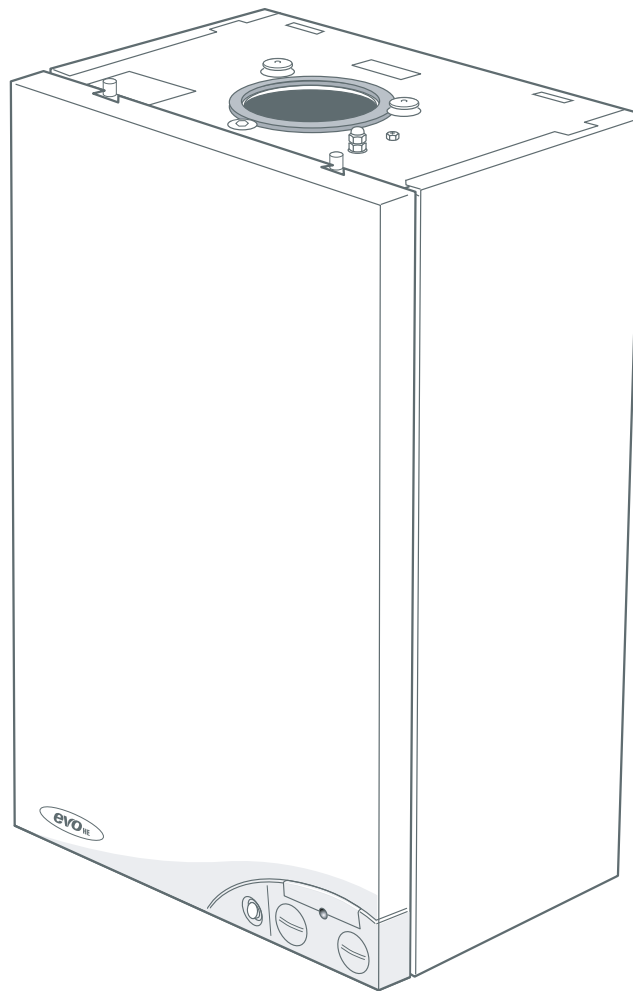
Advanced High Efficiency Boilers

## C22/24, C22/30, C22/35 (V3 Flue System)

Wall mounted, balanced flue, fanned gas boiler



Packaged Boiler Contents have been checked by Operator Number.....



**For details of document amendments, refer to page 3**

September 2009 UIN 204427 A02

### Installation & Servicing Instructions

See reverse for **evo HE** Users Guide

Manufactured exclusively for Wolseley Centers Ltd. by Ideal Boilers



# DOCUMENT AMENDMENTS

Relevant Installation changes implemented in this book from Mod Level ..... A01 (July 08) to A02 (Sep 09)

---

## **Page 7, Optional Extra Kits**

- Addition of Concentric flue Screw Retaining Kit

## **Page 16, Frame 12 - Determining the Flue Lengths and Packs Required**

- New flue kit added.

## **Page 19, Frame 16 - Terminal Wall Seal Assembly / Position**

- New frame added ref. positioning of terminal wall seal

## **Page 22, Frame 23 - Condensate Pipe Termination Configurations**

- Update drawing 1 and not added ref BS6798 (2002)

## **Page 49, Frame 68 - Combustion Chamber Insulation Replacement**

- Updated Frame to reflect new insulation.

## **Page 54, Frame 78 - Diverter Valve Internal Parts Replacement**

- New item no. 6 added.

## **Page 63, Frame 92 - H9/L9 Heat Exchanger Overheat**

- New flow chart.

## **Page 64 - Short Parts List**

- New updated parts list

## **Page 68 - Code of Practice**

- New Code of Practice Guidelines added.

# GENERAL

**Table 1 - General Data**

isar		C22/24	C22/30	C22/35
Gas supply		2H - G20 - 20mbar		
Gas Supply Connection		15mm copper compression		
Injector Size		Stereomatic 5.6mm dia.		5.7mm dia
Inlet Connection	Domestic Hot Water	15mm copper compression		
Outlet Connection	Domestic Hot Water	15mm copper compression		
Flow Connection	Central Heating	22mm copper compression		
Return Connection	Central Heating	22mm copper compression		
Flue Terminal Diameter	mm (in)	100 (4)		
Average Flue Temp-Mass Flow Rate	(DHW)	66°C-10g/s	74°C - 12 g/s	82°C-14g/s
Maximum Working Pressure (Sealed Systems)	bar (lb/in <sup>2</sup> )	2.5 (36.3)		
Maximum Domestic Hot Water Inlet Pressure	bar (lb/in <sup>2</sup> )	10.0 (145)		
Minimum Domestic Hot Water Inlet Pressure*	bar (lb/in <sup>2</sup> )	1.0	1.3	1.7**
Electrical Supply		230 V ~ 50 Hz.		
Power Consumption		148 W	148 W	152 W
Fuse Rating		External : 3A Internal : T3.15A L250 V		
Water content	Central Heating	litre (gal)		
	Domestic Hot Water	litre (gal)		
		2.0 (0.44)		
		0.5 (0.11)		
Packaged Weight	kg (lb)	53.3 (118)	53.4 (118)	53.6 (118)
Maximum Installation Weight	kg (lb)	46.6 (103)	46.7 (103)	46.9 (103)
Boiler Casing Size	Height	mm (in)		
	Width	mm (in)		
	Depth	mm (in)		
		687 (27)		
		390 (15 3/8)		
		278 (11)		

\*Required for maximum flow rate. Boiler operates down to 0.2bar with reduced DHW delivery

\*\* In areas of low water pressure the DHW restrictor can be removed

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

Boiler Input :		Max.	Min.
Boiler Input 'Q'	Nett CV kW	22.6	9.1
	(Btu/h)	(77 100)	(31 000)
	Gross CV kW	25.1	10.1
	(Btu/h)	(85 600)	(34 400)
Gas Consumption	l/s	0.65	0.26
	(ft <sup>3</sup> /h)	(82.5)	(33.1)
Boiler Output :			
Non Condensing	kW	22	8.8
70°C Mean Water temp.	(Btu/h)	(75 000)	(30 000)
Condensing	kW	23.3	9.6
40°C Mean Water temp.	(Btu/h)	(79 500)	(32 800)
Seasonal efficiency* (SEDBUK)	Band A [90.1]%		
NOx Classification	Class 5		

**Table 3 - Performance Data - Domestic Hot Water**

Maximum DHW Input :		C22/24	C22/30	C22/35
Maximum DHW Input :	Nett CV kW	24.3	30.2	36.0
	(Btu/h)	(82 900)	(103 000)	(122 800)
	Gross CV kW	27.0	33.5	39.9
	(Btu/h)	(92 100)	(114 400)	(136 200)
Gas Consumption	l/s	0.7	0.87	1.03
	(ft <sup>3</sup> /h)	(89.0)	(110)	(131)
Maximum DHW Output	kW	23.4	29.3	35.2
	(Btu/h)	(80 000)	(100 000)	(120 000)
DHW Flow Rate at 35°C temp. rise.	l/min	9.6	12.0	14.4
	(gpm)	(2.1)	2.6	(3.2)
DHW Specific Rate	l/min	11.2	14.0	16.8
	(gpm)	(2.5)	(3.1)	(3.7)

\* 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**

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

**PMS** = Maximum operating pressure of water

**C<sub>13</sub> C<sub>33</sub> C<sub>53</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

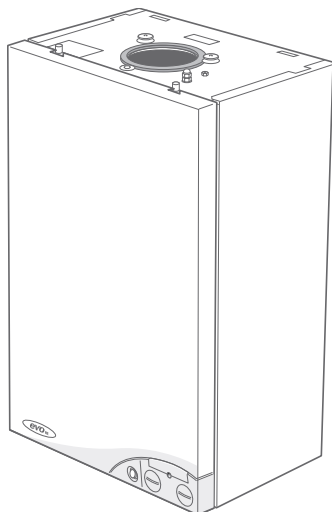
## GENERAL

### evo HE

Natural Gas only

Boiler size	G.C. Appliance No. (Benchmark No.)	PI No.
C22/24	47 348 32	87 BP 34
C22/30	47 348 33	87 BP 34
C22/35	47 348 34	87 BP 34

Destination Country: GB, IE



### CONTENTS

Air Supply .....	8
Benchmark Commissioning Checklist .....	70-71
Boiler Clearances .....	9
Boiler Exploded Diagram .....	13
Condensate Drain .....	10, 21-23
Electrical Connections .....	32
Electrical Supply .....	10
Extension Ducts - Fitting .....	20
Fault Finding .....	58-63
Flow Wiring Diagram .....	35
Flue Fitting .....	16
Flue Installation .....	8
Gas Safety Regulations .....	7
Gas Supply .....	8
Installation .....	12-39
Mandatory Requirements .....	7-10
Pump .....	55
Safe Handling .....	6
Servicing .....	40-57
Short List of Parts .....	64
Thermostatic Radiator Valves .....	10
Water and Systems .....	8,10-12
Water Connections .....	29
Water Treatment .....	12
Wiring Diagrams .....	32-35

For GB, to comply with Building Regulations Part L1 (Part 6 in Scotland) the boiler should be fitted in accordance with the manufacturer's instructions. Self-certification that the boiler has been installed to comply with Building Regulations can be demonstrated by completing and signing the Benchmark Commissioning Checklist.

Before installing this boiler, read the Code of Practice sheet at the rear of this book.

#### BENCHMARK COMMISSIONING CHECKLIST DETAILS

Boiler	Page	Page	
Make and model .....	5	Burner operating pressure .....	n/a
Appliance serial no. on data badge .....	Front Cover	Central heating flow temp. ....	measure and record
SEDBUK No. % .....	4	Central heating return temp. ...	measure and record
<b>Controls</b>		<b>For combination boilers only</b>	
Time and temperature control to heating .....	33	Scale reducer .....	n/a
Time and temperature control to hot water .....	33	<i>Hot water mode</i>	
Heating zone valves .....	33	Heat input .....	to be calculated
TRV's .....	10	Max. operating burner pressure .....	n/a
Auto bypass .....	10	Max. operating water pressure .....	measure & record
Boiler interlock .....	10	Cold water inlet temp .....	measure & record
<b>For all boilers</b>		Hot water outlet temp. ....	measure & record
Flushing to BS.7593 .....	12	Water flow rate at max. setting .....	measure & record
Inhibitor .....	12	<b>For condensing boilers only</b>	
<i>Central heating mode</i>		Condensate drain .....	22
Heat input .....	to be calculated	<b>For all boilers: complete, sign &amp; hand over to customer</b>	
		For assistance see Technical Helpline on the back page	

**NOTE TO THE INSTALLER: COMPLETE THE BENCHMARK COMMISSIONING CHECKLIST AND LEAVE THESE INSTRUCTIONS WITH APPLIANCE**



# GENERAL

## INTRODUCTION

The **evo HE** range of boilers are wall mounted, full sequence, automatic spark ignition, low water content, fanned flue, high efficiency, condensing, combination gas boilers.

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

Central heating (CH) output is fully modulating with a range of 8.8 to 22 kW (30,000 to 75,000 Btu/h)

Instantaneous domestic hot water (DHW) output is also fully modulating with a maximum of :

C22/24	23.4kW (80,000 Btu/h)
C22/30	29.3kW (100,000 Btu/h)
C22/35	35.2kW (120,000 Btu/h)

The boiler is supplied fully assembled with DHW plate heat exchanger, diverter valve, circulating pump, pressure gauge, safety valve and CH expansion vessel.

Variable CH and DHW temperature controls are fitted on the user control and the boiler features a DHW preheat facility.

The boiler casing is of white painted mild steel with the user controls capable of being mounted remotely from the boiler if the option is required.

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

The heat exchanger is of cast aluminium.

The boiler is suitable for connection to fully pumped, sealed water systems ONLY. Adequate arrangements for completely draining the system by provision of drain cocks MUST be provided in the installation pipework.

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

With no demand for CH, the boiler fires only when DHW is drawn off, or periodically for a few seconds without any DHW draw-off, in order to maintain the DHW calorifier in a heated condition.

When there is a demand for CH, the heating system is supplied at the selected temperature of between 30 °C and 82°C, until DHW is drawn off. The full output from the boiler is then directed via the diverter valve to the plate heat exchanger to supply a nominal DHW draw-off of

C22/24	9.6 l/min at 35 °C temperature rise.
C22/30	12 l/min at 35 °C temperature rise.
C22/35	14.4 l/min at 35 °C temperature rise.

The DHW draw off rate specified above is the nominal that the boiler flow regulator will give. Due to system variations and seasonal temperature fluctuations DHW flow rates/temperature rise will vary, requiring adjustment at the draw off tap.

At low DHW draw-off rate the maximum temperature is limited to 65 °C by the modulating gas control.

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.

## SAFE HANDLING

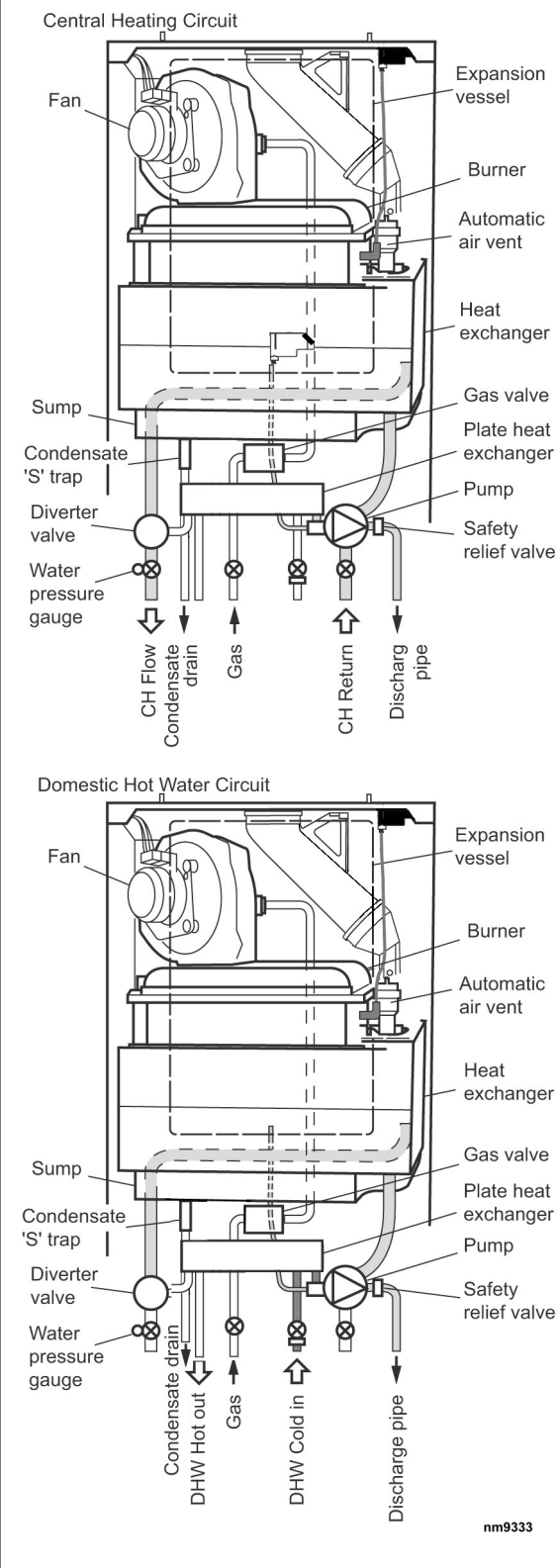
This boiler may require 2 or more operatives to move it to its installation site, remove it from its packaging base and during movement into its installation location. Manoeuvring the boiler may include the use of a sack truck and involve lifting, pushing and pulling.

Caution should be exercised during these operations.

Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:

- Grip the boiler at the base.
- Be physically capable.
- Use PPE as appropriate, e.g. gloves, safety footwear.

## 1 BOILER WATER CIRCUIT DIAGRAMS



During all manoeuvres and handling actions, every attempt should be made to ensure the following unless unavoidable and/or the weight is light.

- Keep back straight.
- Avoid twisting at the waist.
- Avoid upper body/top heavy bending.
- Always grip with the palm of the hand.
- Use designated hand holds.
- Keep load as close to the body as possible.
- Always use assistance if required.

## OPTIONAL EXTRA KITS

- **Flue Extension Ducts** (1000mm long).  
C22/24 & 30-up to 6m  
C22/35-up to 3m
- **Flue Finishing Kit**
- **90° Elbow Kit** (maximum per installation).  
C22/24 & 30-up to 4 elbows  
C22/35-up to 2 elbows
- **45° Elbow Kit** (maximum per installation).  
C22/24 & 30-up to 4 elbows  
C22/35-up to 2 elbows
- **Concentric Flue Screw Retaining Kit**
- **Roof Flue Kit** (to a maximum of 7.5m).
- **Powered Vertical Flue Kit** (5m primary and 17m secondary is a typical maximum length. For alternative details refer to Powered Vertical Instructions).
- **High Level Flue Outlet Kits**
- **Flue Deflector Kit**
- **Weather Collar**
- **Horizontal Flue Terminal 600mm long**
- **Remote User Controls Kit**
- **Boiler Stand-off Kit**
- **Siphon Kit**
- **Valve Cover Kit**
- **Condensate Pump Kit**
- **Pre-piping Frame**
- **Adjustable flue support bracket**

## SAFETY

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

The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force.

In GB, the installation must be carried out by a Gas Safe Registered Engineer. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety (Installation and Use) Regulations
- The appropriate Building Regulations either The Building Regulations, The Building Regulations (Scotland), Building Regulations (northern Ireland).
- The Water Fittings Regulations or Water byelaws in Scotland.
- The Current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

In IE, the installation must be carried out by a Registered Gas Installer (RGI) and installed in accordance with the current edition of I.S.813 "Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for electrical installation.

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 70 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 **Wolseley Centers Ltd.** in writing. If in doubt please enquire.

Any direct connection of a control device not approved by **Wolseley Centers Ltd.** 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

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.

### Bathroom Installations

This appliance is rated **IP20**.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current IEE (BS.7671) Wiring Regulations and, in Scotland, the electrical provisions of the building regulations applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower. For IE reference should be made to the current ETCI rules for electrical installations and I.S. 813:2002.

If the appliance is to be installed in a room containing a bath or shower then, providing water jets are not going to be used for cleaning purposes (as in communal baths/showers), the appliance must be installed in Zone 2, as detailed in BS.7671.

### 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 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.

## 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 Gas Safe Registered Engineer. In IE by a Registered Gas Installer (RGI).

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.

It is the responsibility of the Gas Installer to size the gas installation pipework in accordance with BS6891:2005. Whilst the principle of the 1:1 gas valve ensures the evo C range is able to deliver its full output at inlet pressures as low as 14mb, other gas appliances in the property may not be as tolerant. When operating pressures are found to be below the minimum meter outlet of 19mb these should be checked to ensure this is adequate for correct and safe operation.

Allowing for the acceptable pressure loss of 1mb across the installation pipework, it can be assumed that a minimum permitted operating pressure of 18mb will be delivered to the inlet of the appliance. (Reference BS 6400-1 Clause 6.2 Pressure Absorption).

The integral appliance isolation valve and boiler pipework could further reduce the operating pressure by up to 1.5mb when measured at the inlet test point on the appliance gas valve. Therefore it has been identified that an operating pressure as low as 16.5mbar could be measured at the appliance inlet pressure test point on the gas valve.

### IMPORTANT.

Installation pipes must be fitted in accordance with BS.6891. In IE refer to IS.813:2002. Pipework from the meter to the boiler MUST be of an adequate size.

**Table 4 - Balanced Flue Terminal Position**

Flue Terminal Positions	Min. Spacing*
1. Directly below, above or alongside an opening window, air vent or other ventilation opening.	300mm (12")
2. Below guttering, drain pipes or soil pipes. <i>BS5440-1 2000</i>	25mm (1")* 75mm (3")
3. Below eaves. <i>BS5440-1 2000</i>	25mm (1")* 200mm (8")
4. Below balconies or a car port roof. <i>BS5440-1 2000</i>	25mm (1")* 200mm (8")
5. From vertical drain pipes or soil pipes. <i>BS5440-1 2000</i>	25mm (1")* 150mm (6")
6. From an internal or external corner or to a boundary along side the terminal. <i>BS5440-1 2000</i>	25mm (1")* 300mm (12")
7. Above adjacent ground, roof or balcony level.	300mm (12")
8. From a surface or a boundary facing the terminal.	600mm (24")
9. From a terminal facing a terminal.	1,200mm (48")
10. From an opening in a car port (e.g. door or window) into dwelling.	1,200mm (48")
11. Vertically from a terminal on the same wall.	1,500mm (60")
12. Horizontally from a terminal on the wall.	300mm (12")
<b>Vertical Terminals</b>	
13. Above the roof pitch with roof slope of all angles. Above flat roof.	300mm (12") 300mm (12")
14. From a single wall face. From corner walls.	300mm (12") 300mm (12")

\* Only one reduction down to 25mm is allowable per installation otherwise BS5440-1 2000 dimensions must be followed.

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

## FLUE INSTALLATION

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

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

In IE refer to I.S. 813:2002.

The following notes are intended for general guidance:

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

Terminal guards are available from boiler suppliers. (Ask for TFC flue guard model no. K6 - round, plastic coated). In case of difficulty contact:

Grasslin (UK) Ltd. Tel. + 44 (0) 01732 359 888  
Tower House, Vale Rise Fax. + 44 (0) 01732 354 445  
Tonbridge. Kent TN9 1TB www.tfc-group.co.uk

Ensure that the guard is fitted centrally.

5. The flue assembly shall be so placed or shielded as to prevent ignition or damage to any part of any building.
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. 5440-1:2000.

**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 12 .

## 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

### IMPORTANT.

A minimum length of 1 metre of copper pipe MUST be fitted to both flow and return connections from the boiler before connection to any plastic piping.

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

### WATER TREATMENT - see Frame 6



# GENERAL

## 2 BOILER DIMENSIONS, SERVICES & CLEARANCES

all dimensions in mm (in)

The boiler connections are made on the boiler connection tails. Refer to Frames 32-35.

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

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

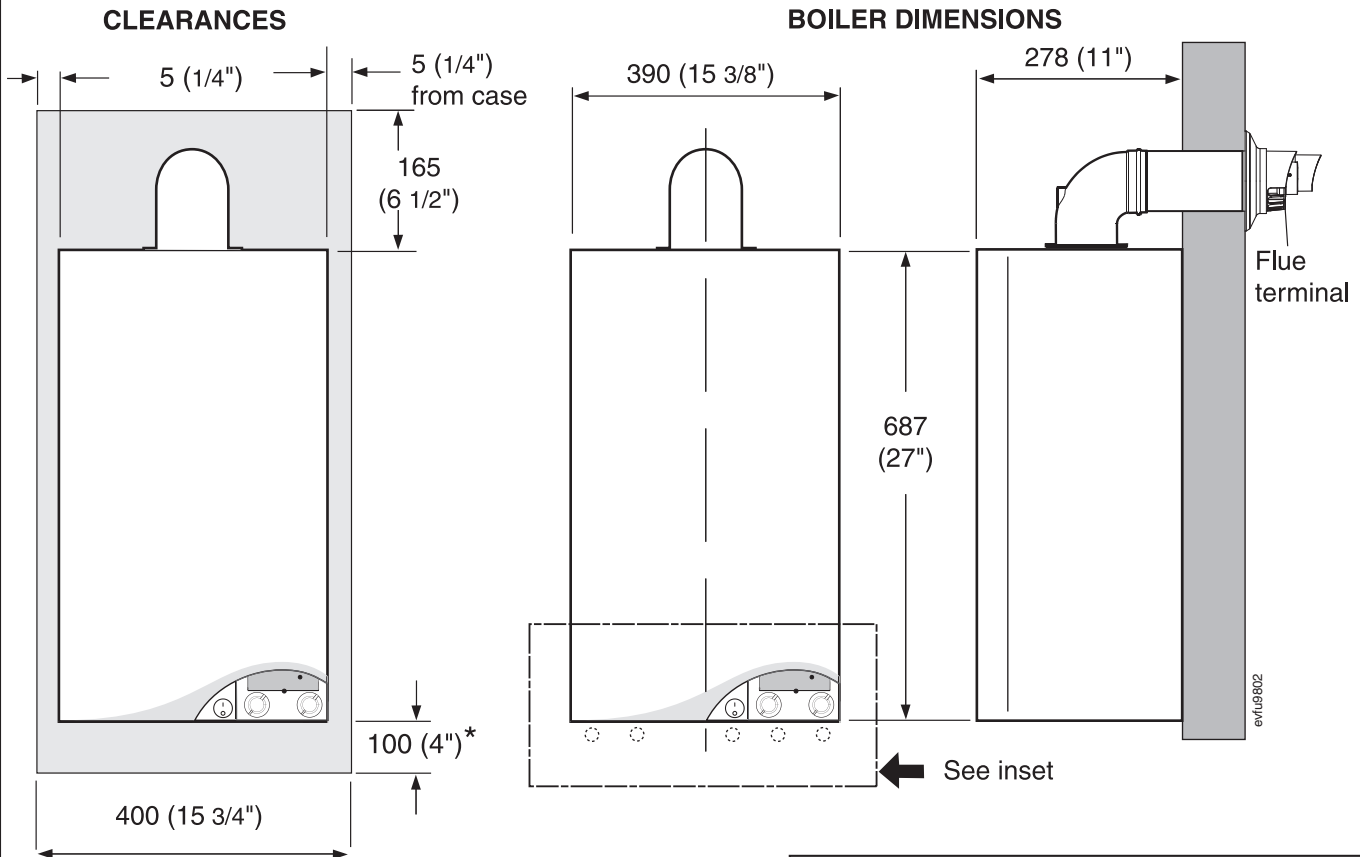
### Side and Rear Flue

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

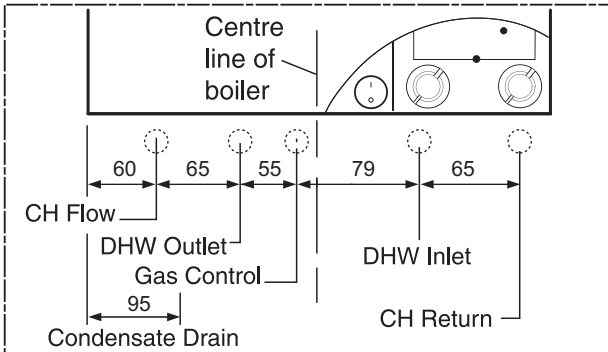
the space into which the boiler is going to be installed is less than the length of flue required the flue must be fitted from the outside.

### 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.



### Inset: Water Connections and Gas Connection



### 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.

**N.B.** The boiler will not fit into a standard depth wall unit. In order for it to do so the plastic fascia should be removed. See Frame 44.

### \* Bottom clearance

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

SIDE FLUE ONLY			
Horizontal length of flue from centre line of boiler to outside wall			Top clearance required (MIN.) Dim. A
C22/24	C22/30	C22/35	
0.5 m	0.5 m	0.5 m	160 mm (6 5/16")
1.0 m	1.0 m	1.0 m	170 mm (6 11/16")
1.5 m	1.5 m	1.5 m	185 mm (7 1/4")
1.5 m	1.5 m	1.5 m	200 mm (7 7/8")
2.5 m	2.5 m	2.5 m	210 mm (8 1/4")
3.0 m	3.0 m	3.0 m	225 mm (8 7/8")
3.5 m	3.5 m	N/A	250 mm (9 7/8")
4.0 m	4.0 m	N/A	260 mm (10 1/4")
4.5 m	4.5 m	N/A	265 mm (10 7/16")
5.0 m	5.0 m	N/A	275 mm (10 13/16")
5.5 m	5.5 m	N/A	290 mm (11 3/8")
6.0 m	6.0 m	N/A	300 mm (11 13/16")

REAR FLUE ONLY	
MIN. Top clearance required = 145 mm (5 3/4")	

# GENERAL

## BOILER CONTROL INTERLOCKS

**Wolseley Centres Ltd.** 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.

Central heating systems controls should be installed to ensure the boiler is switched off when there is no demand for heating or hot water.

When thermostatic radiator valves are used, the space heating temperature control over a living / dining area or hallway having a heating requirement of at least 10% of the boiler heat output should be achieved using a room thermostat, whilst other rooms are individually controlled by thermostatic radiator valves. However, if the system employs thermostatic radiator valves on all radiators, or two port valves, then a bypass circuit must be fitted with an automatic bypass valve to ensure a flow of water should all valves be in the closed position.

## ELECTRICAL SUPPLY

### WARNING.

This appliance must be earthed. 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. For IE reference should be made to the current ETCI rules for electrical installations.

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

**Note. The fan voltage is 325V DC**

## CONDENSATE DRAIN Refer to Frames 22 & 54.

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 21.5mm (3/4") overflow pipe.

## 3 SYSTEM REQUIREMENTS - Central Heating

### Notes

- a. *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.*
- b. *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.*

### 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. An 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.

<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

*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,

## GENERAL

### 4 SYSTEM REQUIREMENTS - CH (continued) and Hot Water

an additional vessel **MUST** be installed on the return to the boiler.

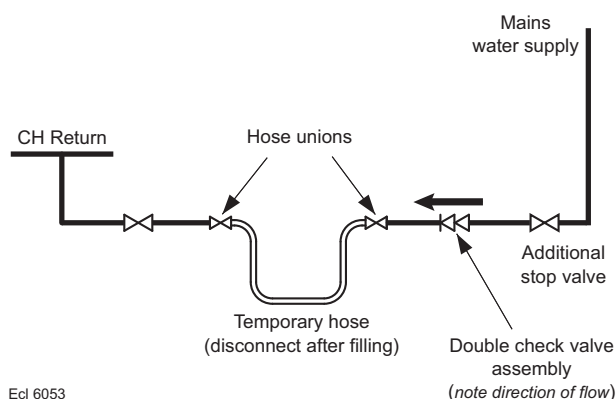
Guidance on vessel sizing is given in Frame 3.

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

- a. 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. When installing the filling device it must be connected as shown below, to fully comply with the water regulations. This may involve the fitting of an additional WRAS approved isolator valve to the mains supply.
  - i. Thoroughly flush out the whole system with cold water.
  - ii. Fill and vent the system until the pressure gauge registers 1bar and examine for leaks.
  - iii. Release water from the system until the minimum system design pressure is reached; 1.0 bar if the system is to be pre-pressurised.

**Water Flow Rate and Pressure Loss**

Max CH Output	kW (Btu/h)	23.4 (80 000)
Water flow rate	l/sec (gal/min)	0.37 4.8
Temperature Differential	°C (°F)	15 (27)
Head available for system pump.	m.w.g. (ft.w.g.)	2.3 7.5



### DOMESTIC HOT WATER

- The domestic hot water service must be in accordance with BS 5546 and BS 6700.
- Refer to Table 1 for minimum and maximum working pressures.
- The boilers are suitable for connection to most types of washing machine and dishwasher appliances.
- When connecting to suitable showers, ensure that:
  - a. The cold inlet to the boiler is fitted with an approved anti-vacuum or syphon non-return valve.
  - b. Hot and cold water supplies to the shower are of equal pressure.

**5. Hard Water Areas**

Where the water hardness exceeds 200mg/litre, it is recommended that a proprietary scale reducing device is fitted into the boiler cold supply within the requirements of the local water company.

**IMPORTANT**

Provision **MUST** be made to accommodate the expansion of DHW contained within the appliance, if a non-return valve is fitted to the DHW inlet.

### 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 valves on page 10.

**Note.** Systems incorporating zone valves which could completely cut off the flow through the system must also include a bypass.

**BALANCING**

- 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 differential.

These valves should now be left as set.

- Open all manual or thermostatic radiator valves and adjust the lockshield valves on the remaining radiators, to give around 15 °C temperature drop at each radiator.
- Adjust the room thermostat and programmer to NORMAL settings.

# INSTALLATION

## 6 WATER TREATMENT

### CENTRAL HEATING

The evo HE range of boilers have an ALUMINIUM alloy heat exchanger.

#### IMPORTANT.

The application of any other treatment to this product may render invalid the guarantee of Wolseley Centres Ltd.

**Wolseley Centres Ltd.** recommend Water Treatment in accordance with the Benchmark Guidance Notes on Water Treatment in Central Heating Systems.

If water treatment is used **Wolseley Centres Ltd.** recommend only the use of FERNOX-COPAL, MB1, GE BETZ or SENTINEL X100 inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

#### Notes.

1. *It is most important that the correct concentration of the water treatment products 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 7593:2006 details the steps necessary to clean a domestic 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.*

### DOMESTIC HOT WATER

In hard water areas where main water can exceed 200ppm Total Hardness (as defined by BS 7593:2006 Table 2) a scale reducing device should be fitted into the boiler cold supply within the requirements of the local water company. The use of artificially softened water, however, is not permitted.

**Wolseley Centres Ltd.** recommend the use of Fernox Qantomat, GE Betz Sentinel Combiguard and Calmag CalPhos I scale reducing devices, which must be used in accordance with the manufacturers' instructions.

For further information contact:  
Fernox Manufacturing Co. Ltd  
Cookson Electronics  
Forsyth Road  
Sheerwater  
Woking  
Surrey GU21 5RZ  
+44 (0) 1799 521133

Sentinel Performance Solutions  
The Heath Business & Technical Park  
Runcorn  
Cheshire WA7 4QX  
Tel: 0800 389 4670  
[www.sentinel-solutions.net](http://www.sentinel-solutions.net)

Salamander Engineering Ltd  
The Heath Business & Technical Park  
Runcorn  
Cheshire WA7 4QX  
Tel: 0800 389 4670

Calmag Ltd.  
Unit 4-6, Crown Works  
Bradford Road  
Sandbeds, Keighley  
West Yorkshire BD20 5LN  
Tel: +44 (0) 1535 210 320

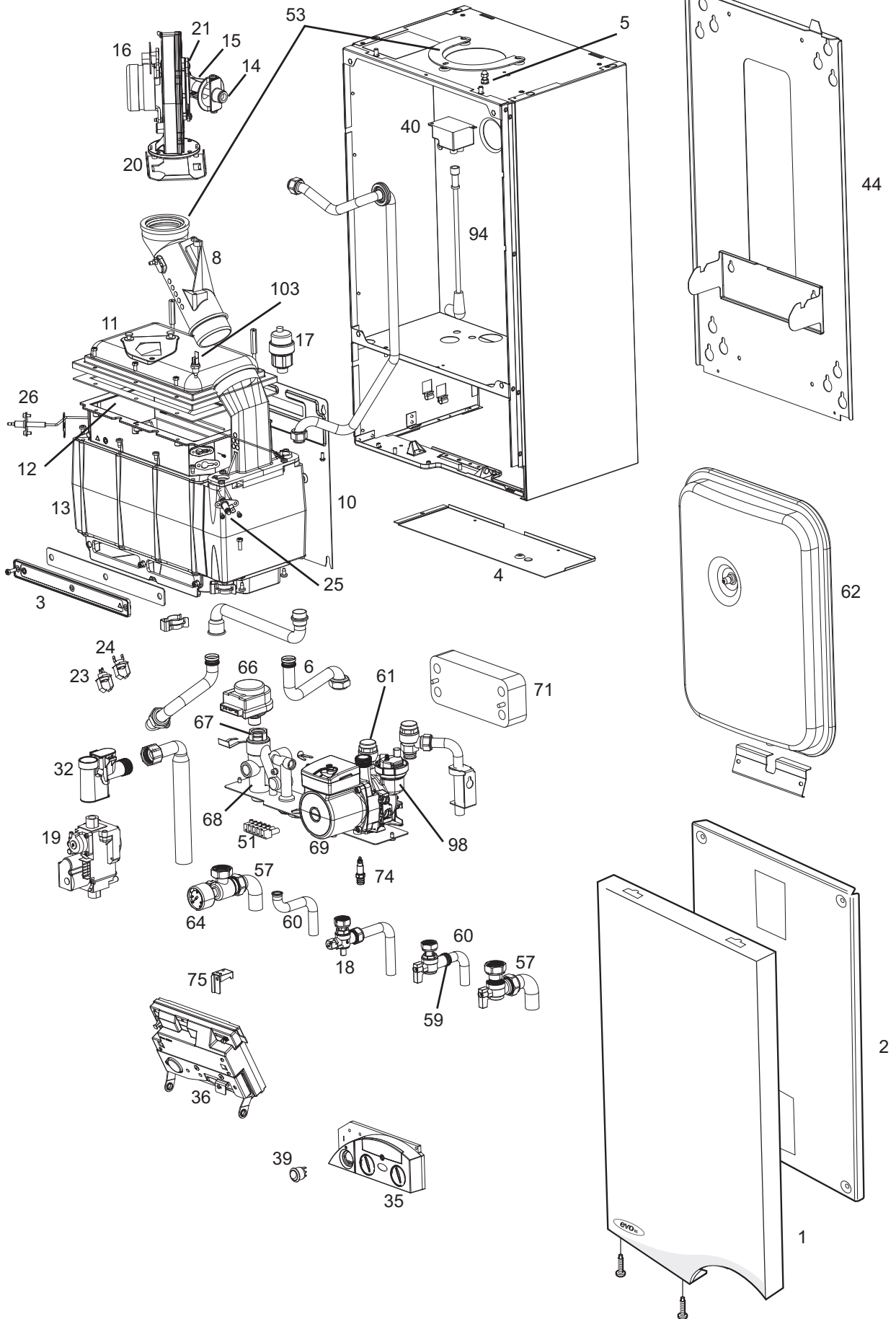
## 7 BOILER ASSEMBLY - Exploded View Legend

**Note** that item numbers are linked to the spares list

- |   |                                      |                               |
|---|--------------------------------------|-------------------------------|
| 1. Front casing panel.                  | 19. Gas control valve.               | 59. Flow restrictor.          |
| 2. Boiler sealing panel.                | 20. Fan bracket.                     | 60. DHW inlet/outlet pipe.    |
| 3. Sump cover.                          | 21. Orifice plate.                   | 61. Pressure relief valve.    |
| 4. Bottom casing panel.                 | 23. Control thermistor (flow/return) | 62. Expansion vessel.         |
| 5. Flue sensing nipple.                 | 24. Overheat thermostat.             | 64. Pressure gauge.           |
| 6. Return pipe.                         | 25. Ignition electrode.              | 66. Diverter valve head.      |
| 8. Flue manifold.                       | 26. Flame detection electrode.       | 67. Diverter valve.           |
| 10. Interpanel.                         | 32. Kit - Trap and seal.             | 68. Diverter valve manifold.  |
| 11. Burner.                             | 35. User control.                    | 69. Pump                      |
| 12. Combustion chamber insulation.      | 36. Primary controls (PCB).          | 70. Pump manifold.            |
| 13. Heat exchanger.                     | 39. Mains switch.                    | 71. DHW plate heat exchanger. |
| 14. Injector and housing.               | 40. Spark generator.                 | 75. Control box clamp.        |
| 15. Venturi assembly.                   | 44. Wall mounting plate              | 94. Ignition lead.            |
| 16. Fan assembly.                       | 51. Mains connector.                 | 98. Air Vent (Pump)           |
| 17. Automatic air vent (Heat Exchanger) | 53. Turret gasket kit.               | 103. Dry fire thermistor.     |
| 18. Gas service cock.                   | 57. CH stub pipe.                    |                               |

# INSTALLATION

## 8 BOILER ASSEMBLY - Exploded View



evfu9803

# INSTALLATION

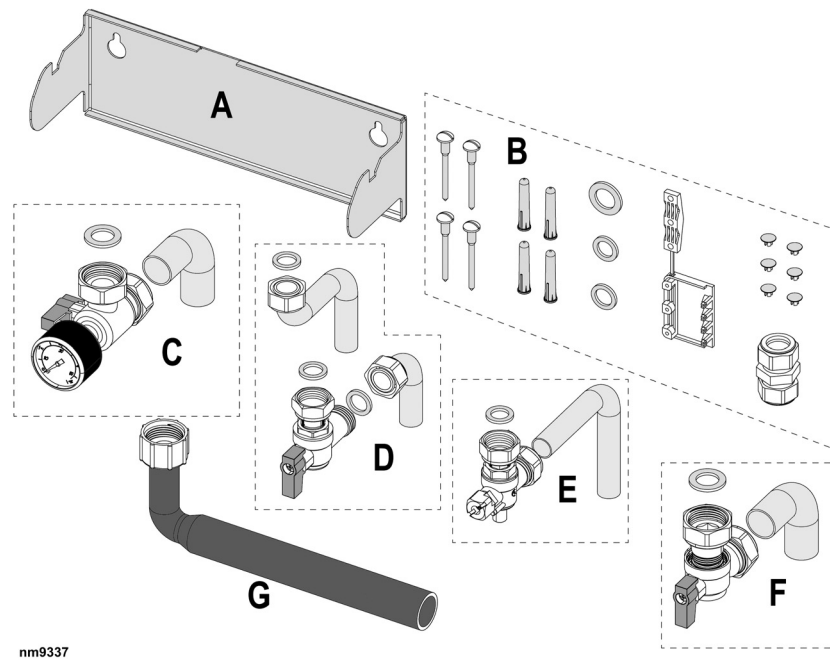
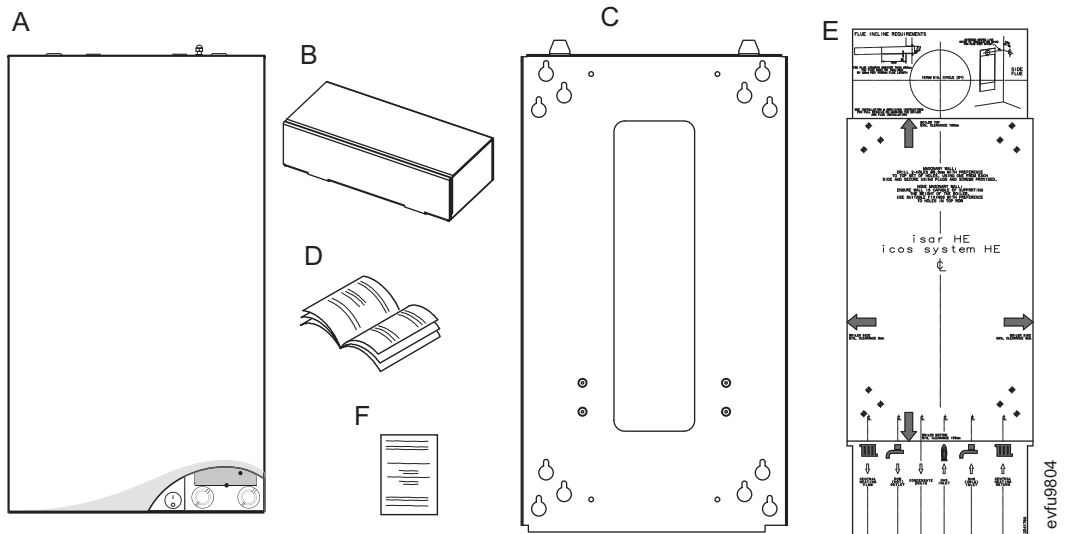
## 9 UNPACKING

The boiler is supplied fully assembled in one Pack A, together with a telescopic flue assembly for lengths up to 595mm, rear or side flue outlet, in Pack B.

Unpack and check the contents.

### Pack A Contents

- A Boiler
- B Hardware Pack Box
- C Wall Mounting Plate
- D These Installation/Users Instructions
- E Wall Mounting Template (located on internal protective packaging)
- F 1 Year Guarantee

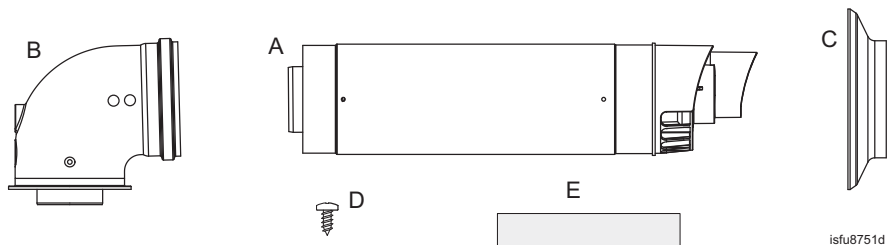


### Hardware Pack Contents

- A Support Bracket - 1 off
- B Accessory Pack
- C CH Flow Valve & Gauge Pack
- D DHW Pack
- E Gas Valve Pack
- F CH Return Valve Pack
- G "S" Trap Hose Moulding

### Pack B Contents

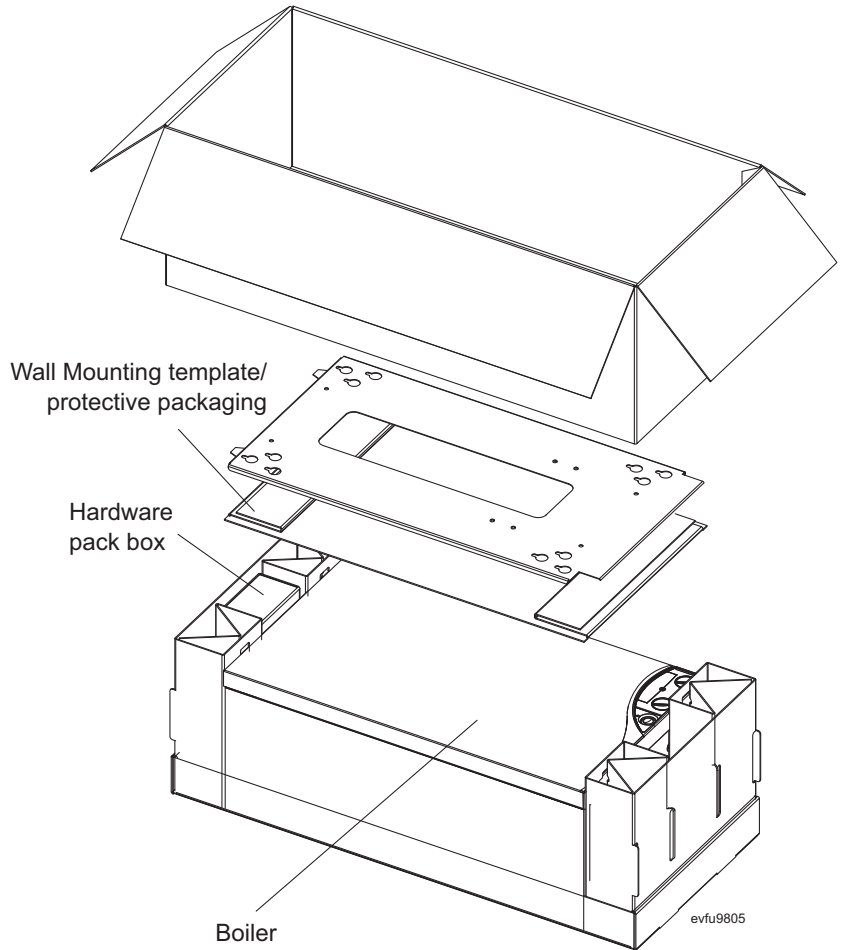
- A Telescopic flue terminal
- B Flue turret
- C Rubber Terminal Wall Seal
- D Screw
- E Sealing tape



# INSTALLATION

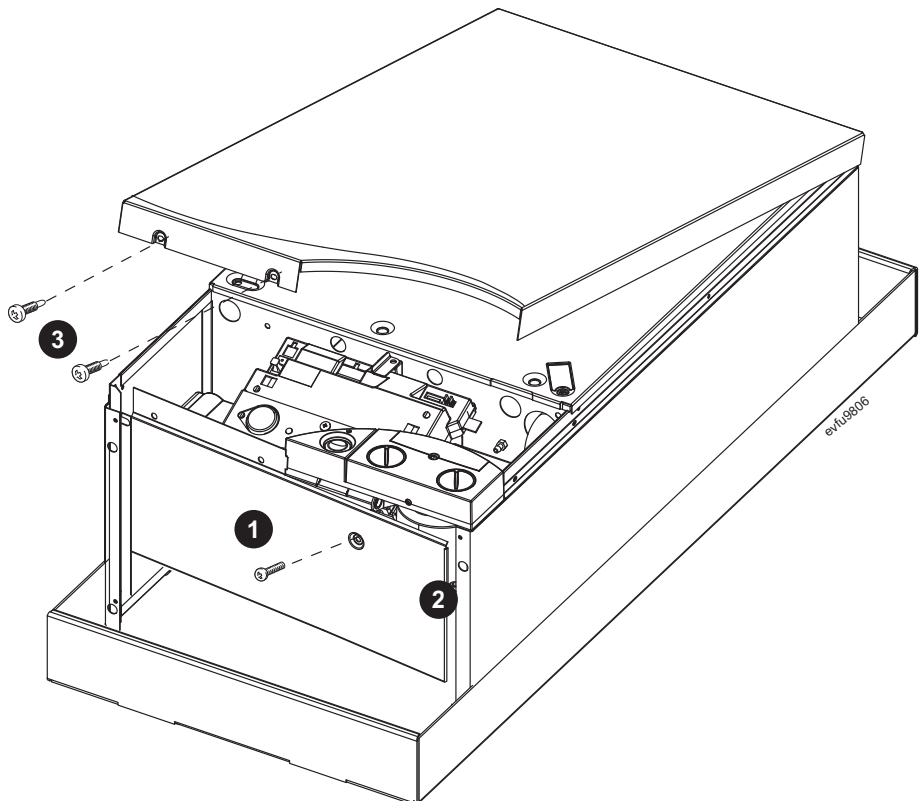
## 10 PACKAGING REMOVAL

1. Ensure the boiler is on a sound flat surface.
2. Carefully remove the strapping.
3. Fold back the top flaps to gain access to:
  - Instructions
  - 1 year guarantee
  - Wall mounting plate
  - Wall mounting template.  
(located under pre-piping frame on protective packaging).
4. Remove the instructions and read thoroughly before unpacking the product.
5. When ready for installation lift off the cardboard carton.



## 11 BOTTOM AND FRONT PANEL REMOVAL

1. Remove the screw from the underside of the boiler's bottom panel.
2. Pull the right-hand side of the panel down, slide it to the right and withdraw.
3. Remove the screws from bottom of the front panel.
4. Lift panel up and off top pegs.



# INSTALLATION

## 12 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 frame depth = 33mm

### FLUE KITS

**Pack B** - supplied as standard

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

**Screw Kit** - Optional kit for mechanical fixing of flue joints

**Finishing Kit** - Supplied as an optional extra.

Refer to 'Flue Extension Ducts'

**Note. MAXIMUM FLUE LENGTHS:**

**C22/24 & C22/30** - 6M (HORIZONTAL FLUE)

**C22/35** - 3M (HORIZONTAL FLUE)

**C22/24, C22/30 & C22/35** - 7.5M (ROOF FLUE)

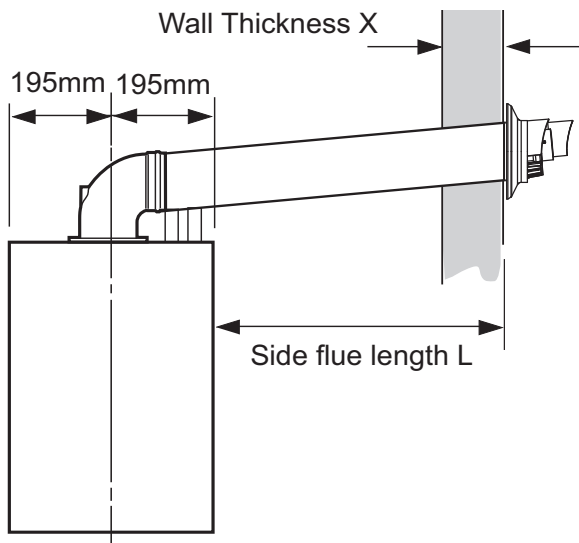
**C22/24, C22/30 & C22/35** - 5M PRIMARY AND 17M SECONDARY IS A TYPICAL MAX. FLUE LENGTH. (For alternative details refer to Powered Vertical Instructions)

**90° ELBOW KIT 60/100** (EQUIVALENT FLUE LENGTH RESISTANCE = 1M)

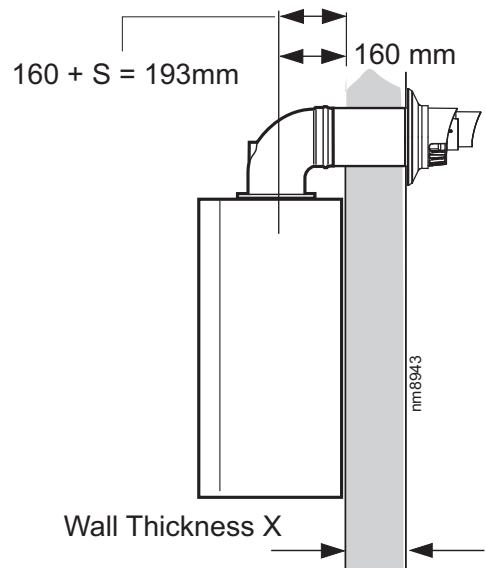
**45° ELBOW KIT 60/100** (EQUIVALENT FLUE LENGTH RESISTANCE = 0.6M)

**MINIMUM HORIZONTAL FLUE LENGTHS** - TELESCOPIC TERMINAL = 370MM  
 (Centre Line of turret to outside of wall terminal) - ONE PIECE TERMINAL = 285MM

**SIDE FLUE**



**REAR FLUE**



FLUE OUTLET



# INSTALLATION

## 12A CONT'D DETERMINING THE FLUE LENGTH AND FLUE PACKS REQUIRED

### Notes.

1. It is recommended that a support bracket is fitted for every 1 meter of extension pipe used and a bracket should be used at every joint, to ensure pipes are held at the correct angle.

If a slip joint coupling is to be used then a bracket should be used to secure the collar.

2. When extension 'D' packs are used 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.

3. If the telescopic 'B' pack, or horizontal flue terminal (600 long) only are used, they may be mounted horizontally. The 1.5 degrees is taken care of by the inclination of the flue within the air pipe.

4. 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 the wall to suit this condition.

5. Only use water as a lubricant during assembly. Do not use mineral based oils.

Total Flue length dimension (measuring from CL of turret to outside wall)		Flue	
Rear flue dim. X+160	Side flue dim. L+195	Extra packs required	Boiler Size
Up to 595 mm	Up to 595 mm	none	C22/24,30 & 35
Up to 1545 mm	Up to 1545 mm	Pack D - 1 off	C22/24,30 & 35
Up to 2495 mm	Up to 2495 mm	Pack D - 2 off	C22/24,30 & 35
Up to 3445 mm	Up to 3445 mm	Pack D - 3 off	C22/24,30 & 35*
Up to 4395 mm	Up to 4395 mm	Pack D - 4 off	C22/24 & 30
Up to 5345 mm	Up to 5345 mm	Pack D - 5 off	C22/24 & 30
Up to 6000 mm	Up to 6000 mm	Pack D - 6 off	C22/24 & 30

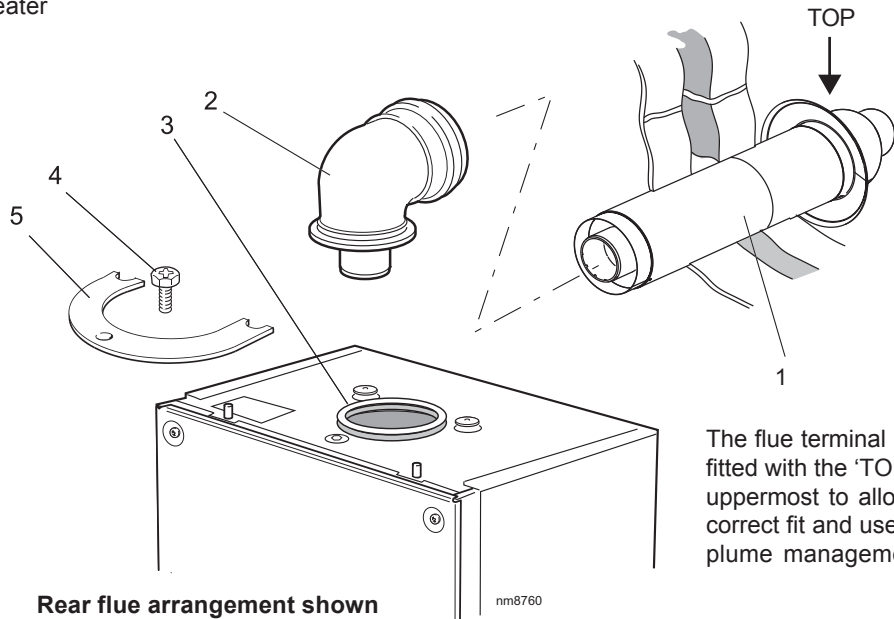
\*evo HE C22/35 is capable of 3m flue only

## 13 FLUE ASSEMBLY - Exploded View

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

**Side** 395mm

**Rear** 435mm



### LEGEND

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

The flue terminal **MUST** be fitted with the 'TOP' uppermost to allow the correct fit and use of the plume management system.

Rear flue arrangement shown

nm8760

# INSTALLATION

## 14 WALL MOUNTING TEMPLATE

The wall mounting template is located on the internal protective packaging.

**Note.**

The template shows the positions of the fixing holes and the rear flue hole centre for standard installation. Care MUST be taken to ensure the correct holes are drilled.

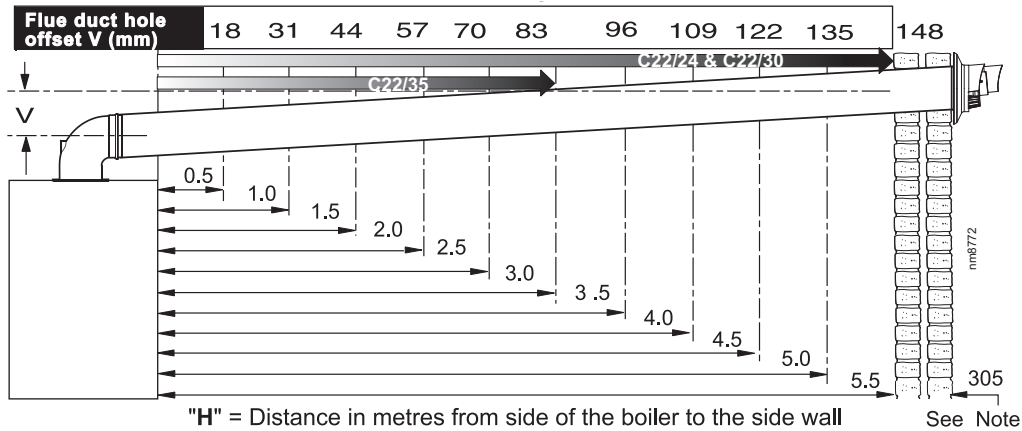
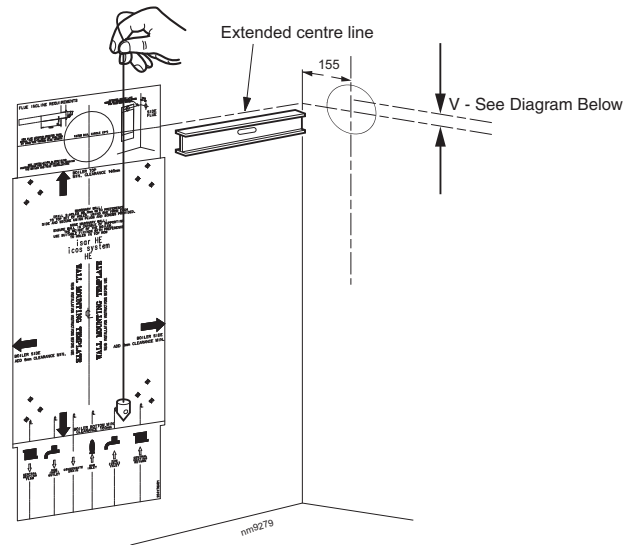
1. Tape template into the selected position. Ensure squareness by hanging a plumbline as shown.
2. If fitting a side flue extend the flue centre line onto the side wall and measure in 155mm for standard installation.

**Note.** If using stand-off kit distance increases to 188mm.

3. Mark onto the wall the following:
  - a. The wall mounting plate screw positions (choose one from each group).
  - b. The position of the flue duct hole (see diagram below).

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

4. Remove the template from the wall.



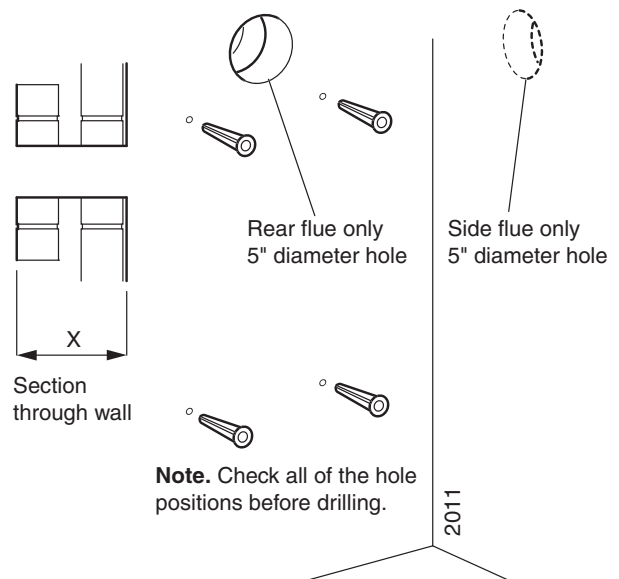
"H" = Distance in metres from side of the boiler to the side wall  
**Note.** If wall thickness is greater than 305mm then dimension "H" must be reduced by the same amount and the offset may be adjusted accordingly.

## 15 PREPARING THE WALL

**IMPORTANT.**

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 7.5mm / 8mm masonry drill and insert the plastic plugs, provided, for the piping frame.
3. Locate 4 No.14 x 50mm screws in the piping frame (one at each side, in any of the 3 holes provided at each side) and screw home.



FLUE OUTLET

# INSTALLATION

## 16 TERMINAL WALL SEAL ASSEMBLY / POSITIONING

Prior to fitting the flue, the rubber terminal wall seal provided in the flue pack MUST be fitted to the flue terminal as shown below in Figure 1.

Once the flue is installed it is IMPORTANT that the rubber terminal wall seal is pressed against the outside wall to create an adequate seal between the flue and wall as shown in Figure 2.

FIGURE 1

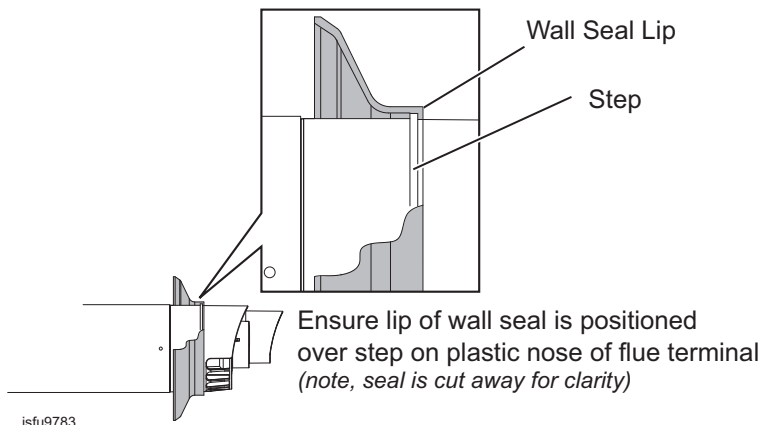
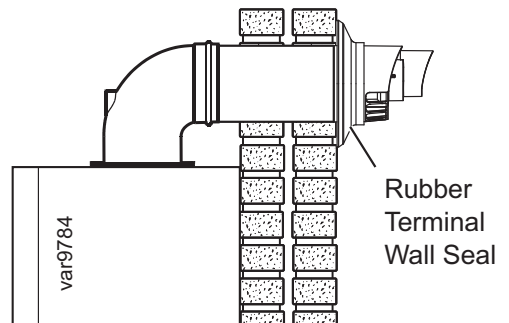


FIGURE 2

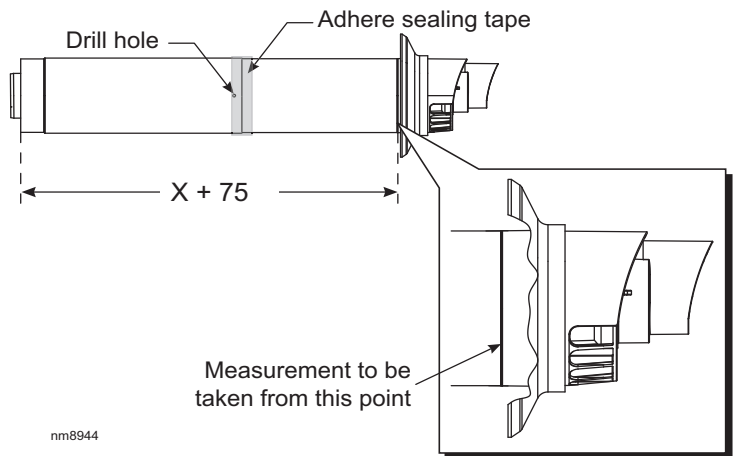


## 17A SETTING THE FLUE - REAR Wall thicknesses of 210 to 435mm

**Notes.**

- a. If using the extension ducts go to Frame 18.
- b. If the stand-off frame is used it is essential to add 33mm to dimension X.
- c. For shorter flue requirements less than 210mm, use non telescopic B Pack.

1. Measure and note wall thickness X. Refer to Frame 12.
2. Add 75mm to dimension X and set telescopic flue length as indicated in drawing.
3. Using a 3.5mm drill bit, drill one hole in outer air duct taking care not to pierce plastic inner flue.
4. Fix to length using self tappers provided.
5. Seal outer air duct using the tape provided.



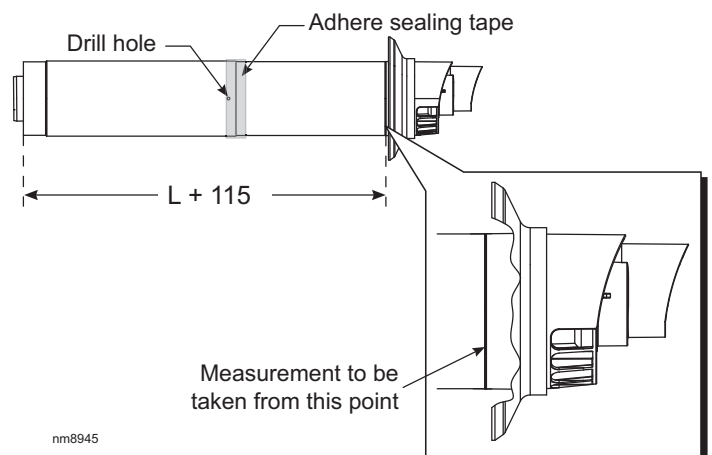
## 17B SETTING THE FLUE - SIDE

Wall thicknesses of 170 to 395mm

**Notes.**

- a. If using the extension ducts go to Frame 18.
- b. For shorter flue requirements use non telescopic B Pack.

1. Measure and note wall thickness X. Refer to Frame 12.
2. Measure distance from side of boiler to inside of wall and add to wall thickness  $X=L$ . Refer to Frame 12.
3. Add 115mm to dimension L and set telescopic flue length as indicated in drawing.
4. Using a 3.5mm drill bit, drill one hole in outer air duct taking care not to pierce plastic inner flue.
5. Fix to length using self tappers provided.
6. Seal outer air duct using the tape provided.

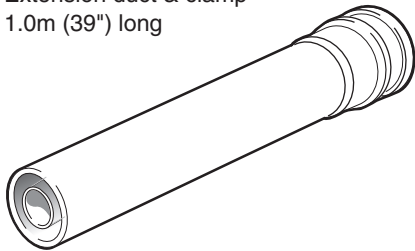


## INSTALLATION

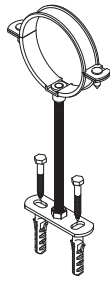
### 18 FLUE EXTENSION DUCTS - For total flue lengths greater than 595mm

#### Pack D Flue extension duct kit contents

Extension duct & clamp  
1.0m (39") long

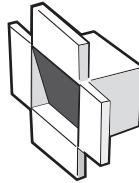


nm8732

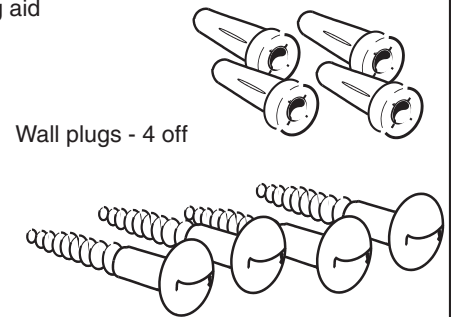


Flue duct support

Flue support cutting aid  
(shown folded up)



No. 10 x2" wood screw - 4 off



Wall plugs - 4 off

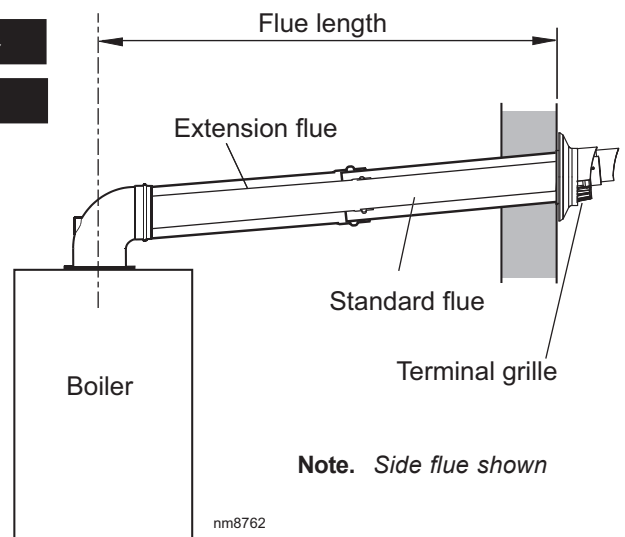
### 19 FLUE EXTENSION DUCTS - continued

**Use a maximum of 6m extended flue ONLY (C22/24 & C22/30)**

**Use a maximum of 3m extended flue ONLY (C22/35)**

#### General arrangement

1. A **maximum** of 6 extension ducts for the C22/24 and C22/30 and a maximum of 3 extension ducts for the C22/35 (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 Frames 18 and 26.
3. Only use water as a lubricant during assembly. Do not use mineral based oils.

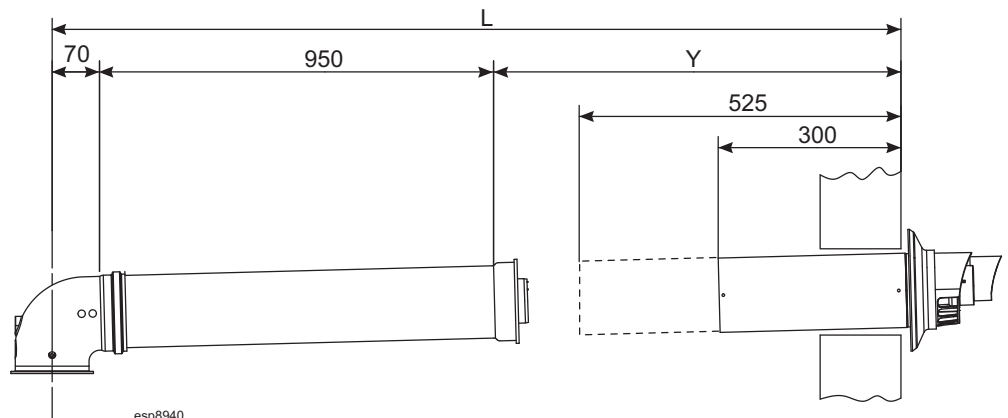


### 20 FITTING THE KIT

Because of the flexibility of the telescopic flue terminal it is not always necessary to cut an extension pack.

1. Measure the total flue length from the centre of the boiler outlet to the outside wall.
2. Subtract 70mm from this dimension.
3. Subtract 950mm for each 'D' pack to be used.
4. If the remainder Y is 300mm - 525mm this can be taken up by the adjustment in the telescopic flue.
5. If the remainder Y is 525mm - 950mm it will be necessary to cut a 'D' pack to 400mm.

6. if the remainder Y is less than 300mm, shorten the previous 'D' pack to 400mm and adjust the telescopic terminal.
7. Measure and mark the length on the flue, to ensure a square cut mark the flue all the way around and cut to length.

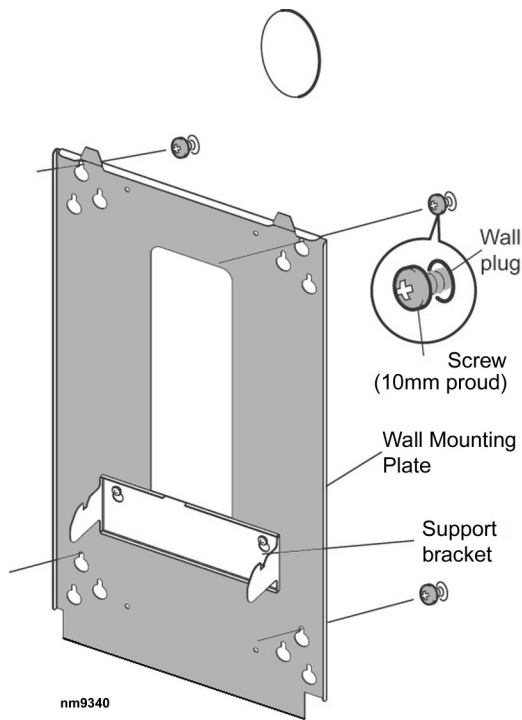


# INSTALLATION

## 21 FITTING THE WALL MOUNTING PLATE (Rear Flue outlet shown)

### TO FIT THE WALL MOUNTING PLATE DIRECTLY TO THE WALL

- Insert wall plugs.
- Put the screws into the wall plugs and leave 10mm proud
- Hang the plate 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 mounting plate.

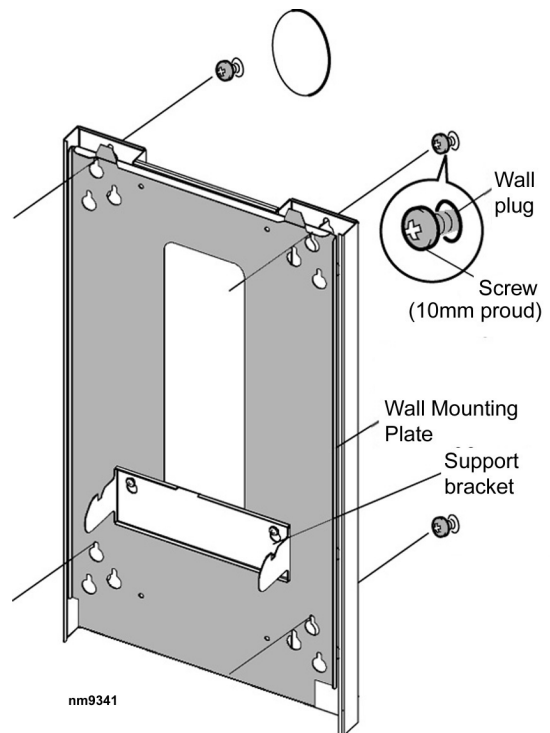


### TO FIT THE WALL MOUNTING PLATE USING THE STAND-OFF FRAME OPTION KIT (To allow pipework to be taken upwards)

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

#### 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.*



# INSTALLATION

## 22 CONDENSATE DRAIN

Before mounting the boiler on the wall, the condensate drain (provided in the h/ware pack) must be connected from the boiler 'S' trap to a drainage point, preferably within the building.

Ensure that the condensate trap is full of water before commissioning the boiler. Refer to Frame 26.

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.**

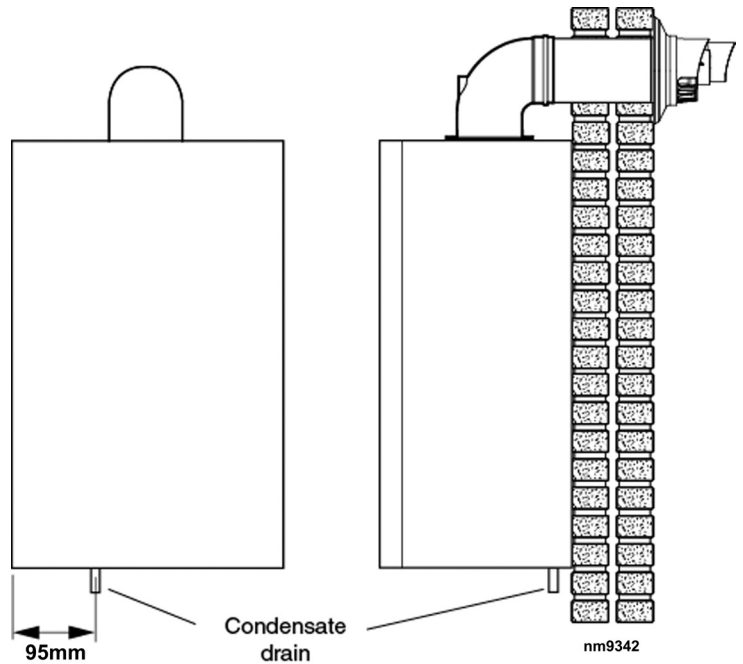
If excessive external pipework cannot be avoided an additional siphon kit and insulation are recommended to prevent possible freezing.

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.

If external condensate pipe run is greater than 3m then pipe must be 32mm nominal diameter.

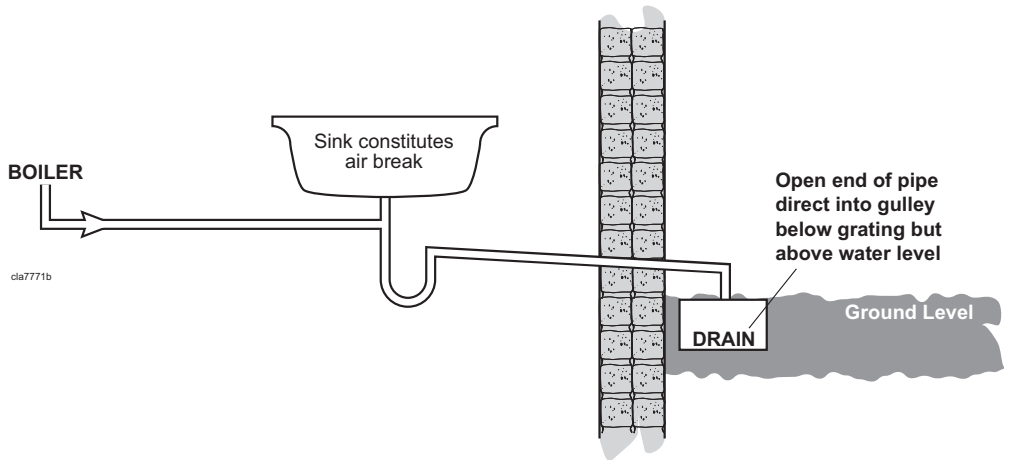
Consideration must be given to insulating external condensate pipe runs.



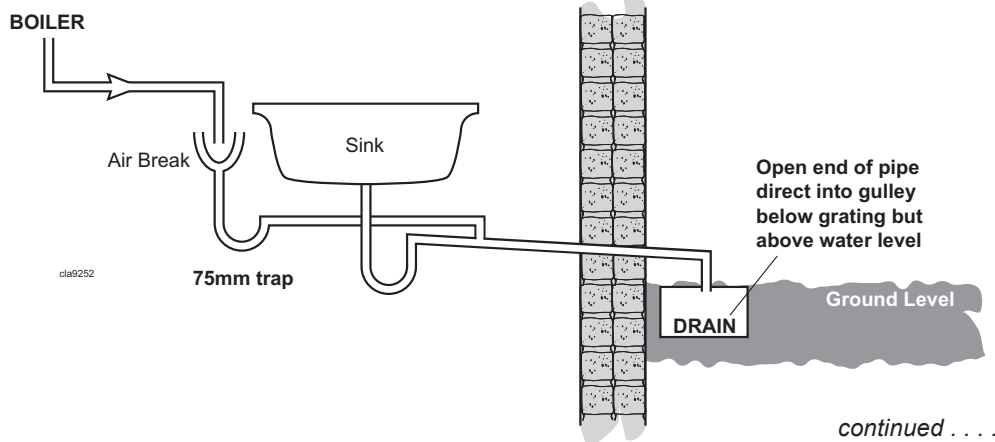
## 23 CONDENSATE PIPE TERMINATION CONFIGURATIONS

Notes: ALL PIPE RUNS MUST BE IN ACCORDANCE WITH BS6798

**1. INTERNAL TO SINK WASTE UPSTREAM OF SINK WASTE TRAP**



**2. INTERNAL TO SINK WASTE DOWNSTREAM OF SINK WASTE TRAP (PREFERRED METHOD)**



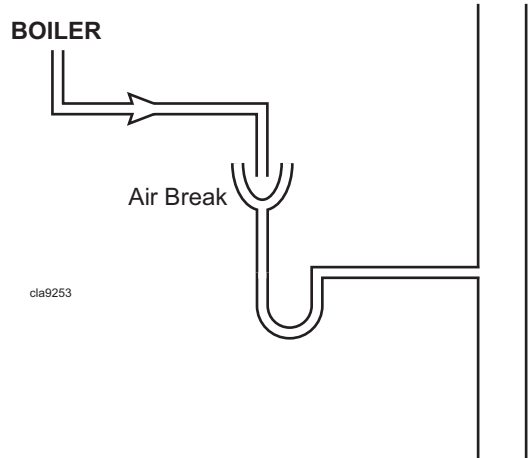
continued . . . .

## 24 CONDENSATE PIPE TERMINATION CONFIGURATIONS . . . *continued*

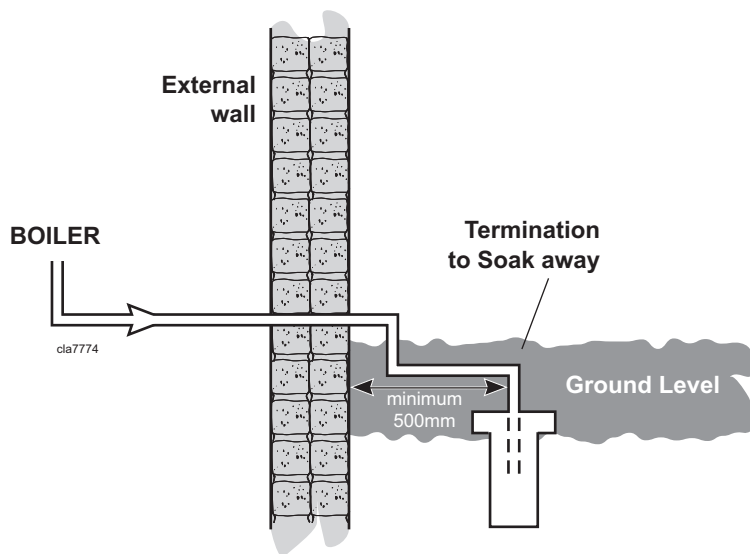
### 3. INTERNAL CONNECTION TO SOIL AND VENT STACK

Termination into a down pipe can take place providing it can be confirmed that the down pipe is part of a combined waste and rain water system.

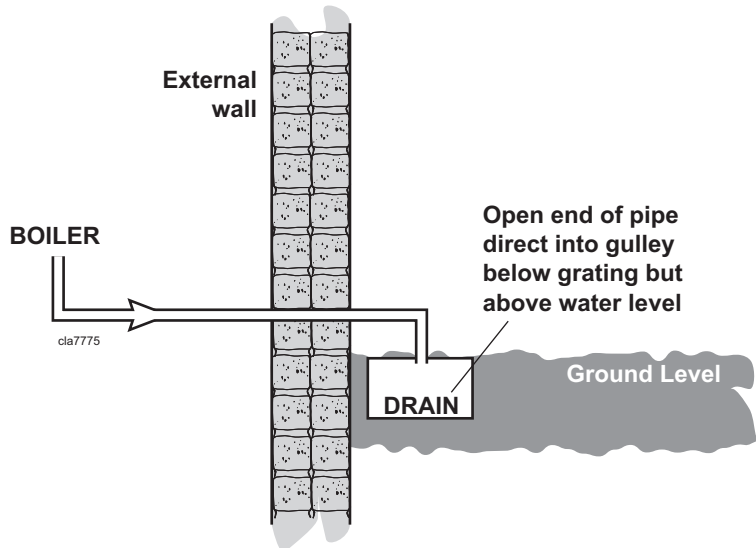
\* Make connection to SVP using a solvent welded saddle



### 4. TERMINATION TO SOAK AWAY



### 5. TERMINATION TO DRAIN / GULLEY

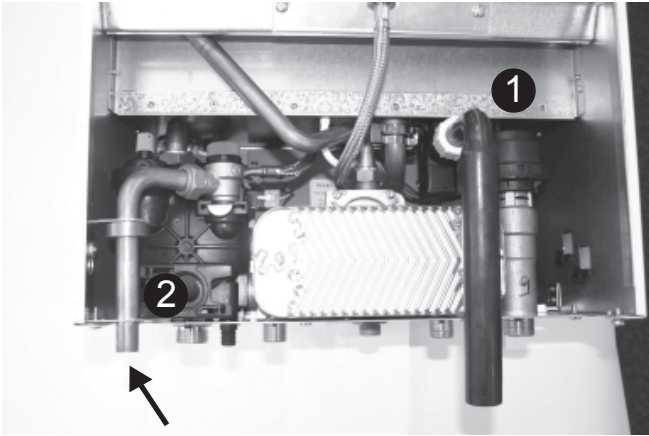


# INSTALLATION

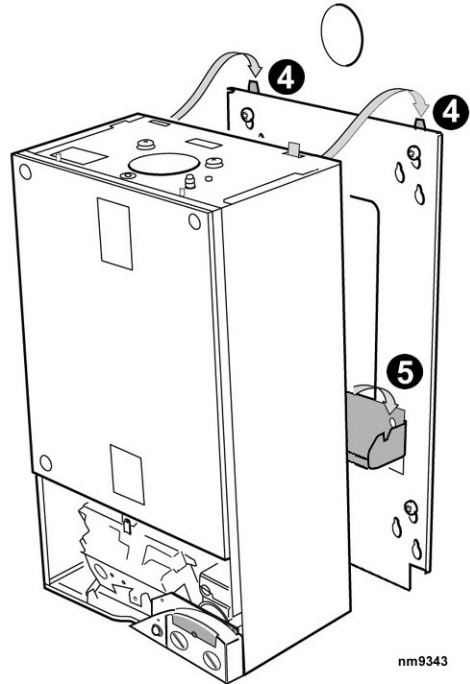
## 25 MOUNTING THE BOILER

1. Before mounting the boiler on the wall place it on its left hand side and fit 'S' trap hose, supplied in the hardware pack.
2. Locate position of 15mm copper safety drain discharge pipe. Ensure this pipe is not strained or damaged when mounting the boiler.
3. Ensure that the plastic blanking plugs are removed from all of the boiler service connections before mounting. Note that some spillage of water may occur when mounting the boiler to the frame.

4. Lift the boiler onto the wall mounting frame, locating it over the tabs at the top of the frame. When handling the boiler take care not to place strain on safety valve discharge pipe.
5. Lower the boiler into position, engaging it onto the support bracket.



**IMPORTANT:** When handling the boiler take care not to place strain on the safety valve discharge pipe.

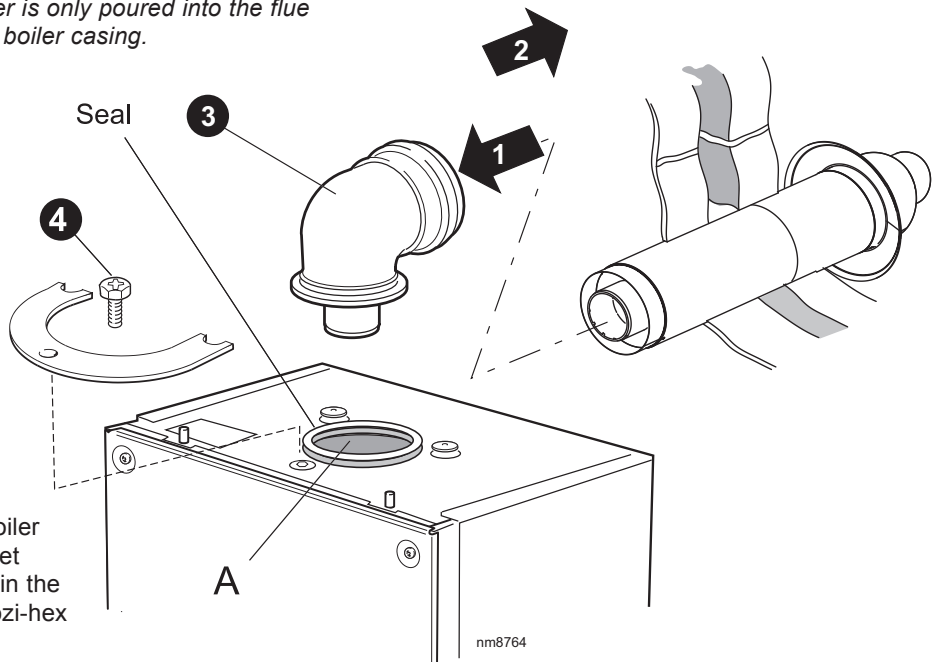


nm9343

## 26 CONNECTING THE FLUE TO THE BOILER

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

1. Locate the flue into the turret.
2. Insert the flue assembly through the prepared hole in the wall. Push through and pull back to seal against outside wall face.
3. Locate the flue turret on the top of the boiler, ensuring that the turret gasket is in place. Also ensure the turret is located concentric with the flue aperture on the boiler top panel. Check that the flue seal 'A' located in the top of the flue manifold is secure and giving an effective seal.
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.



nm8764

### 5. Flues over 1 metre long.

Fix the flue support bracket to the wall, using the 4 wall plugs and wood screws.

**NB.** The space bracket will utilise one fixing hole only whilst used in conjunction with the stand-off option.



# INSTALLATION

## 27 FITTING THE OPTIONAL ROOF FLUE KIT (Flat or Pitched)

**Note.**

A flat or pitched roof flashing plate (not supplied) is required before proceeding with the installation of this kit.

This kit is suitable for both flat and pitched roof terminations, using a concentric flue to run vertically from the top of the boiler and terminating above roof level.

Connection to the top of the boiler is made using both a separately supplied vertical connector and a 80/125 adaptor.

**WEATHER PROOFING**

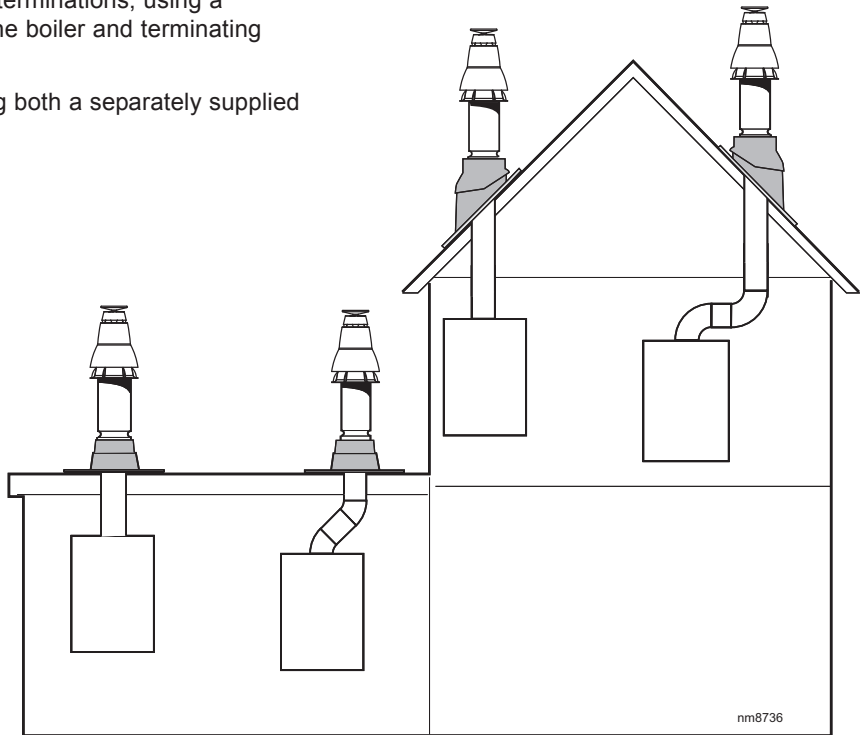
Where the flue passes through the roof line an adequate seal must be made. This is achieved by using either:

- Flat roof weather collar
- or
- Universal weather collar.

**ACCESSORIES**

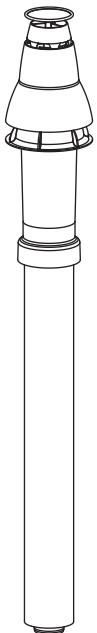
Flue Duct Extension Kits are available for flue lengths extending beyond 1m. These packs contain 1m extension ducts and may be cut to the desired length.

If the offset vertical option is used an elbow Kit is required. For a full accessories list refer to page 7, Optional Extras and Frame 31, Flue Arrangement.

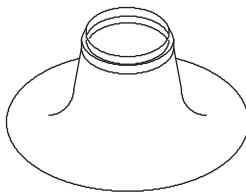


## 28 ROOF FLUE KIT CONTENTS / OPTIONS

**Flue Terminal**  
UIN 203132



**Flue Seal Collar - Flat Roof**  
UIN 152259



**Vertical connector**  
UIN 203135



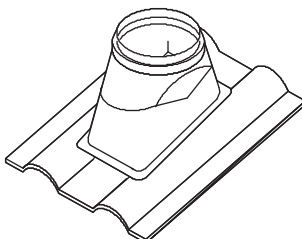
**90° elbow**  
UIN 203130



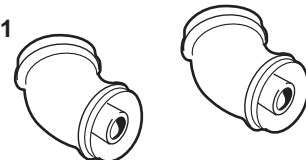
Flue duct support



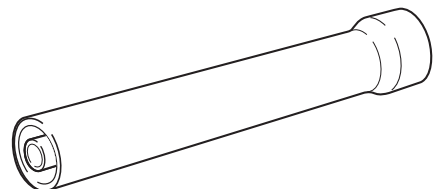
**Flue Seal Collar - Tile Roof**  
UIN 152258



**45° elbow**  
UIN 203131



**Roof Flue Extension Duct**  
UIN 203129



nm8735

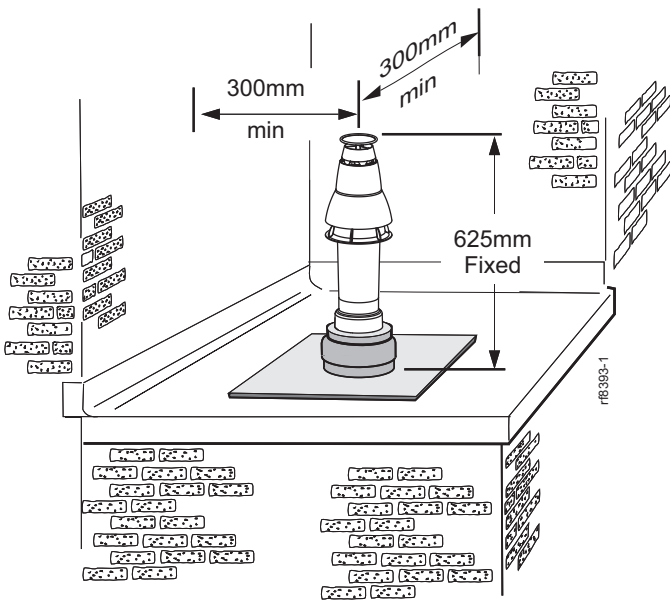
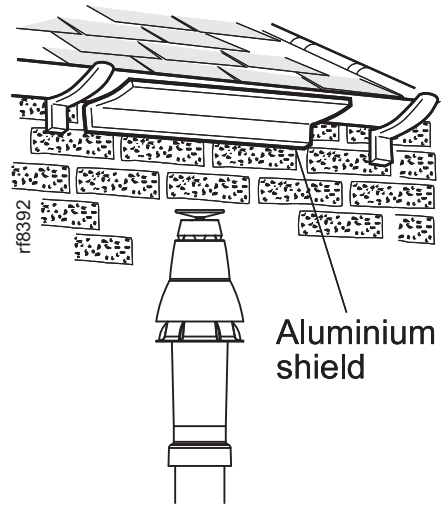
FLUE OUTLET

## 29 FLUE TERMINAL POSITION

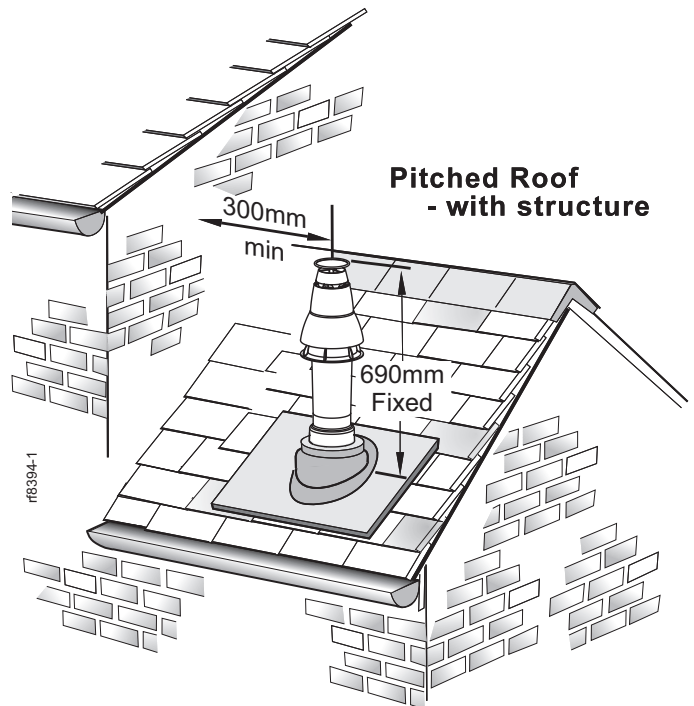
The terminal should be positioned so that products of combustion can safely disperse at all times.

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

Minimum dimensions are shown below



Flat roof - with structure



Pitched Roof - with structure

Terminal Position	Minimum Dimension
Directly below an opening, air brick, windows, etc.	300 mm
Below plastic / painted gutters	300 mm
Painted surface	300 mm
Below eaves or balcony	500 mm

# INSTALLATION

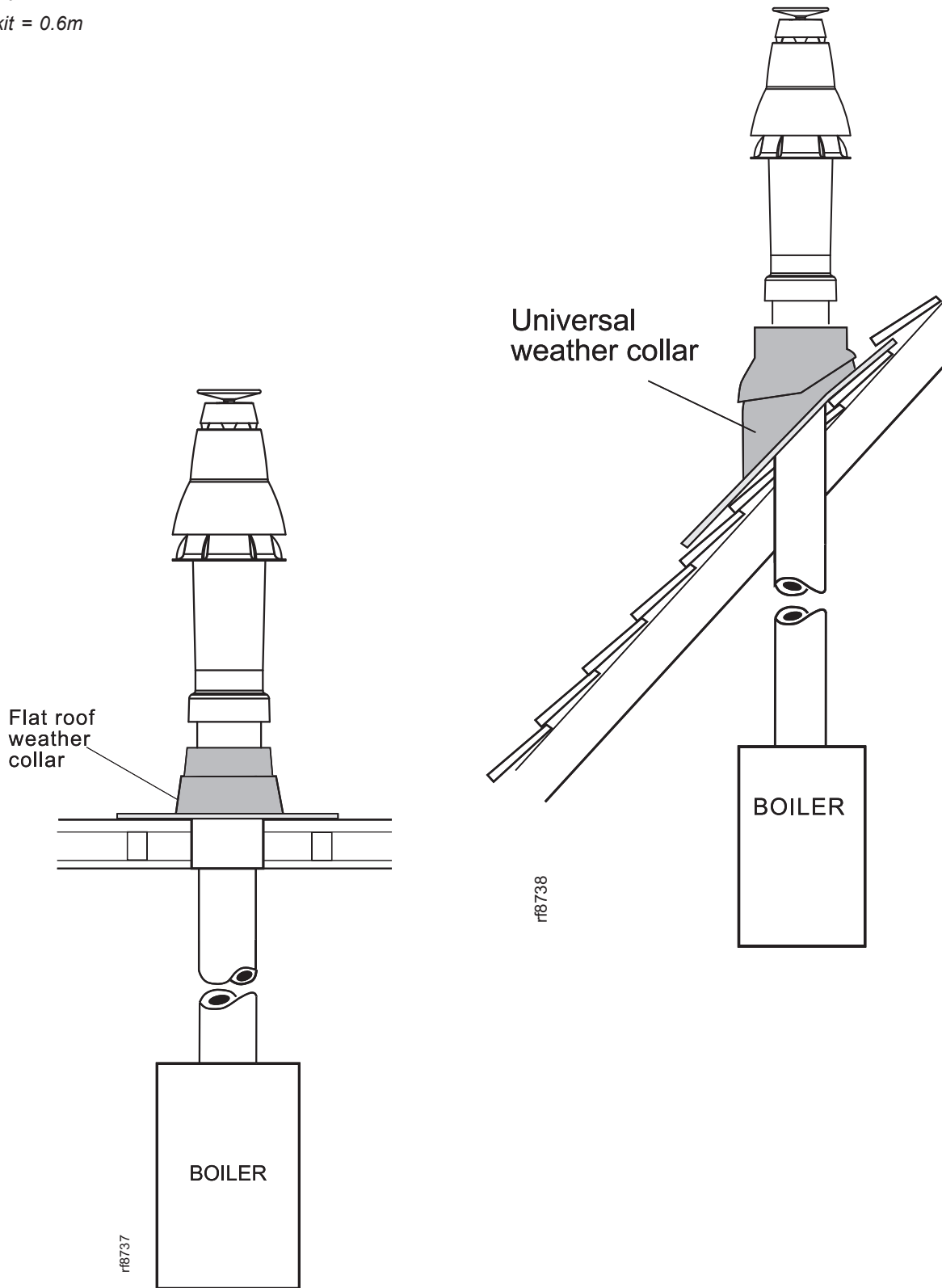
## 30 FLUE ARRANGEMENT

**Note.**

The equivalent flue length resistance of the elbow kits are:

90° elbow kit = 1m

45° elbow kit = 0.6m



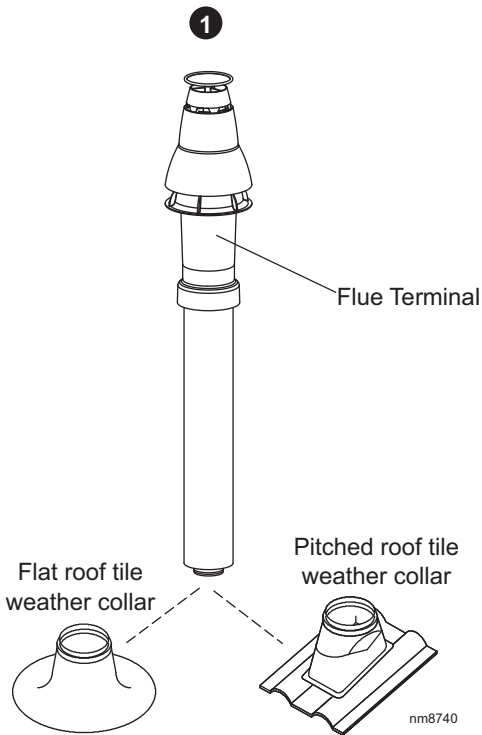
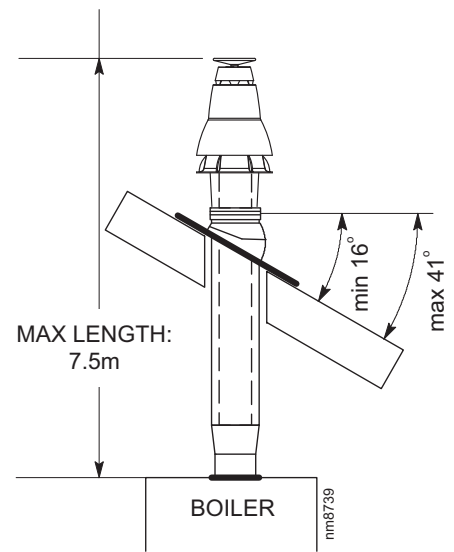
# INSTALLATION

## 31 ASSEMBLING THE ROOF FLUE KIT

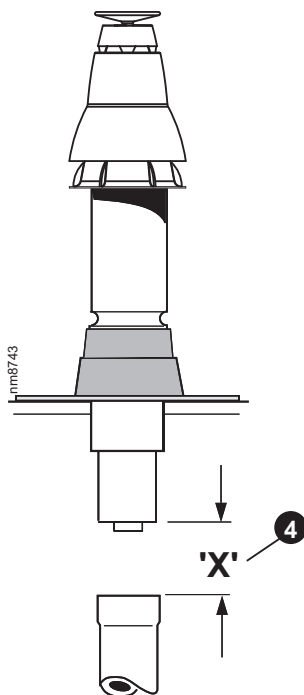
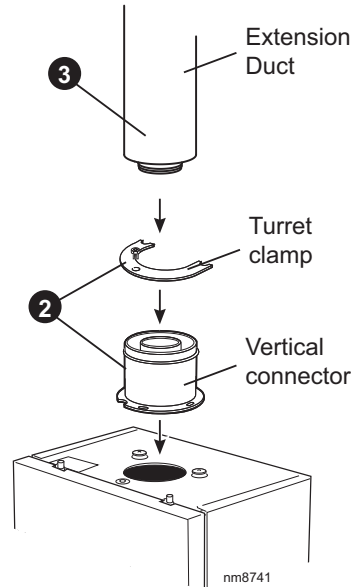
Determine the correct height that the flue should terminate above the roof. If after calculating or measuring the overall flue height from the top of the boiler, it is necessary to cut both pipes of assembly A, then ensure they are cut equally leaving the inner flue tube longer than the outer air tube as supplied.

Ensure the cut pipe ends are free from any burrs.

1. Position the roof flashing plate (supplied separately) over the hole cut in the roof and insert flue terminal from the roof end.



2. Fit the vertical connector (supplied separately) in accordance with the in the instructions provided with the vertical connector kit. **ENSURE THE GASKETS IN THE BOILER FLUE OUTLET ARE CORRECTLY FITTED.**
3. "Push" fit extension duct (if required (supplied separately)) into vertical connector.



4. If the last extension duct requires cutting, measure 'X', the distance (outer ducts), between the duct and the terminal and add 100 mm to this dimension. This gives the length of the last extension duct.

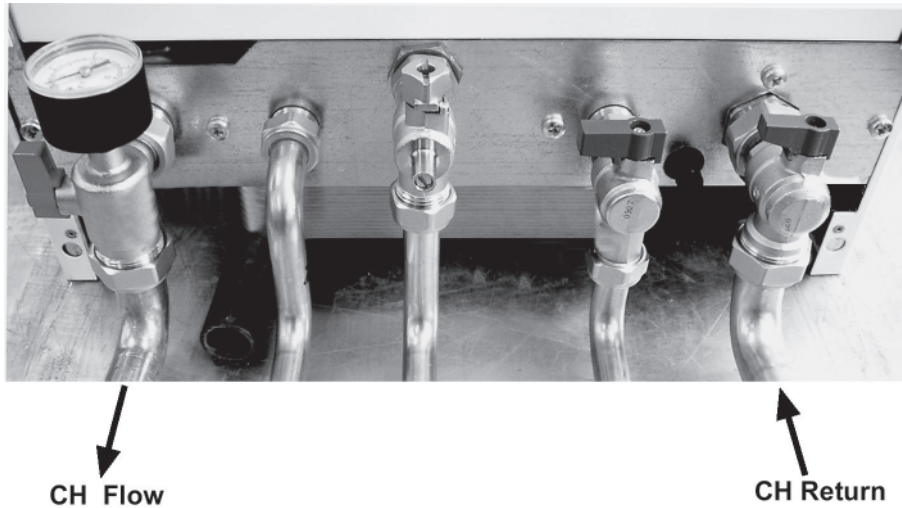
**Note.** Check the position of the inner flue duct relative to the outer duct on the assembled extension duct(s) and ensure the terminal flue duct is cut longer than the air duct to ensure engagement in the final flue duct seal.

5. Finally ensure the roof flashing plate is correctly sealed to the roof.

## INSTALLATION

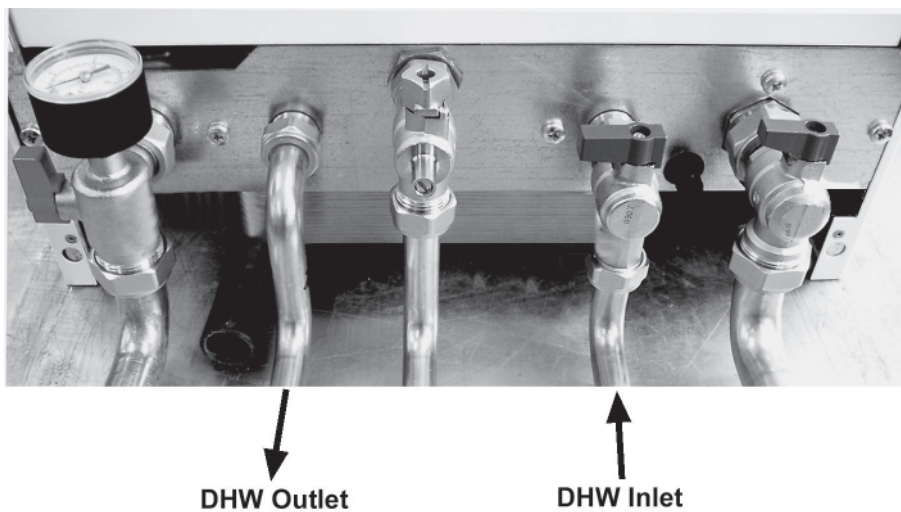
### 32 WATER CONNECTIONS - CH

1. Connect boiler service valves and copper tails provided in the hardware pack to the threaded boss connections provided at the lower rear of the boiler. Ensure all boss blanking plugs are removed before connecting hardware. Each valve must be fitted to the correct boss as shown in the picture. Guidance to correct connection location is also provided on the wall-mounting template. Ensure each union is fitted with fibre seals provided.
2. If connecting the boiler to heating loads in excess of 60,000 Btu/h, connecting flow and return heating system pipework must be sized in 28mm diameter at the point of pipe connection to the boiler tails. Use 22mm x 28mm pipe adaptors as appropriate.
3. Do not subject any of the isolating valves to heat as the seals may be damaged.



### 33 WATER CONNECTIONS - DHW

1. The DHW inlet isolating valve incorporates a flow regulator / filter pre-fitted in the valve body. Inspect it to ensure no blockage is evident. Fit it to the DHW inlet ball valve, ensuring the seal provided is correctly located.
2. Fit DHW outlet pipe tail to DHW outlet connection, ensuring the seal provided is correctly located.



# INSTALLATION

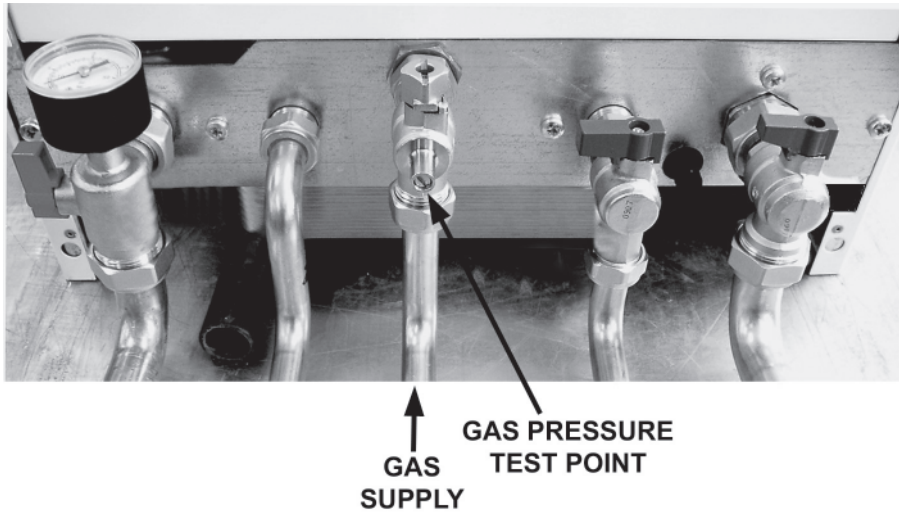
## 34 GAS CONNECTION

**IMPORTANT.** The gas service cock is sealed with a non-metallic blue fibre washer, which must not be overheated when making capillary connections. Refer to Frame 2 for details of the position of the gas connection.

A boiler gas supply pipe length of 20m and not less than 15mm O.D. can be connected to the boiler via the gas service cock union.

Ensure that the gas supply pipe does not foul the boiler casing.

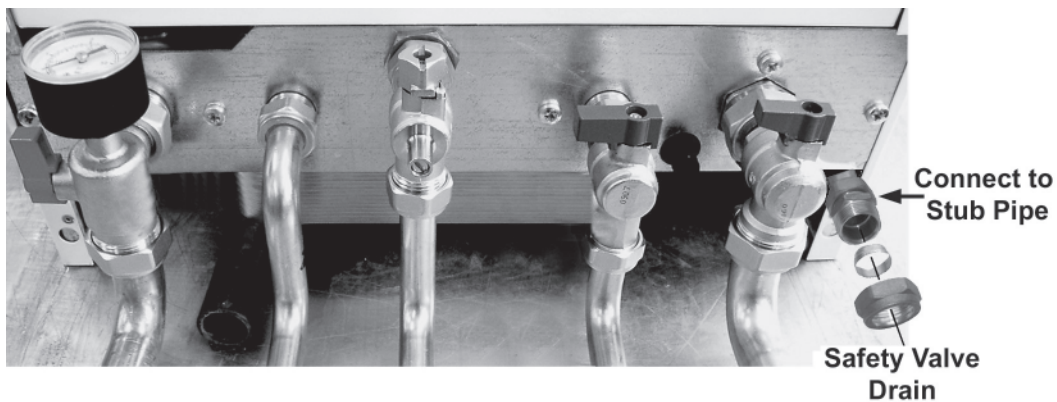
For additional gas supply information refer to "Gas Supply" on page 8.



## 35 SAFETY VALVE DRAIN

The safety valve connection, located at the bottom right-hand side of the boiler, comprises a 15mm diameter stub pipe.

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. A 15mm compression fitting is supplied with the Hardware Pack to connect it to the stub pipe.



## 36 FILLING

### IMPORTANT - when filling:

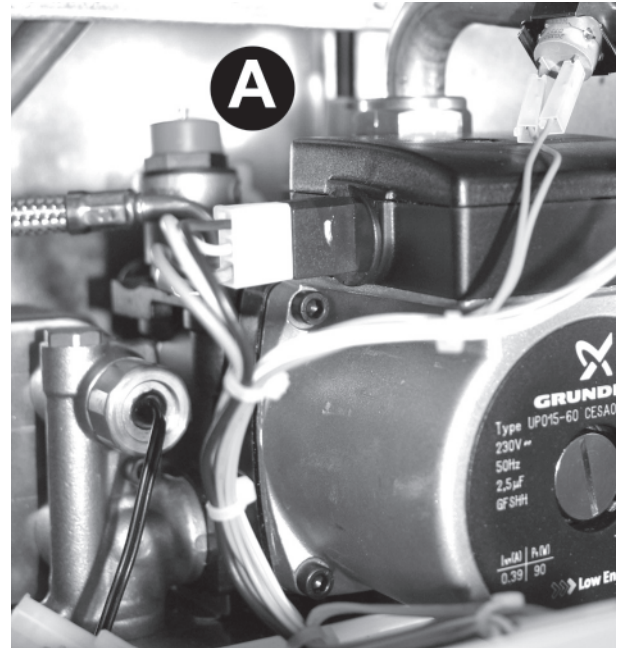
- A. Ensure the dust cap on air vent located at the rear of the pump chamber is slightly unscrewed.
- B. When filling, there may be a slight water leak from the air vent therefore electrical connections should be protected.

### Central Heating

1. Remove the front panel. Refer to Frame 49.
2. Ensure that the CH isolating valves are open.
3. Fill and vent the system. Check for water tightness.
4. Pressurise the system to 1 bar.

### Domestic Hot Water

1. Fully open all DHW taps and ensure that water flows freely from them.
2. Close all taps.



**Note.** The domestic hot water flow rate is automatically regulated to a maximum:

C22/24 = 9.6 l/m (2.1 gpm)

C22/30 = 12.0 l/m (2.6 gpm)

C22/35 = 14.4 l/m (3.2 gpm)

# INSTALLATION

## 37 ELECTRICAL CONNECTIONS

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

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

The fuse rating should be 3A. All external controls and wiring must be suitable for mains voltage.

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

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. For IE reference should be made to the current ETCI rules for electrical installations.

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.

## 38 INTERNAL WIRING

A pictorial wiring diagram is shown in Frame 40.

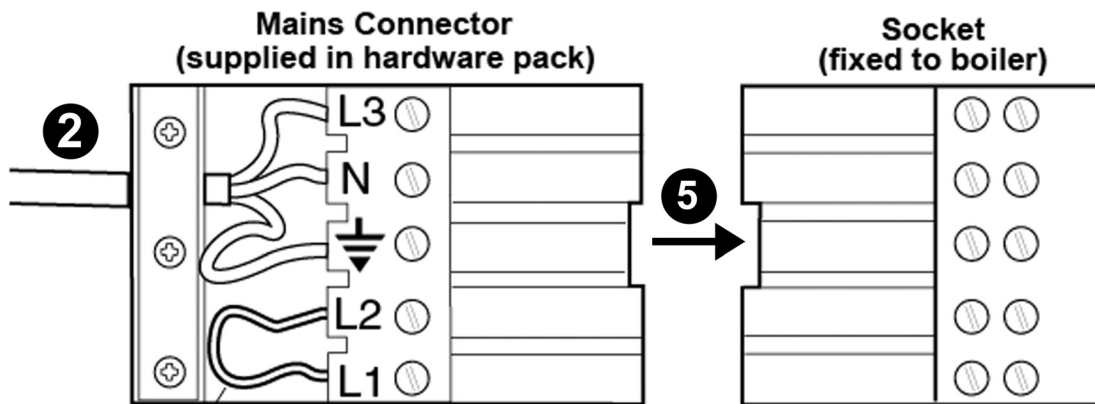
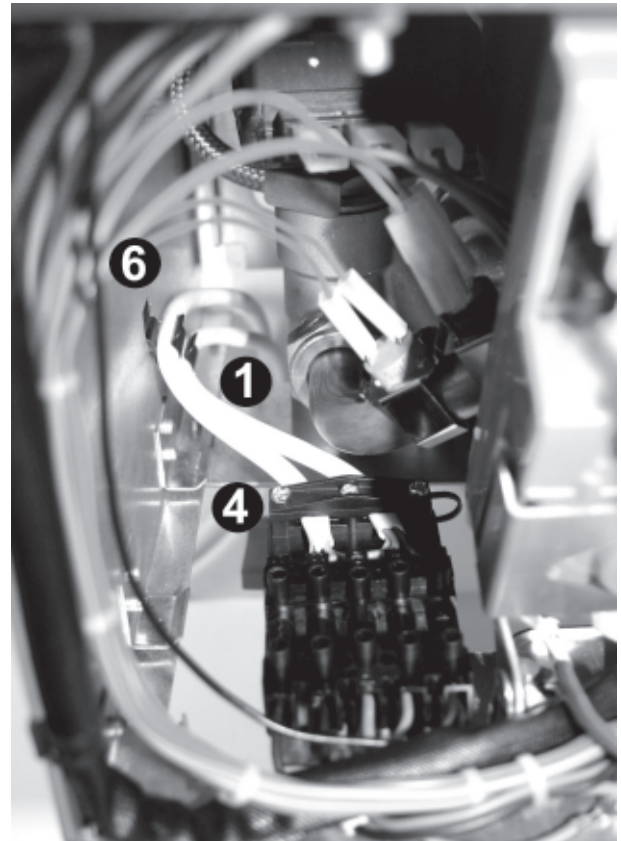
This photo shows an external programmer lead (on the left) and the mains cable (on the right).

1. Route the mains cable from bottom left-hand rear of boiler casing to plug & socket connection.
2. Wire the permanent live supply into the 5-way remote plug terminals, L3, N & .

### IMPORTANT.

A permanent live is **ESSENTIAL** in order for the advanced diagnostic controls to function correctly. *Ensure that the lengths of the live and neutral wires are shorter than the earth wires so that if the cable slips in its anchorage the current carrying wire become taut before the earth wires.*

3. Wire any switched live supply into L2 or connect L1 and L2 via external control switching as shown in Frame 39. In either case remove the wire link fitted to L1 to L2.
4. Secure the mains lead with the cable clamp.
5. Connect the mains lead connector. Ensure it is fully located into the socket.
6. Support the incoming cable(s) with the clips provided.



Remove link when connecting external programmer.

nm9344



## 39 EXTERNAL ELECTRICAL 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.

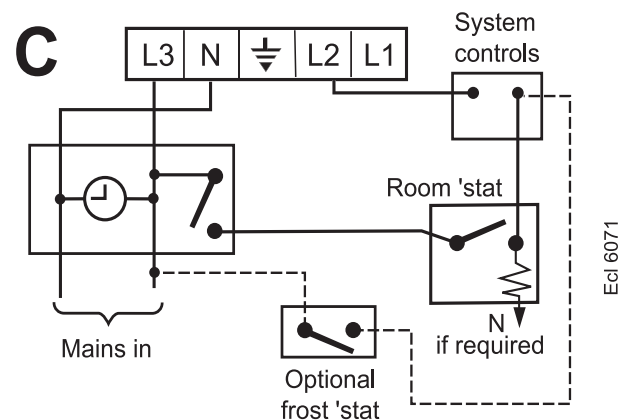
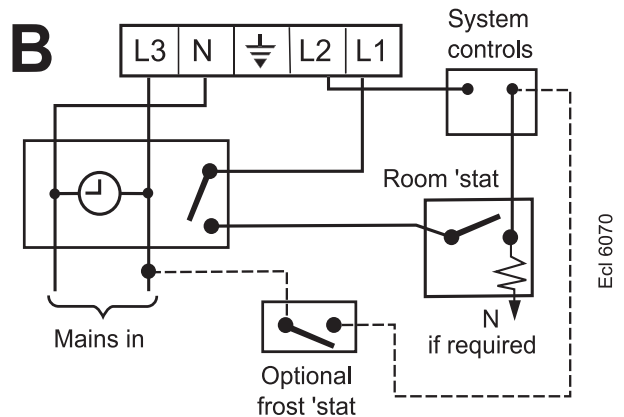
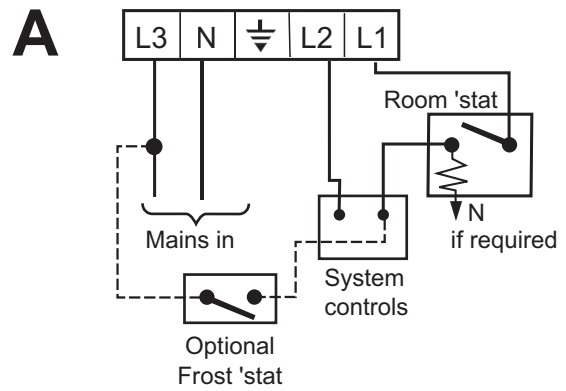
#### Diagram A

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.**

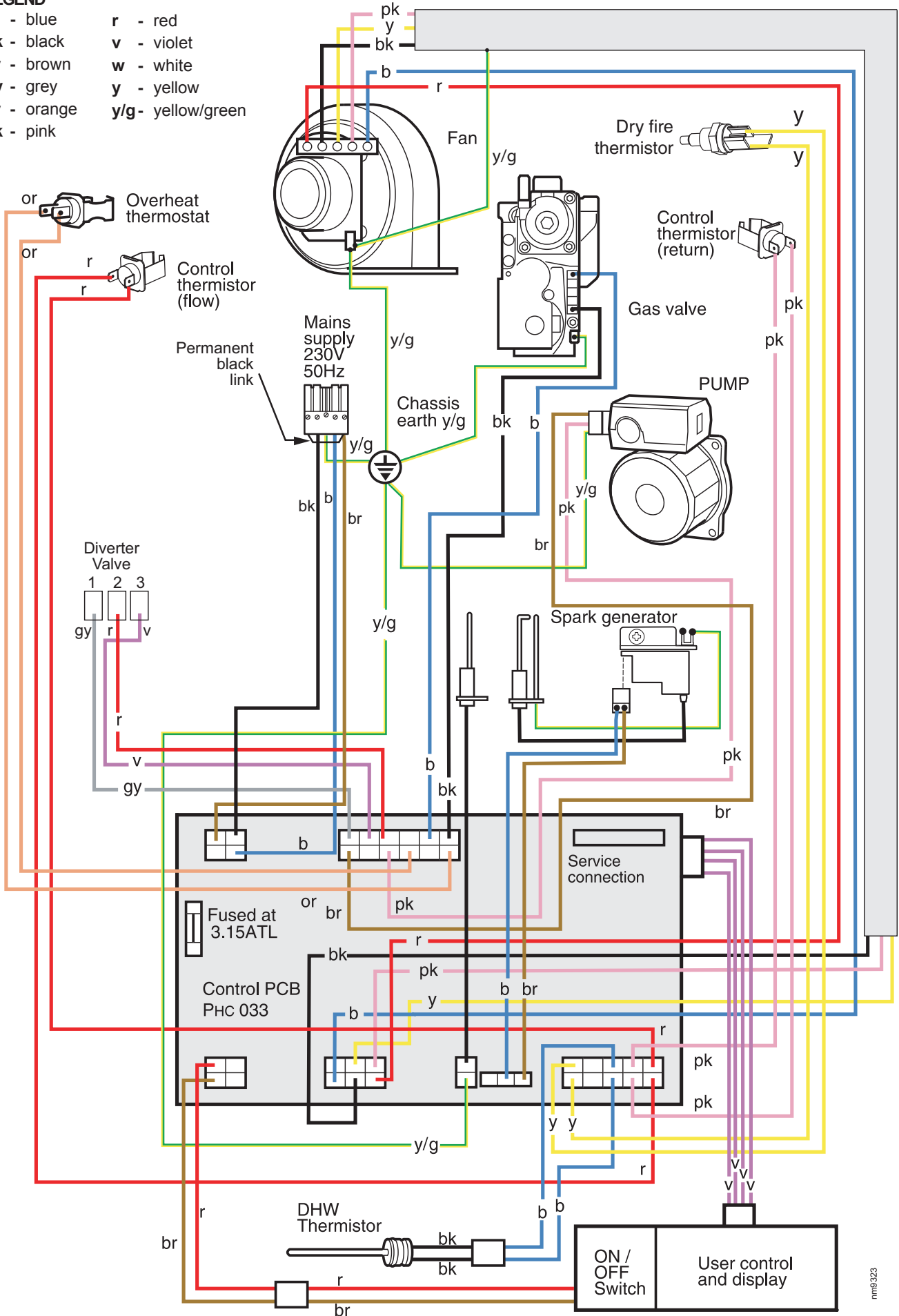


# INSTALLATION

## 40 PICTORIAL WIRING DIAGRAM

### LEGEND

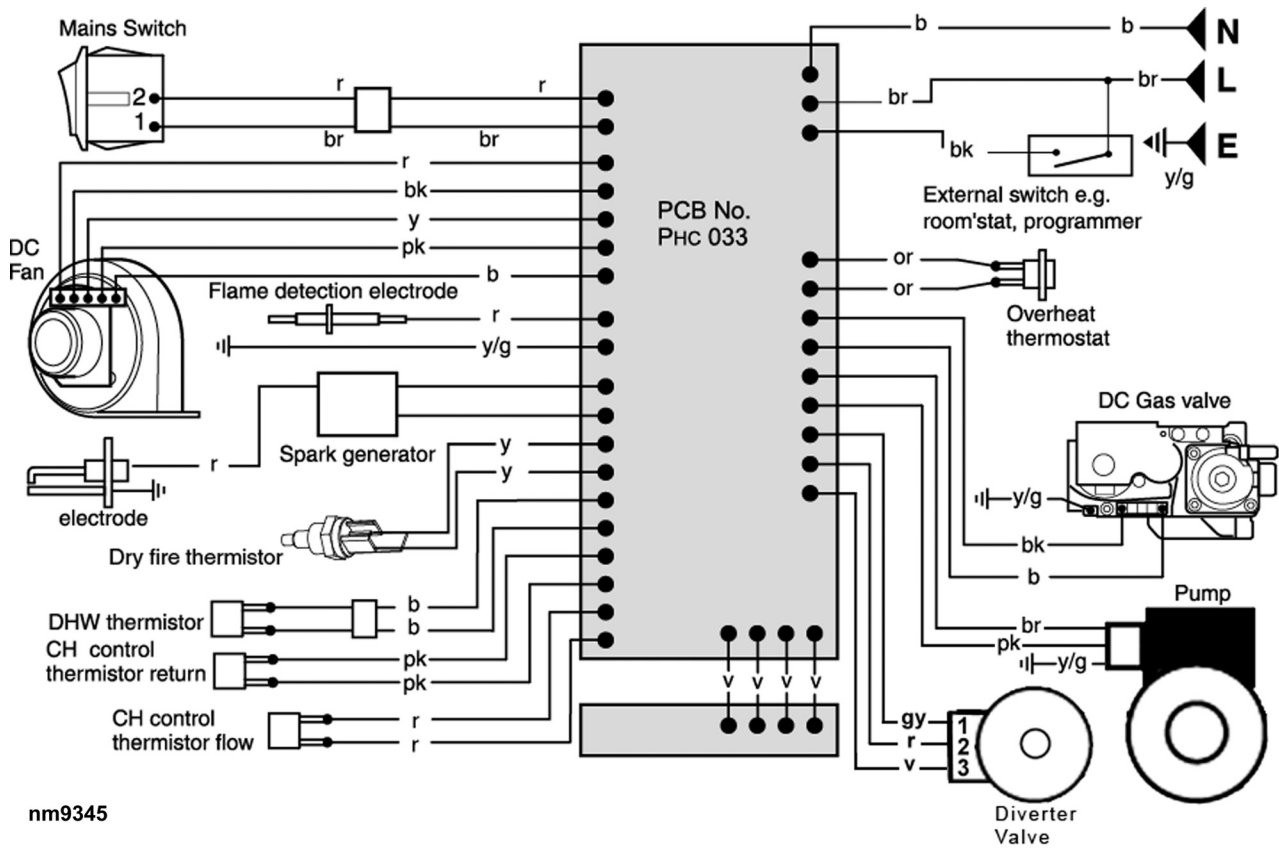
- |             |                    |
|-------------|--------------------|
| b - blue    | r - red            |
| bk - black  | v - violet         |
| br - brown  | w - white          |
| gy - grey   | y - yellow         |
| or - orange | y/g - yellow/green |
| pk - pink   |                    |



mm9323

# INSTALLATION

## 41 FUNCTIONAL FLOW WIRING DIAGRAM



### LEGEND

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

## 42 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.

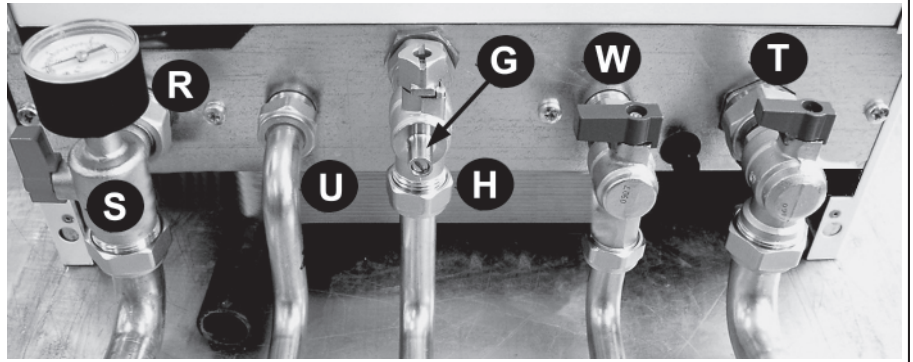
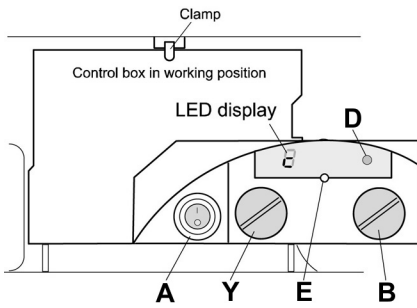
### B. Gas Installation

1. The whole of the gas installation, including the meter, should be inspected and tested for tightness and purged in accordance with the recommendations of BS. 6891.  
In IE refer to IS.813:2002.
2. Purge air from the gas installation by the approved methods only.

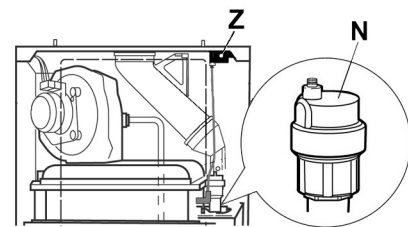
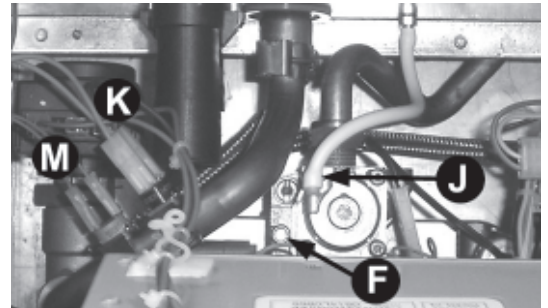
**WARNING.** Whilst effecting the required gas tightness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and **DO NOT SMOKE.**

# INSTALLATION

## 43 INITIAL LIGHTING



Control Box Servicing Position. See Frame 51.



### LEGEND

- |                                  |                               |
|----------------------------------|-------------------------------|
| A. Boiler On/Off switch.         | M. Control thermistor (flow). |
| B. CH thermostat knob.           | N. Automatic air vent.        |
| D. Burner On neon.               | R. Pressure gauge.            |
| E. Reset button.                 | S. CH Flow isolating valve.   |
| F. Injector pressure test point. | T. CH Return isolating valve. |
| G. Inlet pressure test point.    | U. DHW outlet.                |
| H. Gas service cock.             | W. DHW inlet                  |
| J. Casing pressure test point.   | Y. DHW thermostat knob.       |
| K. Overheat thermostat.          | Z. Spark generator.           |

1. Check that the system has been filled and that the boiler is not airlocked. Ensure the automatic air vent cap (N) is open.

### Note.

*It is important the burner is not operated before the system is fully vented of air. If it is necessary to operate the appliance pump to assist venting of the air this must be done with the gas service cock turned off.*

2. Refit the boiler sealing panel. Refer to Frame 50.
3. Check that the drain cock is closed and that the CH and DHW isolating valves (T, W and S) are OPEN.
4. Check that the electrical supply is OFF.
5. Check that the boiler on/off switch (A) is off.
6. Check that the gas service cock (H) is OPEN.
7. Slacken the screw in the inlet pressure test point (G) and connect a gas pressure gauge via a flexible tube.
8. Switch the electricity supply ON and check all external controls are calling for heat.

### CENTRAL HEATING

9. Set the boiler thermostat knob (B) to position 6 and switch the boiler on/off switch (A) to ON. The boiler control should now go through its ignition sequence until the burner is established.
10. If the boiler does not light after 3 attempts the fault code **L-F** will be displayed, Press the reset button (E) and the boiler will repeat its ignition sequence.

When the burner is established the WHITE 'Burner On' neon (D) will be illuminated, the LED display will show status **C**

### THE DISPLAY

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

Below is a list with display function in normal operation.

- 0** Standby, no demand for heat present.
- C** Boiler is active for central heating.
- d** Boiler is active for domestic hot water.
- t** Boiler is heating up the plate heat exchanger.

### Note: Boiler frost protection is activated as follows:


- 1 Pump runs if temperature is below 5 degrees C
- 2 Boiler fires if temperature is below 3 degrees C

- H** Boiler is in lockout for a specific error. Display will be blinking, alternating with a number or letter to show which error is detected.
- L** Boiler is in lockout for a specific error. Display will be blinking, **0** alternating with a number or letter to show which error is detected.

## 44 INITIAL LIGHTING - continued

### DOMESTIC HOT WATER

11. With the boiler firing, set the DHW thermostat knob (Y) to maximum and fully open a DHW tap.

The boiler should continue to run and the LED display should show status 

12. Ensure that with the boiler operating the dynamic gas pressure is able to obtain maximum output. Refer to Table 2.

For additional gas supply information refer to "Gas Supply" on page 8.

### IMPORTANT

**The gas input to the burner is regulated by the gas valve according to the air flow produced by the fan. It is NOT user-adjustable. Any interference to sealed settings on the gas valve will adversely affect operation and render our warranty void.**

13. Turn off the DHW tap.  
14. Set the boiler on/off switch (A) to OFF.

15. Swing the control box into the servicing position. Refer to Frame 51.

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

17. Swing the control box back into its working position and secure. Reconnect the ignition lead.

18. Refit the user control.

19. Fit the boiler front and bottom panels.




## 45 GENERAL CHECKS

Make the following checks for correct operation in:

### DOMESTIC HOT WATER (DHW) MODE

1. With no call for CH or DHW the boiler should fire for a short period to preheat the DHW plate heat exchanger.





The display should read

  returning to  
 when the burner switches off.

#### Notes.

- a. *If no DHW is drawn off, the boiler will fire periodically for a short time, to maintain the plate heat exchanger temperature.*  
b. *The DHW preheat operates 24 hours a day .*
2. Fully open all DHW taps in turn and ensure that water flows freely from them.

The display should read:

  neon flashing  
then:  
  neon steady when the burner lights.

3. Close all taps except the furthest one from the boiler and check that the boiler is firing at maximum rate.

This is factory set to give a DHW temperature rise of approximately 35°C at the flow rate stated on page 6 under "operation".

4. Reduce the DHW draw-off rate to about 3 l/min (0.7gpm) and check that the boiler modulates to deliver DHW at approximately 65°C.

5. Close the DHW tap and check that the main burner extinguishes. The pump should overrun for a few seconds and the display sequence should read:



When the pump stops the display sequence should read:



**Note.** *On systems in excess of 2 bar inlet pressure a water pressure governor may be required to prevent water noise.*

# INSTALLATION

## 46 GENERAL CHECKS - continued

### CENTRAL HEATING (CH) & DOMESTIC HOT WATER (DHW) MODE.

1. Ensure that the CH external controls are calling for heat.  
The display should read:

c ✱

after first satisfying DHW preheat if necessary. ( t ✱ )

2. Fully open a DHW tap and check that hot water is delivered.

The display should read:

d ✱ flashing

#### 3. Gas Rate

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

Check at the gas meter, with no other appliance in use. Refer to Table 3 for gas rates.

4. Close the DHW tap. The burner should go off and the pump continue to run.

The display should read:

d ✱ flashing

then

c ✱ flashing

After 15 seconds the burner should relight, to supply central heating. The display should read:

c ✱

5. Set the central heating external controls to OFF. The burner should go off and the pump continue to run for five minutes

The display should read:

c returning to

0 when the pump stops.

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

### 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 in the absence of any system demand.

### WATER TEMPERATURES

Temperatures can be selected using the CH and DHW thermostats.

Knob Setting	CH Flow Temp °C (°F)	DHW Outlet Temp °C (°F)
Max	82 (180)	65 (150)
Min	30 (86)	42 (110)

## 47 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 both heating and hot water consumption.

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 and domestic hot water controls.

Explain that due to system variations and seasonal temperature fluctuations DHW flow rates/temperature rise will vary, requiring adjustment at the draw off tap. It is therefore necessary to draw the users attention to the section in the Users Instructions titled "Control of Water Temperature" and the following statement:

**"Additionally, the temperature can be controlled by the user via the draw-off tap: the lower the rate the higher the temperature, and vice versa".**

5. Explain the function of the boiler fault mode.

Emphasise that if a fault is indicated, the boiler should be turned off and a Gas Safe Registered Installer consulted. In IE contact a Registered Gas Installer (RGII).

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 draw attention to the Programmer Users Instructions and hand them to the householder.

### 8. Loss of system water pressure

Explain that the dial underneath the boiler 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. Explain the re-pressurising procedure and if unable to repressurise or if the pressure continues to drop a registered local heating installer should be consulted.

**WARNING. Do not fire the boiler if the system pressure is less than 0.5 bar.**



After installation and commissioning please complete the Commissioning Checklist before handover to the customer. For IE, its is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S. 813:2002.

### IMPORTANT

10. A comprehensive service should be carried out ANNUALLY.

Stress the importance of regular servicing by a Gas Safe Registered Installer. In IE servicing work must be carried out by a Registered Gas Installer (RGII).

11. 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.

## 48 SERVICING SCHEDULE

For the very latest copy of literature for specification and maintenance practices visit our website [www.idealboilers.com](http://www.idealboilers.com), where you will be able to download relevant information. N.B. Technical Bulletins are also available on our website.

**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.

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 Gas Safe Registered Installer. In IE service work must be carried out by a Registered Gas Installer (RGI).

1. Light the boiler and carry out a pre-service check, noting any operational faults.
2. Clean the main burner.
3. Clean the heat exchanger & 'S' trap.
4. Check the condition of the combustion chamber insulation. Any cracked, damaged or displaced pieces should be replaced. Ionisation probes are a servicable component and requires inspecting annually. Replace if distorted.
5. Check the main injector for blockage or damage.
6. Wherever possible remove and clean the condensate 'S' trap (refer to Frame 54) and check the drain for blockage.
7. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
8. Check the DHW filter for blockage. Refer to Frame 33.

The servicing procedures are covered more fully in Frames 49 -56 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 49 and 50.

### IMPORTANT.

9. After completing the servicing or exchange of components always test for gas tightness.
10. When work is complete the sealing panel MUST be correctly refitted, ensuring that a good seal is made.

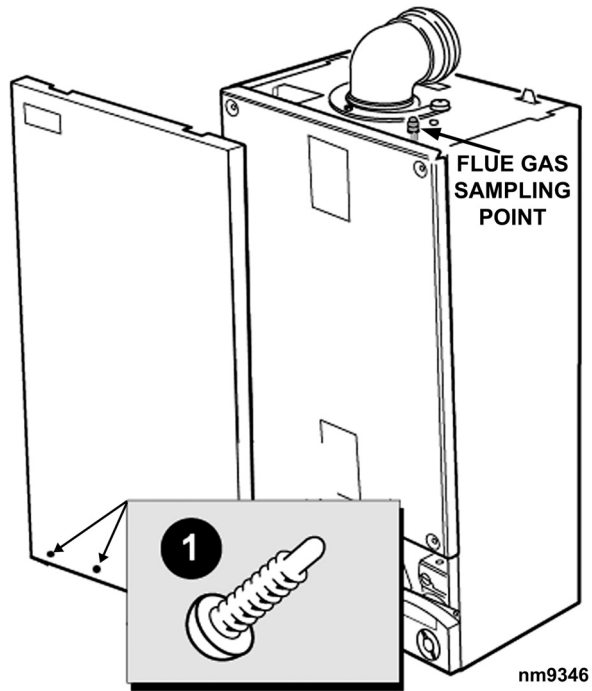
**Do NOT OPERATE the boiler if the sealing panel is not fitted.**

11. If, for any reason, the condensate 'S' trap has been removed ensure the trap is refilled with water before reassembling.
12. Check the gas consumption.
13. Connect a suitable gas analyser to the sampling point on the top of the boiler (refer to Frame 49) 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.
14. Complete the service section in the Benchmark Commissioning Checklist.



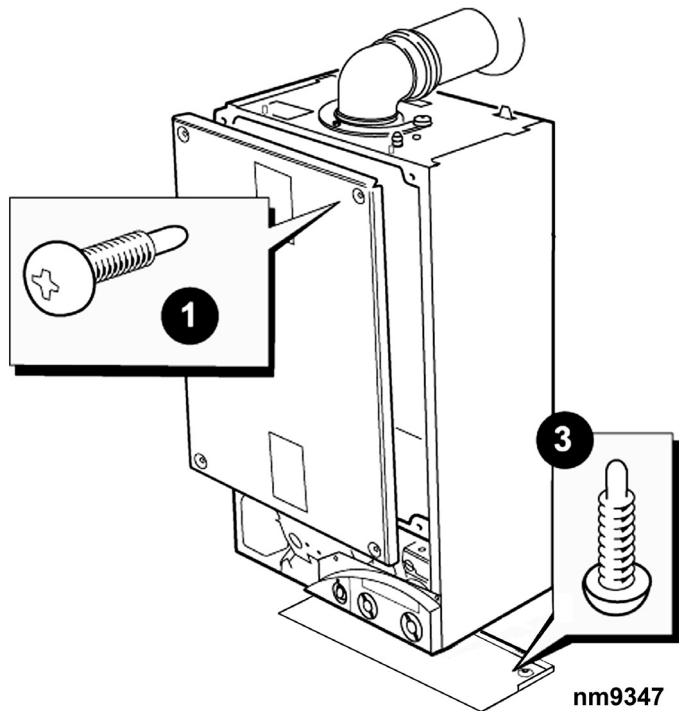
**49 BOILER FRONT PANEL REMOVAL**

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



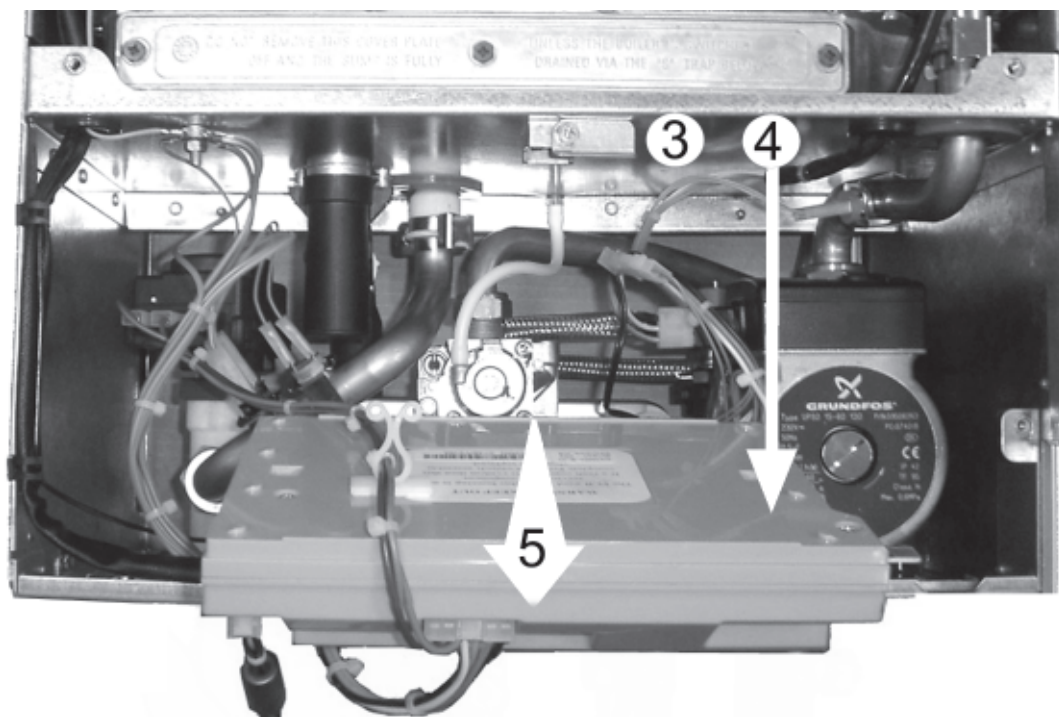
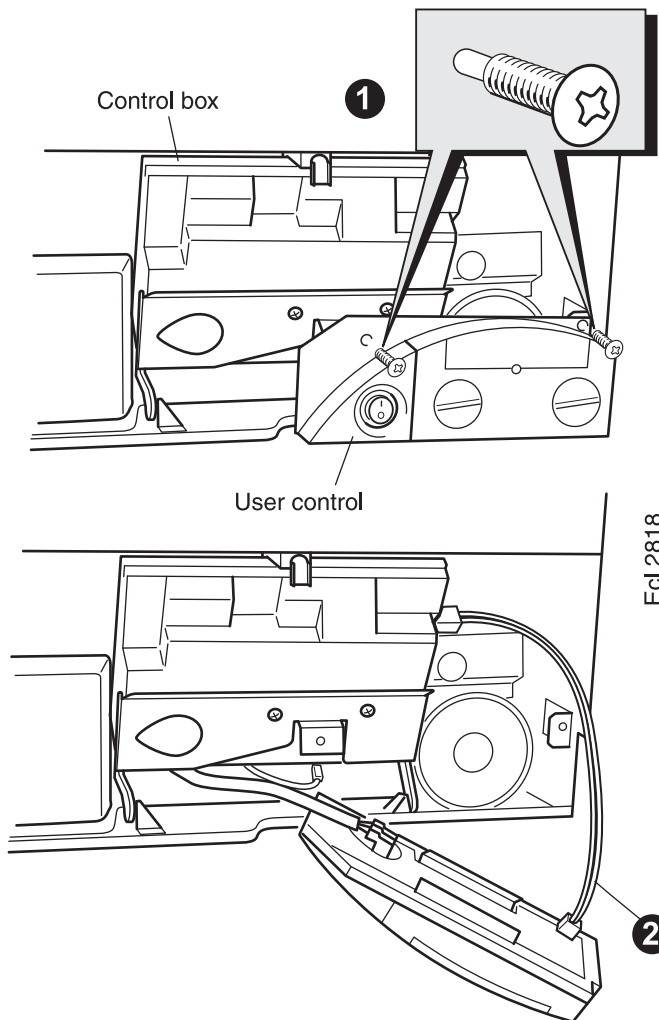
**50 BOILER SEALING PANEL / BOTTOM PANEL REMOVAL**

1. To remove the sealing panel remove the 4 screws.
2. Remove the panel.
3. To remove the bottom panel first remove the screw.
4. Pull the right hand side of the panel down. Slide it to the right and withdraw.



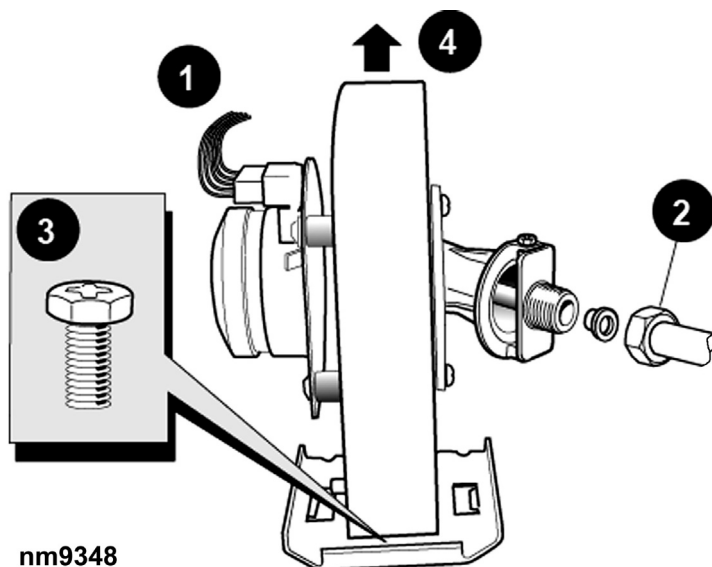
## 51 MOVING CONTROL BOX TO THE SERVICING POSITION

1. Remove the 2 screws and withdraw the user control.
2. Unplug the low voltage electrical lead from the back of the user control.
3. Release the clamp,
4. Swing the control box down
5. Pull the control box slightly forward.



## 52 FAN 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 screw on the fan mounting bracket.
4. Lift off fan and venturi assembly.
5. Inspect the injector for blockage or damage.



## 53 BURNER REMOVAL AND CLEANING

1. 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.

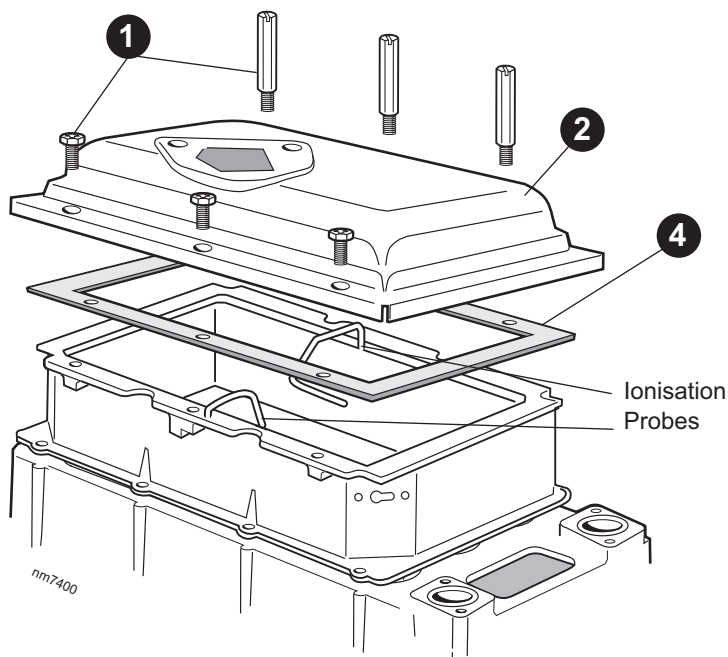
### IMPORTANT

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 and combustion chamber insulation for any signs of damage. Replace as necessary.

### Note.

*Take care not to disturb the ionisation probes at the front and rear of the combustion chamber.*

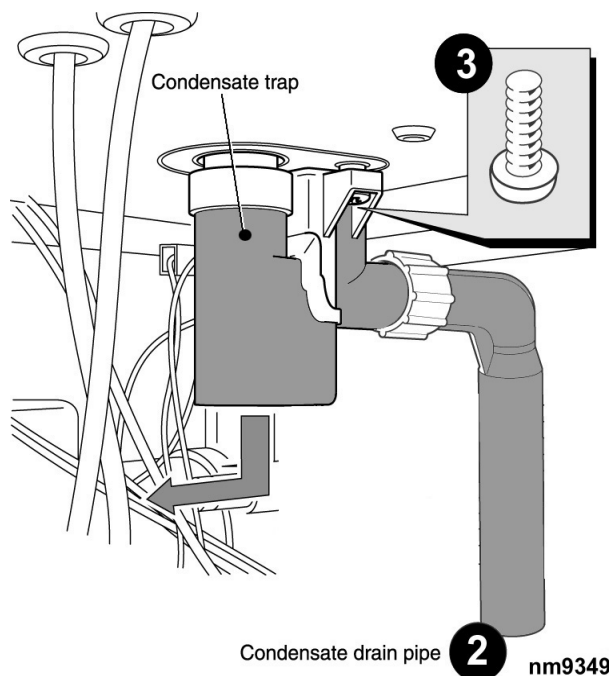


## SERVICING

### 54 CLEANING THE CONDENSATE 'S' TRAP

**Note:** Ensure the condensate trap is fully drained before removal.

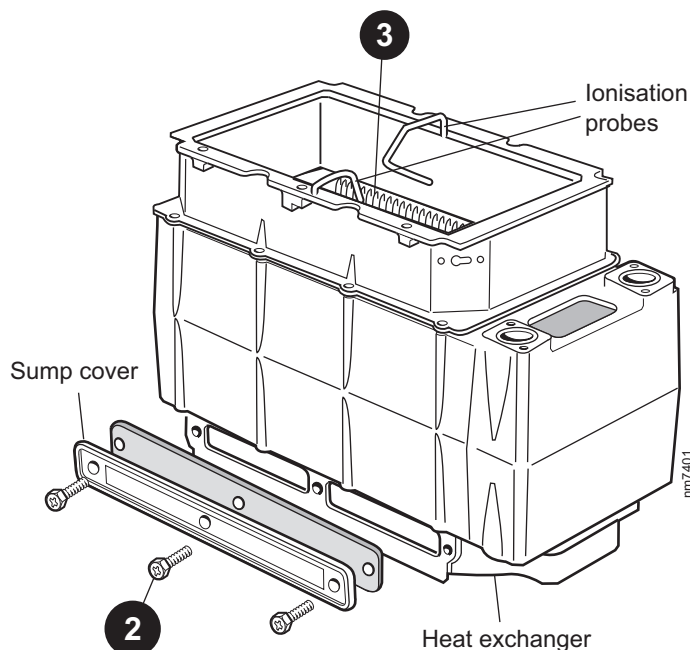
1. Swing the control box down into the servicing position. Refer to Frame 51.
2. Disconnect the condensate drain pipe.
3. Remove the 2 screws and pull the trap down and forward to remove.
4. Flush out any deposits with clean water.



### 55 CLEANING THE HEAT EXCHANGER

**Note:** Ensure the sump is fully drained before removal.

1. Remove ignition and flame detection electrodes. Refer to Frames 63 & 64.
  2. Remove the 3 screws retaining 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 ignition and detection electrodes. Ensure that they are clean and in good condition - replace if necessary.
  6. Check the condition of the combustion chamber insulation. Any cracked or damaged pieces must be replaced.
- Note.** Take care not to disturb the ionisation probes at the front and rear of the combustion chamber.
7. Check that the ignition and detection gaps are correct. Refer to Frames 63 & 64.



### 56 REASSEMBLY

**Reassemble the boiler in the following order:**

1. Refit the condensate 'S' trap, ensuring that it is full of water.
  2. Refit the sump cover.
  3. Refit the electrodes. (Check dimensions; Frames 63 & 64).
  4. Refit the burner.
  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 box back into its working position and secure.
  9. Refit the display unit.
  10. Refit the boiler front and bottom panels.
  11. Turn on the gas supply at the gas service cock.
  12. Reconnect the electrical supply.

# SERVICING

## 57 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 49.

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

### IMPORTANT.

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

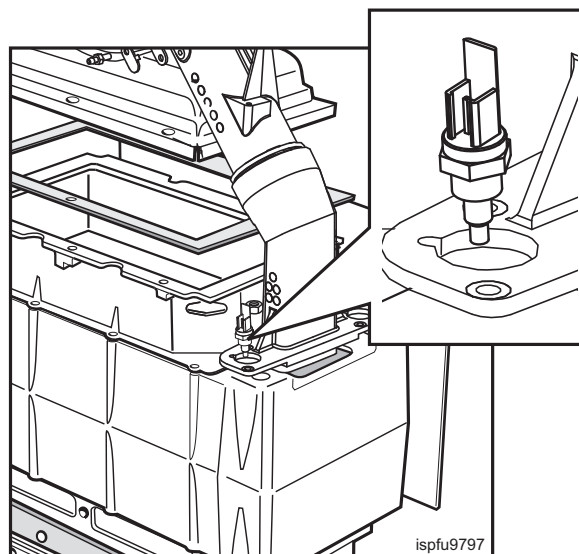
### Notes.

1. In order to assist fault finding, the control panel has an LED diagnostic display. The key to boiler fault conditions is shown in Frame 84.
2. In order to replace components in Frames 74-82 it is necessary to drain the boiler. Refer to Frame 77.

**THE BOILER MUST NOT BE OPERATED WITHOUT THE SEALING PANEL FITTED**

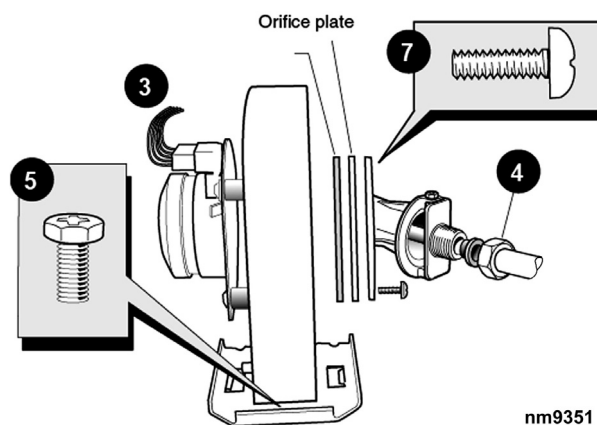
## 58 DRY FIRE THERMISTOR REPLACEMENT

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Drain down the boiler. Refer to Frame 77.
4. Unplug the electrical lead.
5. Unscrew the thermistor.
6. Fit the new thermistor using the sealing washer provided.
7. Reassemble in the reverse order.
8. Check the operation of the boiler. Refer to Frames 45 & 46.



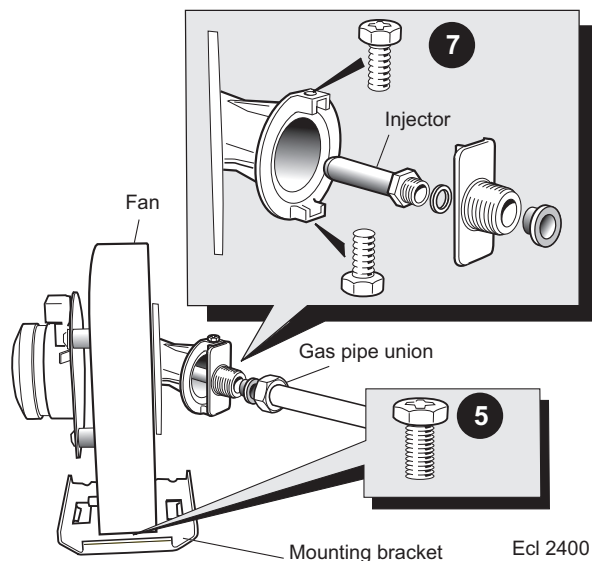
## 59 FAN REPLACEMENT

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Disconnect the electrical leads from the fan.
4. Undo the gas pipe union connection to the injector housing.
5. Remove the screw retaining the fan mounting bracket.
6. Remove the fan and venturi assembly. Refer to Frame 52.
7. Unscrew the 3 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. Reassemble the boiler in reverse order, taking care not to overtighten the screw on the fan mounting bracket.
11. Check the operation of the boiler. Refer to Frames 45 & 46.



## 60 BURNER INJECTOR REPLACEMENT

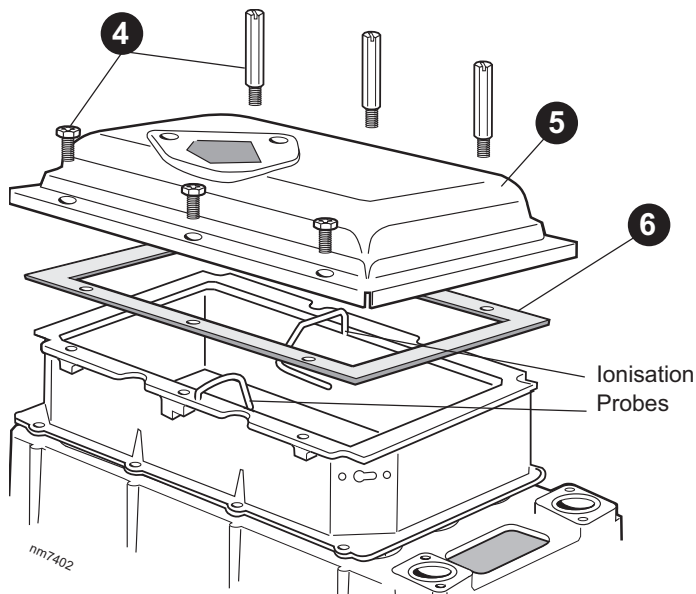
1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Disconnect the electrical leads from the fan.
4. Undo the gas pipe union connection to the injector housing.
5. Remove the screw retaining the fan mounting bracket.
6. Remove the fan and venturi assembly
7. Remove the 2 injector housing screws.
8. Withdraw the injector housing.
9. Fit the new injector housing complete with injector.
10. Reassemble 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 Frames 45 & 46.



## 61 BURNER REPLACEMENT

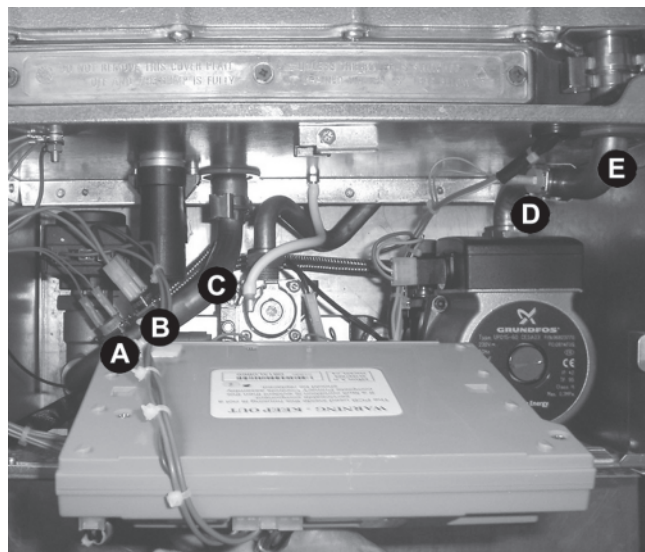
1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Remove the fan assembly. Refer to Frame 59.
4. Remove the 6 screws securing the burner (the 3 screws at the rear are extended to ease access).
5. Lift off the burner from the combustion chamber.
6. Fit the new burner, replacing any damaged or deteriorating sealing gasket.
7. Reassemble in reverse order.
8. Check the operation of the boiler. Refer to Frames 45 & 46.

**Note.** Take care not to disturb the ionisation probes at the front and rear of the combustion chamber.



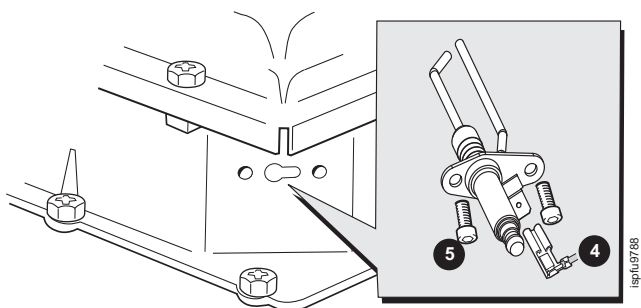
## 62 CONTROL THERMISTOR, RETURN THERMISTOR & OVERHEAT 'STAT RENEWAL

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Unclip the thermistor **A** and thermostat **B** from the flow pipe **C** and withdraw it from the controls compartment.
4. Unclip the thermistor **D** from the return pipe **E** and withdraw it from the controls compartment.
5. Disconnect the electrical leads from the thermistors or thermostat.
6. Reconnect the electrical leads and reassemble in reverse order, ensuring that the spring clips are securely on the pipes.
7. Check the operation of the boiler. Refer to Frames 45 & 46.

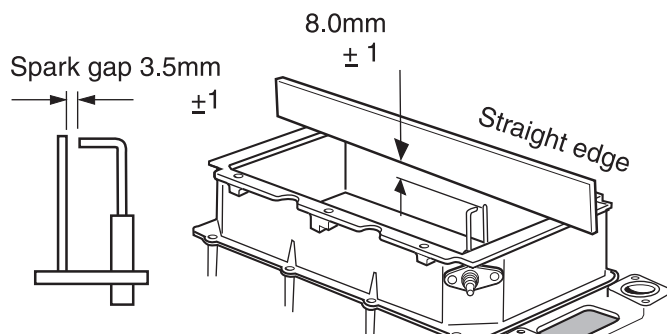


## 63 IGNITION ELECTRODE REPLACEMENT

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Unplug the ignition lead from the electrode.
4. Remove the earth lead from the ignition electrode.
5. Remove the remaining screw holding the ignition electrode to the combustion chamber.

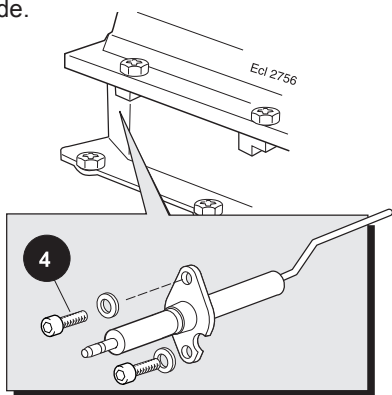


6. Remove the electrode.
7. Fit the new ignition electrode, using the new gasket supplied. Check dimensions as shown.
8. Reassemble in reverse order, and check that no damage to the combustion chamber insulation has occurred during the electrode replacement.
9. Check the operation of the boiler. Refer to Frames 45 & 46.

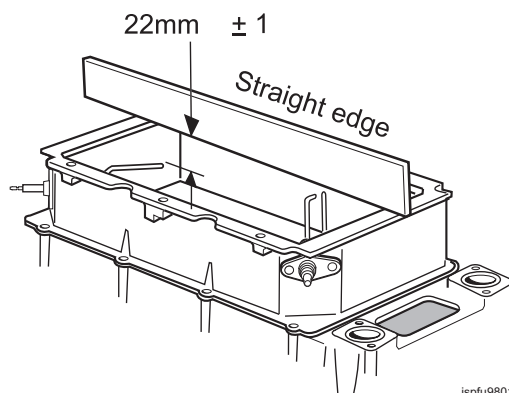


## 64 FLAME DETECTION ELECTRODE REPLACEMENT

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Unplug the flame detection lead from the electrode.
4. Remove the 2 screws holding the flame detection electrode to the combustion chamber.
5. Remove the electrode.

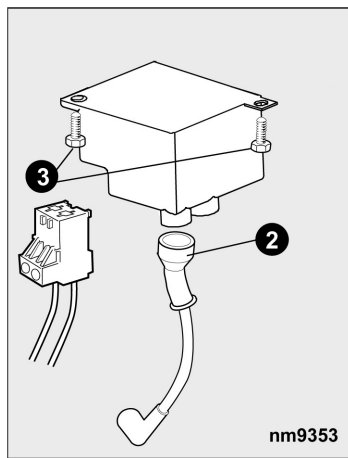


6. Fit the new flame detection electrode, using the new gasket supplied. Check dimensions as shown.
7. Reassemble in reverse order, and check that no damage to the combustion chamber insulation has occurred during the electrode replacement.
8. Check the operation of the boiler. Refer to Frames 45 & 46.



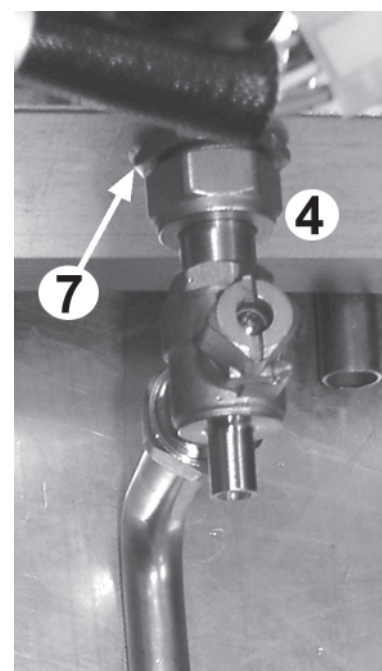
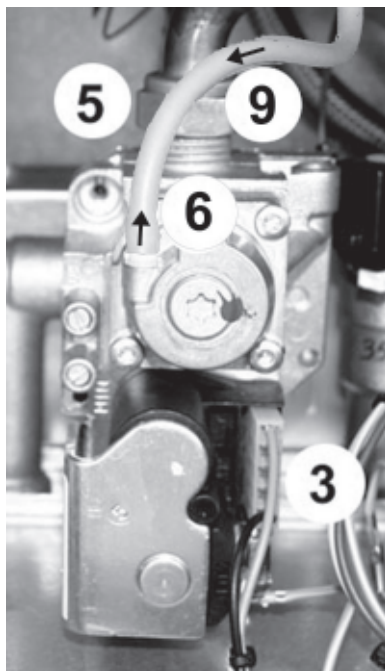
## 65 SPARK GENERATOR REPLACEMENT

1. Refer to Frame 57.
2. Disconnect the leads from the spark generator.
3. Remove the M4 screws securing the spark generator to the boiler chassis.
4. Fit the new spark generator and re-assemble in reverse order.
5. Check operation of the boiler. Refer to Frames 45 & 46.



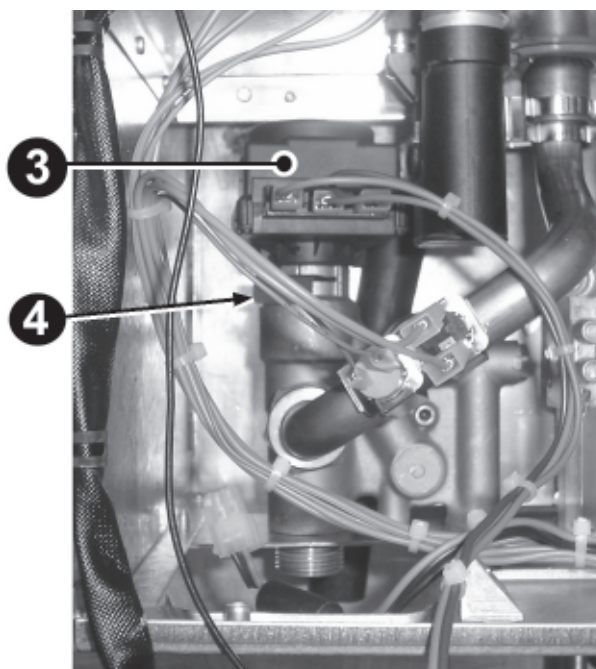
## 66 GAS CONTROL VALVE REPLACEMENT

1. Refer to Frame 57.
2. Swing the control box down into the servicing position. Refer to Frame 51.
3. Unplug the electrical lead connection from the gas control valve and disconnect the earth wire.
4. Undo the gas inlet pipe union at the gas service cock.
5. Undo the union nut on the outlet of the gas control valve.
6. Disconnect the white tube from the valve.
7. Remove the back nut retaining the valve to the bottom panel and withdraw the valve upwards.
8. Fit the new gas control valve and reconnect gas and electrical connections.
9. Re-connect the white tube to the valve.
10. Check operation of the boiler. Refer to Frames 45 & 46.



## 67 DIVERTER VALVE ACTUATOR REPLACEMENT

1. Refer to Frame 57.
2. Swing the control box down into the servicing position. Refer to Frame 51.
3. Remove the electrical connections.
4. Using a suitable tool pull out the retaining clip and lift the diverter head from the brass body.
5. Fit new actuator head and reassemble in reverse order. Ensure the electrical connections are fitted correctly (left to right GREY - RED - PURPLE)
6. Check operation of the boiler. Refer to Frames 45 & 46.





## 68 COMBUSTION CHAMBER INSULATION REPLACEMENT

Ideal Stelrad Group recommends that, for your own comfort and safety and to comply with good working practice, the procedure described below is followed:

1. Refer to 'Replacement of Components' Frame.
2. Remove the boiler front and sealing panels. Refer to 'Boiler Front Panel Removal' and 'Boiler Sealing Panel Removal' Frame.
3. Remove the fan / venturi assembly. Refer to 'Fan and Venturi Assembly removal and cleaning' Frame.
4. Remove the burner. Refer to 'Burner removal and cleaning' Frame.
5. Remove the ignition electrode. Refer to 'Ignition Electrode replacement' Frame.
6. Remove the flame detection electrode. Refer to 'Flame Detection electrode replacement' Frame.
7. Remove the front and rear ionisation probes and discard.

Prior to removal of the insulation piece the following protective equipment should be worn:

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

8. Damp down the combustion chamber area containing the insulation piece.
9. Remove the insulation piece. The replacement one piece insulation is supplied in a plastic bag, this bag should be retained and the discarded insulation should now be placed into it.
10. Sweep any dampened particles and place in the plastic bag.

11. Fit new insulation piece -

- (a) Locate and align the insulation with the electrode holes and position the insulation into the combustion chamber.
- (b) Push the flexible material into the corners of the combustion chamber ensuring it is flat and flush against the combustion chamber wall.
- (c) Interlock the insulation piece along the back wall of the combustion chamber.
- (d) Again push the flexible material into the corners of the combustion chamber ensuring it is flat and flush against the combustion chamber wall.
- (e) Secure the insulation by replacing the ionisation probes with those supplied in the kit. Note that ionisation probes are a serviceable component and require inspecting annually.

**Note.** *The insulation is designed to be interlocking and should be fitted as shown.*

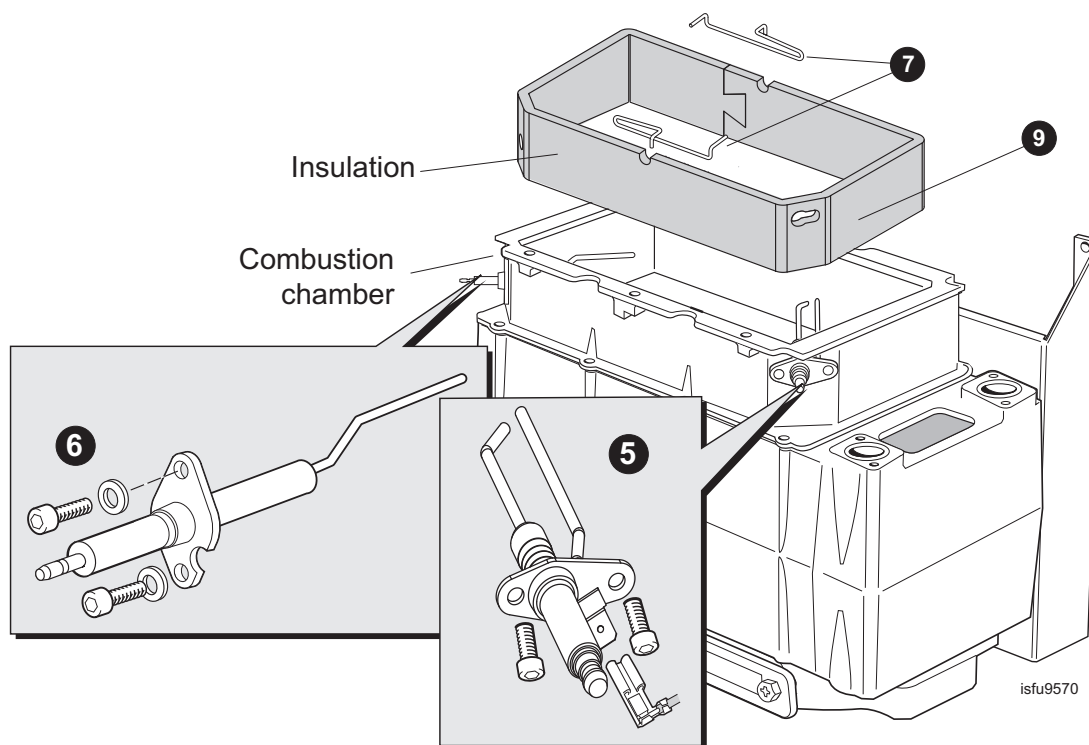
12. Remove the gloves and face mask and place them in the plastic bag.

13. Wash your hands and any areas of skin which may have come into contact with any of the particles from the insulation piece.

**Note.** *Seal the plastic bag and dispose of it and its contents into a commercial tip.*

14. Reassemble in reverse order.

15. Check operation of the boiler. Refer to 'General Checks' Frames.



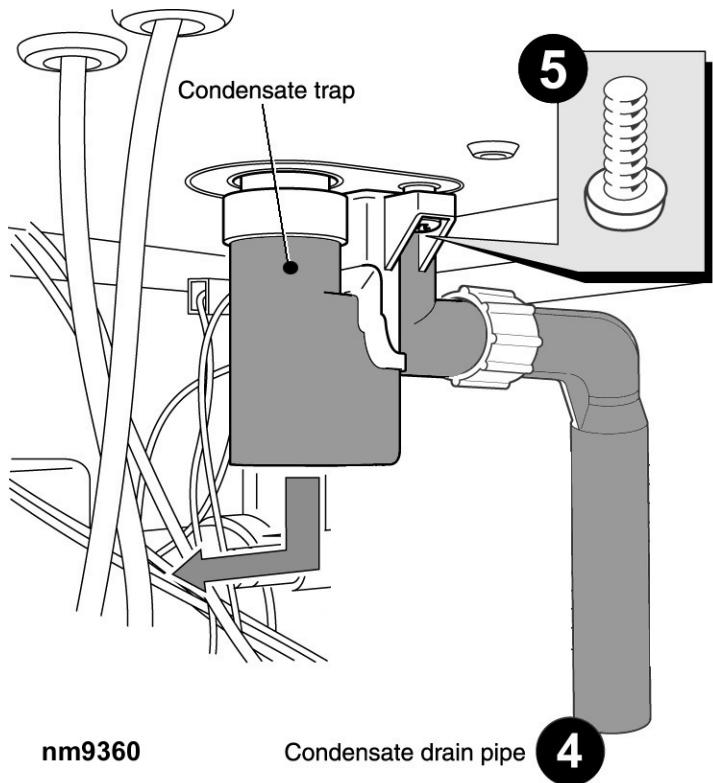
## SERVICING

### 69 CONDENSATE 'S' TRAP REPLACEMENT

1. Refer to Frame 57.

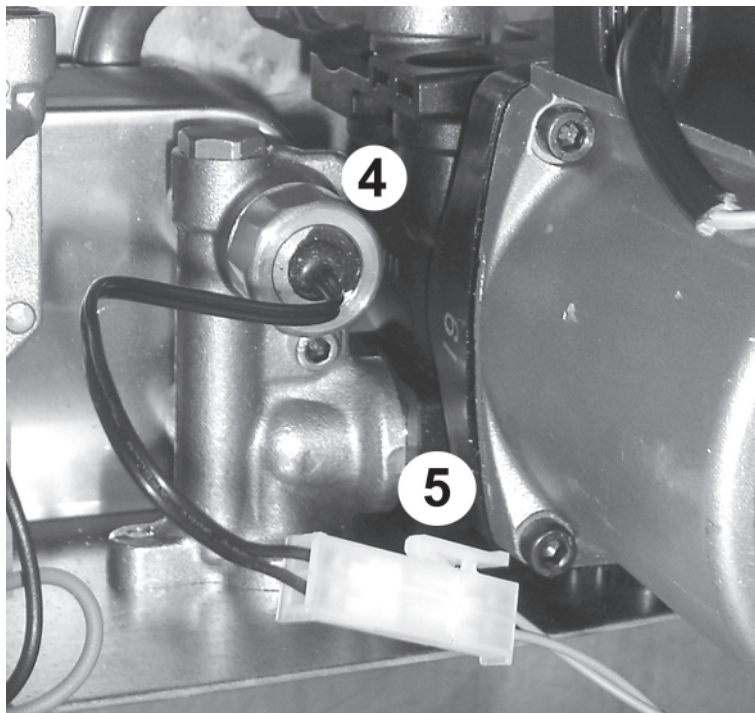
**Note:** Ensure condensate trap is fully drained before removal.

2. Remove the casing front & bottom panel. Refer to Frames 49 & 50.
3. Swing the control box down into the servicing position. Refer to Frame 51.
4. Disconnect the condensate drain pipe.
5. Remove the 2 securing screws and pull the trap down and forward to remove.
6. Transfer the drain pipe to the new trap and reassemble in reverse order.
7. When reassembling ensure the trap is full of water.
8. Check operation of the boiler. Refer to Frames 45 & 46.



### 70 DHW THERMISTOR REPLACEMENT

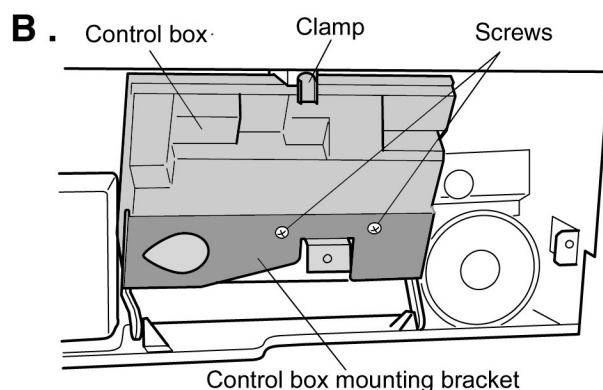
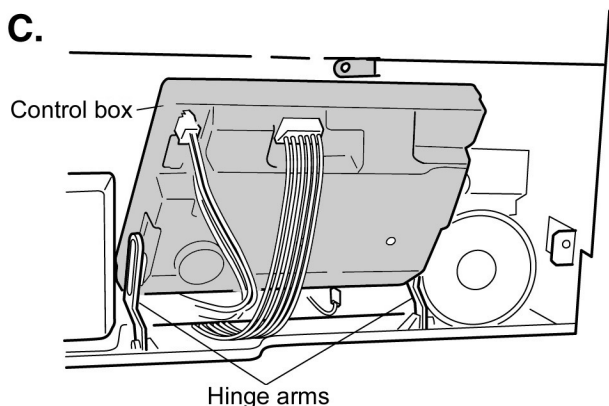
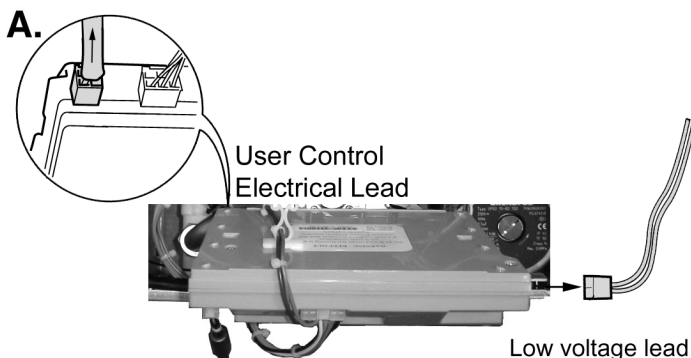
1. Refer to Frame 77 for draining the appliance.
2. Swing the control box into the servicing position. Refer to Frame 51.
3. Drain the DHW circuit. Refer to Frame 77.
4. Unscrew the knurled retaining nut.
5. Disconnect the in line electrical connection and withdraw the thermistor.
6. Reassemble in reverse order.
7. Check operation of the boiler. Refer to Frames 45 & 46.



## 71 CONTROL BOX REPLACEMENT

1. Refer to Frame 57.
2. Remove the casing front & bottom panel. Refer to Frames 49 & 50.
3. Swing the control box down into the servicing position. Refer to Frame 51.
4. Unplug the user control electrical lead and low voltage lead from the control box and remove the control. Refer to diagram A.
5. Return the control box to the working position and secure with the clamp. Unscrew the mounting bracket screws to remove the bracket. Refer to diagram B.
6. Release the clamp and carefully remove the control box from the hinge arms. Refer to diagram C.
7. Unplug all the electrical wiring from the control box and remove.

8. Transfer mounting bracket and hinge arms to the new control box.
9. Reassemble in reverse order, ensuring that the control box is located correctly in the housing before reconnecting the electrical wiring.
10. Check operation of the boiler. Refer to Frames 45 & 46.

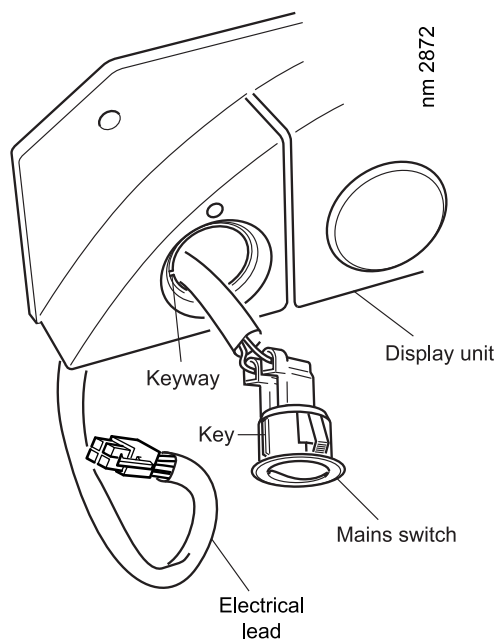
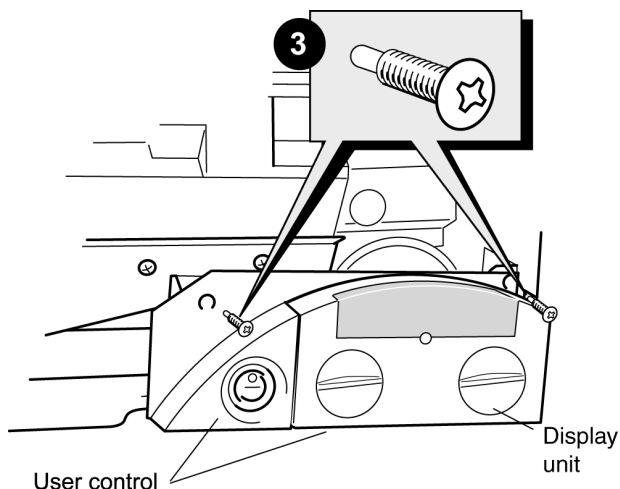


nm9355

## 72 MAINS SWITCH REPLACEMENT

1. Refer to Frame 57.
2. Remove the casing front & bottom panel. Refer to Frames 49 & 50.
3. Remove the 2 screws and allow the user control to lower.
4. Push out the mains switch from the rear, as shown.
5. Fit the new switch, ensuring that the electrical leads are replaced on the correct terminals (refer to Frame 41) and the key on the switch is correctly aligned with the slot in the plastic moulding.

6. Reassemble in reverse order.
7. Check operation of the boiler. Refer to Frames 45 & 46.

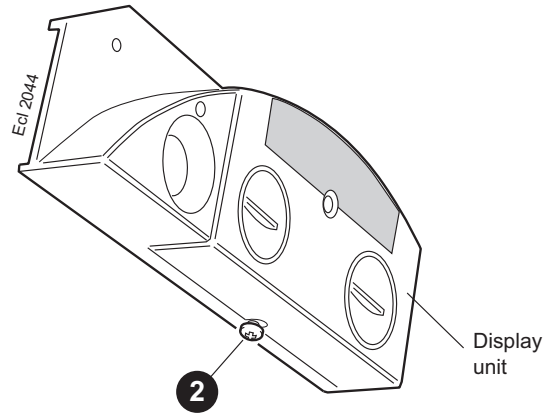
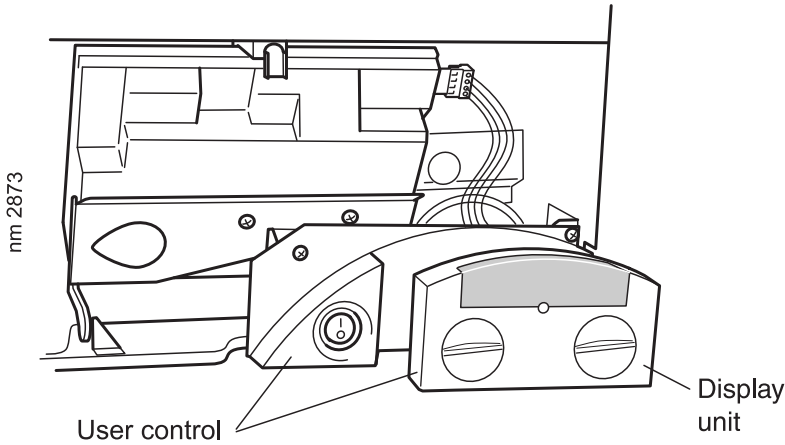


nm 2872

## 73 USER CONTROL REPLACEMENT

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

1. Refer to Frame 57.
2. Loosen the 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. Reassemble in reverse order.
6. Check operation of the boiler. Refer to Frames 45 & 46.



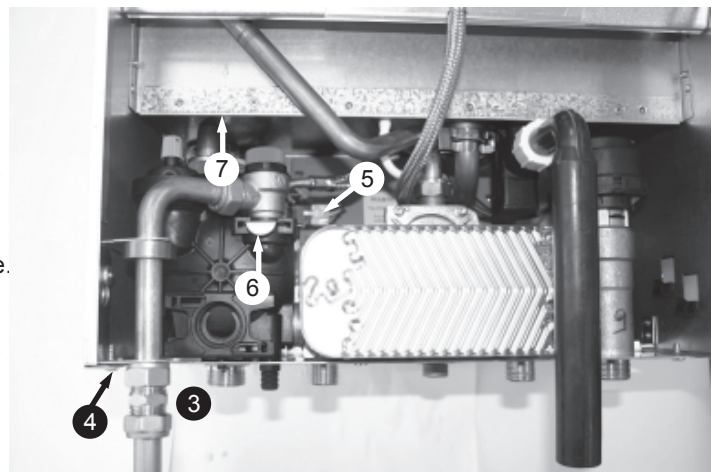
## 74 PRESSURE GAUGE RENEWAL

1. Refer to Frame 57.
2. Drain the boiler. Refer to Frame 77.
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 36.
6. Check operation of the boiler. Refer to Frames 45 & 46.



## 75 SAFETY RELIEF VALVE RENEWAL

1. Refer to Frame 57.
2. Drain the boiler CH circuit. Refer to Frame 77.
3. Undo the 15mm compression fitting from the pressure relief outlet pipe.
4. Remove self tapping screw located on chassis adjacent to outlet pipe.
5. Withdraw expansion vessel flexi hose clip and lift away from pump housing to improve access to the safety valve.
6. Withdraw the clip securing the safety valve.
7. Lift safety valve complete with its outlet pipe and support bracket upwards. Note outlet pipe bracket is supported by key-hole fastener. Withdraw assembly from boiler.
8. Fit the new safety valve to the pipe and reassemble in reverse order.
9. Refill boiler. Refer to Frame 36. Check operation of boiler. Refer to Frames 45 & 46.

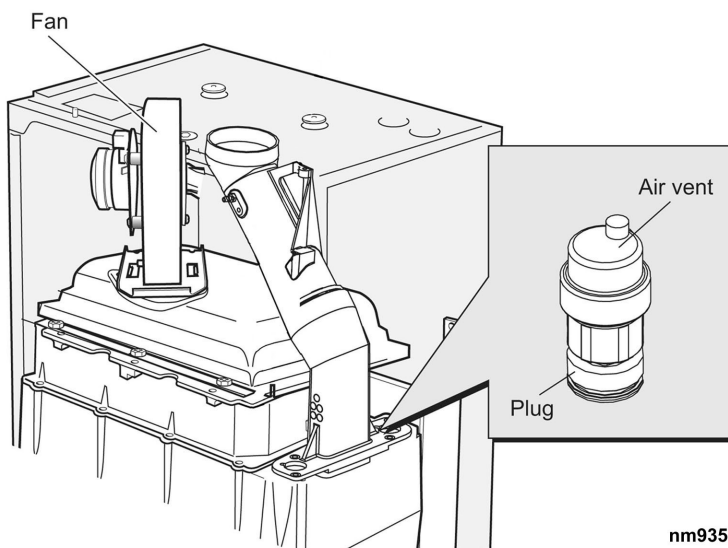


**Viewed from back of boiler**

## 76 AUTOMATIC AIR VENT REPLACEMENT

### HEAT EXCHANGER AIR VENT

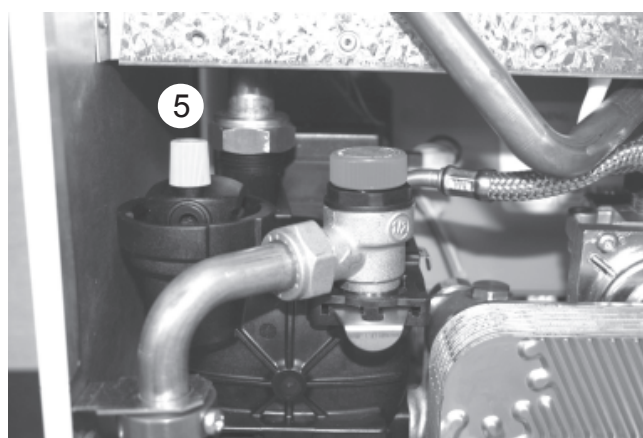
1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to frames 49 & 50.
3. Drain the boiler. Refer to frame 77.
4. Remove the turret from the boiler. Refer to frame 26.
5. Release the silicon tubing from the sample point.
6. Release the electrical connections from the dry fire thermistor.
7. Release the electrical connections from the spark generator.
8. Remove the M5 x 10 screw retaining the top flue manifold casting.
9. Remove the casting.
10. Remove the fan from the boiler. Refer to Frame 52.
11. Remove the burner from the heat exchanger. Refer to Frame 53.
12. Unscrew the air vent from its heat exchanger mount and renew.
13. Re assemble the boiler in reverse order.
14. Refill the boiler. Refer to frame 36. Check for leaks around the new air vent joint.
15. Check the operation of the boiler. Refer to Frames 45 & 46.



nm9356

### PUMP AIR VENT

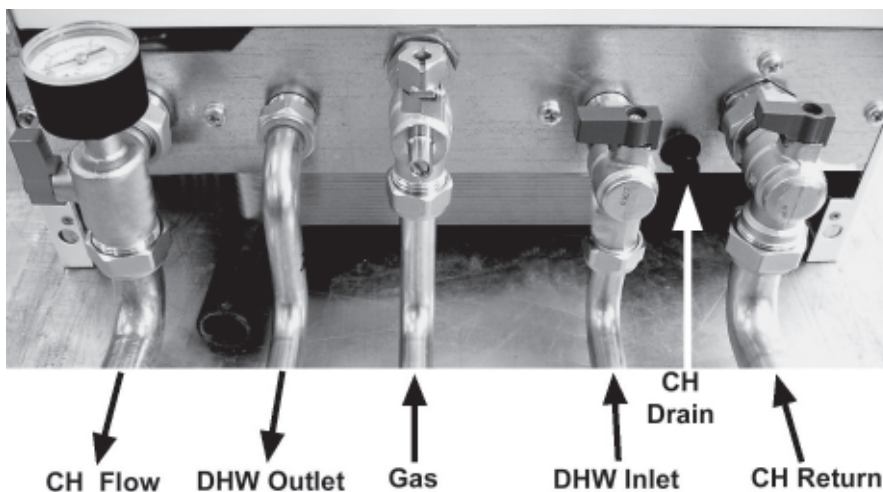
1. Refer to Frame 57.
2. Swing the control box down into the servicing position - refer to frame 51
3. Drain the boiler. Refer to frame 77.
4. Remove the circulating pump head - refer to frame 80
5. Locate the automatic air vent head located at the rear of the of pump chamber plastic housing. If increased access is required disconnect the 22mm pipe connection at top a pump chamber and swing pipe outwards.
6. The automatic air vent head is retained in the pump body with a bayonet connection. The air vent head and float assembly is removed by turning the head anti-clockwise (viewed from above) and pulling upwards.
7. Reassembly is the reverse of the above. Ensure the air vent head O ring seal is in place when refitting.
8. Refill the boiler. Refer to frame 36. Check for leaks around the new air vent joint.
9. Check the operation of the boiler. Refer to Frames 45 & 46.



Viewed from back of boiler

## 77 DRAINING THE BOILER

1. Refer to frame 57.
2. Close all the water isolating (CH and DHW) valves on the boiler inlet.
3. **To drain the central heating circuit:** Attach a length of hose to the CH drain point and open the drain valve.
4. **To drain the domestic hot water circuit.** As there is no direct drain for the domestic hot water circuit, depending on the location of the boiler, opening the lowest hot water tap may drain this circuit. However it must be noted that some residual water will be experienced during replacement of components.
5. **After replacing any component on the boiler, close the drain valve, remove the hose and open all system isolating valves (re-pressurise as appropriate with filling loop) before proceeding to check operation of the boiler.**
6. Check operation of the boiler. Refer to Frames 45 & 46.



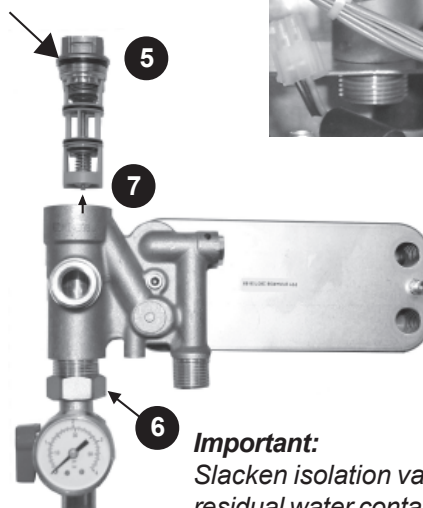
## 78 DIVERTER VALVE INTERNAL PARTS REPLACEMENT

1. Refer to Frame 57.
2. Swing the control box down into the servicing position. Refer to Frame 51.
3. Drain the boiler. Refer to Frame 77.
4. Remove the diverter valve actuator head. Refer to Frame 67.
5. Unscrew the top connection to access the internal parts.
6. To allow residual water within the waterset to drain, slacken CH isolation valve union connecting isolation valve to waterset.

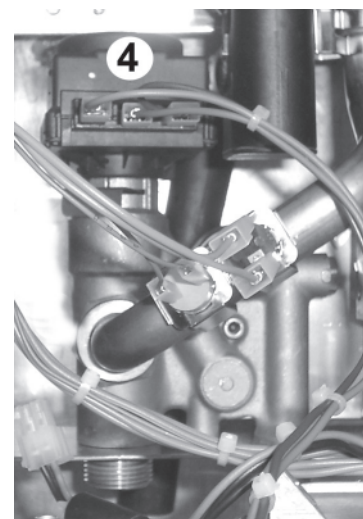
**NOTE.** Failure to do this may result in compression of trapped residual water during diverter valve reassembly, resulting in damage to the pressure gauge located on the CH isolation valve.

7. Fit the new valve cartridge mechanism ensuring correct fit of the pin.
8. Reassemble in reverse order ensuring CH isolation valve union is reconnected.
9. Refill the boiler. Refer to Frame 36.
10. Check operation of the boiler. Refer to Frames 45 & 46.

Cartridge Mechanism  
Part No. 175 411

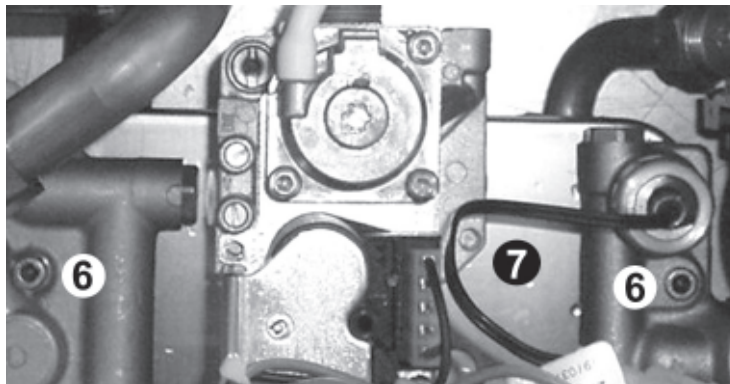


**Important:**  
Slacken isolation valve union to drain residual water contained within waterset.



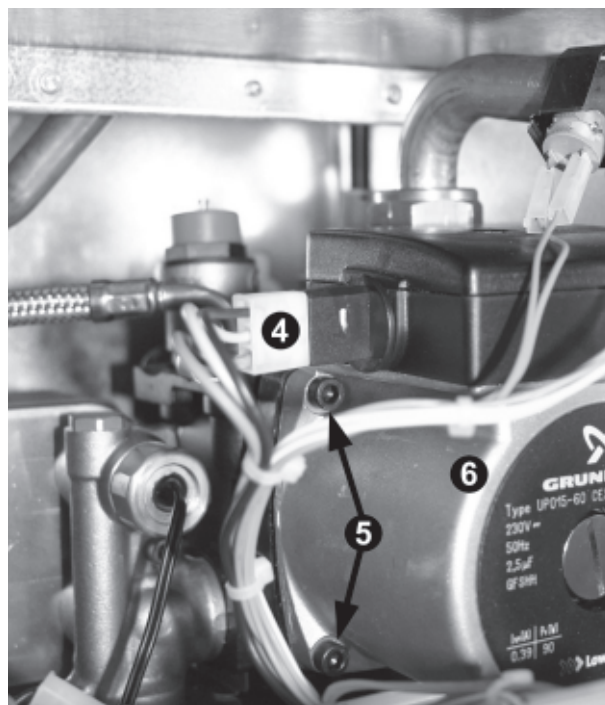
## 79 DHW PLATE HEAT EXCHANGER REPLACEMENT

1. Refer to Frame 57.
2. Swing the control box down into the servicing position. Refer to Frame 51.
3. Drain the boiler. Refer to Frame 77.
4. Remove divertor valve actuator. Refer to Frame 67.
5. Remove condensate "S" trap. Refer to Frame 54.
6. Remove the 2 allen screws securing the plate heat exchanger to the brass housings.
7. Manoeuvre the plate heat exchanger out of the top left-hand side of the controls area.
8. Fit the new plate heat exchanger, using the new o-rings supplied.
9. Reassemble in reverse order.
10. Refill the boiler. Refer to Frame 36.
11. Check operation of the boiler. Refer to Frames 45 & 46.



## 80 PUMP HEAD REPLACEMENT

1. Refer to Frame 57.
2. Drain the boiler CH circuit. Refer to Frame 77.
3. Swing the control box down into the servicing position. Refer to Frame 51.
4. Disconnect the electrical lead from the pump.
5. Remove the 4 Allen screws retaining the pump head.
6. Remove the pump head.
7. Fit the new pump head.
8. Reassemble in reverse order.
9. Refill the boiler. Refer to Frame 36.
10. Check operation of the boiler. Refer to Frames 45 & 46.



## 81 HEAT ENGINE RENEWAL

Refer also to Frame 8 - 'Boiler Exploded View'.

### IMPORTANT

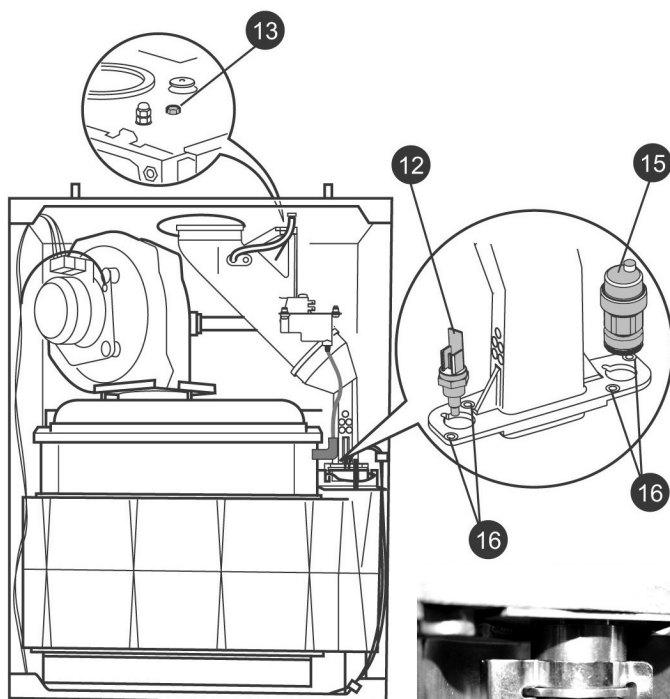
Before starting the removal procedure, protect the gas and electrical controls with a waterproof sheet or plastic bag.

1. Refer to Frame 57.
2. Remove the boiler front, bottom and sealing panels. Refer to Frames 49 & 50.
3. Drain the boiler. Refer to Frame 77.
4. Remove the control box and place on one side. Refer to Frame 71.
5. Remove the fan / venturi assembly and place on one side. Refer to Frame 52.
6. Remove the burner and place on one side. Refer to Frame 53.
7. Remove the ignition and detection electrodes. Refer to Frames 63 & 64.
8. Remove the spark generator. Refer to Frame 65.
9. Release the flue from the turret. Refer to Frame 26.
10. Remove the turret from the boiler. Refer to Frame 26.
11. Release the silicone tubing from the sampling point.
12. Release the electrical connection to the dry fire thermistor.
13. Remove the M5 x 10 screw retaining the top flue manifold casting.
14. Remove the top casting of the flue manifold from the appliance.
15. Remove the automatic air vent. Refer to Frame 76.
16. Undo the 4 M x 10 screws securing the bottom flue manifold casting and remove.

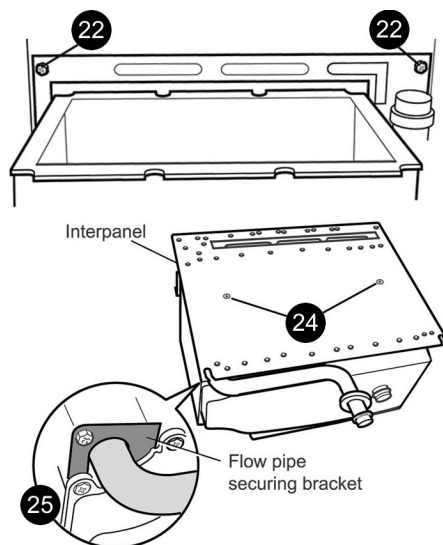
17. Remove the edge clip securing the dry fire thermistor wiring.
18. Remove the clip securing the return pipe.
19. Remove the overheat thermostat and the control thermistor. Refer to Frame 62.
20. Remove the clip to release the flow pipe.
21. Remove the condensate 'S' trap. Refer to Frame 69.
22. Remove the 2 M5 screws securing the interpanel to the back panel.
23. Slide the heat exchanger and interpanel assembly upward to disengage and remove from the casing, complete with the flow pipe.
24. Remove the 2 M6 countersunk screws, remove the interpanel and transfer to the new heat exchanger.
25. Remove the M5 screw and remove the flow pipe securing bracket.
26. Remove the flow pipe and transfer to the new heat exchanger.
27. Reassemble in reverse order, replacing gaskets or seals if any sign of damage is evident. When replacing the spring clips located on both the flow and return pipe connections, ensure clip is oriented to correctly match connecting pipe diameters.

**Note.** The heat exchanger is supplied with new combustion chamber insulation boards. These should be fitted (refer to Frame 68 before the burner and fan / venturi assembly and before the ignition and detection electrodes are replaced).

28. Refill the boiler. Refer to Frame 36.
29. Check operation of the boiler. Refer to Frames 45 & 46.



nm9357



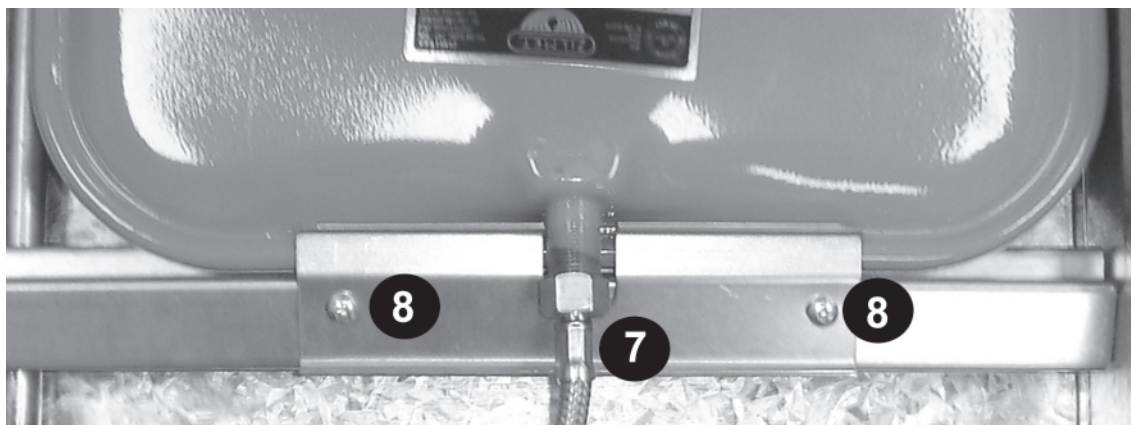


## 82 EXPANSION VESSEL REPLACEMENT

1. Refer to Frame 57.
2. Drain the boiler. Refer to Frame 77.
3. Unscrew all the gas and water connection unions on the boiler side of the valves.
4. Remove the screw from the turret clamp and remove.
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. Unscrew the union nut on the vessel water connection pipe.
8. Unscrew the 2 screws from the securing clamp and remove.
9. Remove the expansion vessel.
10. Fit the new expansion vessel.
11. Reassemble in reverse order.
12. Refill the boiler. Refer to Frame 36.
13. Check operation of the boiler. Refer to Frames 45 & 46.

**Note.**

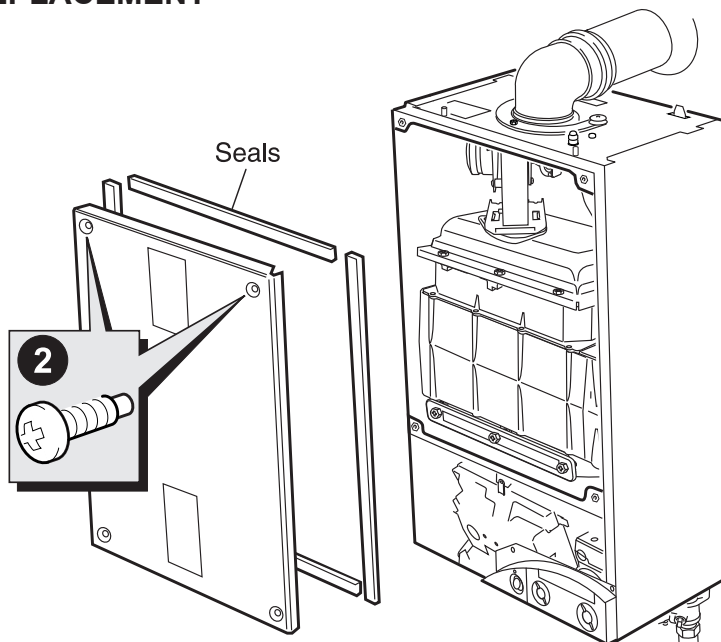
*If preferred, and for convenience, a new expansion vessel may be installed elsewhere in the heating system, providing it ensures equivalent system protection.*



## 83 BOILER SEALING PANEL SEAL REPLACEMENT

1. Refer to Frame 57.
2. Remove the boiler front and sealing panels. Refer to Frames 49 & 50.
3. Remove the old seal from the casing and thoroughly clean the casing surfaces.
4. Fit the new adhesive seals, note that they are supplied to the correct length for the relevant sides.
5. Reassemble in reverse order.
6. Check operation of the boiler. Refer to Frames 45 & 46.

**Note.** *Ensure that the boiler sealing panel is correctly sealed, compressing the seal to make an airtight joint.*



nm 2764

## FAULT FINDING

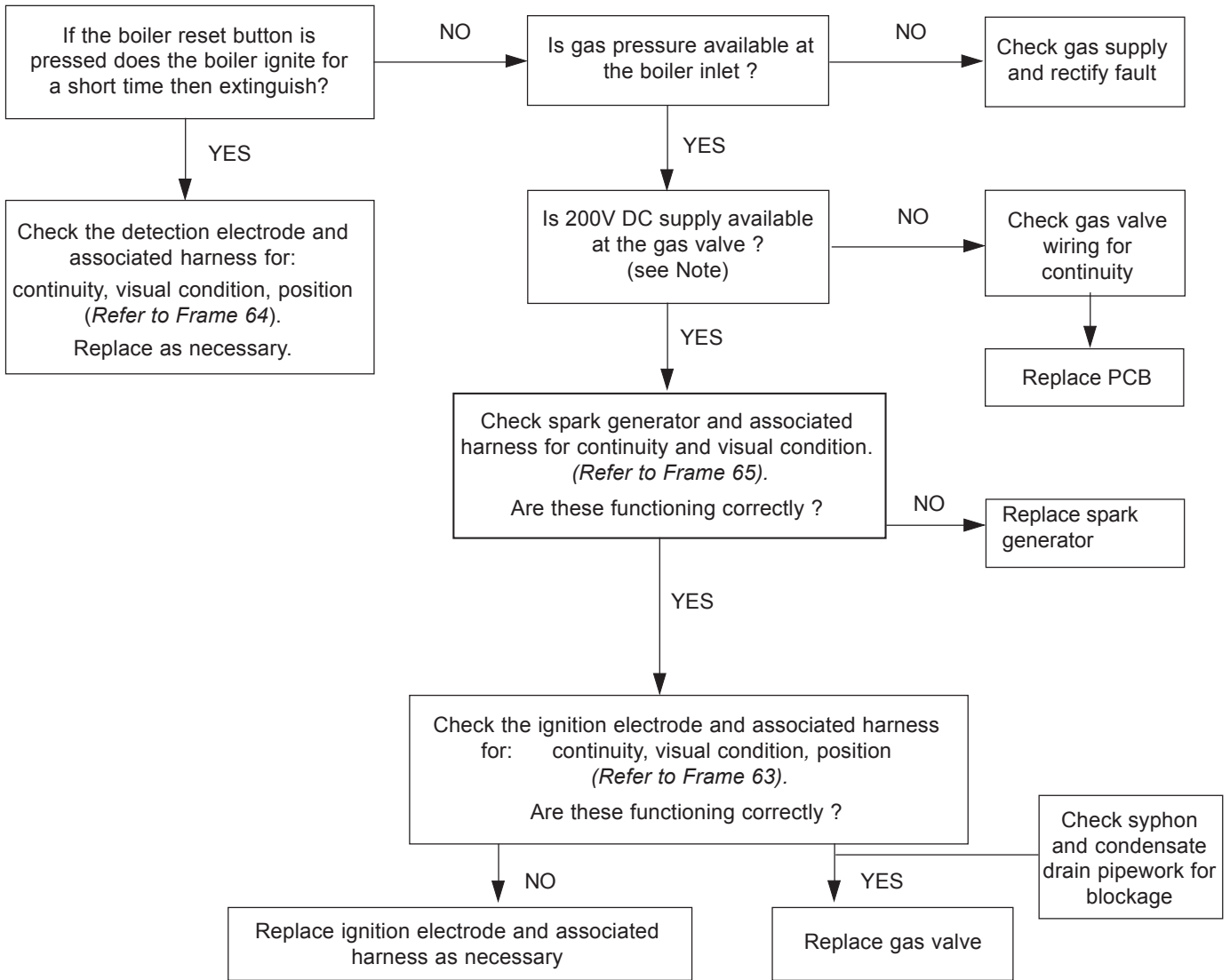
### 84 FAULT FINDING CHART MAIN MENU

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 85
ALTERNATING 'L' 'E'	GO TO FRAME 86
ALTERNATING 'L' 'A'	GO TO FRAME 87
ALTERNATING 'L' '8'	GO TO FRAME 88
ALTERNATING 'H' '1'	GO TO FRAME 89
ALTERNATING 'H' '2'	GO TO FRAME 90
ALTERNATING 'H' '3'	GO TO FRAME 91
ALTERNATING 'H' '4'	GO TO FRAME 92
ALTERNATING 'H' 'F'	GO TO FRAME 93
ALTERNATING 'H' 'n'	GO TO FRAME 94
ALTERNATING 'H' 'E'	GO TO FRAME 86
ALTERNATING 'H9'	GO TO FRAME 92
ALTERNATING 'L9'	GO TO FRAME 92

## FAULT FINDING

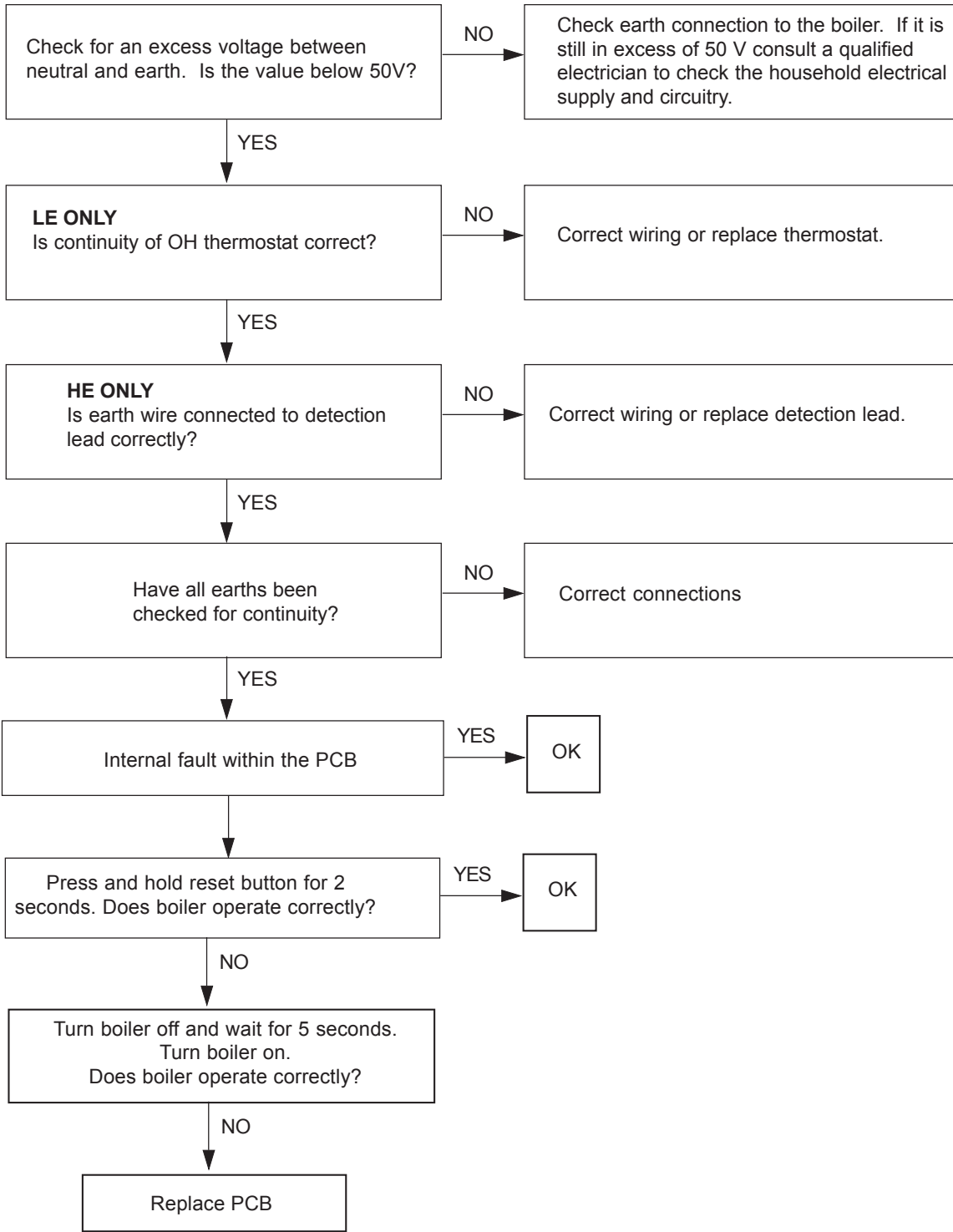
### 85 L.....F..... (FLAME DETECTION ERROR)



**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 indicates that the correct voltage is supplied to the gas valve.

# FAULT FINDING

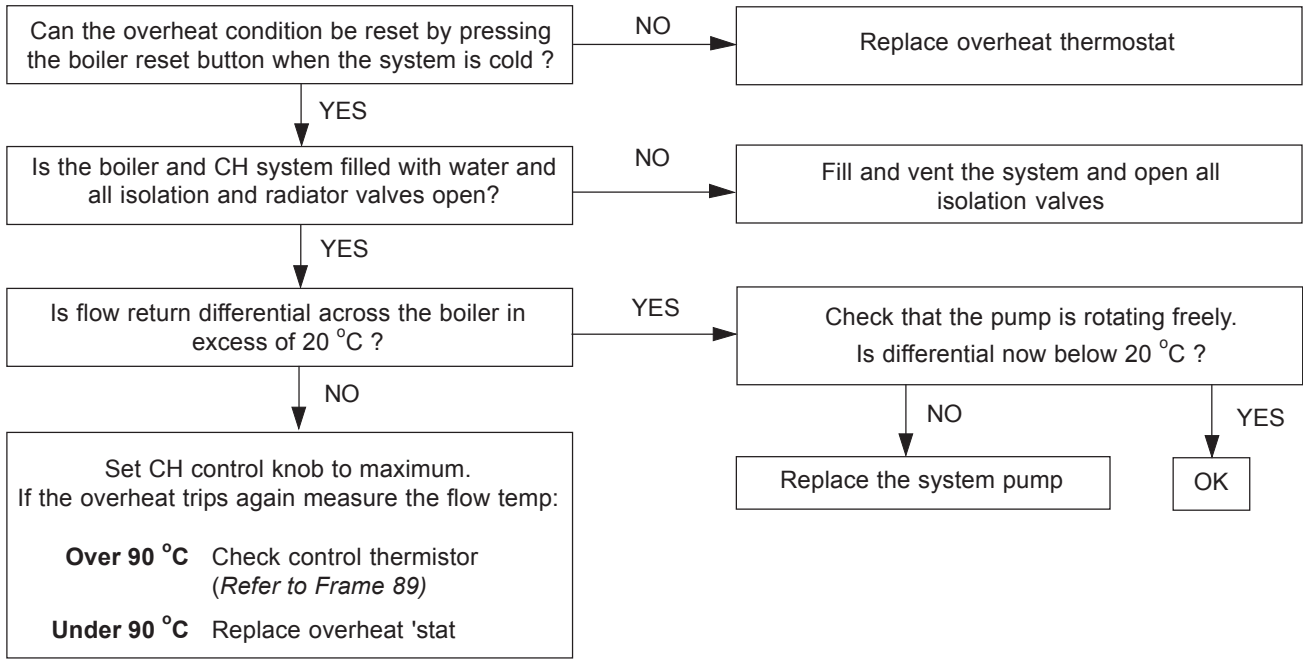
## 86 L.....E..... or H.....E..... (PCB ERROR)



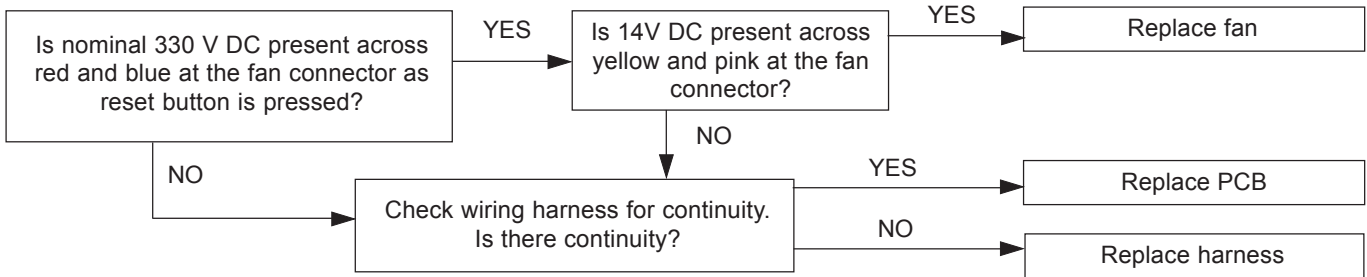
FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING FAULT FINDING

## FAULT FINDING

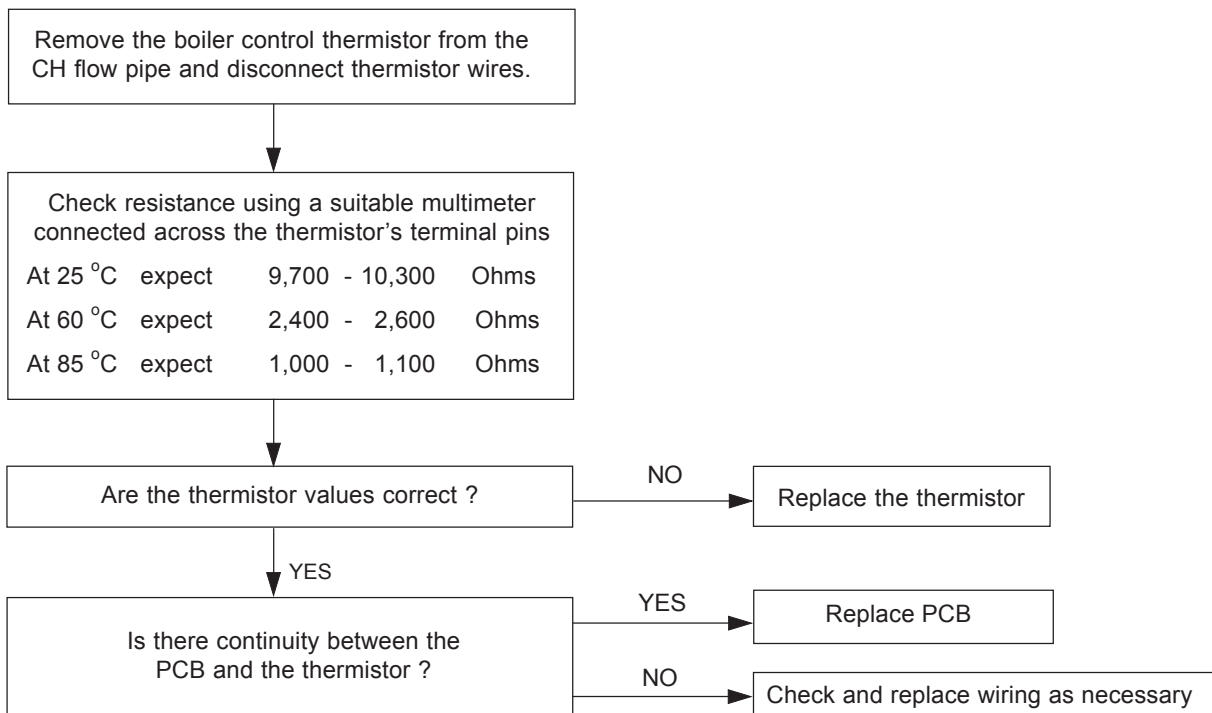
### 87 L.....A..... (OVERHEAT ERROR)



### 88 L....8..... (FAN ERROR)

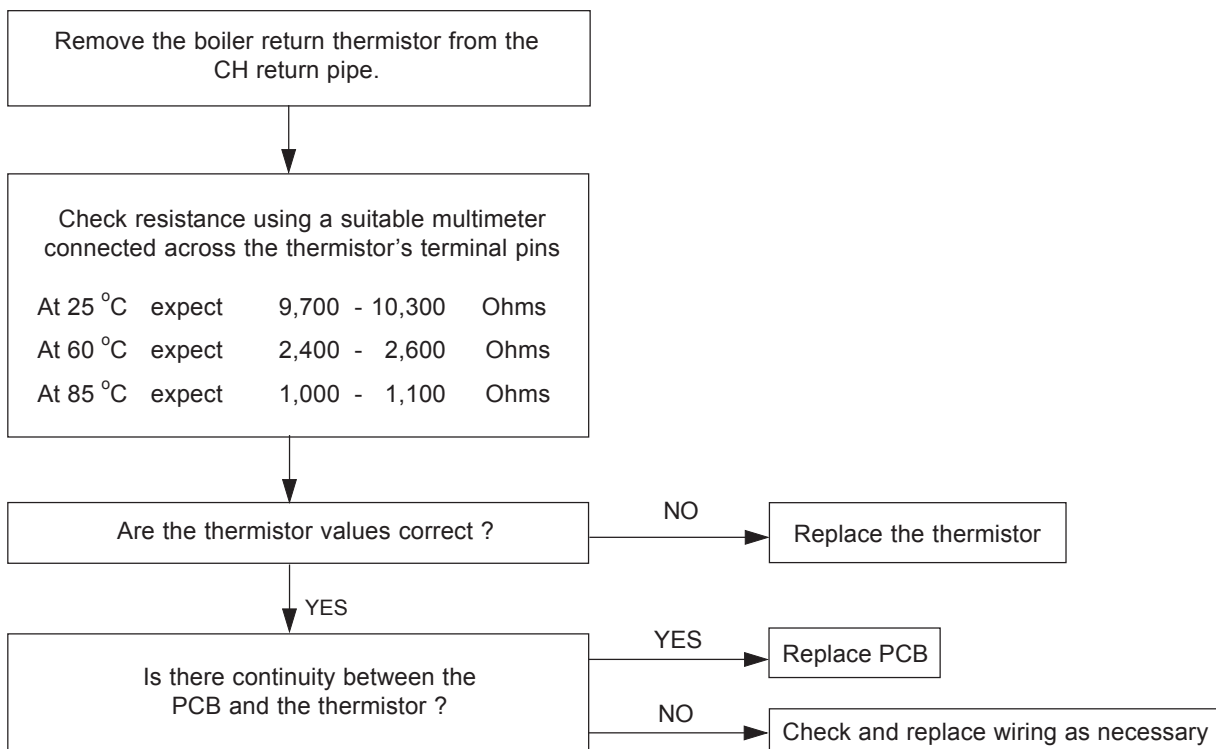


### 89 H.....1..... (CONTROL THERMISTOR [FLOW] ERROR)

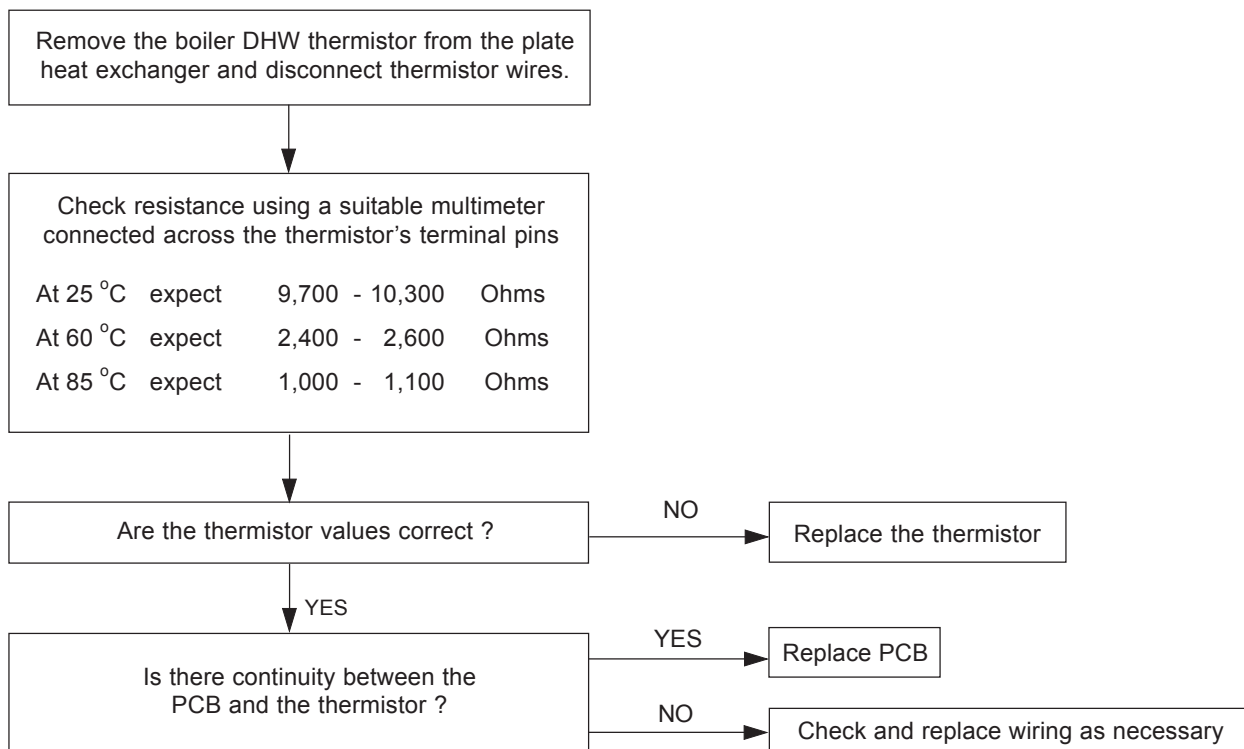


## FAULT FINDING

### 90 H.....2..... (CONTROL THERMISTOR [RETURN] ERROR)

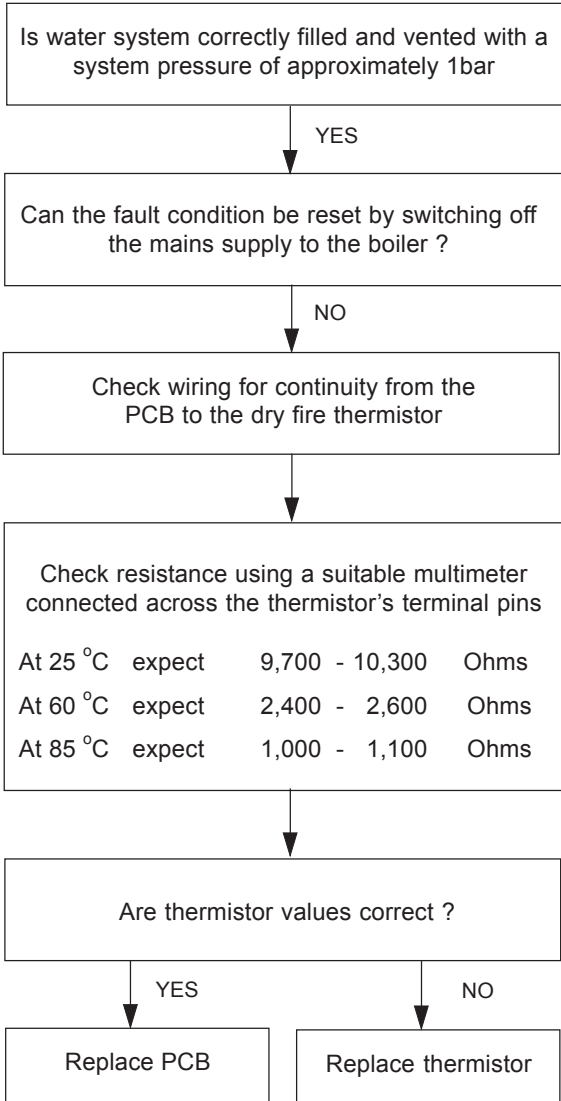


### 91 H.....3..... (DHW THERMISTOR ERROR)

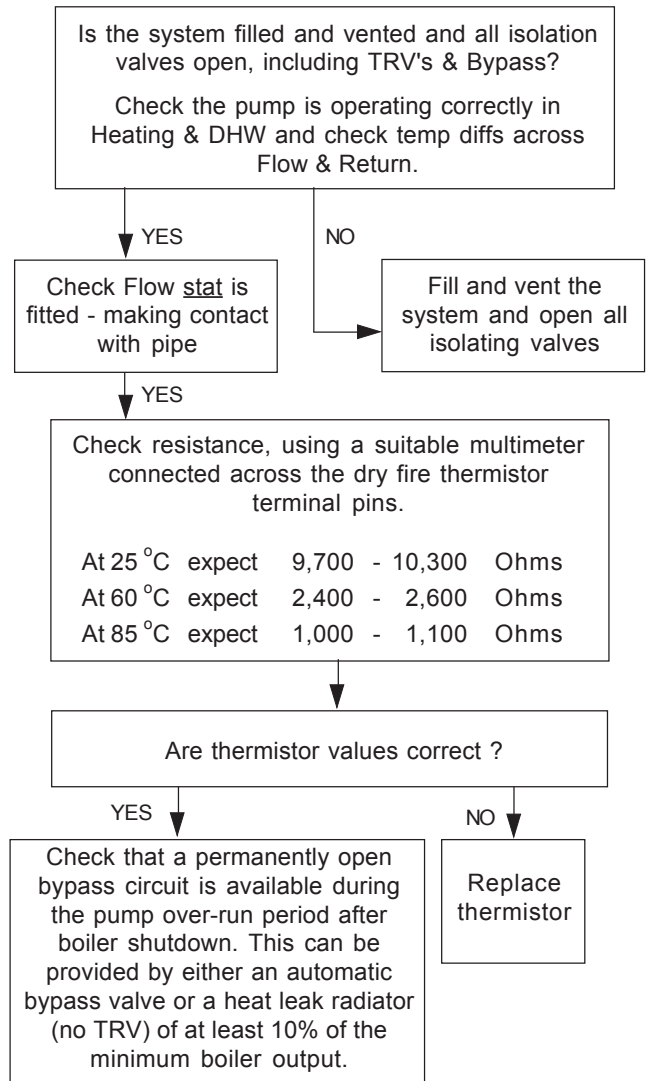


## FAULT FINDING

### 92 H.....4.... (DRY FIRE THERMISTOR ERROR)



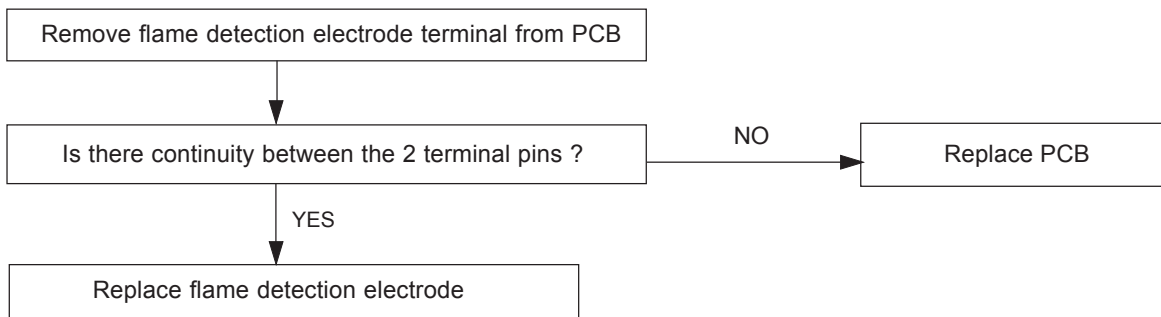
### H9/L9 (HEAT EXCHANGER OVERHEAT)



**Note.**

*With V9 Primary Control PCB, overheat LA/HA or H9/L9 when reset will display 3 horizontal lines and will not attempt to fire until the temperature in the heat exchanger drops below 50°C.*

### 93 H.....F.... (FLAME DETECTION ERROR)



### 94 H.....n.... (PHASE REVERSAL ERROR)

Check wiring to the boiler for reversed live and neutral

## 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 list is held by British Gas Services, Wolseley Centers Ltd. distributors and merchants.

When ordering spares please quote:

1. Boiler model
2. Appliance G.C. No.
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 Wolseley Centers Ltd.

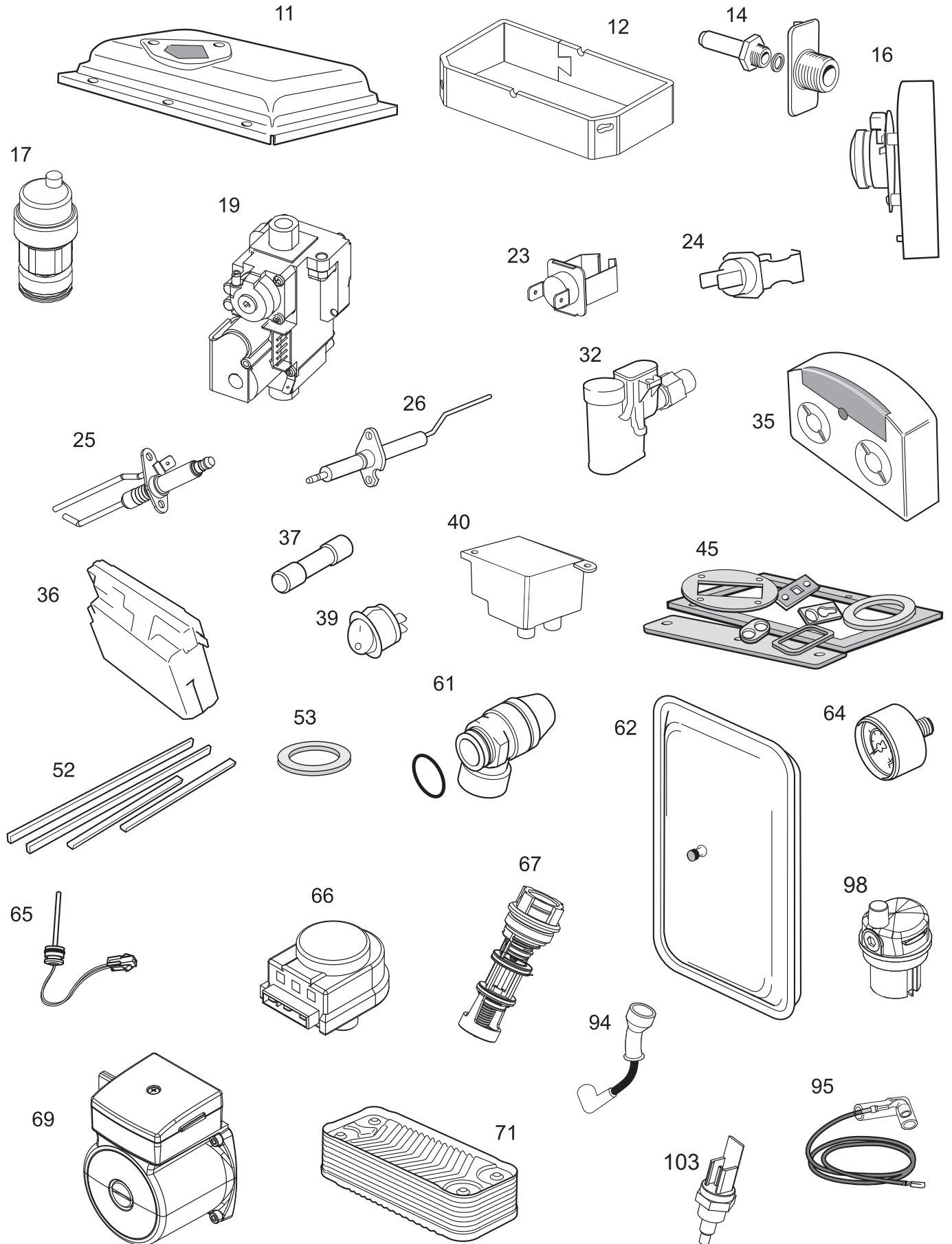
Key No.	G.C. Part No.	Description	Qty.	Product Number
1	-	Front casing panel	1	173 670
4	H66-557	Bottom casing panel	1	175 414
11	-	Burner	1	173 752
12	HO7-660	Combustion chamber insulation	1	173 520
14	E67-492	Injector and housing - C22/2430	1	170 908
	HO7-770	Injector and housing - C22/35	1	173 522
16	E85-097	Fan assembly - C22/24/30	1	172 625
	HO7-771	Fan assembly - C22/35	1	173 525
17	E69-286	Automatic air vent (Heat exchanger)	1	170 988
19	H58-082	Gas valve kit	1	174 789
23	H58-084	Thermistor (boiler control)	2	174 790
24	H58-086	Overheat thermostat	1	174 791
25	HO7-664	Ignition electrode kit	1	175 406
26	HO7-665	Flame detection electrode kit	1	173 529
32	H40-140	Kit - Trap and Seal	1	174 244
35	113-713	User control (display unit)	1	173 671
36	149-852	PCB primary controls kit (V9)	1	174 486
37	E67-519	Fuse PCB (3.15A L250V)	1	170 931
39	HO7-777	Mains switch c/w harness	1	173 537
40	HO7-731	Spark generator assy.	1	173 538
45	E67-527	Gasket kit (servicing)	1	170 938
52	E68-376	Seal kit (sealing panel)	1	171 014
53	E68-380	Turret gasket	1	171 022
61	H66-650	Pressure relief valve	1	175 413
62	H66-652	Expansion vessel	1	175 415
64	H69-341	Pressure gauge	1	170 991
65	H28-067	DHW thermistor	1	173 974
66	H58-165	Diverter valve motor head	1	174 813
67	H62-599	Diverter valve cartridge	1	175 411
69	H66-587	Pump Head	1	175 409
71	H66-588	Plate heat exchanger - C22/24	1	175 417
	H66-589	Plate heat exchanger - C22/30	1	175 418
	H66-592	Plate heat exchanger - C22/35	1	175 419
94	H66-644	Ignition lead	1	175 424
95	HO7-792	Detection lead	1	173 512
98	H58-225	Air vent (pump)	1	174 894
103	H29-018	Dry Fire Thermistor	1	174 087
		Hardware Pack Contents (Ref. Frame 9)		
		Pack B - Accessory Pack	1	175 437
		Pack C - Flow Valve Pack	1	175 431
		Pack D - DHW Pack		
		C22/24	1	175 434
		C22/30	1	175 435
		C22/35	1	175 436
		Pack E - Gas Pack	1	175 433
		Pack F - Return Valve Pack	1	175 432

(\* Refer to boiler serial letter code on data plate to identify correct spare)



# SHORT LIST OF PARTS

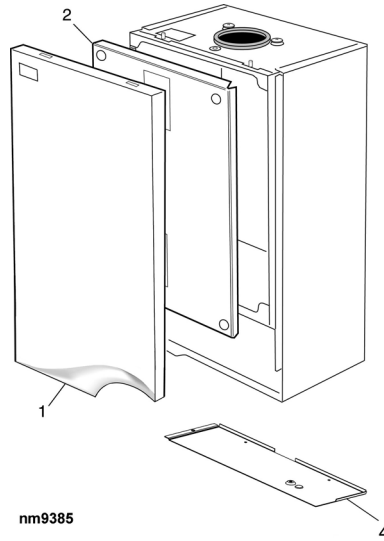
## 95 SHORT LIST



nm9571a

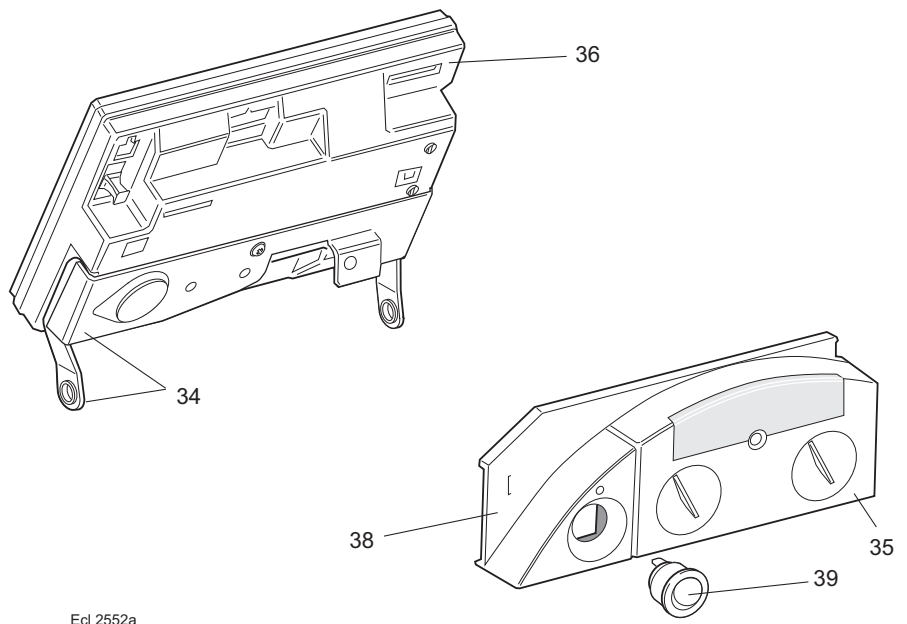
## 96 BOILER CASING ASSEMBLY

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



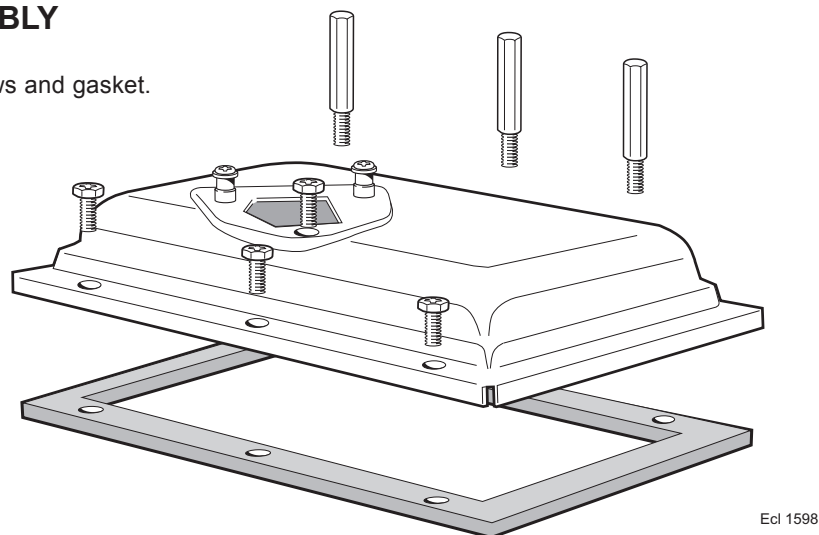
## 97 CONTROLS ASSEMBLY

33. Controls assy with screws.
34. Controls hinge bracket.
35. User controls (without item 38).
36. PCB (primary controls).
38. User controls housing
39. Mains switch.
54. Jumper link (not shown)



## 98 BURNER ASSEMBLY

11. Burner assembly with screws and gasket.





# Code Of Practice

For the installation, commissioning and servicing of domestic heating and hot water products

Benchmark places responsibilities on both manufacturers and installers.\* The purpose is to ensure that customers\*\* are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. Installers are required to carry out work in accordance with the following:

## Standards of Work

- Be competent and qualified to undertake the work required.
- Install, commission, service and use products in accordance with the manufacturer's instructions provided.
- Ensure that where there is responsibility for design work, the installation is correctly sized and fit for purpose.
- Meet the requirements of the appropriate Building Regulations. Where this involves notifiable work be a member of a Competent Persons Scheme or confirm that the customer has notified Local Authority Building Control (LABC), prior to work commencing.
- Complete all relevant sections of the Benchmark Checklist/Service Record when carrying out commissioning or servicing of a product or system.
- Ensure that the product or system is left in a safe condition and, whenever possible, in good working order.
- Highlight to the customer any remedial or improvement work identified during the course of commissioning or servicing work.
- Refer to the manufacturer's helpline where assistance is needed.
- Report product faults and concerns to the manufacturer in a timely manner.

## Customer Service

- Show the customer any identity card that is relevant to the work being carried out prior to commencement or on request.
- Give a full and clear explanation/demonstration of the product or system and its operation to the customer.
- Hand over the manufacturer's instructions, including the Benchmark Checklist, to the customer on completion of an installation.
- Obtain the customer's signature, on the Benchmark Checklist, to confirm satisfactory demonstration and receipt of manufacturer's instructions.
- Advise the customer that regular product servicing is needed, in line with manufacturers' recommendations, to ensure that safety and efficiency is maintained.
- Respond promptly to calls from a customer following completion of work, providing advice and assistance by phone and, if necessary, visiting the customer.
- Rectify any installation problems at no cost to the customer during the installer's guarantee period.

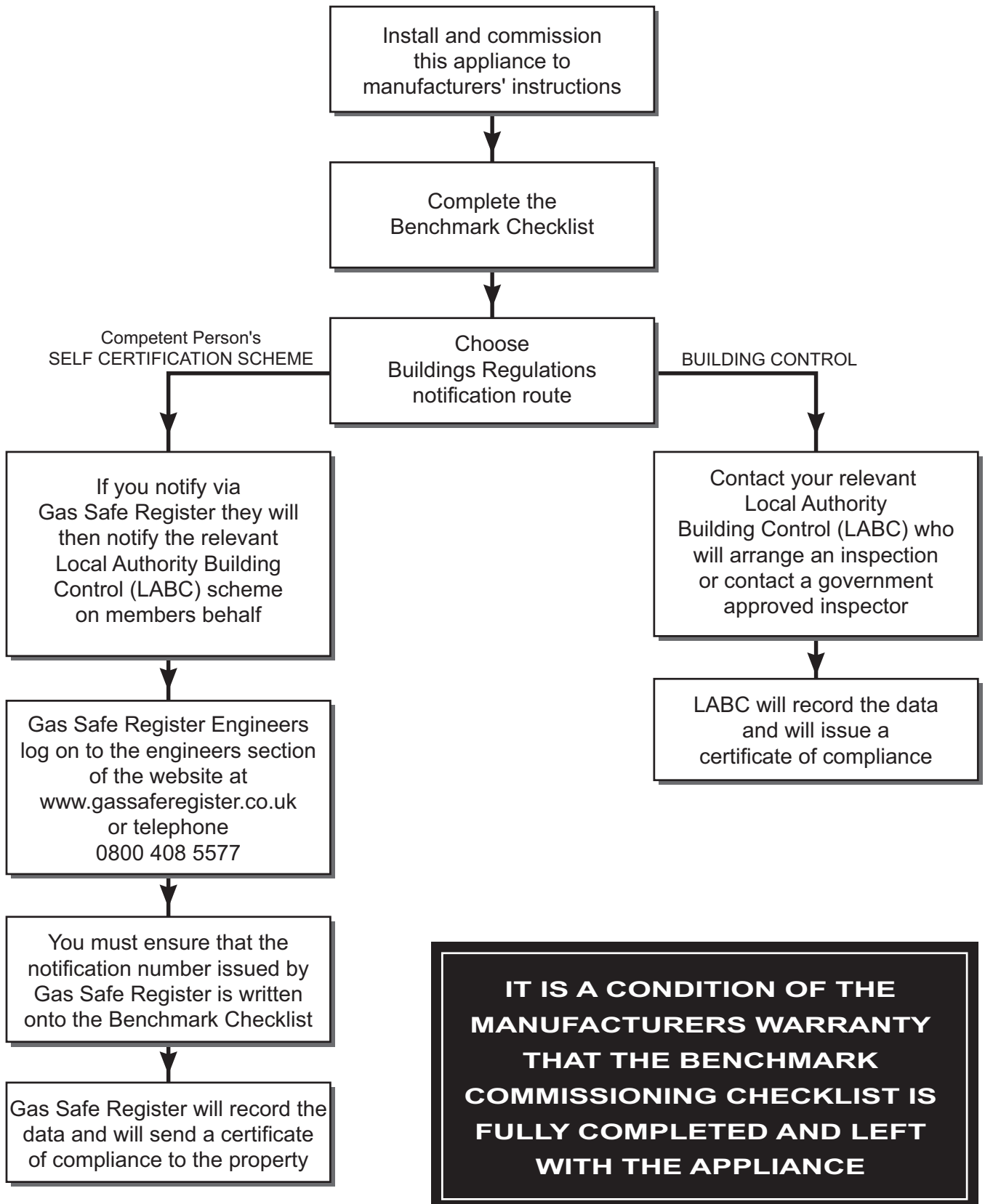


\*The use of the word "installer" is not limited to installation itself and covers those carrying out installation, commissioning and/or servicing of heating and hot water products, or the use of supporting products (such as water treatment or test equipment).

\*\*Customer includes householders, landlords and tenants.

# INSTALLER NOTIFICATION GUIDELINES

A change to Building Regulations (England and Wales) requires the installer to notify when installing a heating appliance, as from 1st April 2005.



# GAS BOILER SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Address \_\_\_\_\_  
Boiler Make and Model \_\_\_\_\_  
Boiler Serial Number \_\_\_\_\_  
Commissioned by (print name) \_\_\_\_\_ Gas Safe Register ID Number \_\_\_\_\_  
Company Name \_\_\_\_\_ Telephone Number \_\_\_\_\_  
Company Address \_\_\_\_\_  
Commissioning Date \_\_\_\_\_

### To be completed by the customer on receipt of a Building Regulations Compliance Certificate \*:

Building Regulations Notification Number (if applicable) \_\_\_\_\_

### CONTROLS Tick the appropriate boxes

Time and Temperature Control to Heating	Room Thermostat and Programmer/Timer <input type="checkbox"/>	Programmable Room Thermostat <input type="checkbox"/>	Load/Weather Compensation <input type="checkbox"/>	Optimum Start Control <input type="checkbox"/>
Time and Temperature Control to Hot Water		Cylinder Thermostat and Programmer/Timer <input type="checkbox"/>		Combination Boiler <input type="checkbox"/>
Heating Zone Valves			Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>
Hot Water Zone Valves			Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>
Thermostatic Radiator Valves			Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>
Automatic Bypass to System			Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>
Boiler Interlock				Provided <input type="checkbox"/>

### ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer's instructions Yes

What system cleaner was used? \_\_\_\_\_

What inhibitor was used? \_\_\_\_\_ Quantity  litres

### CENTRAL HEATING MODE Measure and Record:

Gas Rate  m<sup>3</sup>/hr OR  ft<sup>3</sup>/hr

Burner Operating Pressure (if applicable)  mbar OR Gas Inlet Pressure  mbar

Central Heating Flow Temperature  °C

Central Heating Return Temperature  °C

### COMBINATION BOILERS ONLY

Is the installation in a hard water area (above 200ppm)? Yes  No

If yes, has a water scale reducer been fitted? Yes  No

What type of scale reducer has been fitted? \_\_\_\_\_

### DOMESTIC HOT WATER MODE Measure and Record:

Gas Rate  m<sup>3</sup>/hr OR  ft<sup>3</sup>/hr

Burner Operating Pressure (at maximum rate)  mbar OR Gas Inlet Pressure (at maximum rate)  mbar

Cold Water Inlet Temperature  °C

Hot water has been checked at all outlets Yes  Temperature  °C

Water Flow Rate  l/min

### CONDENSING BOILERS ONLY

The condensate drain has been installed in accordance with the manufacturer's instructions and/or BS5546/BS6798 Yes

### ALL INSTALLATIONS

If required by the manufacturer, record the following CO<sub>2</sub>  % OR CO  ppm OR CO/CO<sub>2</sub> Ratio

The heating and hot water system complies with the appropriate Building Regulations Yes

The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions Yes

The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes

The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes

Commissioning Engineer's Signature \_\_\_\_\_

Customer's Signature \_\_\_\_\_

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

\*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.



# SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service Record is completed.

### Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

**SERVICE 1** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 2** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 3** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 4** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 5** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 6** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 7** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 8** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 9** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_

**SERVICE 10** Date \_\_\_\_\_

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

Gas Safe Register ID Number \_\_\_\_\_

Comments \_\_\_\_\_

Signature \_\_\_\_\_



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



***Wolseley Installer/Technical Helpline  
0870 849 8057***