

# IDEAL CLASSIC

## NF 30, NF 40, NF 50, NF 60, NF 70 & NF 80

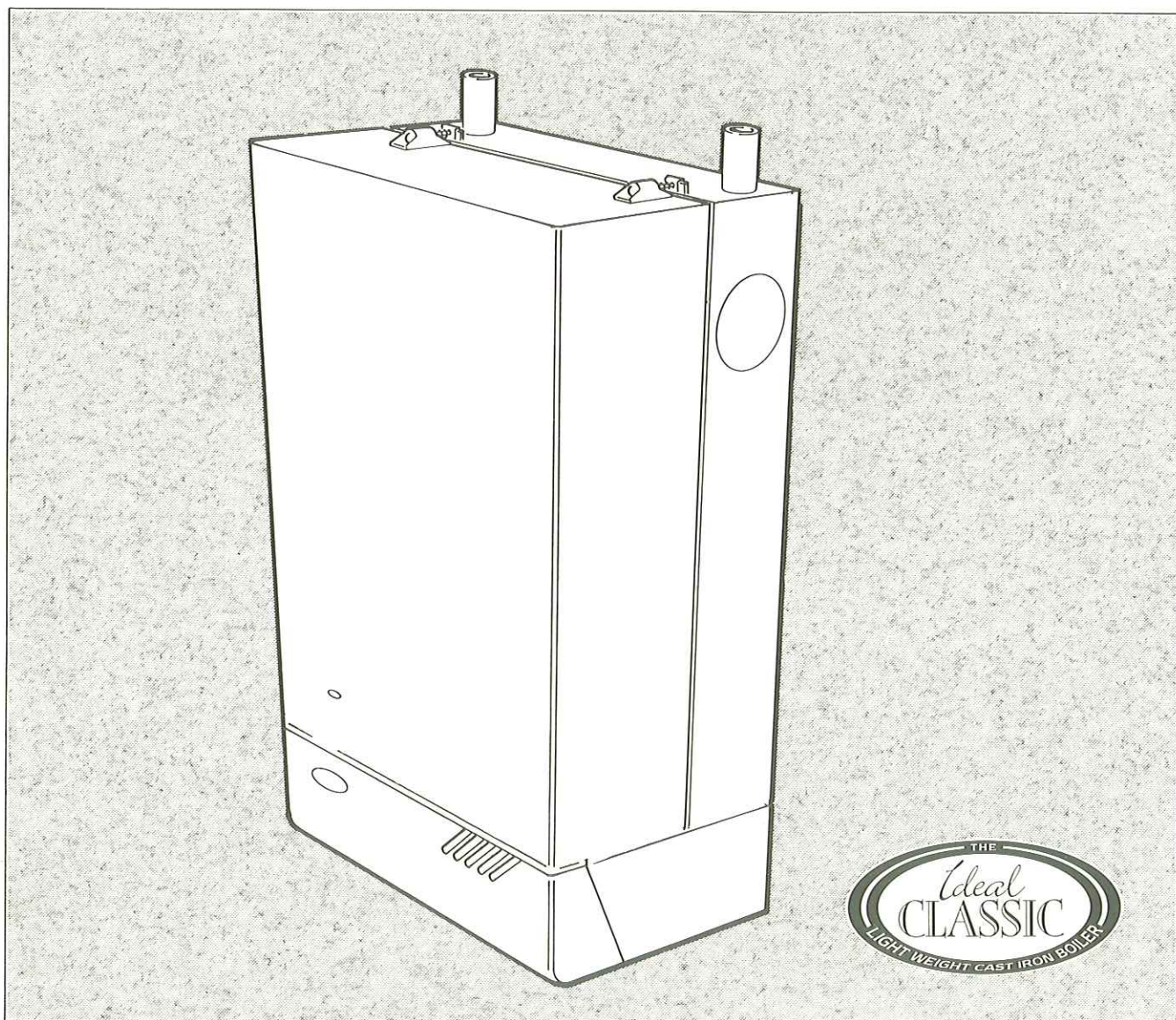
### Wall Mounted, Fanned, Balanced Flue Gas Boilers.

## Installation & Servicing.

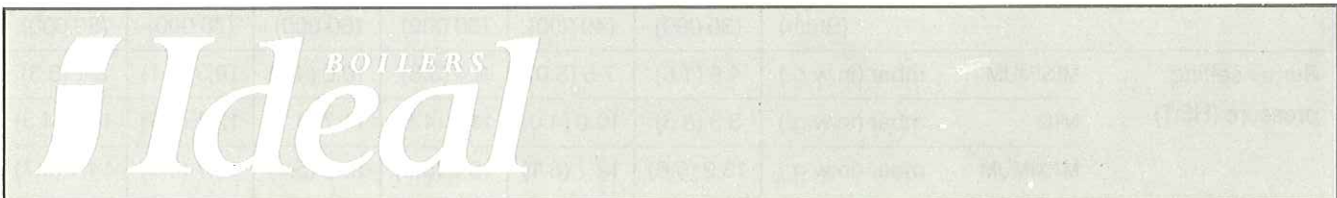
**CAUTION:** To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

**IMPORTANT:** This appliance is for use with  
**NATURAL GAS ONLY.**

Ideal Classic	G.C. Appliance No.
NF 30 .....	41 429 30
NF 40 .....	41 429 31
NF 50 .....	41 429 32
NF 60 .....	41 429 33
NF 70 .....	41 429 77
NF 80 .....	41 429 34



**NOTE TO THE INSTALLER:** LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER



**Table 1- GENERAL DATA**

Boiler Size		NF 30	NF 40	NF 50	NF 60	NF 70	NF 80
Main burner bar		Aeromatic AC 19/123 265		Aeromatic AC 19/123 262		Aeromatic AC 19/123 264	
Gas control		HONEYWELL VR 4700 E 1042, 240 V					
Burner Injector	BRAY	Cat. 16 Size 850	Cat. 10 Size 1150	Cat. 16 Size 1400	Cat. 10 Size 1800	Cat. 10 Size 2100	Cat. 10 Size 2400
Pilot injector		HONEYWELL 45900421 - 002 (STAMPED 56 / 42 A)					
Gas supply connection (in. BSP)		Rc 1/2 (1/2)					
Flow connection		22 mm copper			28 mm copper (FEMALE)		
Return connection		22 mm copper			28 mm copper (FEMALE)		
Maximum static water head		m (ft.)		30.5 (100)			
Minimum static water head		m (ft.)		0.45 (1.5)			
Electrical supply		240 V ~ 50 Hz Boiler power consumption; 50 W					
Fuse rating		External; 3 A			Internal ; F1A to BS. 4265		
Water content		litre (gal.)		2.7 (0.6)		3.65 (0.8)	
Dry weight		kg (lb)		38.7 (85.0)		44.1 (97.0)	
Maximum installation weight		kg (lb)		29.8 (66.0)		35.4 (78.0)	
Boiler size	Height	mm (in.)		700 (27.5)			
	Width	mm (in.)		380 (15.0)			
	Depth	mm (in.)		300 (11.8)			
Flue duct diameter		mm (in.)		100 (4.0)			

**Table 2- PERFORMANCE DATA**

Boiler Size		NF 30	NF 40	NF 50	NF 60	NF 70	NF 80	
Boiler input  To obtain gas consumption (a) For l/s; divide heat input (kW) by C.V. of the gas (MJ/m <sup>3</sup> ). (b) For ft <sup>3</sup> /h; divide heat input (Btu/h) by C.V. of the gas (Btu/ft <sup>3</sup> ).  Heat inputs are pre-set to the highest nominal rating.	MINIMUM	kW	5.9	11.3	14.8	19.1	22.2	22.5
		(Btu/h)	(20 100)	(38 500)	(50 600)	(65 300)	(75 900)	(76 900)
	Gas consumption	l/s (ft <sup>3</sup> /h)	0.15 (19.4)	0.29 (37.1)	0.38 (48.7)	0.49 (62.9)	0.58 (73.1)	0.58 (74.1)
	MID	kW	8.6	13.0	16.6	20.6	24.0	26.0
		(Btu/h)	(29 200)	(44 300)	(56 600)	(70 200)	(81 800)	(88 600)
	Gas consumption	l/s (ft <sup>3</sup> /h)	0.22 (28.1)	0.34 (42.7)	0.43 (54.5)	0.53 (67.6)	0.62 (78.8)	0.67 (85.4)
	MAXIMUM	kW	11.0	14.7	18.3	22.0	25.6	29.3
		(Btu/h)	(37 500)	(50 000)	(62 500)	(75 000)	(87 500)	(100 000)
	Gas Consumption	l/s (ft <sup>3</sup> /h)	0.28 (36.1)	0.38 (48.2)	0.47 (60.2)	0.57 (72.3)	0.66 (84.3)	0.76 (96.3)
Boiler output	MINIMUM	kW	4.4	8.8	11.7	14.7	17.6	17.6
		(Btu/h)	(15 000)	(30 000)	(40 000)	(50 000)	(60 000)	(60 000)
	MID	kW	6.6	10.3	13.2	16.1	19.0	20.5
		(Btu/h)	(22 500)	(35 000)	(45 000)	(55 000)	(65 000)	(70 000)
	MAXIMUM	kW	8.8	11.7	14.7	17.6	20.5	23.4
		(Btu/h)	(30 000)	(40 000)	(50 000)	(60 000)	(70 000)	(80 000)
Burner setting pressure (HOT)	MINIMUM	mbar (in.w.g.)	4.0 (1.6)	7.5 (3.0)	9.4 (3.8)	10.0 (4.0)	10.3 (4.1)	8.1 (3.3)
	MID	mbar (in.w.g.)	8.3 (3.3)	10.0 (4.0)	11.5 (4.6)	11.7 (4.7)	12.1 (4.9)	10.8 (4.3)
	MAXIMUM	mbar (in.w.g.)	13.9 (5.6)	12.7 (5.1)	13.8 (5.5)	13.5 (5.4)	13.7 (5.5)	14.1 (5.7)

## INTRODUCTION

The **Ideal Classic** NF 30, NF 40, NF 50, NF 60, NF 70 and NF 80 are fully automatically controlled, wall mounted, balanced flue, fanned gas boilers.

They are range rated to provide central heating outputs of 4.4kW (15 000 Btu/h) to 8.8kW (30 000 Btu/h), 8.8kW (30 000 Btu/h) to 11.7kW (40 000 Btu/h), 11.7kW (40 000 Btu/h) to 14.6 kW (50 000 Btu/h), 14.6 kW (50 000 Btu/h) to 17.6kW (60 000 Btu/h), 17.6 kW (60 000 Btu/h) to 20.5 kW (70 000 Btu/h) and 17.6 kW (60 000 Btu/h) to 23.4kW (80 000 Btu/h).

The boiler casing is of white enamelled mild steel with a removable controls pod containing a drop down door.

The boiler thermostat is located behind the controls access door, in the box mounted on the gas valve.

A **Programmer Kit**, which fits neatly within the casing, is available as an optional extra. Separate fitting instructions are included with this kit.

A **Vertex Flue Kit**, for vertical flue connection is available as an optional extra.

A **90° Flue Elbow Kit** is also available.

The boilers are suitable, as standard, for connection to open vented systems ONLY. An **Overheat Thermostat Kit** is available to allow the boiler to be used on sealed water systems.


A complete **Sealed System Module**, which fits on top of the appliance is also available as an optional extra.

The boiler is suitable for connection to pumped, open vented central heating systems; pumped central heating combined with pumped indirect domestic hot water systems; pumped indirect domestic hot water supply systems. **THESE MODELS CANNOT BE USED ON SYSTEMS WHICH INCLUDE GRAVITY CIRCULATION.**

See *Frame 4* for details of the correct boiler tappings to use.

The boilers are supplied with a standard flue kit suitable for rear or side outlet applications from 114 mm (4 1/2 in.) to 406 mm (16 in.). Optional extra extension ducts up to 3 m (118 in.), rear or side outlet, are available.

### Gas Safety (Installation and Use) Regulations, 1990

It is law that all gas appliances are installed by competent persons (e.g. CORGI identified by ) in accordance with the above Regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest and that of safety, to ensure the law is complied with.

The installation of the boiler MUST also be in accordance with the latest I.E.E. Wiring Regulations, the Local Building Regulations, the by-laws of the Local Water Authority, the Building Regulations and the Building Standards (Scotland) and any relevant requirements of the Local Authority.

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

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

HEALTH & SAFETY DOCUMENT No. 635  
The Electricity at Work Regulations, 1989.

*Manufacturer's notes must NOT be taken in any way as overriding statutory obligations.*

**IMPORTANT.** These appliances are certificated by the British Standards Institution 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 otherwise recommended by Caradon Heating Ltd, in writing. If in doubt please enquire.

Any direct reconnection of a control device not approved by Caradon Heating Ltd., could invalidate the B.S.I. Certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above Regulations.

### 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. **THE BOILER IS NOT SUITABLE FOR EXTERNAL INSTALLATION.**

**IMPORTANT NOTICE.** If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the British Gas publication 'Guide for Gas Installations in Timber Frame Housing', Reference DM2. If in doubt advice must be sought from the Local Gas Region of British Gas.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. 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.

Where a room-sealed appliance is installed in a room containing a bath or shower then the appliance and any electrical switch or appliance control utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower.

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

A compartment used to enclose the boiler MUST be designed and constructed specially for this purpose. An existing cupboard or compartment may be used, provided it is modified for the purpose. Details of essential features of cupboards / compartment design, including airing cupboard installation are given in BS. 6798. In siting the boiler, the following limitations MUST be observed:

1. The position selected for installation MUST allow adequate space for servicing in front of the boiler and for air circulation around the boiler. For the minimum clearances required for safety and subsequent service, see the Wall Mounting Template, Frame 7 and Frame 8. In addition sufficient space may be required to allow lifting access on to the wall mounting plate.
2. This position MUST also permit the provision of a satisfactory balanced flue termination.

### GAS SUPPLY

The Local Gas Region 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 Region.

A gas meter can only be connected by the Local Gas Region or by a Local Region Contractor.

## GENERAL

An existing meter should be checked, preferably by the Gas Region, to ensure that the meter is adequate to deal with the rate of gas supply required.

Installation pipes MUST be fitted in accordance with BS. 6891. Pipework from the meter to the boiler MUST be of an adequate size. Do NOT use pipes of smaller size than the boiler inlet gas connection.

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

## FLUE INSTALLATION

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

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 spacings from the terminal to obstructions & ventilation openings are specified in Table 3.
4. Where the lowest part of the terminal is fitted less than 2 m (6.6 ft.) 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:

Quinnel, Barret & Quinnel Ltd.,  
884 Old Kent Road, London, SE 15 (Model 304),  
Telephone No. 071 6391357.

and from,

Tower Flue Components Ltd.,  
Vale Rise, Tonbridge, Kent, TN9 1TB (Model K1),  
Telephone No. 0732 351 555

Ensure that the guard is fitted centrally.

5. Where the terminal is fitted within 850 mm (34 in.) of a plastic or painted gutter or 450 mm (18 in.) of painted eaves then an aluminium shield at least 750 mm (30 in.) long should be fitted to the underside of the gutter or painted surface.
6. The air inlet/ products outlet duct and the terminal of the boiler MUST NOT be closer than 25 mm (1 in.) to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440:1 1990.
7. If the terminal is fitted less 2 m (6 ft. 6 in.) above a balcony, above ground or above a flat roof then the minimum spacing in Table 3 No.s 2, 3, 5 and 6 would be 75 mm in order to allow a terminal guard to be fitted.
8. Where it is essential that the terminal wall plate is fitted, i.e. wall thicknesses over 610 mm (24 in.) or with an inaccurately cut hole, the minimum spacing in Table 3 No.s 2, 3, 5 and 6 would be 60 mm in order to allow the terminal wall plate to be fitted.

**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 immediately and the Local Gas Region consulted.*

## FLUE INSTALLATION - AIR SUPPLY

### TERMINAL

The terminal assembly can be adapted to accommodate various wall thicknesses, refer to Frame 1 'Unpacking'.

### AIR SUPPLY

Detailed recommendations for air supply are given in BS. 5440:2. The following notes are for general guidance:

1. It is NOT necessary to have a purpose provided air vent in the room or internal space in which the boiler is installed.
2. If the boiler is to be installed in a cupboard or compartment, permanent air vents are required (for cooling purposes) in the cupboard/ compartment, at both high and low levels. The air vents must either communicate with room/internal space, or be direct to outside air. The minimum effective areas of the permanent air vents, required in the cupboard/ compartment, are specified as follows and are related to maximum rated heat input.
3. Both air vents MUST communicate with the same room or internal space, or MUST be on the same wall to outside air.
4. In siting the air vents care must be taken to avoid the freezing of pipework.

Refer to Tables 4, 5, 6, 7, 8 and 9 for details of the air vent position and sizing.

**Table 3 - BALANCED FLUE TERMINAL POSITION**

Terminal Position	Minimum Spacing
1. Directly below an openable window, air vent or other ventilation opening.	300 mm (12 in.)
2. Below guttering, drain pipes or soil pipes.	25 mm (1 in.)
3. Below eaves.	25 mm (1 in.)
4. Below balconies or a car port roof.	25 mm (1 in.)
5. From vertical drain pipes or soil pipes.	25 mm (1 in.)
6. From internal or external corners.	25 mm (1 in.)
7. Above adjacent ground, roof or balcony level.	300 mm (12 in.)
8. From a surface facing the terminal.	600 mm (24 in.)
9. From a terminal facing a terminal.	1200 mm (48 in.)
10. From an opening in a car port (eg. door or window) into dwelling.	1200 mm (48 in.)
11. Vertically from a terminal on the same wall.	1500 mm (60 in.)
12. Horizontally from a terminal on the wall.	300 mm (12 in.)

**Table 4 - NF 30 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	99 (16)	50 (8)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	99 (16)	50 (8)

**Table 5 - NF 40 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	133 (21)	67 (11)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	133 (21)	67 (11)

**Table 6 - NF 50 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	165 (26)	83 (13)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	165 (26)	83 (13)

**Table 7 - NF 60 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	198 (31)	99 (16)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	198 (31)	99 (16)

**Table 8 - NF 70 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	231 (36)	116 (18)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	231 (36)	116 (18)

**Table 9 - NF 80 AIR SUPPLY**

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm <sup>2</sup> (in <sup>2</sup> )	264 (41)	132 (21)
LOW LEVEL cm <sup>2</sup> (in <sup>2</sup> )	264 (41)	132 (21)

**WATER CIRCULATION SYSTEM**

The boiler must NOT be used for direct hot water supply. For the types of system and correct piping procedure - see 'Introduction' and Frame 3.

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

The domestic hot water system, if applicable, should be in accordance with the relevant recommendations of BS. 5546. Copper tubing to BS. 2871:1 is recommended for water carrying pipework.

The hot water storage cylinder MUST be of the indirect type and should preferably be manufactured of copper. Single feed, indirect cylinders are not recommended and MUST NOT be used on sealed systems.

The appliances are NOT suitable for gravity central heating, nor are they suitable for the provision of gravity domestic hot water.

The hot water cylinder & ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent

heat loss & any possible freezing - particularly where pipes run through roof spaces and ventilated under floor spaces.

*The boiler must be vented.*

Draining taps MUST be located in accessible positions, which permit the draining of the whole system - including the boiler and hot water storage vessel. They should be at least 1/2 in. BSP nominal size & be in accordance with BS. 2879.

The boiler is fitted with a special drain plug which is provided to drain the BOILER ONLY in the event of the system drain plug being unable to do so. The hydraulic resistances of the boilers, at MAXIMUM OUTPUT with an 11°C (20°F) temperature differential, are shown in Table 10.

**Table 10 - WATER FLOW RATE AND PRESSURE LOSS**

Boiler Size	NF 30	NF 40	NF 50	NF 60	NF 70	NF 80
Boiler output kW	8.8	11.7	14.6	17.6	20.5	23.4
Btu/h	30 000	40 000	50 000	60 000	70 000	80 000
Water flow rate l/min	11.4	15.2	19.0	22.8	26.5	30.3
gal/h	150	200	250	300	350	400
Pressure loss mbar	22.0	20.4	31.5	41.7	54.8	77.0
in.w.g.	8.9	8.3	12.6	16.7	22.0	30.9

**THERMOSTATIC RADIATOR VALVES**

Caradon Heating 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.

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, then a by-pass must be fitted in order to ensure a flow of water should all the T.R.V.s be in the closed position.

**ELECTRICAL SUPPLY**

Wiring external to the appliance MUST be in accordance with the current I.E.E. Wiring Regulations and any Local Regulations which apply.

The boiler is supplied for 240 V ~ 50 Hz

Single Phase

Fuse Rating is 3 A

The method of connection to the mains electricity supply MUST facilitate complete electrical isolation of the boiler, preferably by the use of a fused, unswitched three pin plug and a shuttered socket outlet, both complying with the requirements of BS. 1363.

Alternatively, a fused double pole switch, having at least a 3 mm (1/8 in.) contact separation in both poles and servicing only the boiler, may be used.

The point of connection to the mains should be readily accessible and adjacent to the boiler, except that for bathroom installations; the point of connection to the mains MUST be situated outside of the bathroom.

**Note.** Where a room sealed appliance is installed in a room containing a bath or shower then the appliance and any electrical switch or appliance control utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower.

**1 UNPACKING**

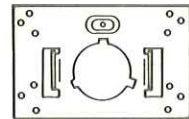
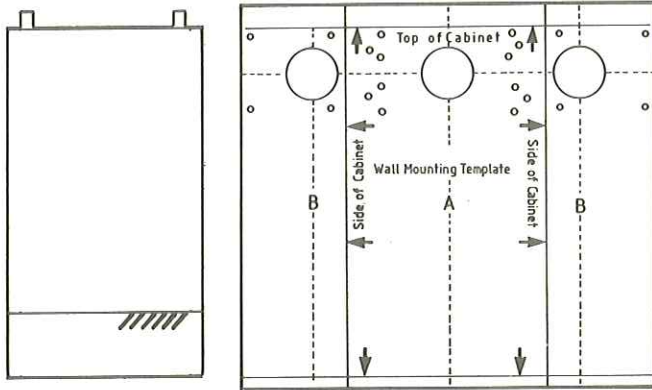
The boiler is supplied fully assembled in one pack 'A', together with a standard flue assembly for lengths up to 406 mm (16 in.), rear or side flue outlet, in pack 'B'.

Optional extras, if ordered. (Programmer Kit, Overheat Thermostat Kit, complete Sealed System Module, Extension Duct Kit 'D', Vertex Flue Kit and 90° Flue Elbow Kit) are available in separate boxes. Unpack and check the contents.

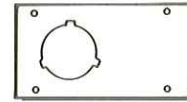
**PACK 'A' CONTENTS** Also contained in Pack 'A'; the Hardware Pack (listed opposite), these Installation & Servicing Instructions and the User's Instructions.

**HARDWARE PACK**

- Sealing tape for side outlet plate.
- 50 mm x No. 14 wood screw, 4 off.
- 50 mm x No. 10 wood screw, 9 off.
- Wall plug (TP2B brown), 13 off.
- Data plate indicator arrow, 1 off.
- M8 x 12 lg. screw, 1 off.
- M8 washer, 1 off.
- Aluminium foil (450 lg.), 1 off.
- 22 mm x 28 mm copper reducing socket (NF 70 and NF 80 ONLY), 2 off.
- Sealing plate, 1 off.



Wall mounting plate

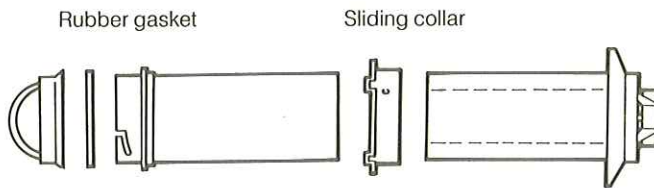


Side outlet terminal mounting plate

Complete boiler

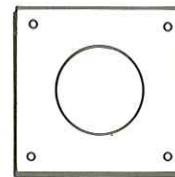
Wall mounting template

**PACK 'B' CONTENTS.** Also contained in Pack 'B'; No.8 x 6 mm self tappers, 9 off; length of adhesive tape, 1 off; duct cutting support rings, 2 off (cardboard - retain for later use); rectangular washer, 3 off.



Locking collar

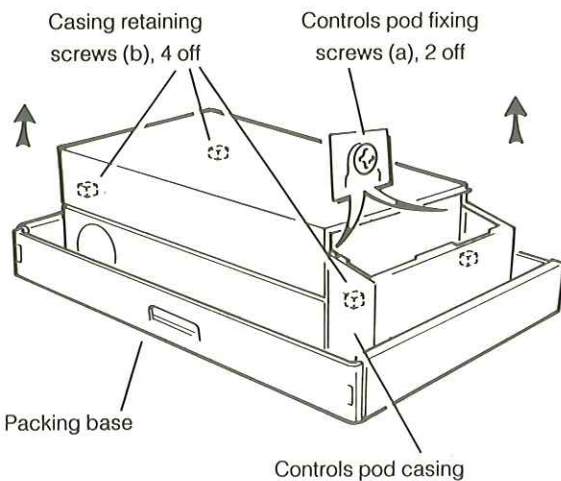
Telescopic air inlet / products outlet assembly



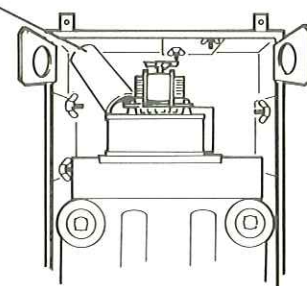
Terminal wall plate

**2 PACKAGING AND CASING REMOVAL**

1. Unpack the boiler. But do not remove the cardboard controls protection box.
2. Remove the casing as follows and place to one side to avoid damage.
  - (a) Release controls pod fixing screws (a) 3 full turns only. Remove the pod by pulling it forward to disengage from the keyhole slots.
  - (b) Undo the 4 screws (b) retaining the casing to the back panel.
  - (c) Remove the casing in the direction of the arrows.



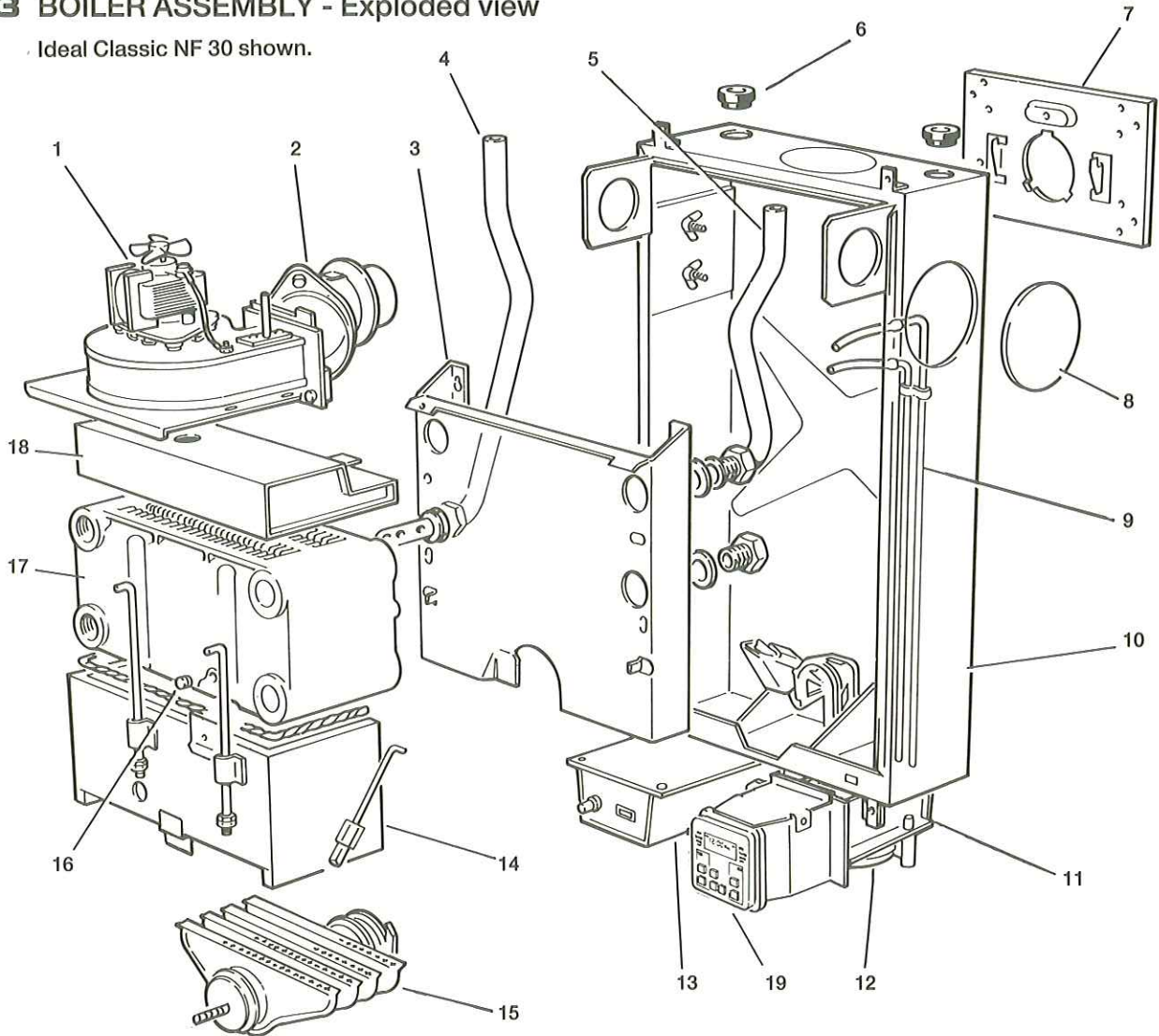
4. Remove the side flue extension tube (for use with side flue only) taped inside the fan chamber.
5. Remove the boiler from its packaging base (being careful not to damage the gas valve and control box). **Do not remove the cardboard controls protection box.**



6. Unpack the boiler terminal box & (if applicable) the extension flue box(es).

**3 BOILER ASSEMBLY - Exploded view**

Ideal Classic NF 30 shown.



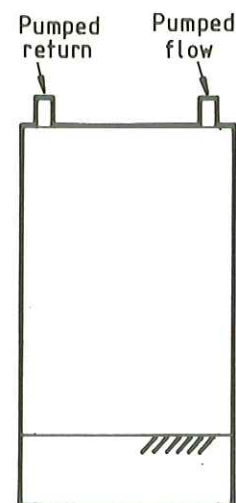
**LEGEND**

- |                        |                             |   |                            |
|------------------------|-----------------------------|---|----------------------------|
| 1. Fan assembly.       | 5. Pumped flow pipe.        | 10. Back panel.                                     | 14. Combustion chamber.    |
| 2. Flue outlet elbow.  | 6. Rubber sealing grommets. | 11. Programmer mounting bracket.                    | 15. Main burner.           |
| 3. Inter-panel.        | 7. Wall mounting plate.     | 12. Pressure switch.                                | 16. Boiler drain point.    |
| 4. Pumped return pipe. | 8. Sealing plates, 2 off.   | 13. Control box (mounted on the gas control valve). | 17. Heat exchanger.        |
|                        | 9. Pressure sensing pipes.  | 18. Collector hood assembly.                        | 19. Programmer (optional). |

**4 BOILER WATER CONNECTIONS**

1. This appliance is NOT suitable for use in a direct hot water system.
2. If the boiler is to be used on a sealed system, an **Overheat Thermostat Kit** is available and must be installed in accordance with the instructions supplied with the kit.

**Note.** The NF 70 and NF 80 boilers ONLY must be fitted with the 22 mm x 28 mm copper reducing sockets, provided in the Hardware Pack, (or equivalent 22 mm x 28 mm compression fittings used) and the pumped flow and return pipes run in 28 mm pipe.



For Sealed System applications (fully pumped) refer to the **Overheat Thermostat Kit** instructions

**5 OPEN VENT SYSTEM REQUIREMENTS. Fully pumped.**

All dimensions in mm. (in.)

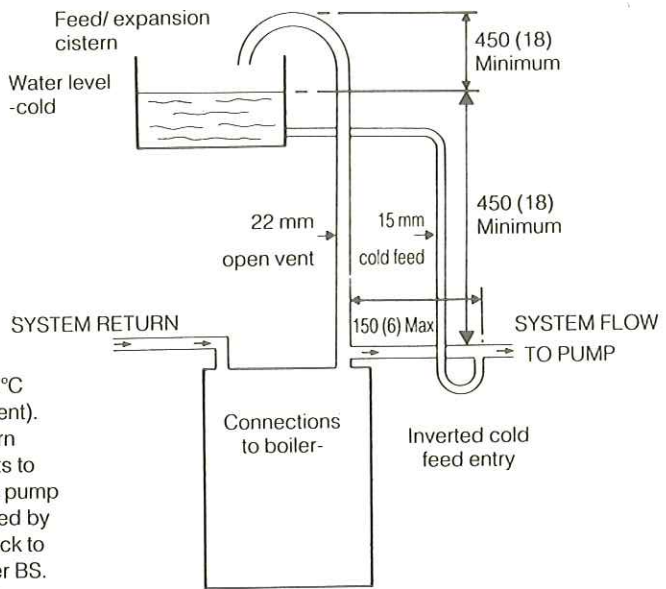
The system should be vented directly off the boiler flow pipe, as close to the boiler as possible. The cold feed entry should be inverted and **MUST** be positioned between the pump and the vent, and not more than 150 mm (6 in.) away from the vent connection.

There should be a minimum height - 450 mm (18 in.) of open vent above cistern water level. If this is impossible refer below.

The vertical distance between the highest point of the system and the feed/expansion cistern water level **MUST** not be less than 450 mm (18 in.).

The pump **MUST** be fitted on the flow side of the boiler.

A suitable pump is a domestic circulator capable of providing an 11°C (20°F) temperature differential (e.g. Grundfos UPS 15/50 or equivalent). The vertical distance between the pump and feed / expansion cistern **MUST** comply with the pump manufacturers minimum requirements to avoid cavitation. Should these conditions not apply, either lower the pump position or raise the cistern above the minimum requirement specified by Caradon Heating Ltd. **Note:** A cold water feed must be available back to the boiler, when all automatic valves are in the closed position (Refer BS. 6798) and when close coupled the feed must not be in a vertical leg.



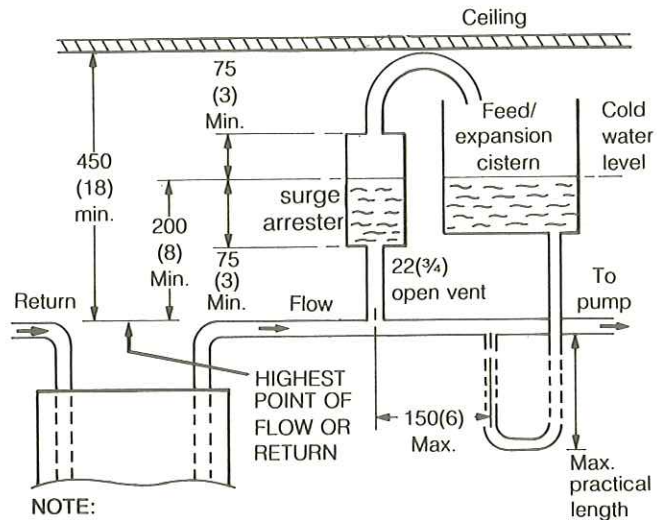
**6 LOW HEAD INSTALLATIONS**

The **Ideal Classic** range of boilers can be installed in low head situations by fitting a 'surge arrester' in the expansion pipe - as shown.

The following conditions **MUST** be observed;

1. The surge arrester must be at least 42 mm in diameter x 150 mm long, thus ensuring a **MINIMUM** air gap and a **MINIMUM** depth of water below the static water level (cold) of 75 mm.
2. The static water level (cold) must be at least 200 mm above the top of the horizontal flow pipe, fitted as shown. The vent connection **MUST NOT** be made immediately off the top of the boiler, as venting is made less efficient.
3. The maximum practical length of 15 mm cold feed pipe should be used in order to reduce the effective volume of system water expanding into the feed / expansion cistern to a minimum.

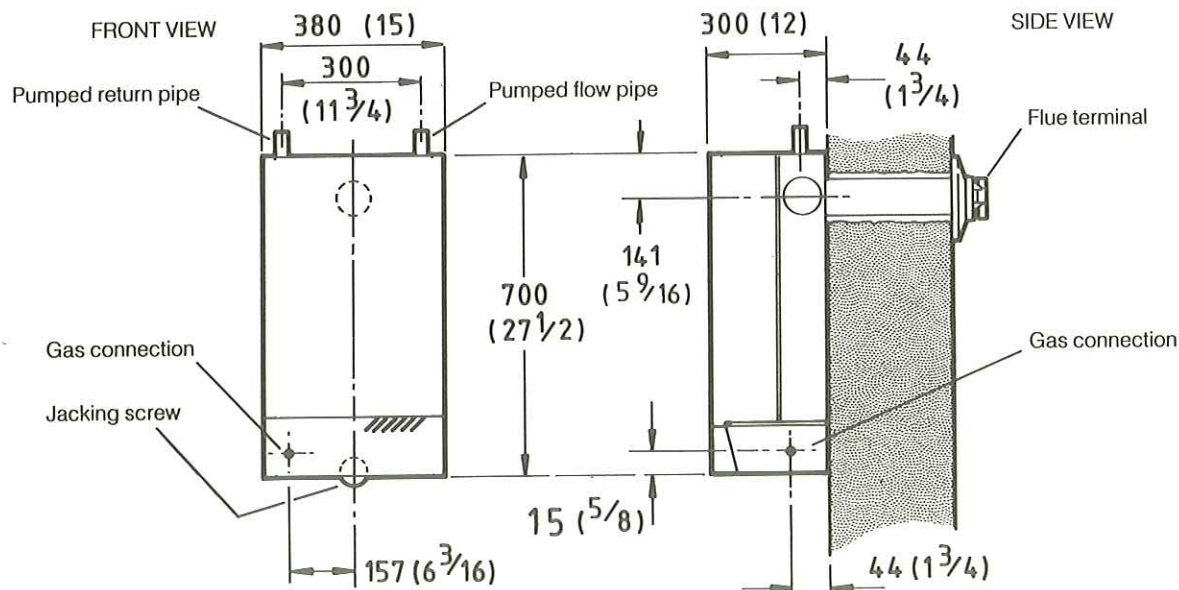
**MINIMUM REQUIREMENTS**



**NOTE:**  
The pump manufacturers minimum requirements must be complied with. All dimensions in mm (in) N.B. Imperial dimensions approximate

**7 BOILER DIMENSIONS / SERVICES**

All dimensions in mm (in.)





**8 BOILER CLEARANCES**

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

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

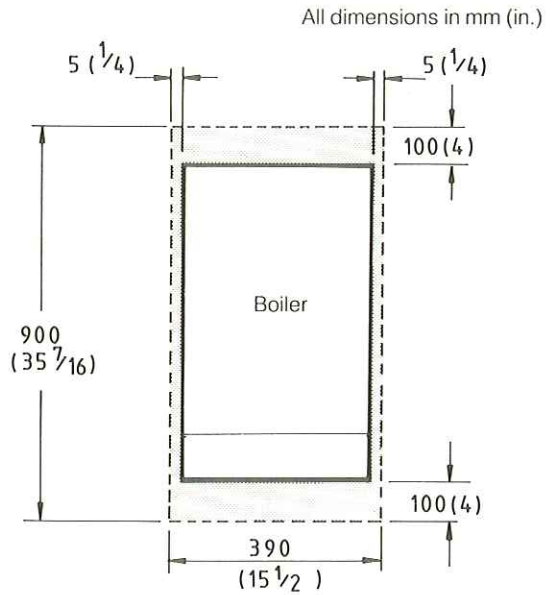
**Side flue only**

(a) Provided that the flue hole is cut accurately, eg. with a core drill, the flue can be installed from inside up to 610 mm (24 in.), but with flue lengths greater than the width / depth of the boiler then the space in which the boiler is to be installed must be at least equal to the flue length plus the length of the terminal grille.

**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.

(c) If using the **Complete Sealed System Module** then refer to the instructions packed with the module for the necessary clearances.



Front clearance: 450 mm (17 3/4 in.) from the front of the boiler casing.

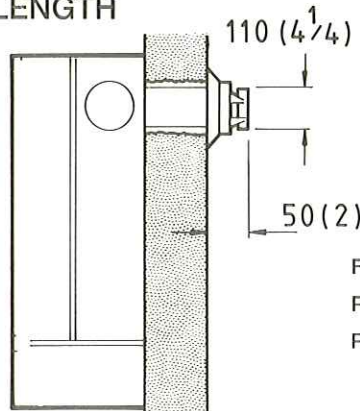
**9 DETERMINING THE FLUE LENGTH**

**REAR FLUE INSTALLATION**

*It is most important that the boiler is installed in a vertical position.*

Dimension 'X'; wall thickness.

Dimension 'Y'; wall thickness plus boiler spacing.

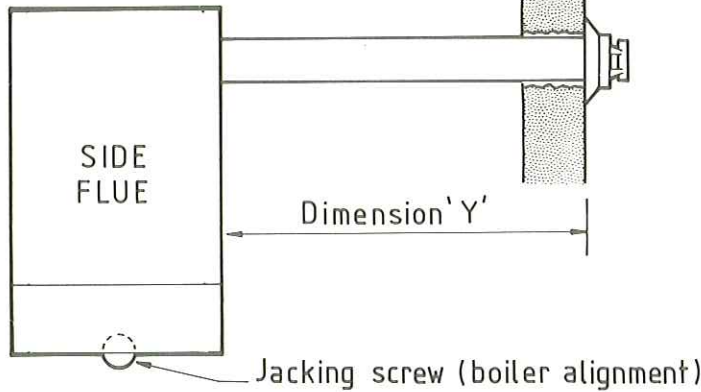


**FLUE KITS**

Pack 'B'; supplied as standard.

Pack 'D'; optional extension kit for side flue or rear flue outlet. Refer to 'Flue Extension Ducts'.

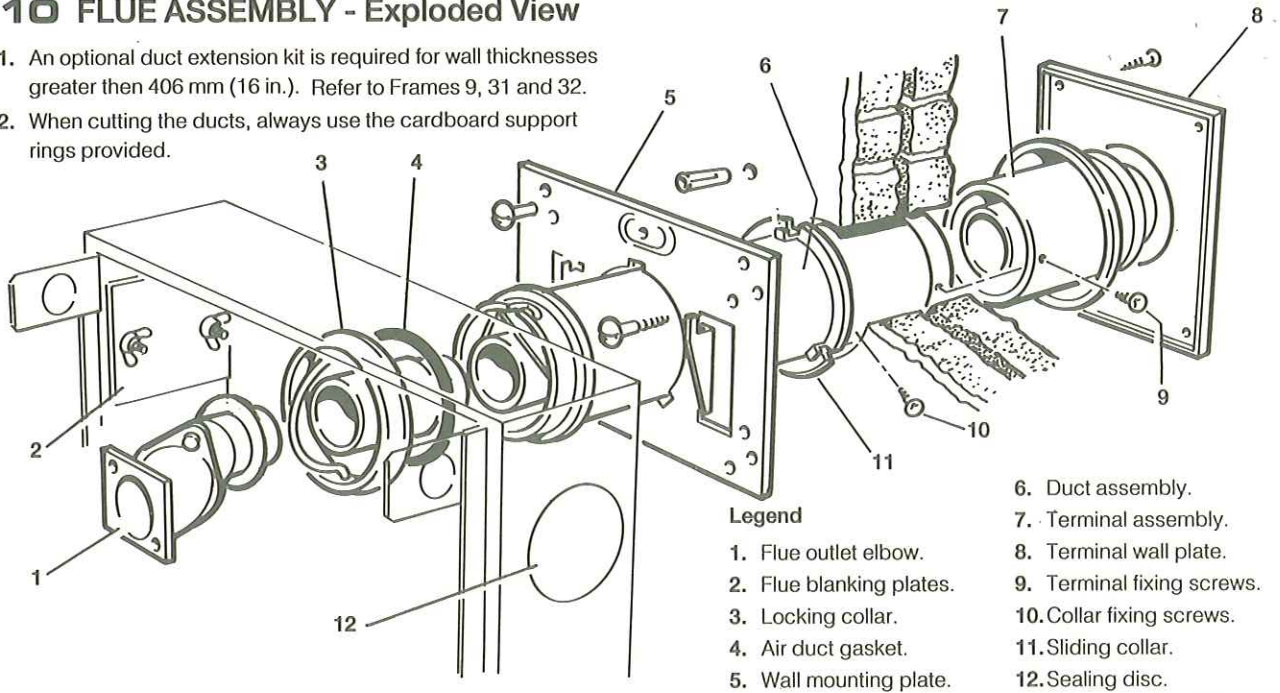
**SIDE FLUE INSTALLATION**



Flue length Dimension 'X' or 'Y'	Flue packs required
114 to 216 mm (4 1/2 to 8 1/2 in.)	Pack 'B' (Cut down as in Frames 13 and 23)
216 to 406 mm (8 1/2 to 16 in.)	Pack 'B'
406 to 1280 mm (16 to 50 3/8 in.)	Pack 'B' (1 off) and Pack 'D' (1 off)
1280 to 2140 mm (50 3/8 to 84 1/4 in.)	Pack 'B' (1 off) and Pack 'D' (2 off)
2140 to 3000 mm (84 1/4 to 118 1/8 in.)	Pack 'B' (1 off) and Pack 'D' (3 off)

**10 FLUE ASSEMBLY - Exploded View**

1. An optional duct extension kit is required for wall thicknesses greater than 406 mm (16 in.). Refer to Frames 9, 31 and 32.
2. When cutting the ducts, always use the cardboard support rings provided.

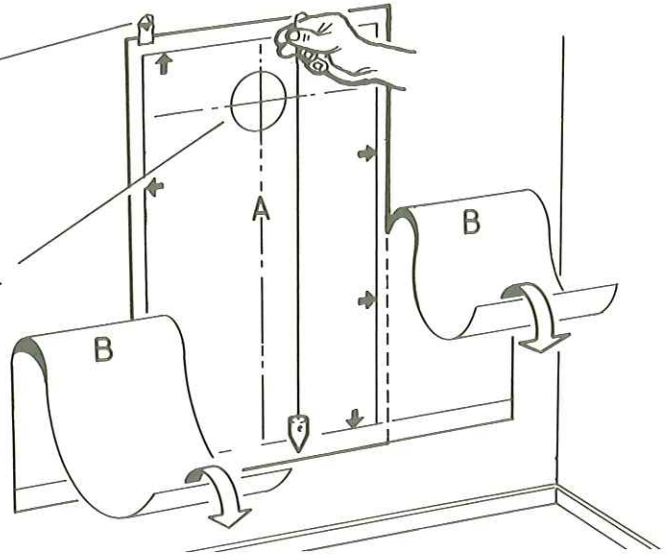


**Legend**

- |                          |                            |
|--------------------------|----------------------------|
| 1. Flue outlet elbow.    | 6. Duct assembly.          |
| 2. Flue blanking plates. | 7. Terminal assembly.      |
| 3. Locking collar.       | 8. Terminal wall plate.    |
| 4. Air duct gasket.      | 9. Terminal fixing screws. |
| 5. Wall mounting plate.  | 10. Collar fixing screws.  |
|                          | 11. Sliding collar.        |
|                          | 12. Sealing disc.          |

**11 WALL MOUNTING TEMPLATE**

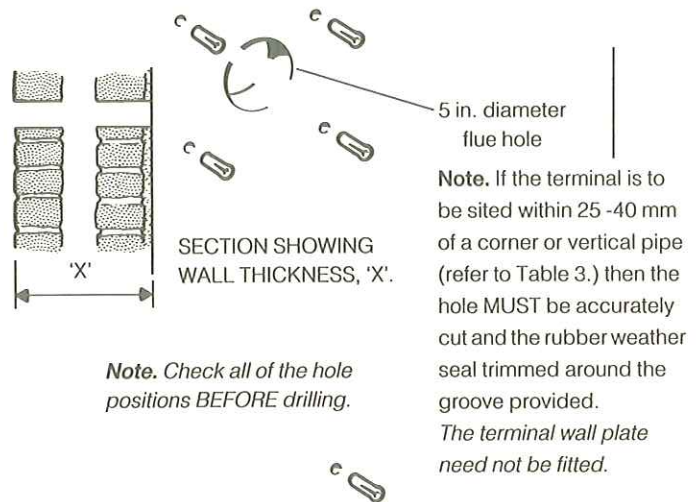
1. Discard both sections 'B' of the template.
2. Tape the template into the selected position.
3. Ensure squareness by hanging a plumb line as shown.
4. Mark onto the wall the 4 mounting plate screw positions and the lower fixing screw positions.
5. Mark onto the wall the position of the flue duct.  
**Note.** Mark the centre of the hole as well as the circumference.
6. Remove the template from the wall.



**12 PREPARING THE WALL**

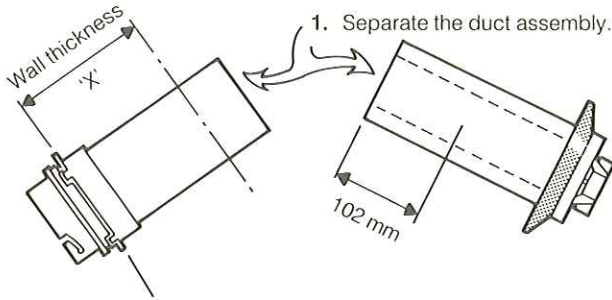
**IMPORTANT.** Ensure that, during the cutting operation, masonry falling outside of the building does not cause damage or personal injury.

1. Cut the flue hole (preferably with a 5 in. core boring tool) ensuring that the hole is square to the wall. If the hole has been quite accurately cut with a drill, then making good the wall faces is not essential- as seals are provided at both ends of the flue. However, both wall faces immediately around the cut hole should be flat; make good if necessary. For less accurate holes make good to approximately 125 mm diameter at the two wall faces. If the flue hole is longer than 610 mm this must be done from the outside for the outer face, as access to outside is needed to fit the terminal plate anyway.
2. Measure and note the wall thickness 'X'.
3. Drill the 4 fixing holes with an 8 mm (5/16 in.) masonry drill.
4. Drill the jacking plate fixing screw hole with an 8 mm (5/16 in.) masonry drill.
5. Insert the plastic plugs provided.



**13 CUTTING THE DUCT ASSEMBLY**

WALL THICKNESSES OF 114 TO 216 mm ONLY.



1. Separate the duct assembly.
2. Push the sliding collar to the end of the duct and measure off dimension 'X' (wall thickness).
3. Cut to length 'X', using the cardboard duct rings for support. **Note.** Cut the inner flue tube 6mm (1/4 in.) longer than the outer air tubes.
4. Always cut 102 mm (4 in.) off the terminal section.
5. Remove the cardboard support rings.
6. Re-assemble the terminal, aligning the seams.

**15 FITTING THE FLUE ASSEMBLY**

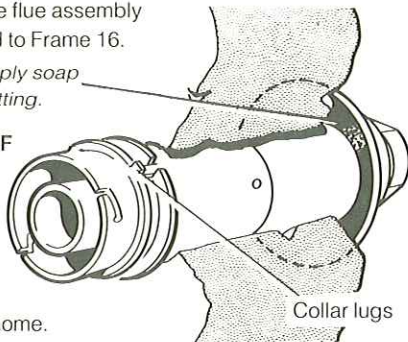
FROM INSIDE OF THE BUILDING.

1. Push the assembly through the wall.
2. Locate the wall mounting plate over the flue assembly. Engage the flue duct collar lugs with the wall mounting plate slots & rotate the flue assembly to lock. Proceed to Frame 16.

**Weather seal.** Apply soap solution to ease fitting.

FROM OUTSIDE OF THE BUILDING.

1. Fit the wall mounting plate (Frame 16)- but do not drive the No. 14 screws home.
2. Push the assembly through the wall. Engage the collar lugs with the wall mounting plate slots & rotate the flue assembly to lock.
3. Drive home the No. 14 wall mounting plate screws.

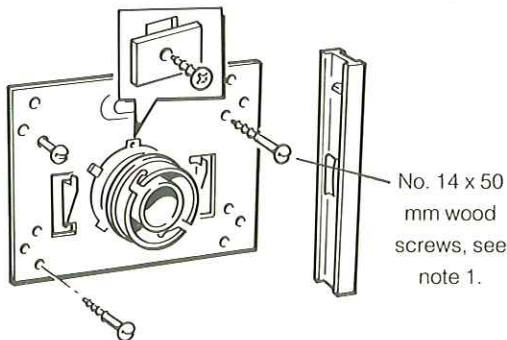


PROCEED NOW TO STEP 3 OF FRAME 16

**16 WALL MOUNTING PLATE**

1. Fix the mounting plate to the wall with the No. 14 x 50 mm wood screws.
2. Check with a spirit level that the plate is vertical.

Flue is shown locked in position.

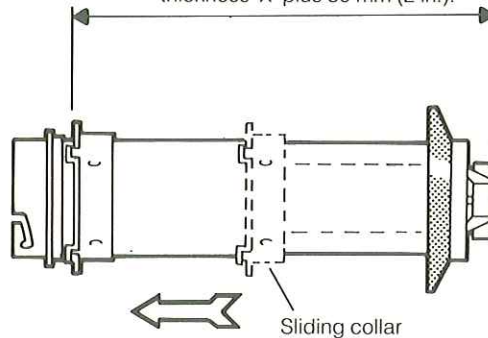


3. Align the holes in the sliding collar flange with the 3 cut-outs in the wall plate. Insert 3 of the self-tappers and rectangular washers to retain the assembly.

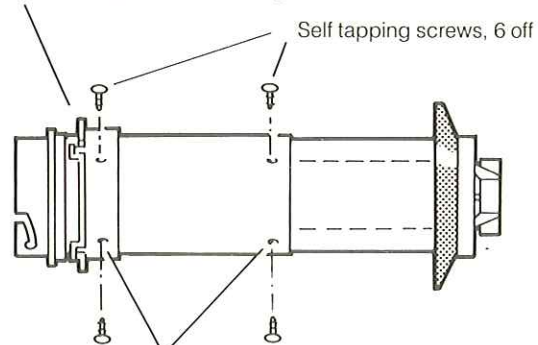
**14 JOINING THE DUCT ASSEMBLY**

WALL THICKNESSES UP TO 406 mm ONLY.

1. Push the sliding collar to the boiler end of the assembly.
2. Set the assembly to length, wall thickness 'X' plus 50 mm (2 in.).



3. Using the sliding collar as a template at the duct join, mark the positions of the 3 fixing screws. **Note.** If the duct join is too close to the rubber weather seal to permit access for drilling, mark the hole positions at the mid-point of the duct.
4. Slide the collar back to the boiler end of the duct and mark the positions for a further 3 fixing screws.



5. Drill the 6 fixing holes using a 3.2 mm. drill. Insert the self tapping screws in order to fix the collar in position and lock the duct assembly. **DO NOT DRILL THE INNER FLUE DUCT.**
6. Seal the air duct joint with the aluminium tape provided in the Hardware Pack.

FOR WALL THICKNESSES ABOVE 406 mm, REFER TO FRAMES 31 & 32 - FLUE EXTENSION DUCTS.

**17 TERMINAL WALL PLATE**

This plate is provided to allow neat concealment and full compression of the rubber seal. If the flue hole and flue ducts have been accurately cut and the outside wall face is flat its use is not essential *except this plate must be used on wall thicknesses over 610 mm (24 in.).*

1. Position the terminal wall plate over the terminal.
2. Drill 4 fixing holes with an 8 mm (5/16 in.) masonry drill.
3. Insert the four plastic plugs provided.
4. Secure the plate with four of the No. 10 x 2in. screws provided.

**Note.** If the terminal is less than 2 m (6.6 ft.) above ground level, an approved terminal guard should be fitted. Refer to Page 4.

**18 MOUNTING THE BOILER**

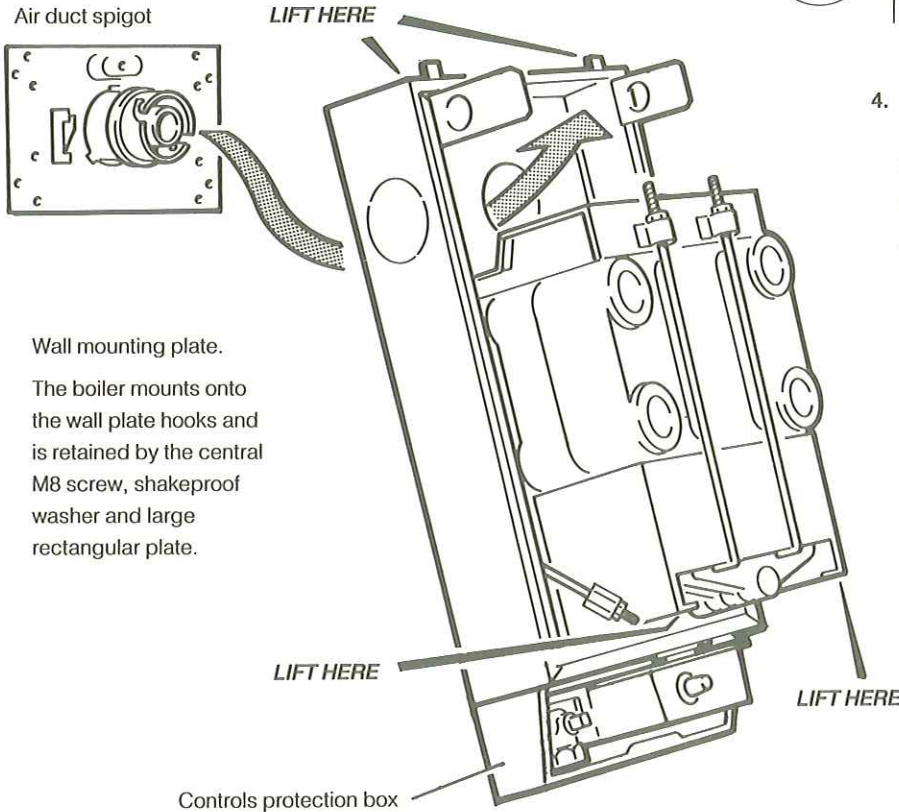
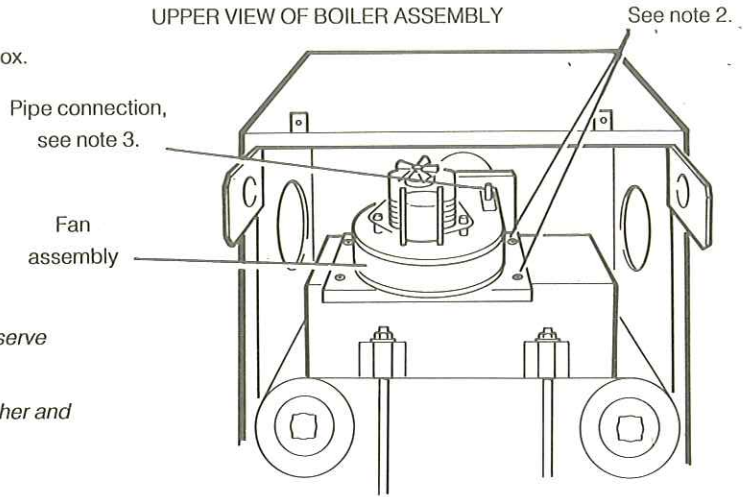
**Note.** Do not remove the cardboard controls protection box.

1. Disconnect the 2 fan electrical connections and the fan earth to top panel connection.
2. Remove the 4 screws, each with two washers, retaining the fan assembly.
3. Pull off the silicon rubber pipe connection on top of the fan. Remove the fan to a safe place.

**Note.** Always take care when handling the fan, to preserve the balance of the impeller.

Have ready to hand the M8 fixing screw, shakeproof washer and large rectangular plate supplied in the Hardware Pack.

UPPER VIEW OF BOILER ASSEMBLY



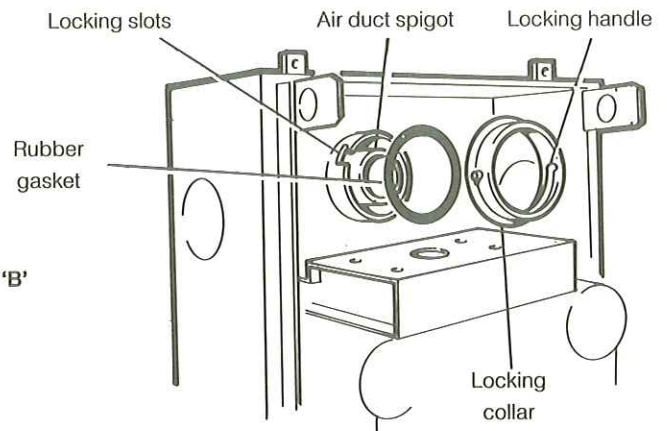
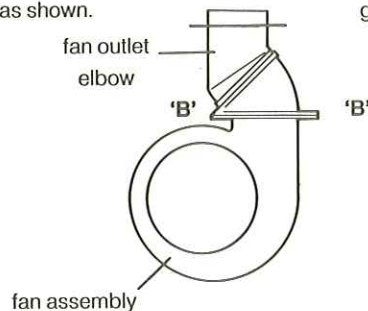
Wall mounting plate.  
The boiler mounts onto the wall plate hooks and is retained by the central M8 screw, shakeproof washer and large rectangular plate.

4. Lift the boiler onto the wall mounting plate - as shown.  
**DO NOT USE THE BURNER / CONTROLS ASSEMBLY FOR LIFTING.**
5. Fit the M8 screw, shakeproof washer and large rectangular plate to retain the boiler.  
**Note.** Before fully tightening the M8 screw, check the boiler alignment using a spirit level and adjust as necessary with the jacking screw. Refer to Frame 7.
6. Remove the cardboard controls protection box.
7. Adjust the jacking screw until the hole in the wall lines up with the hole in the jacking screw plate. Locate a No. 10 x 2 in. screw in the boiler lower fixing hole and secure to the wall.
8. Make all water connections and check for water soundness.

**DO NOT USE THE BURNER / CONTROLS ASSEMBLY FOR LIFTING.**

**19 SEALING THE BOILER AND FLUE**

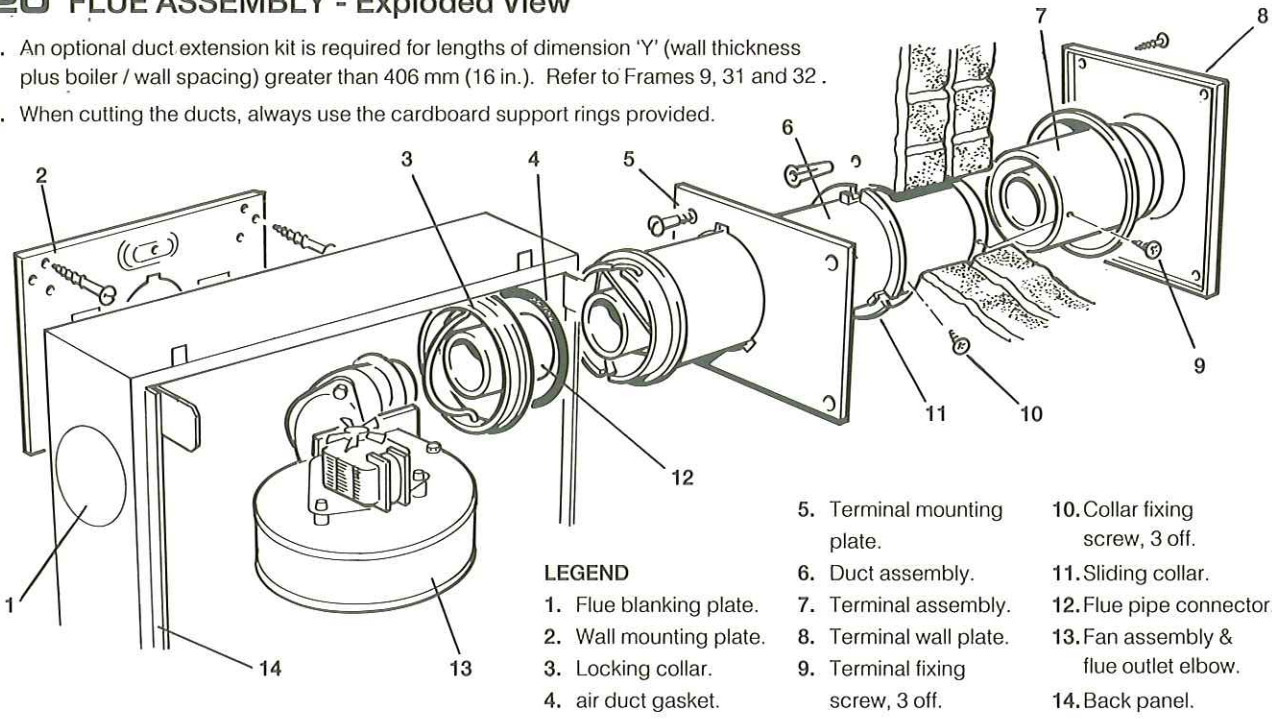
1. Stretch the rubber gasket over the air duct spigot.
2. Fit the locking collar as shown and rotate it to engage with the locking slots in the flue assembly.
3. Fold the locking handle as shown.
4. Slacken the two nuts at joint 'B-B' on the fan outlet elbow.
5. Check that the flue baffles are pushed fully down in the heat exchanger and refit the fan assembly, retaining with the four screws and washers previously removed.



6. Retighten the two screws retaining the elbow to the fan.
7. Reconnect the 2 fan electrical connections and the earth lead. Refit the positive pressure silicon rubber pipe to the connection on top of the fan.

**20 FLUE ASSEMBLY - Exploded View**

1. An optional duct extension kit is required for lengths of dimension 'Y' (wall thickness plus boiler / wall spacing) greater than 406 mm (16 in.). Refer to Frames 9, 31 and 32.
2. When cutting the ducts, always use the cardboard support rings provided.

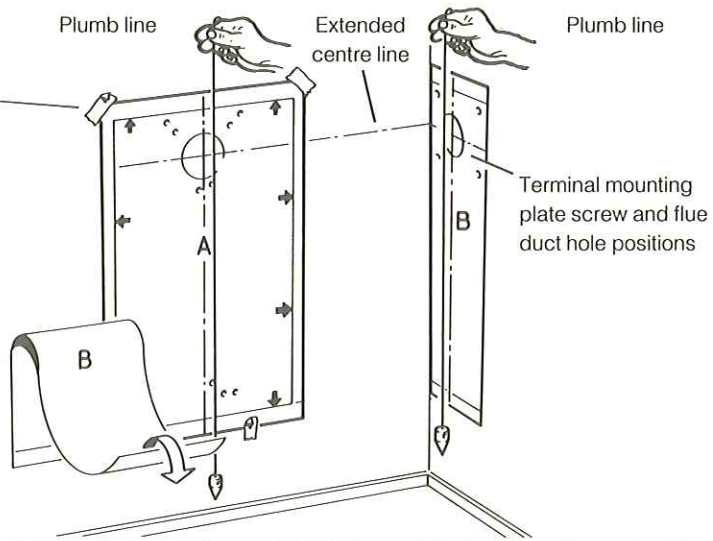


**LEGEND**

- |                         |                                  |                                       |
|-------------------------|----------------------------------|---------------------------------------|
| 1. Flue blanking plate. | 7. Terminal assembly.            | 12. Flue pipe connector.              |
| 2. Wall mounting plate. | 8. Terminal wall plate.          | 13. Fan assembly & flue outlet elbow. |
| 3. Locking collar.      | 9. Terminal fixing screw, 3 off. | 14. Back panel.                       |
| 4. air duct gasket.     | 5. Terminal mounting plate.      |                                       |
|                         | 6. Duct assembly.                |                                       |
|                         | 10. Collar fixing screw, 3 off.  |                                       |
|                         | 11. Sliding collar.              |                                       |

**21 WALL MOUNTING TEMPLATE**

1. Separate the templates.
2. Tape both templates into the selected position locating template 'B' via an extended centre line as shown.
3. Ensure squareness by hanging a plumbline as shown.
4. Mark onto the wall the mounting plate screw positions (choose 1 from each group) and lower fixing screw position.
5. Mark onto the wall the 4 terminal mounting plate screw positions.
6. Mark onto the wall the position of the flue duct hole.  
**Note.** Mark the centre of the hole as well as the circumference.
7. Remove both templates from the wall.

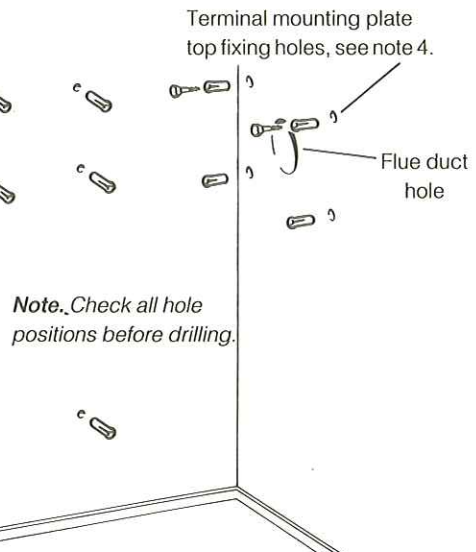
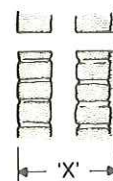


**22 PREPARING THE WALL**

**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 using a 5 in. core boring tool), ensuring that the hole is square to the wall. If the hole has been quite accurately cut with a drill then making good the wall faces is not essential as seals are provided at both ends of the flue. However, both wall faces immediately around the cut hole should be flat; make good if necessary. For less accurate holes make good to approximately 125 mm diameter at the two wall faces. For holes longer than 610 mm this must be done from outside for the outer face as access to outside is needed to fit the terminal wall plate anyway.
2. Measure the wall thickness 'X' and calculate dimension 'Y' (i.e. Boiler spacing plus 'X'). Refer to Frame 9.
3. Drill the 4 wall plate holes and the remaining 5 holes with an 8 mm (5/16 in.) masonry drill and insert the plastic plugs provided.
4. Locate 2 No. 10 x 2 in. screws in the terminal mounting plate top fixing holes and screw home to within 6 mm (1/4 in.) of the wall surface.  
**Note.** If the terminal is to be sited 25 to 40 mm from a corner or vertical pipe (refer to Table 3) the hole must be accurately cut and the rubber weather seal trimmed around the groove provided. The terminal wall plate need not be fitted.

**SECTION THROUGH THE WALL**



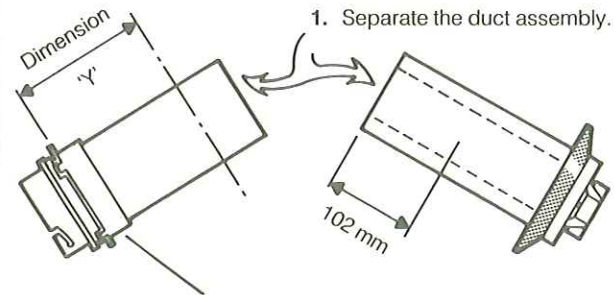
SIDE FLUE OUTLET ONLY

## INSTALLATION

## FLUE ASSEMBLY - TERMINAL MOUNTING PLATE

### 23 CUTTING THE DUCT ASSEMBLY

FLUE LENGTHS OF 114 TO 216 mm ONLY.



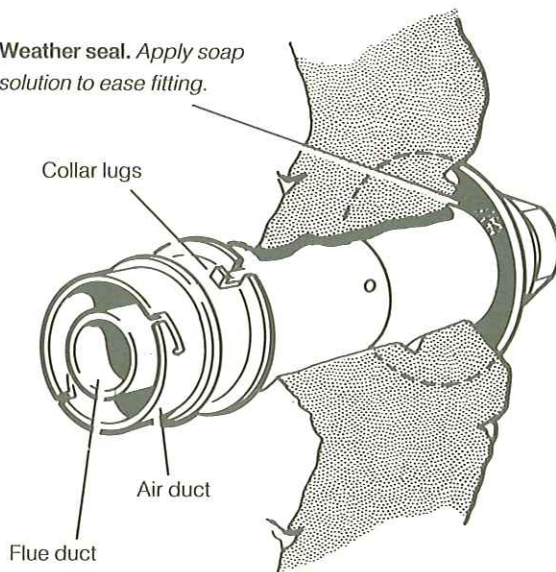
1. Separate the duct assembly.
2. Push the sliding collar to the end of the duct and measure off dimension 'Y' (wall thickness plus boiler spacing).
3. Cut to length 'Y', using the cardboard duct rings for support. **Note.** Cut the inner flue tube 6 mm (1/4 in.) longer than the outer air tubes.
4. Always cut 102 mm (4 in.) off the terminal section.
5. Remove the cardboard support rings.
6. Re-assemble the terminal, aligning the seams.

### 25 FITTING THE FLUE ASSEMBLY

FROM INSIDE OF THE BUILDING.

1. Push the flue duct assembly through the wall.
2. Take the terminal mounting plate and stick the sealing tape provided to the reverse side of the plate. Locate the plate over the projecting flue duct assembly and engage the flue duct collar lugs with the terminal mounting plate slots. Rotate the flue assembly to lock. Continue the installation procedure from Note 2 of Frame 26.

**Weather seal.** Apply soap solution to ease fitting.



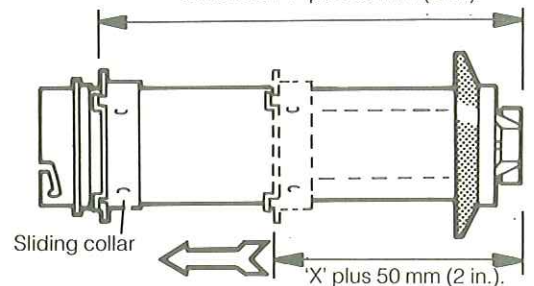
FROM OUTSIDE OF THE BUILDING ONLY.

1. Fit the terminal mounting plate as detailed in Notes 1 to 4 of Frame 26- but do not drive the No. 10 x 2 in. fixing screws fully home until the flue duct assembly is engaged.
2. From outside of the building, push the assembly through the wall. Engage the flue duct collar lugs with the terminal mounting plate slots and rotate the flue assembly to lock.
3. Drive home the No. 10 x 2 in. fixing screws.
5. Make good between the plate and the corner of the wall.
6. Align the holes in the sliding collar flange with the 3 slots in the terminal wall plate. Insert 3 of the self tapping screws and rectangular washers, provided, to retain the assembly. Refer to the detail in Frame 26.

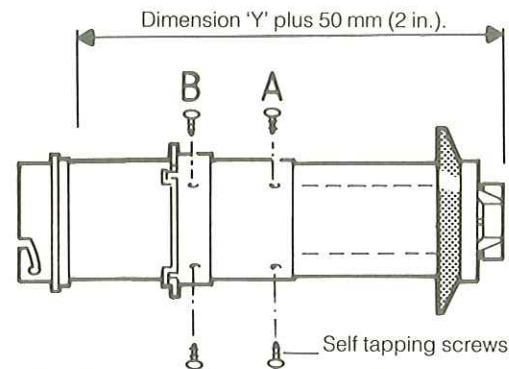
### 24 JOINING THE DUCT ASSEMBLY

FLUE LENGTHS UP TO 406 mm ONLY.

1. Push the sliding collar to the boiler end of the assembly.
2. Set the assembly to length, dimension 'Y' plus 50 mm (2 in.).



3. Using the sliding collar as a template at the duct join, mark the positions of the 3 fixing screws (A). **Note.** If the duct join is too close to the rubber weather seal to permit access for drilling, mark the hole positions at the mid-point of the duct.
4. Set the collar to the required position, ie. dimension 'X' (wall thickness) plus 50 mm (2 in.) and mark the positions for a further 3 fixing screws (B).



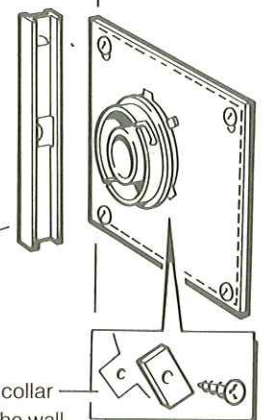
5. Drill the 6 fixing holes using a 3.2 mm. drill. Insert the self tapping screws in order to fix the collar in position and lock the duct assembly. **DO NOT DRILL THE INNER FLUE DUCT.** **Note.** If the duct locking screws restrict the sliding collar then use the collar locking screws to lock the whole assembly.
6. Seal the air duct joint with the aluminium tape provided in the Hardware Pack.

FOR FLUE LENGTHS ABOVE 406 mm, REFER TO FRAMES 31 & 32 - FLUE EXTENSION DUCTS.

### 26 TERMINAL MOUNTING PLATE

1. Stick the sealing tape, provided, to the reverse side of the plate.
2. Engage the plate on the top two fixing screws.
3. Locate two No. 10 x 2 in. screws in the bottom fixing holes and drive home all four screws.
4. Check with a spirit level that the plate is vertical.

The flue assembly is shown locked in position.

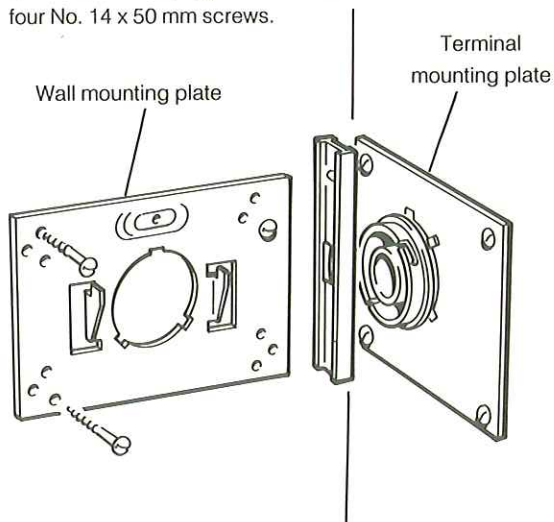


5. Make good between the plate and the corner of the wall.
6. Align the holes in the sliding collar flange with the 3 cut outs in the wall plate. Insert 3 of the self tapping screws and rectangular washers, provided, to retain the flue assembly.

**SIDE FLUE OUTLET ONLY**

**27 WALL MOUNTING PLATE**

1. Fix the wall mounting plate to the wall with the four No. 14 x 50 mm screws.

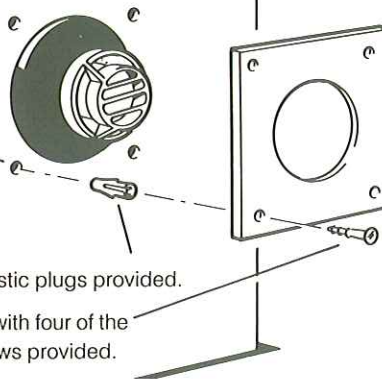


2. Check with a spirit level that the plate is vertical.

**28 TERMINAL WALL PLATE**

This plate allows the neat concealment and full compression of the rubber seal. Its use is not essential if the flue hole and flue ducts have been accurately cut and the outside wall face is flat *except that this plate must be used on wall thickness over 610 mm (24 in.)*.

1. Position the terminal wall plate over the terminal.
2. Drill 4 fixing holes with an 8 mm (5/16 in.) masonry drill.
3. Insert the four plastic plugs provided.
4. Secure the plate with four of the No. 10 x 2in. screws provided.



**Note.** If the terminal is less than 2 m (6.6 ft.) above ground level, an approved terminal guard should be fitted. Refer to Page 4.

**29 MOUNTING THE BOILER**

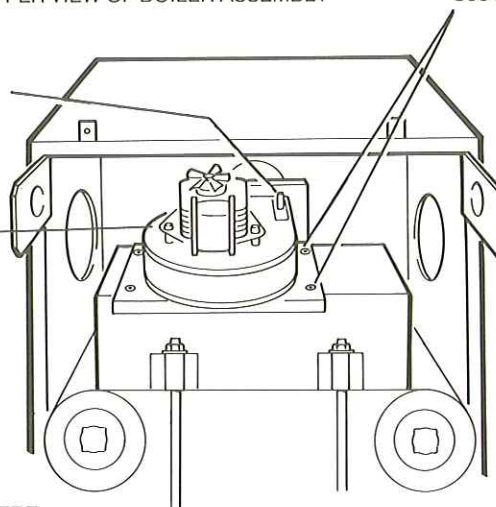
**Note.** Do not remove the cardboard controls protection box.

1. Disconnect the 2 fan electrical connections and the fan earth to top panel connection.
  2. Remove the 4 screws, each with two washers, retaining the fan assembly.
  3. Pull off the silicon rubber pipe connection on top of the fan. Remove the fan to a safe place.
- Note.** Always take care when handling the fan, to preserve the balance of the impeller.
4. Fit a pair of blanking plates and discs to the rear flue outlet hole. Have ready to hand the M8 fixing screw, shakeproof washer and large rectangular plate supplied in the Hardware Pack.

UPPER VIEW OF BOILER ASSEMBLY

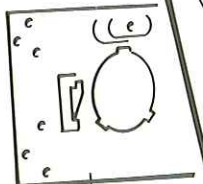
See note 2.

Pipe connection, see note 3.  
Fan assembly



Flue sealing disc

LIFT HERE



Wall mounting plate.  
The boiler mounts onto the wall plate hooks and is retained by the central M8 screw, shakeproof washer and large rectangular plate.

Terminal mounting plate.  
The air duct spigot engages in the hole in the side panel.

5. Lift the boiler onto the wall mounting plate -as shown. The air duct spigot engages in the hole in the side panel.
- DO NOT USE THE BURNER / CONTROLS ASSEMBLY FOR LIFTING.**

6. Fit the M8 screw, shakeproof washer and large rectangular plate to retain the boiler.
- Note.** Before fully tightening the M8 screw, check the boiler alignment using a spirit level and adjust as necessary with the jacking screw. Refer to Frame 7

LIFT HERE

Controls protection box

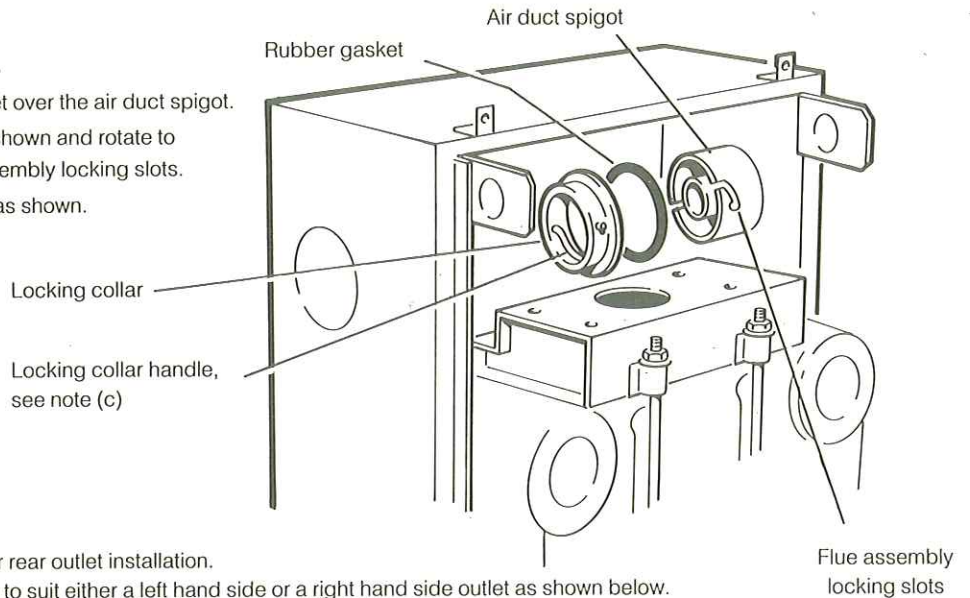
7. Remove the cardboard controls protection box.
8. Adjust the jacking screw until the hole in the wall lines up with the hole in the jacking screw plate. Locate a No. 10 x 2 in. screw in the boiler lower fixing hole and secure to the wall.
9. Make all water connections and check for water soundness.

**DO NOT USE THE BURNER / CONTROLS ASSEMBLY FOR LIFTING.**

**30 SEALING THE BOILER AND FLUE / REFITTING THE FAN ASSEMBLY**

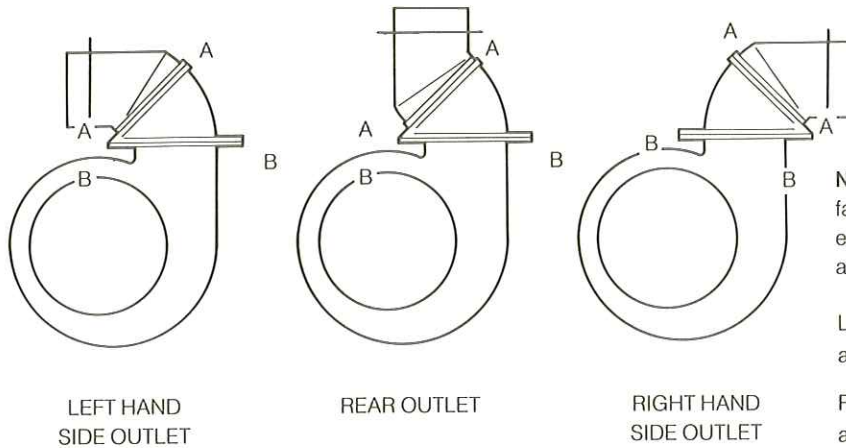
**1. Sealing the Boiler and Flue.**

- (a) Stretch the rubber gasket over the air duct spigot.
- (b) Fit the locking collar as shown and rotate to engage with the flue assembly locking slots.
- (c) Fold the locking handle as shown.



**2. Fan Outlet Arrangement.**

The fan outlet is supplied for rear outlet installation. Re-arrange the outlet elbow to suit either a left hand side or a right hand side outlet as shown below.



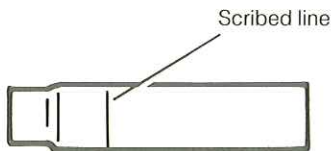
**Note.** When altering the arrangement of the fan outlet elbow, for either side, slacken the extended nuts at joint 'B - B' to help alignment when re-fitting the fan assembly.

**LEFT HAND SIDE OUTLET:** Disconnect at joint 'A - A' and rotate through 180°.

**RIGHT HAND SIDE OUTLET:** Disconnect at joints 'A - A' and 'B - B' and rotate both through 180°.

**3. Fan Assembly Refitting.**

- (a) For R.H. side outlet only. Cut the side outlet flue pipe to the scribed line.



**Note.** The pipe is the correct length for L.H. side outlet.

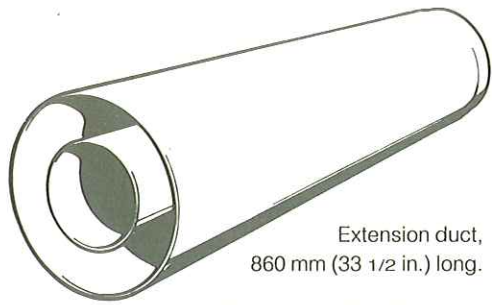
- (b) Fit the flue pipe connector onto the fan outlet elbow.
- (c) Ensure that the flue baffles are fully pushed down in the heat exchanger.
- (d) Refit the fan assembly onto the collector hood, fully engaging the flue pipe connector into the flue pipe. Secure the assembly with the four screws previously removed. Re-tighten the extended nuts at joint 'B - B' on the flue outlet elbow.
- (e) Re-connect the 2 fan electrical connections and the earth lead.
- (f) Re-connect the positive pressure silicon rubber pipe to the connection on top of the fan.

**PROCEED TO FRAME 33**



**31 PACK 'D' CONTENTS AND GENERAL ARRANGEMENT OF THE FLUE DUCTS**

PACK 'D' FLUE EXTENSION DUCT KIT CONTENTS. Unpack the Kit and check the contents.



Extension duct,  
860 mm (33 1/2 in.) long.



Support bracket.



Length of  
adhesive tape.



Wall plug.



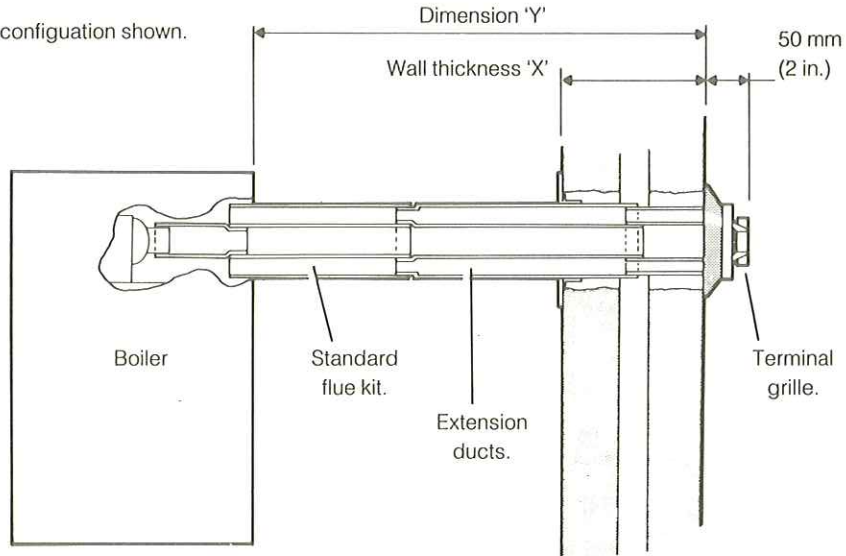
No. 8 x 1/4 in. self  
tapping screws, 4 off.

No. 10 x 3 in. wood  
screw screw, 1 off.

**FLUE LENGTHS UP TO 3 m. USE A MAXIMUM OF THREE KITS ONLY.**

**GENERAL ARRANGEMENT.** Note. Side flue configuration shown.

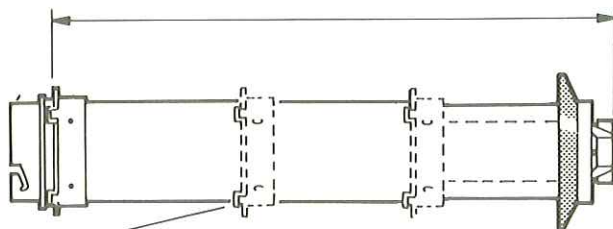
1. A MAXIMUM OF THREE KITS ONLY may be used together.
2. Always cut the extension ducts at the plain ends only.
3. Ensure that there is at least a 25 mm (1 in.) overlap at each joint.
4. For flue lengths of less than 457 mm (18 in.), ensure that the collar is positioned on an air duct (outer).
5. Flue extensions of greater length than 1 m (39 in.) should be supported with the bracket provided.
6. Tape all air duct connections.
7. Always align the seams when re-assembling the ducts.



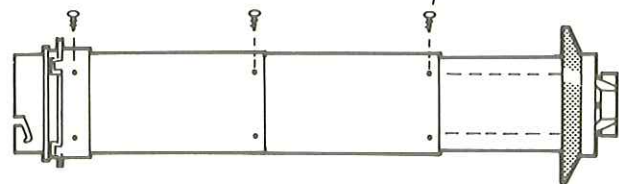
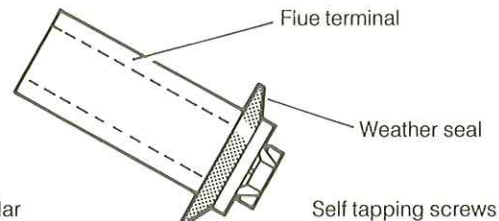
**32 FITTING THE KIT**

**IMPORTANT.** Read in conjunction with Frame 31.

1. Separate the Flue duct assembly.
2. Insert the appropriate extension duct(s) with the plain end(s) toward the terminal.
3. Re-assemble the terminal and the duct assemblies.
4. Push the sliding collar back to the boiler end of the duct, or to its intended position.
5. Set the assembly to length, i.e. Dimension 'X' (wall thickness) plus 50 mm (2 in.) or Dimension 'Y' (wall thickness and boiler spacing) plus 50 mm (2 in.).



6. Using the sliding collar as a template at the joints of any ducts mark the positions the fixing screws (3 screws for each joint).



7. Drill at the markings with a 3.2 mm. drill.
8. Lock the assembly in position with the self tapping screws provided.
9. Drill through the holes of the collar into the air duct with a 3.2 mm. drill and lock the sliding collar into position with 3 of the self tapping screws provided.

**Note.** If the flue duct assembly locking screws restrict the sliding collar then use the collar locking screws to lock the whole assembly.

**REAR & SIDE FLUE OUTLET**

**33 GAS CONNECTION**

Refer to 'Gas supply' (page 3) and Frame 7 (page 8) for gas inlet service dimensions

A MINIMUM working gas pressure of 20 mbar MUST be available at the boiler inlet.

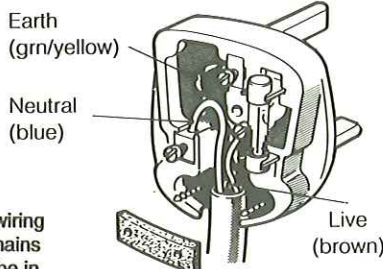
The main gas cock is on the left hand side of the gas control valve, as shown.

To facilitate connection it is recommended that the gas cock is not removed from the gas control valve.

**34 ELECTRICAL CONNECTIONS**

**WARNING:** The appliance MUST be efficiently earthed.

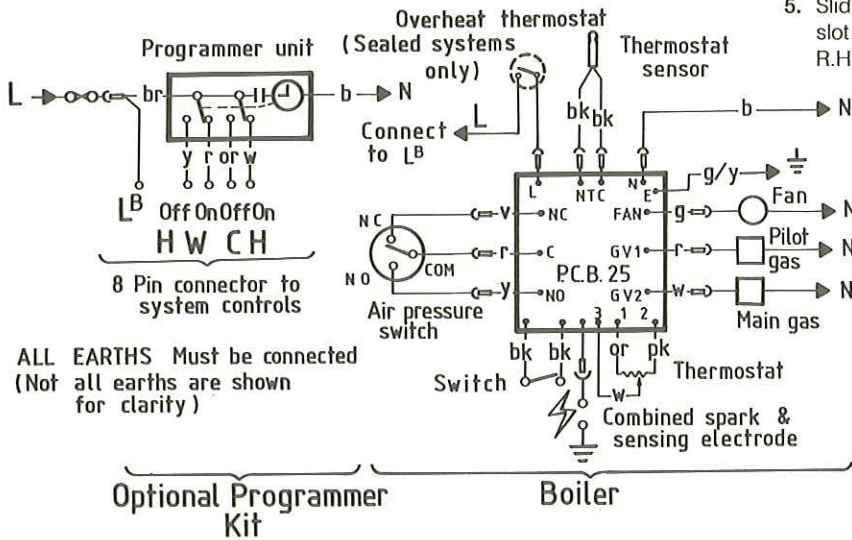
A mains supply of 240 V ~ 50 Hz is required.



All external controls & wiring MUST be suitable for mains voltage. Wiring should be in 3-core PVC insulating cable, NOT LESS than 0.75 mm<sup>2</sup> (24 x 0.2mm), to BS 6500 Table 16 and 70°C 'T' rating.

Wiring external to the boiler MUST be in accordance with the current I.E.E. Wiring Regulations and any Local Regulations. The supply connection may be made via a removable plug to an unswitched shuttered socket/outlet, preferably adjacent to the boiler, & should such a plug be used for connection to the mains, it MUST be of the 3-pin type - wired as shown, fused at 3A and comply with the requirements of BS.1363. Alternatively, a fused double-pole switch having a 3mm contact separation in both poles, serving only the boiler & system controls may be used.

**FLOW WIRING DIAGRAM**



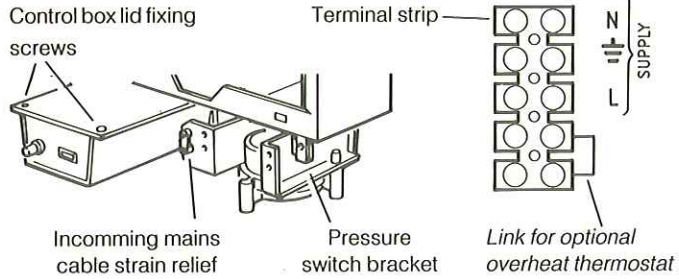
ALL EARTHS Must be connected (Not all earths are shown for clarity)

Optional Programmer Kit

Boiler

Note. If the optional Programmer Kit is to be fitted, refer to the instructions provided with the kit and Frame 35.

**INCOMING MAINS WIRING DETAIL**



1. Remove the 2 control box lid fixing screws and disengage the lid retention hooks. Remove the lid.
2. Route the mains cable through the strain relief mounted on the pressure switch bracket.
3. Lift the terminal strip from its control box retention slots.
4. Wire the live, neutral and earth into the terminal strip, ensuring that the lengths of the current carrying conductors are shorter than the earth conductor, so that if the cable slips in its anchorage the current carrying conductors become taut before the earth conductor.
5. Slide the terminal strip back into its retention slot and push the cable into the control box R.H. side rear cable clamp.

Note: Ensure that no basic insulation is accessible outside of the control box. (Refer diagram in Frame 36).

6. Tighten the main cable strain relief on the pressure switch bracket.
7. Replace the control box lid and retain with the 2 screws previously removed.

**LEGEND**

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

**35 EXTERNAL CONTROLS**

The wiring diagrams illustrated in Frames 37 & 38 cover the systems most likely to be fitted to this appliance.

For wiring external controls to the Ideal Classic NF boiler, reference should be made to the system wiring diagrams supplied by the relevant Manufacturer, in conjunction with the wiring diagrams shown in Frames 36 - 38.

Difficulty in wiring should not arise, providing the following directions are observed:

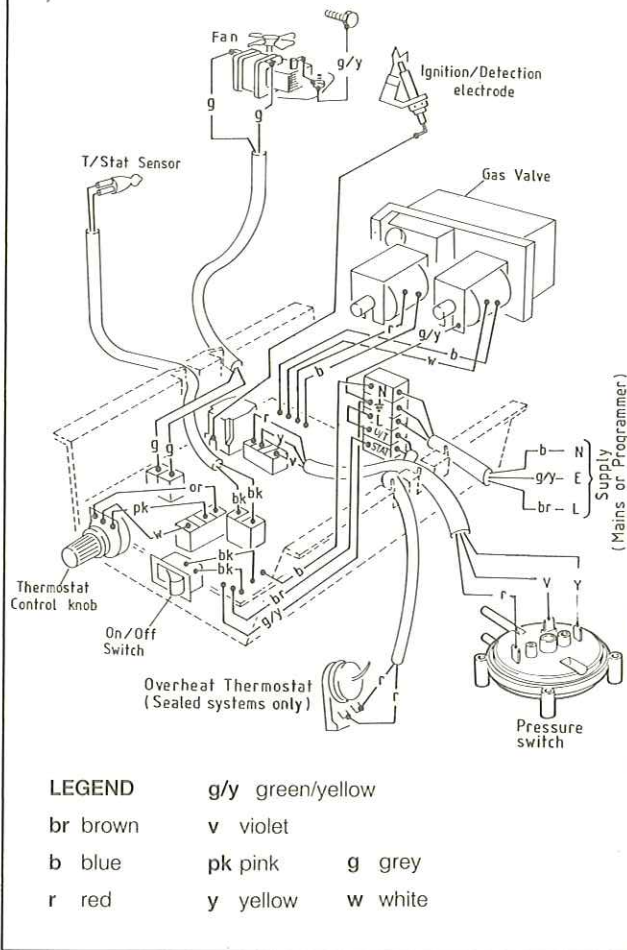
1. Controls that switch the system ON & OFF, e.g. a time switch, MUST be wired, in series, in the live mains lead to the boiler.
2. Controls that over-ride an ON/OFF control e.g. a frost thermostat, MUST be wired into the mains lead, in parallel, with the control(s) to be over-riden - refer to Frame 39.

3. Controls that switch the circulation pump only ON and OFF, e.g. a room thermostat, MUST be wired, in series, with the pump in the live pump lead.
4. If a proprietary system is used, follow the instructions supplied by the Manufacturers.
5. SYSTEM DESIGNS FEATURING CONTROLS OR WIRING ARRANGEMENTS WHICH ALLOW THE BOILER TO FIRE WHEN THERE IS NO PUMPED CIRCULATION TAKING PLACE SHOULD NOT BE FITTED.

Advice on required modifications to the wiring may be obtained from the component Manufacturers.

- Notes.**
1. Connections between a frost thermostat & the time control should be made without disturbing other wiring.
  2. A frost thermostat should be sited in a cool place in the house, but where it can sense heat from the system.

**36 PICTORIAL WIRING**



**37 MID POSITION VALVE**

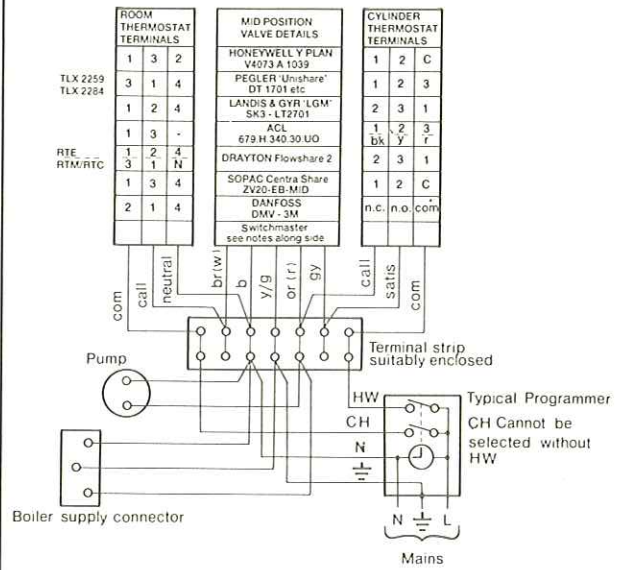
**Notes:**

**Pumped only**

1. Some earth wires are omitted for clarity. Ensure proper earth continuity when wiring.
2. Numbering of terminals on thermostats is specific to the Manufacturer.
3. This is a fully controlled system - set the boiler thermostat to maximum.
4. Switchmaster 'Midi' is similar in operation, but the wiring differs slightly; see Manufacturer's literature.

**LEGEND**

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



**38 TWO SPRING CLOSED VALVE**

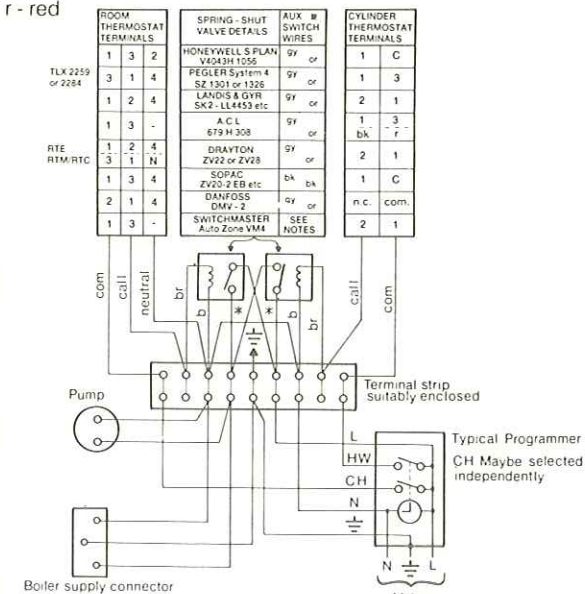
**Notes:**

**Pumped only**

1. Some earth wires are omitted for clarity. Ensure proper earth continuity when wiring.
2. Numbering of terminals on thermostats is specific to the Manufacturer.
3. This is a fully controlled system - set the boiler thermostat to maximum.
4. Switchmaster valve has grey & orange auxillary switch leads, but the grey wire must be connected to the live supply.

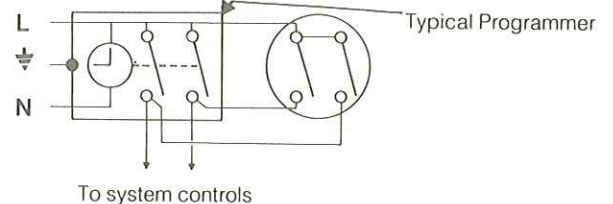
**LEGEND**

- |            |             |            |
|------------|-------------|------------|
| b - blue   | gy - grey   | bk - black |
| br - brown | or - orange | w - white  |
| r - red    |             |            |

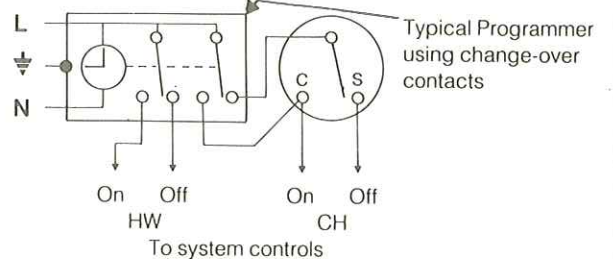


**39 FROST PROTECTION**

**A. Double pole frost stat', e.g. SOPAC TA347.04**



**B. Change-over frost stat', (shown satisfied)**



Central heating systems fitted wholly inside the house do not normally require frost protection, as the house acts as a 'storage heater' & can normally be left at least 24 hrs. without frost damage. However, 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 stat' should be wired into the system. This is usually done at the programmer, in which case the programme selector switches are set to 'Off' & all other controls MUST be left in the running position. The frost stat' should be sited in a cold place, but where it can sense heat from the system. 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 manufacturer's leaflets will give full details. Diagram A shows a double pole frost stat', which should suffice for all systems which do not use the 'OFF' terminals of the programmer. Diagram B shows a 'change-over' frost stat', which will cover most systems which do use 'CH OFF'. If, however, on such a system, the HW pipework is in an isolated part of the house, a second frost stat' may be used to protect it. If in doubt, ask your installer for advice.

**40 COMMISSIONING & 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. ie. earth continuity, polarity, resistance to earth and short circuit, using a suitable test meter.

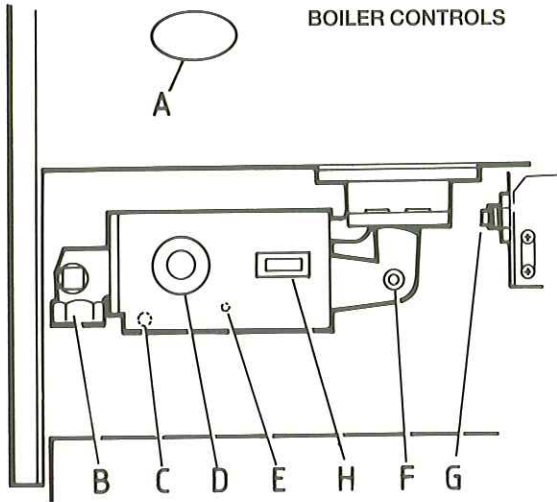
**(b) Gas Installation**

1. The whole of the gas installation, including the meter, must be inspected and tested for soundness, and purged in accordance with the recommendations of BS. 6891.
2. Purging air from the gas installation may be expedited by loosening the screws on the gas service cock and purging until gas is smelled.
3. Retighten the screws and check for gas soundness.

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

**41 INITIAL LIGHTING**

**BOILER CONTROLS**



**LEGEND**

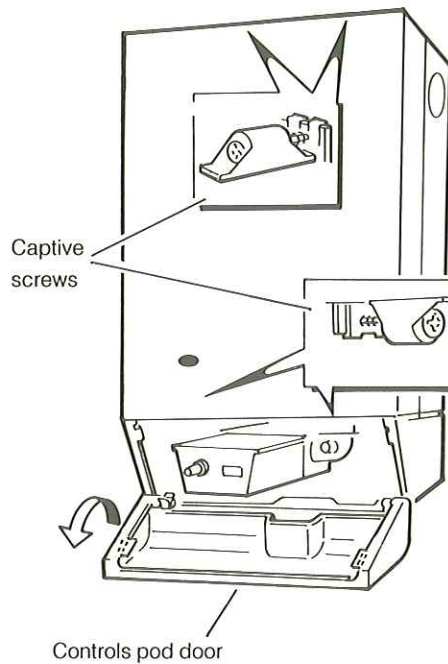
- |                               |   |
|-------------------------------|---|
| A Sight Glass.                | E Main burner pressure adjuster.                |
| B Gas service cock.           | F Burner pressure test nipple.                  |
| C Inlet pressure test nipple. | G Overheat thermostat reset button (if fitted). |
| D Thermostat Knob             | H Boiler mains ON / OFF switch.                 |

**TO LIGHT THE BOILER**

1. Check that all the drain cocks are closed, and any valves in the flow and return are open.
2. Check that the gas service cock (B) is ON and the boiler Mains ON / OFF switch (H) is OFF.
3. If the boiler output is to be set to minimum or mid, affix the appropriate indicator label supplied in the hardware pack to the data plate, located on the upper L.H. side of the back panel.
4. Fit the boiler casing but do not fit the controls pod.
5. Slacken the screw in the burner pressure test point (F) and connect a gas pressure gauge via a flexible tube.
6. Switch the electricity supply ON and check that all external controls are calling for heat.
7. Set the boiler thermostat knob (D) to position '6' and the boiler Mains ON / OFF switch to ON and the fan will start. After the fan has run for a few seconds the pilot solenoid valve should open and the intermittent spark commence, continuing until the pilot is established. The main burner will then light. If this does not occur, refer to Frame 8 of the 'Servicing' section.
8. Test for gas soundness around ALL boiler gas components using leak detection fluid. Particularly check gas valve flanges.

**FITTING THE BOILER CASING**

- Lift the boiler casing up to the boiler assembly and secure with the 4 captive screws.



- The casing must seat correctly and compress the sealing strip to make an airtight joint. Visually check the side seals, but if side clearances are limited then check that the top and bottom edges of the casing are correctly located.
 

**Note.** If the Sealed System Module is fitted, remove the module casing in order to inspect the top casing seal.
9. Check that the main burner cross lights smoothly. If this sequence does not occur, then refer to the 'Fault Finding' section.
  10. Operate the boiler for 10 minutes to stabilise the burner temperature.
  11. The boiler is pre-set at the factory to its highest nominal rating, but can be range rated to suit the system design requirements. Refer to Table 2 on page 2. Turn the adjusting screw (E) clockwise to decrease the pressure.
  12. Set the boiler Mains ON / OFF switch to OFF.
  13. Remove the pressure gauge and tube. Retighten the sealing screw in the pressure test nipple.
  14. Turn ON & check for gas soundness at the screw sealing.
  15. Refit the controls pod and tighten the 2 front fixing screws.
  16. Close the pod door.

**42 GENERAL CHECKS**

Make the following checks for correct operation:

1. Set the boiler thermostat knob to position '6' and operate the Mains ON / OFF switch. Check that the main burner lights and extinguishes in response.
2. The correct operation of ANY programmer and all other system controls should be proved.  
Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.
3. Check that the casing is sealed correctly and compressing the sealing strip all around the casing.
4. **Water Circulation System**
  - (a) With the system HOT, examine all water connections for soundness.
  - (b) With the system still hot, turn off the gas, water and electricity supplies to the boiler and drain down in order to complete the flushing process.

- (c) Re-fill and vent the system, clear all air locks and again check for water soundness.
  - (d) Balance the system.
5. Finally set the controls to the User's requirements.

The temperatures quoted below are approximate and vary between installations.

Knob Setting	Flow Temperature	
	°C	°F
1	54	130
2	60	140
3	66	150
4	71	160
5	77	170
6	82	180

**WARNING.** The boiler MUST NOT be operated with the casing removed.

**43 HANDING OVER**

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

1. Hand the User's Instructions to the Householder and explain his or her responsibilities under the Gas Safety (Installation and Use) Regulations; 1990.
2. Draw attention to the Lighting Instruction label affixed to the controls pod door.
3. Explain and demonstrate the lighting and shutting down procedures.
4. 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 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.
5. Explain the function and the use of the boiler thermostat and external controls.
6. Explain the function of the boiler over-heat thermostat (ONLY FITTED FOR SEALED SYSTEM USE) and emphasise that if cut-out persists, the boiler should be turned off and the local Heating Installer consulted.
7. Explain and demonstrate the function of time and temperature controls, radiator valves, etc for the economic use of the system.
8. If any Programmer Kit is fitted, then draw attention to the Programmer Kit User's instructions and hand them to the Householder.
9. Stress the importance of regular servicing by the Local Gas Region or by a qualified Heating Engineer and that a comprehensive service should be carried out AT LEAST ONCE A YEAR.

## 1 SCHEDULE

To ensure the continued safe and efficient operation of the appliance, it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage, but should be carried out at least annually. It is the law that any service work must be carried out by a competent person.

- (a) Light the boiler and carry out a pre-service check, noting any operational faults.
- (b) Clean the main burner.
- (c) Clean the heat exchanger.
- (d) Clean the main and pilot injectors.
- (e) Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
- (f) if the appliance has been installed in a compartment, check that the ventilation areas are clear.

The servicing procedures are covered more fully in Frames 2 to 8 and must be carried out in sequence.

**WARNING.** Disconnect the electrical supply.

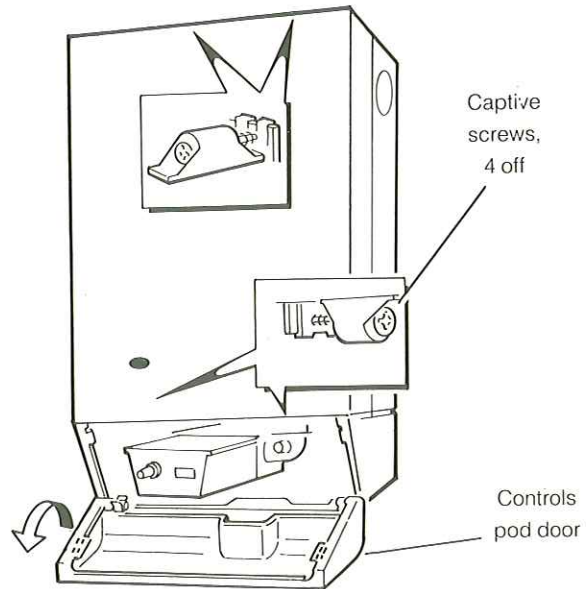
**IMPORTANT.** After completing the servicing or exchange of components always test for gas soundness and carry out functional checks as appropriate.

**Note.** In order to carry out either servicing or replacement of components, the boiler casing must be removed (Frame 2).

**IMPORTANT.** When work is complete the casing MUST be correctly re-fitted, ensuring that a good seal is made. **DO NOT OPERATE THE BOILER IF THE CASING IS NOT FITTED.**

## 2 BOILER CASING REMOVAL

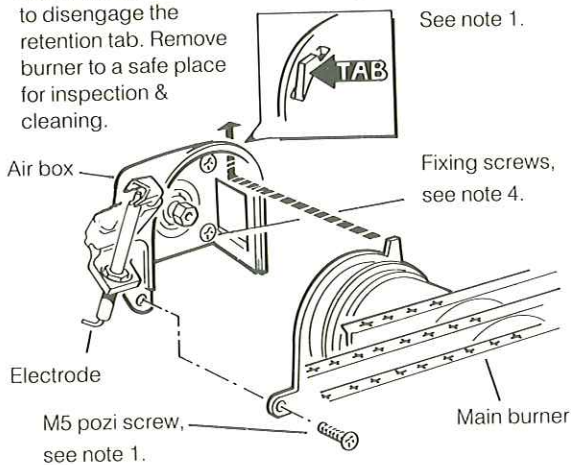
1. Refer to Frame 1.
2. If the Sealed System Module is fitted then lift off the casing to expose the boiler casing top fixing screw.
3. Open the controls pod door.
4. Release the 4 captive screws at the top and bottom of the casing. Lift the casing off the boiler and retain in a safe place.



5. Isolate the gas supply at the service cock. Refer to Frame 9.

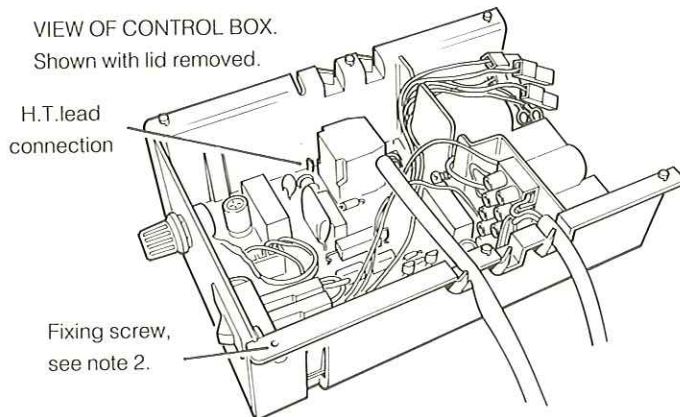
## 3 BURNER AND AIR BOX REMOVAL

1. Remove the screw retaining the front burner support bracket to the combustion chamber. Remove the M5 pozi screw situated at the L.H, bottom rear of the burner & pull the burner downwards to disengage the retention tab. Remove burner to a safe place for inspection & cleaning.



2. Remove the control box lid fixing screws. Pull the lid forwards and upwards to disengage the catches and remove the lid.
3. Pull the H.T. lead connection off the printed circuit board and pull the lead upwards through the bottom panel grommet.

VIEW OF CONTROL BOX.  
Shown with lid removed.



4. Remove the four screws retaining the air box / pilot assembly to the vertical manifold & carefully remove the assembly.

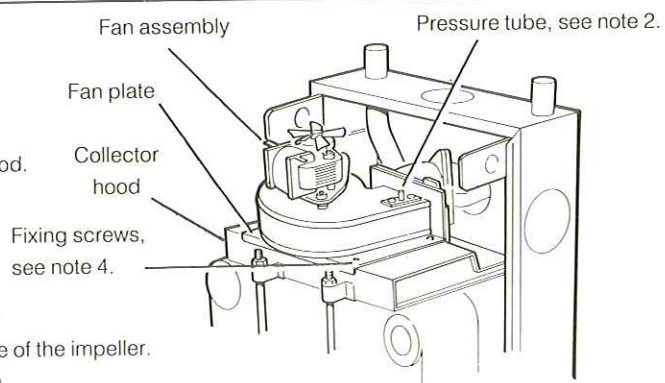
## 4 CLEANING THE FAN ASSEMBLY

1. Disconnect the fan leads and the fan earth connection.
2. Pull off the silicon rubber pressure tube on top of the fan casing.
3. Remove the four screws retaining the fan plate to the collector hood.
4. Pull the fan assembly to disengage the flue. Remove the fan assembly and gasket.

5. Remove the fan plate to check that the fan impeller runs freely. Clean with a soft brush or renew as necessary, refer to Frame 17.

**Note.** Always take care when handling the fan, due to the balance of the impeller.

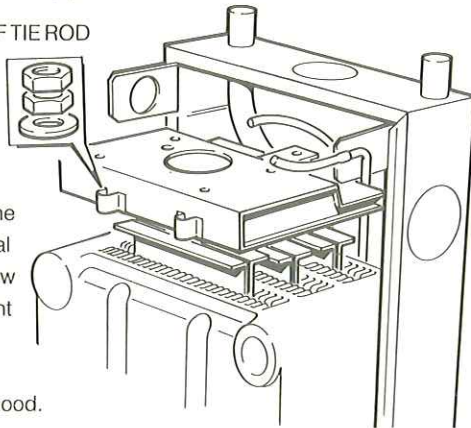
6. Check that the boiler air inlet duct and flue duct are unobstructed.



**5 CLEANING THE FLUEWAYS**

1. Pull off the silicon rubber negative pressure tube on the L.H. side aluminium pipe.

DETAIL OF TIE ROD FIXINGS



2. Remove the rear central fixing screw & both front tie rods. Lift off the collector hood.
3. Remove the flue baffle clips and remove the flue baffles.
4. Replace the controls box cover and protect the controls box from any falling heat exchanger deposits.
5. Remove all loose deposits from the heat exchanger, particularly between the fins, using a suitable brush.

**6 CLEANING THE BURNER AND PILOT ASSEMBLY**

1. Brush off any deposits that may have fallen on to the burner head, ensuring the flame ports are un-obstructed and remove any debris that may have collected.
 

**Note.** Brushes with metallic bristles **MUST NOT** be used.
2. Remove the main burner injector and ensure there is no blockage or damage. Clean or renew as necessary.
3. Refit the injector using an approved jointing compound sparingly.
4. Inspect the pilot burner & ignition / detection electrode. Ensure that they are clean & in good condition. Check that:
  - (a) The pilot burner injector is not blocked or damaged. Refer to Frame 13 for removal details.
  - (b) The pilot burner is clean and unobstructed.
  - (c) The ignition/detection electrode is clean and undamaged.
  - (d) The ignition / detection lead is in good condition.
  - (e) The spark gap is correct (Frame 13). Clean or renew as necessary.

**Note.** The pilot shield is located around the pilot assembly bracket and is located by the electrode retaining nut.

**7 RE-ASSEMBLY**

Re-assemble the boiler in the following order.

1. Refit the flue baffles.
2. Inspect the collector hood rope gasket and replace if necessary ensuring that the self adhesive rope is fitted centrally onto the lip of the collector hood. The boiler efficiency will be adversely affected if incorrectly fitted. Refit the collector hood and retain with the two front rods and the rear central fixing screws. Tighten the nuts and screw. Ensure that the sealing gasket is compressed. Refit the negative pressure pipe to the L.H. side aluminium pipe. Inspect the fan plate gasket and replace if necessary.
3. Refit the fan mounting plate to the fan and the refit fan assembly. Refit the positive pressure tube on the top of the fan housing. Reconnect the electrical leads.

4. Refit the air box assembly and burner. Ensure that the burner front fixing is refitted.
5. Refit the control box lid.
6. Re-connect the gas supply and the electrical wiring. Refer to Frames 33 and 36 of the 'Installation' section.
7. Check the sightglass in the boiler casing. Clean or renew as necessary. Refer to Frame 10.
8. Check for gas soundness. Refer to Frame 40 and 41 of the 'Installation' section. Check the gas service cock, flanges and pressure test point.
9. Refit the boiler casing and tighten the four captive screws.
 

**IMPORTANT.** When work is complete the casing **MUST** be correctly refitted. Ensure that a good seal is made.
10. Close the controls pod door.

**8 GAS PRESSURE ADJUSTMENT**

**PILOT**

The pilot is factory set to maximum and no further adjustment is possible. If after removing and checking the injector (as detailed in Frame 13 - 'Servicing'), and ensuring that there is an inlet pressure of 20 mbar available, the pilot does not light then contact Caradon Heating Ltd. Relight in accordance with 'Initial Lighting' (refer to Frame 41 - 'Installation').

**MAIN BURNER**

After any servicing, reference should be made to Table 2 which quotes details of the rated output with the related burner setting pressure and the heat input. Any required adjustments should be made by using the pressure adjustment screw. Refer to 'Initial Lighting', 'Frame 41 'Installation'.

**REPLACEMENT OF PARTS**

**9 GENERAL**

When replacing any component:

1. Isolate the electricity supply.
2. Turn OFF the gas supply.
3. Remove the boiler casing. refer to Frame 2.



**IMPORTANT.** When work is complete the casing **MUST** be correctly refitted, ensuring that a good seal is made.

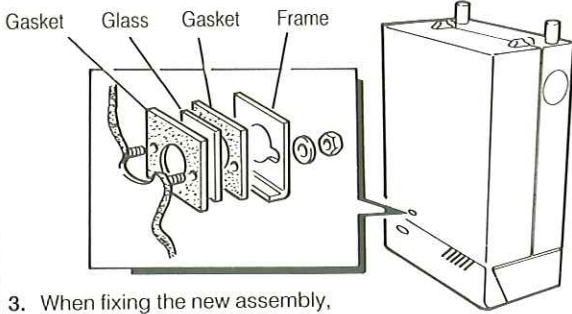
**Note.** In order to assist fault finding the control box printed circuit board is fitted with 4 indicator lights which represent the following boiler conditions:

- Neon I1. Air pressure switch made.
- Neon I2. Boiler thermostat calling for heat.
- Neon I3. Mains electricity ON.
- Neon SG1. Flashes to indicate spark operation (stops after detection).

**The boiler *MUST NOT* be operated if the casing is not fitted.**

**10 SIGHTGLASS REPLACEMENT**

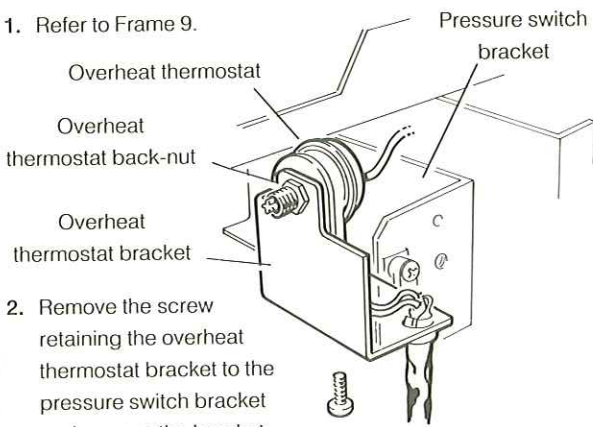
1. Refer to Frame 9.
2. Unfasten the two nuts and washers holding the sightglass assembly to the casing front panel.



3. When fixing the new assembly, ensure that the parts are in the correct order. The frame must have the return edge at the bottom.
4. Re-tighten the 2 nuts to ensure an airtight seal. Do NOT overtighten.
6. Replace the boiler casing. Refer to Frame 7.

**12 OVERHEAT THERMOSTAT REPLACEMENT**  
Fitted for sealed systems only

1. Refer to Frame 9.



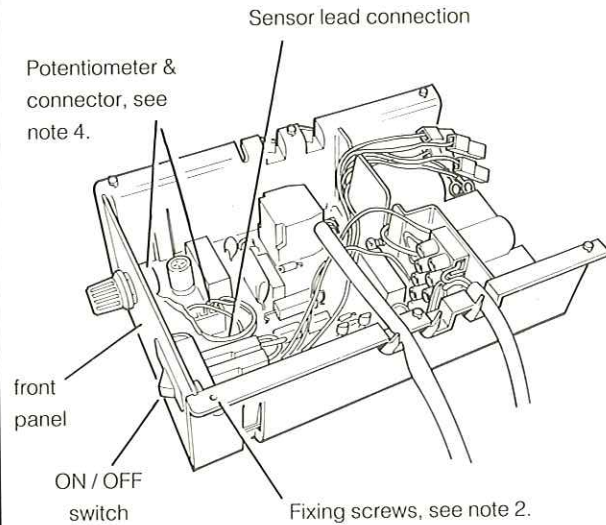
2. Remove the screw retaining the overheat thermostat bracket to the pressure switch bracket and remove the bracket.
3. Pull off the electrical connections at the thermostat.
4. Remove the back-nut retaining the thermostat to the bracket.
5. Fit the new thermostat and re-assemble in reverse order.

**11 CONTROL THERMOSTAT POTENTIOMETER, CONTROL THERMOSTAT SENSOR LEAD & ON / OFF SWITCH REPLACEMENT**

Refer also to Frame 26 of 'Exploded Views' & Frame 36 'Installation'.

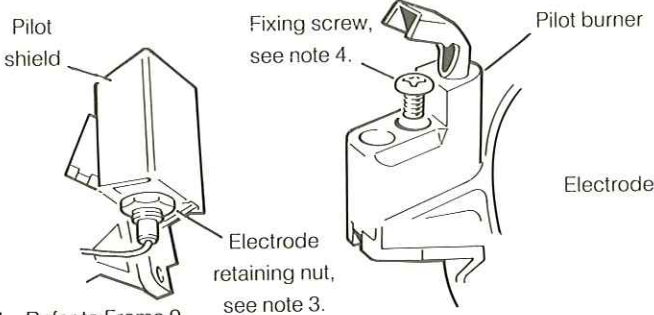
1. Refer to Frame 9.
2. Remove the control box lid fixing screws. Pull the lid forward and upward to disengage the catches and remove the lid.
3. Unclip and remove the front panel by lifting it upwards.

VIEW OF BOILER CONTROL BOX. Shown with cover removed.

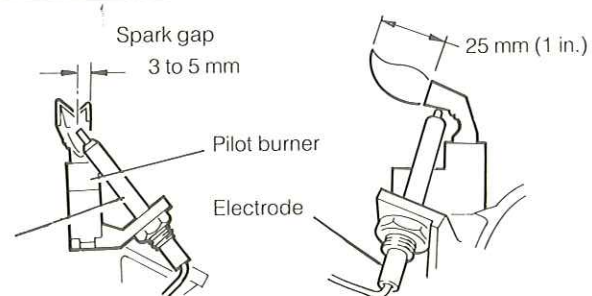


4. To remove the control thermostat potentiometer; pull the knob off the shaft, remove the back-nut and pull off the connector at the printed circuit board.
5. To remove the sensor lead; pull the connector off the printed circuit board, pull from the strain relief, remove from the pocket in the boiler heat exchanger (by removing the M3 fixing screw), unclip from the back panel and remove the strain relief bush on the back panel base.
6. To remove the ON / OFF switch; pull the connectors off the rear of the switch, press in the 2 side retaining clips and remove the switch.
7. Replace in reverse order, ensuring that sensor is pushed to the bottom of the pocket and the switch connections are on the right. Test the function of the thermostat and switch.

**13 PILOT BURNER REPLACEMENT**



1. Refer to Frame 9.
2. Remove the burner and air box assembly. Refer to Frame 3.
3. Remove the electrode retaining nut and remove the pilot shield and electrode.
4. Unscrew the central pilot fixing screw & lift the pilot clear of the pilot injector. The pilot injector may now be unscrewed if required.
5. Replace the pilot burner (and injector if necessary) and retain with the M4 screw previously removed. Ensure that the copper sealing washer is replaced when refitting the the pilot injector.

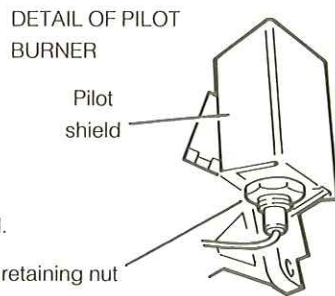


6. Replace the electrode & pilot shield, retaining both with the electrode nut.
7. Replace the air box assembly.
8. Replace the burner.
9. Check the pilot burner relationship to the main burner & the spark gap.
10. Replace the boiler casing. Refer to Frame 7.
11. The pilot is factory set to maximum and no further adjustment is possible. Ensure that there is an inlet pressure of 20 mbar available. Also check burner ignition and cross-lighting.



### 14 SPARK ELECTRODE AND LEAD REPLACEMENT

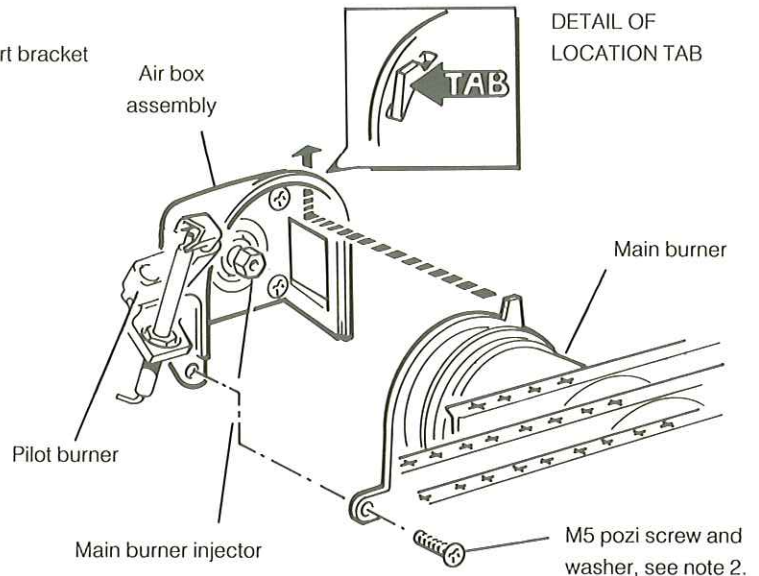
1. Refer to Frame 9.
2. Remove the burner and air box assembly. Refer to Frame 3.
3. Remove the electrode retaining nut.
4. Remove the pilot shield.



5. Remove the spark electrode and integral lead.
6. Refit the new electrode and lead in reverse order. Ensure that the pilot shield is replaced.
7. Check the spark gap. Refer to frame 13.
8. Refit the burner.
9. Replace the boiler casing. Refer to Frame 7.
10. Check the pilot ignition.

### 15 MAIN BURNER AND MAIN BURNER INJECTOR REPLACEMENT

1. Refer to Frame 9.
2. Remove the screw retaining the front burner support bracket to the combustion chamber.
3. Remove the M5 pozi screw and washer, situated at the left hand bottom rear of the burner. Pull the burner downwards to disengage the retention tab and remove the burner.
4. At this stage the main burner injector can be removed, checked, cleaned or replaced as required. Ensure that an approved jointing compound is used sparingly.
5. Fit the new burner, ensuring that the retention tab is correctly located in the air box slot.
6. Refit M5 retaining screw and washer.
7. Refit the boiler casing. Refer to Frame 7.
8. Check the burner for cross-lighting and flame stability.



### 16 GAS CONTROL VALVE REPLACEMENT

**Note.** Also refer to Frame 25 of 'Exploded Views' for illustration of the procedure detailed below.

1. Refer to Frame 9.
2. Remove the burner and air box assembly. Refer to Frame 3.
3. Turn OFF the gas supply at the service cock.
4. Remove the control box by removing the lid, unclipping the front panel (refer to Frame 11), undoing the central fixing screw & pulling off the connections at the printed circuit board.
5. Withdraw and suspend the control box. Pull off the solenoid electrical connections and unscrew the earth lead at the gas control valve.
6. Suspend the control box from the incoming mains lead.

7. Remove the four M4 extended nuts securing the gas service cock to the gas valve.
8. Whilst supporting the gas control valve, remove the two screws retaining the manifold to the back panel.
9. Remove the gas control / manifold assembly.
10. Remove the 4 screws retaining the manifold extension to the gas control & fit the new gas control. Ensure that the new control is fitted the correct way round (an arrow engraved on back indicates the direction of flow) & the sealing gasket is correctly fitted.
11. Re-assemble in reverse order. **Note:** Do NOT over-tighten the four gas cock retaining screws.
12. Replace the burner / air box assembly.
13. Replace the boiler casing. Refer to Frame 7.
14. Check the gas valve operation.

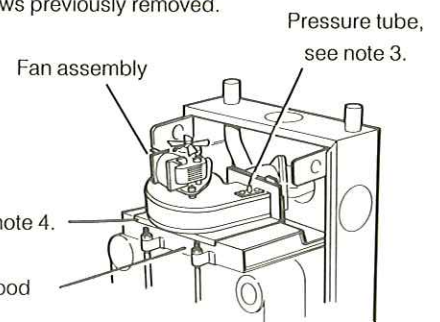
### 17 FAN UNIT REPLACEMENT

1. Refer to Frame 9.
2. Disconnect the fan leads and fan earth connection.
3. Pull off the silicon rubber pressure tube on top of the fan housing.
4. Remove the 4 screws, retaining the fan plate to the collector hood.
5. Pull the fan assembly to disengage the flue and remove the fan assembly. **Note.** Always take care when handling the fan in order to preserve the balance of the impeller.
6. Remove the 3 screws retaining the fan plate to the fan & transfer the plate to the new fan.
7. Remove the two screws and nuts retaining the aluminium elbow to the fan and transfer the elbow to the new fan.
8. Remove the two screws retaining the pressure sensing

device and transfer the sensing device to the new fan. Retain with the 2 screws previously removed.

9. Refit the new fan unit and re-connect all electrical leads.

Fan plate, see note 4.  
Collector hood

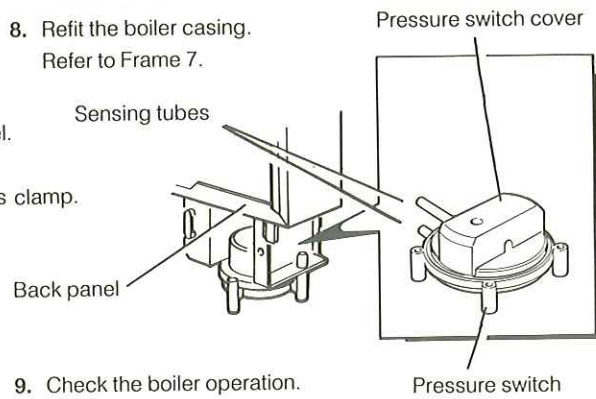


10. Refit the boiler casing. Refer to Frame 7.
11. Check the boiler operation.

**18 PRESSURE SWITCH REPLACEMENT**

1. Refer to Frame 9.
2. Pull both of the sensing tubes off the pressure switch.
3. Remove the 2 screws retaining the pressure switch to the back panel.
4. Remove the pressure switch cover by removing the fixing screw
5. Remove the 3 electrical connections and unscrew the wiring harness clamp.
6. Transfer the electrical connections to the new pressure switch. Yellow to No. 2, red to No. 3 and violet to no. 1.
7. Refit the new pressure switch & re-assemble in reverse order. Ensure that the 2 rubber pipes are re-connected to the correct pressure switch connections (red pipe to lower connection marked with a red dot and white pipe to upper connection).

8. Refit the boiler casing. Refer to Frame 7.
9. Check the boiler operation.



**19 AUTOMATIC IGNITION PRINTED CIRCUIT BOARD REPLACEMENT**

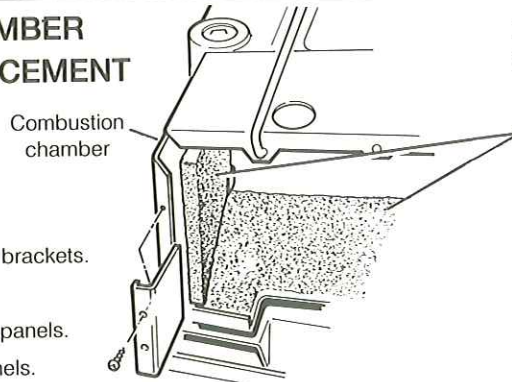
**Note.** Refer to Frames 25 and 26 of 'Exploded Views' for illustration of the procedure detailed below.

1. Refer to Frame 9.
2. Remove the control box lid fixing screws. Pull forwards and upwards in order to disengage the lid.
3. Pulloff the H.T. lead.
4. Remove the 4 'push-in' connectors on the printed circuit board.
5. Unclip the plastic control box front.
6. Pull the 2 connectors off the Mains ON / OFF switch.
7. Remove the 5 - way terminal block from its housing and remove the 3 wires connected to the printed circuit board.

8. Remove the central fixing screw retaining the control box to the gas control valve.
9. Pull the 4 leads from the solenoids.
10. Pull the terminal strip from its housing & remove the P.C.B wires.
11. Press in the 2 side retaining tabs and remove the printed circuit board.
12. Fit the new printed circuit board and re-assemble in reverse order. Refer to Frames 34 and 36 'Installation for the electrical connections.
13. Refit the boiler casing. Refer to Frame 7.
14. Check the ignition operation.

**20 COMBUSTION CHAMBER INSULATION REPLACEMENT**

1. Refer to Frame 9.
2. Remove the burner and air box assembly. Refer to Frame 3.
3. Remove the two front tie rods.
4. Remove the two side panel retaining brackets.
5. Remove the side insulation panels.
6. Remove the front and rear insulation panels.
7. Fit the new front & rear insulation panels.



DETAIL OF BOILER COMBUSTION CHAMBER

8. Fit the new side panels and retain with the brackets and screws previously removed.
9. Re-fit the front tie rods.
10. Re-assemble the rest of the appliance in reverse order.

**21 HEAT EXCHANGER REPLACEMENT**

**Note.** Refer to Frame 3 (Boiler assembly - exploded view) of the 'Installation' section for illustration of the procedure detailed below.

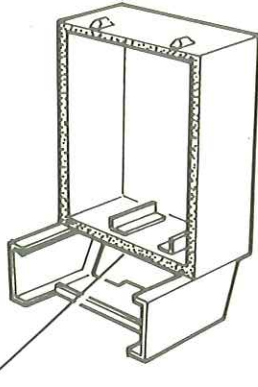
1. Refer to Frame 9.
2. Remove the burner / air box assembly. Refer to Frame 3.
3. Drain the system.
4. Disconnect the water connections. If compression fittings are used then cut the pipes both above and below the fittings in order to allow the heat exchanger assembly to be removed. Remove the heat exchanger drain plug and drain the residual water into a suitable receptacle.
5. Remove the fan assembly. Refer to Frame 17.
6. Remove the collector hood. Refer Frame 5.
7. Remove the combustion chamber by unscrewing the nuts retaining side tie rods.
8. Remove the controls box. Refer to frame 16, note 4.
9. Remove the Programmer Kit (if fitted). Refer to Frame 24.
10. Remove the 4 extended nuts retaining the gas service cock to the gas control valve.

11. Remove the two screws retaining the manifold / gas control valve assembly to the back panel and remove the assembly.
12. Remove the thermostat sensor from the pocket on the heat exchanger by removing the M3 screw and plate.
13. Slacken 3 turns only the 4 heat exchanger / inter-panel retaining screws.
14. Lift the heat exchanger / inter-panel assembly upwards and forwards to disengage key hole fixings. Pull the assembly downwards to clear the water pipes from the back panel.
15. Remove the two rubber sealing grommets from the top of the back panel to facilitate fitting the new assembly.
16. Fit the new heat exchanger assembly, complete with water pipes, and hang it on the key hole slots and screws. Retighten the screws.
17. Replace the 2 rubber sealing grommets.
18. Re-assemble in reverse order. **Note:** Do NOT overtighten the four gas cock retaining screws.
19. Remake all water connections, ensuring that the compression fittings ( if used ) are correctly refitted.
20. Fully test all functions, including water and gas soundness.

**22 CASING SEAL REPLACEMENT**

1. Refer to Frame 9.

INNER VIEW OF BOILER CASING



2. Remove the old seal from the channel in the casing surround and thoroughly clean the casing surfaces.
3. Fit the new self adhesive seals.
4. Replace the boiler casing. Refer to Frame 7.

**23 GAS VALVE SOLENOID REPLACEMENT**

**Note.** Refer to frame 25 of 'Exploded Views' for illustration of the procedure detailed below.

1. Refer to Frame 9.
2. Remove the fixing screws securing the control box lid. Pull forwards and upwards to disengage the lid.
3. Unscrew the central control box fixing screw and remove the box from the gas control valve.
4. Pull off the electrical connections at the solenoid and remove the earth wire connection at the solenoid bracket.
5. Remove and replace the solenoid coil as shown in Frame 25.
6. Re-assemble in reverse order.
7. Replace the boiler casing. refer to frame 7.
8. Check the function of the gas control valve.

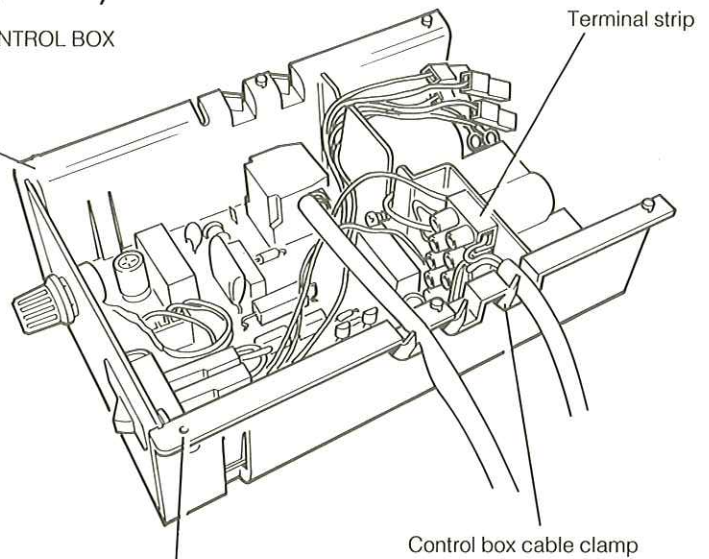
**24 PROGRAMMER REPLACEMENT (if fitted)**

1. Refer to Frame 9.

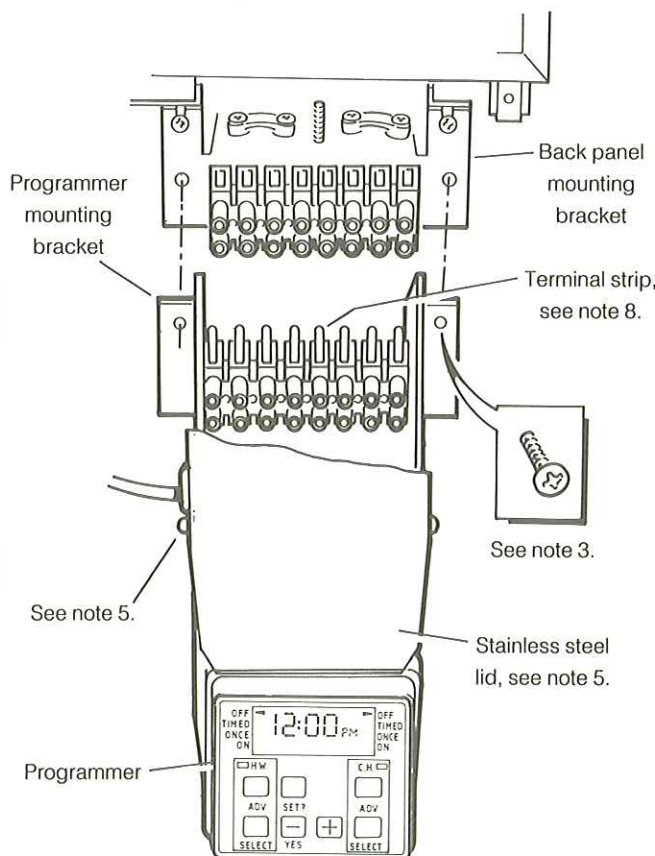
DETAIL OF BOILER CONTROL BOX

2. Remove the boiler control box lid and release the terminal strip from its slide retention. Disconnect the 'L', 'N' and 'E' connections from the terminal strip and release the cable clamps.

Lid fixing screw



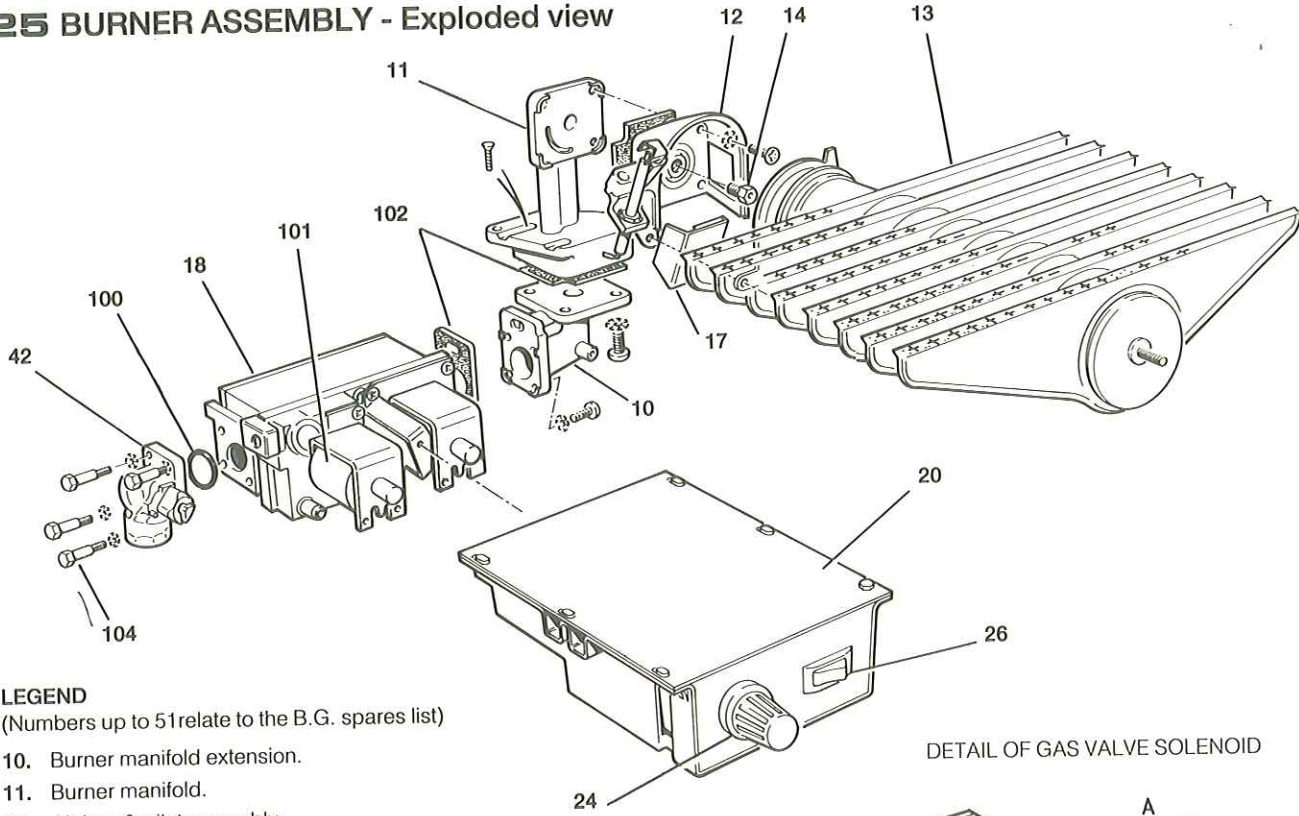
DETAIL OF PROGRAMMER



Lid fixing screw

3. Remove the 2 screws retaining the programmer mounting bracket to the back panel mounting bracket.
4. Pull the programmer mounting bracket downward and forward in order to disengage the terminal strip connection.
5. Remove the 2 screws fastening the stainless steel lid to the programmer mounting bracket and remove the lid.
6. Slide the programmer upwards in order to clear the mounting bracket.
7. Remove the strain relief bush retaining the control box feed cable and remove the earth lead from the earth post.
8. Remove the 3 screws retaining the terminal strip to the programmer mounting bracket.
9. Remove the programmer, complete with its terminal strip and wiring harness.
10. Fit the new programmer, terminal strip and wiring harness in reverse order.
11. Set the programmer to the desired programme and test its functions.

**25 BURNER ASSEMBLY - Exploded view**

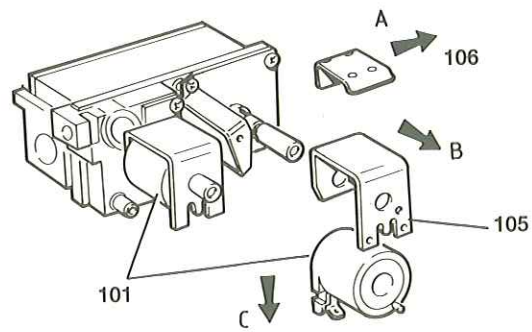


**LEGEND**

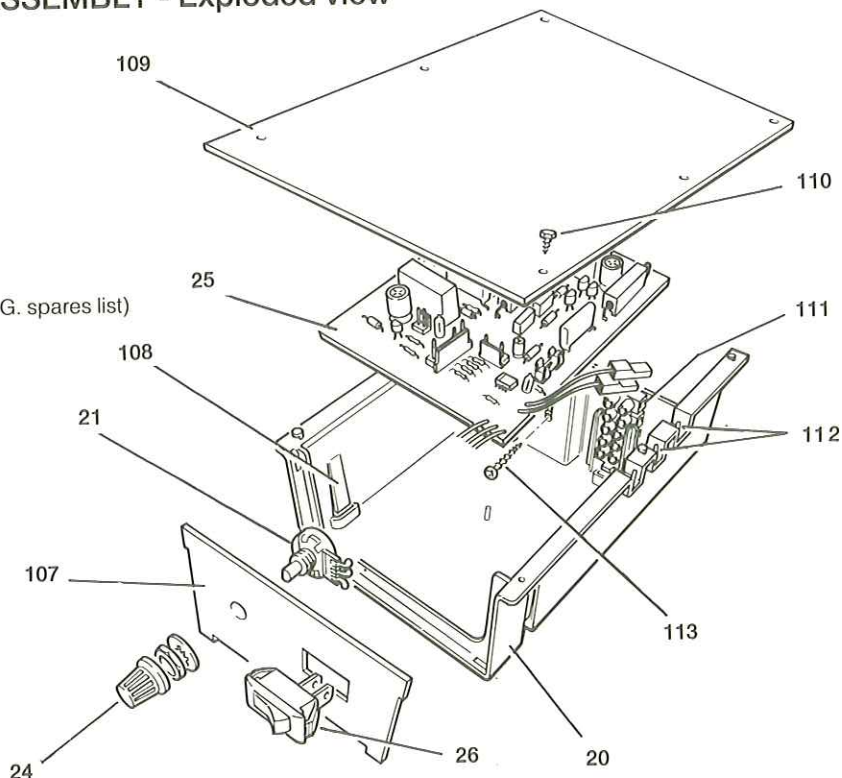
(Numbers up to 51 relate to the B.G. spares list)

- 10. Burner manifold extension.
- 11. Burner manifold.
- 12. Air box & pilot assembly.
- 13. Main burner.
- 14. Main burner injector.
- 17. Pilot shield.
- 18. Gas control valve.
- 20. Control box.
- 24. Thermostat knob.
- 26. Mains ON/OFF switch.
- 42. Gas service cock.
- 100. 'O' ring.
- 101. Gas control valve solenoid.
- 102. Sealing gaskets.
- 104. Extended screws.
- 105. Solenoid mounting bracket.
- 106. Spring clip.

**DETAIL OF GAS VALVE SOLENOID**



**26 CONTROL BOX ASSEMBLY - Exploded view**



**LEGEND**

(Numbers up to 51 relate to the B.G. spares list)

- 107. Control box front cover.
- 21. Thermostat potentiometer.
- 108. Printed circuit board retaining clips.
- 25. Printed circuit board.
- 109. Control box lid.
- 110. Control box lid fixing screws.
- 111. Mains input connector.
- 112. Strain relief bushes.
- 113. Central fixing screw.
- 20. Control box.
- 26. Mains ON / OFF switch.
- 24. Thermostat knob.

# SERVICING

# SHORT LIST OF PARTS

The following list comprises parts commonly required as replacement components due to damage, expendability, or such that their failure or absence is likely to affect safety or performance.

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

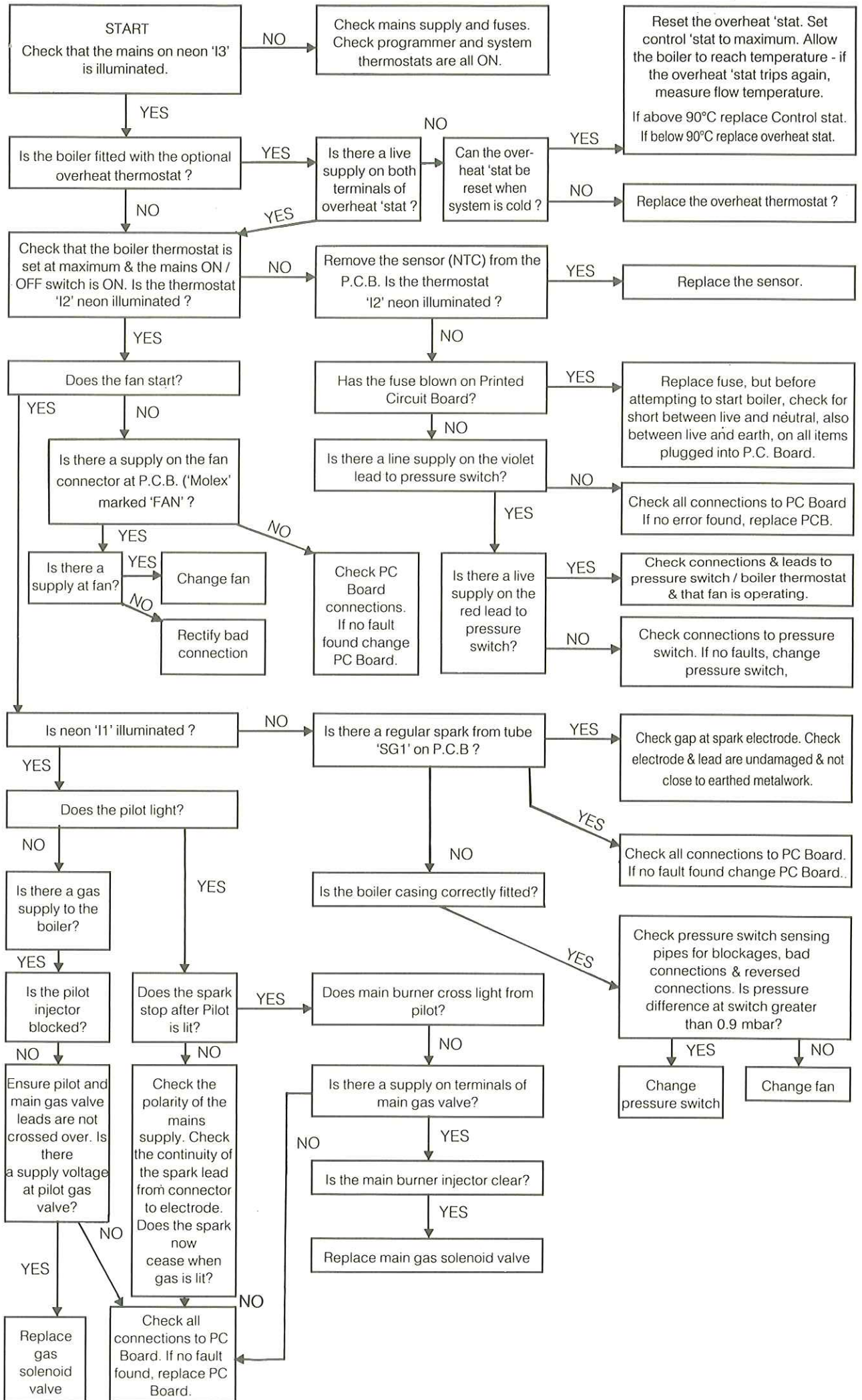
Details of the British Gas Lists are held by Gas regions, CARADON Distributors and by Merchants.

**Ideal Classic NF 30, NF 40, NF 50, NF 60, NF 70 and NF 80 Gas Boilers.**

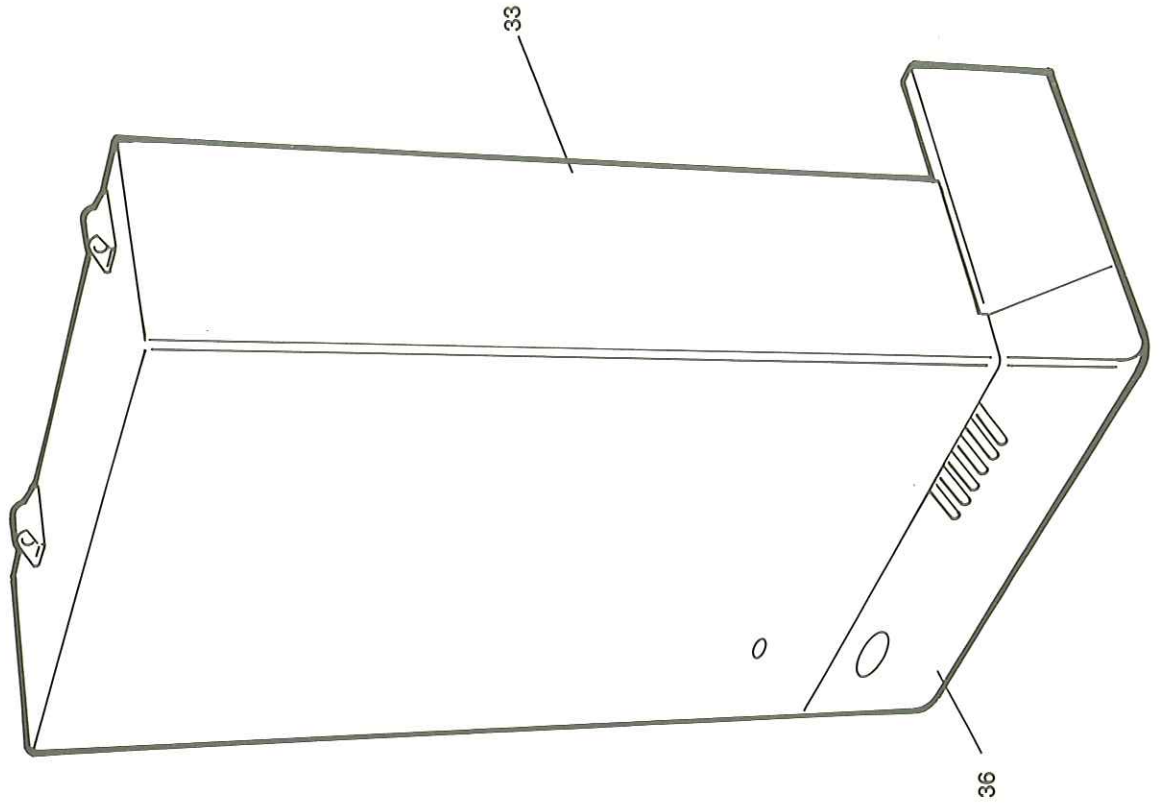
When ordering spares please quote:

1. Boiler Model
2. Appliance G.C. Number
3. Description
4. Maker's Part Number
5. Quantity

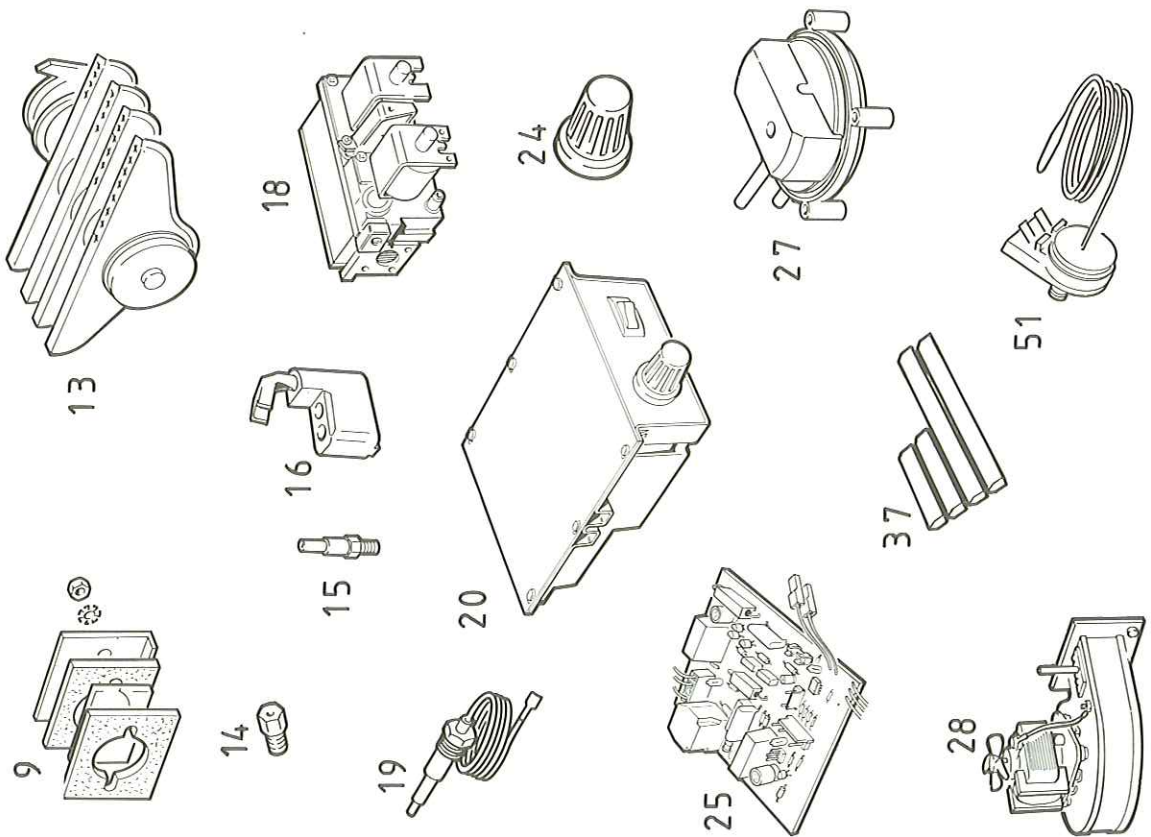
Key No.	G.C. Part No.	Description	No. Off	Product Code N o.
9	319 493	Sightglass assembly kit.	1	079 333
13		Main burner.		
	386 143	AEROMATIC No. AC 19/123 265; NF 30 & NF 40	1	113 176
	386 137	AEROMATIC No. AC 19/123 262; NF 50 & NF 60	1	113 177
	386 142	AEROMATIC No. AC 19/123 264; NF 70 & NF 80	1	113 179
14		Main burner injector.		
	398 272	BRAY Cat. 16 - size 850; NF 30	1	004 385
	393 050	BRAY Cat. 10 - size 1150; NF 40	1	003 205
	398 329	BRAY Cat. 16 - size 1400; NF 50	1	003 962
	398 060	BRAY Cat. 10 - size 1800; NF 60	1	004 443
		BRAY Cat. 10 - size 2100; NF 70	1	
	398 066	BRAY Cat. 10 - size 2400; NF 80	1	004 444
15	386 150	Pilot burner injector. HONEYWELL 45900421 - 002 (Stamped 56 / 42A).	1	004 982
16	308 347	Pilot burner. HONEYWELL Q 359 A 1124	1	079 599
18	308 359	Gas control valve. HONEYWELL VR 4700 E 1042, 240 V	1	079 600
19	308 317	Ignition electrode. VERNITRON No. 1414	1	113 172
20	308 281	Control box, including control thermostat potentiometer, control thermostat, sensor lead, control thermostat knob and mains ON / OFF switch.	1	137 656
24	308 283	Control thermostat knob.	1	079 601
25	386 149	Automatic ignition printed circuit board. PACTROL P.C.B. No. 25 B	1	079 716
27	308 285	Pressure switch, BECK 911 . 81 L	1	137 990
28	386 220	Fan assembly. SIFAN No. FFB 0224 - 004 or	1	137 568
33	308 320	Boiler casing assembly - white stove enamel, with sightglass and foil insulation.	1	079 706
36	308 328	Controls casing door - white plastic, with Lighting Instructions.	1	079 709
37	308 331	Boiler sealing pack.	1	079 605
51	386 144	Overheat thermostat, RANCO LM 7 - P 8508 (sealed systems only)	1	113 200



**28 BOILER CASING ASSEMBLY**



**27 SHORT PARTS**





**THIS SYMBOL IS YOUR  
ASSURANCE OF QUALITY**

These appliances are designed for use with Natural Gas only. They have been tested and conform with the provisions of BS. 6332 and BS. 5258.



**CERTIFIED PRODUCT**  
Manufactured under a BS 5750 Quality  
System accepted by BSI

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

**CARADON IDEAL Ltd,**

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Registered Office; National Avenue, Kingston upon Hull,  
North Humberside, HU5 4JN.

*A subsidiary of Caradon p.l.c*

August 1994 111 751 A02

**i Ideal** BOILERS

## **Customer Care & Technical Support**

*Please use the following numbers for speedy assistance.*

**Spares.** ..... Tel: 01482 498 643

**Customer Care &  
Technical Support.** ..... Tel: 01482 498 610

..... Fax: 01482 498 666

**Publications/literature.** ..... Tel: 01482 498 467