

installation and servicing

Classic

Your Ideal installation and servicing guide

FF 350P - 380P

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

i *ldeal* BOILERS
ENGINEERED FOR PEACE OF MIND

GENERAL

Table 1 - General Data

| Boiler Size | | | FF 350 P | FF 360 P | FF 380 P |
|-----------------------------|--------------|----------|--|----------|----------------------|
| Gas supply connection | | | Rc 1/2 (1/2) | | |
| Flow connection | | | 22mm copper | | 28mm copper (FEMALE) |
| Return connection | | | 22mm copper | | 28mm copper (FEMALE) |
| Maximum static water head | m (ft.) | | 30.5 (100) | | |
| Minimum static water head | m (ft.) | | 0.45 (1.5) | | |
| Electrical supply | | | 230 V ~ 50 Hz Boiler power consumption; 100W | | |
| Fuse rating | | | External; 3A Internal; F1A to BS.4265 | | |
| Water content | litre (gal.) | | 3.65 (0.8) | | 4.65 (1.0) |
| Dry Weight | | | | | |
| | kg (lb) | | 46.6 (102.8) | | 52.6 (116.0) |
| Maximum installation weight | kg (lb) | | 37.4 (82.5) | | 43.1 (95.0) |
| 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 | | | FF 350 P | FF 360 P | FF 380 P |
|-------------------------------|----------------|--|-------------|-------------|-------------|
| Boiler input | kW | | 18.3 | 21.9 | 29.3 |
| | (Btu/h) | | (62 500) | (74 700) | (100 000) |
| Gas consumption | l/s (ft³/h) | | 0.20 (25.0) | 0.23 (29.2) | 0.30 (38.1) |
| Boiler output | kW | | 14.7 | 17.6 | 23.5 |
| | (Btu/h) | | (50 000) | (60 000) | (80 000) |
| Burner Setting | mbar | | 35.9 | 35.8 | 34.8 |
| pressure (HOT) | (in.w.g.) | | (14.4) | (14.4) | (14.0) |
| Inlet pressure | mbar (in.w.g.) | | 37.0 (14.8) | | |
| Seasonal efficiency (SEDBUK)* | Band D | | [82.0]% | [80.4]% | [80.4]% |

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

To obtain the gas consumption:

- a. For l/s divide heat input (kW) by C.V. of the gas (MJ/m³)
- b. For ft³/h divide heat input (Btu/h) by C.V. of the gas (Btu/ft³)

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

Classic FF Propane Gas only

B.G. Certified - P.I. No. **87 AP 107**

Destination Countries: GB and IE

Appliance type:

..... C₁₂ & C₃₂

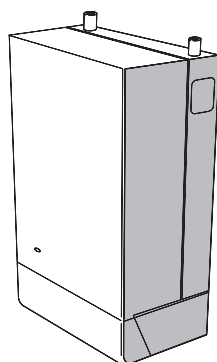
..... C₇₂ (360P,380P only)

Data Badge: on top of the controls support

Models

G.C. Appliance No.

| | |
|------------------|-----------|
| Classic FF 350 P | 41 392 06 |
| Classic FF 360 P | 41 392 07 |
| Classic FF 380 P | 41 392 08 |



Key to symbols

IE = Ireland

GB = United Kingdom (Countries of destination)

PMS = Maximum operating pressure of water

C₁₂ & C₃₂ =

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

C₇₂ =

A room sealed appliance designed for connection via concentric vertical ducts and a draught diverter located in the roof space to a secondary flue. The combustion air is taken from the roof space. The fan is down stream of the combustion chamber.

I_{3P} = An appliance designed for use on 3rd Family gas, Group P only.

CONTENTS

| | |
|---------------------------------|----|
| Air Supply | 7 |
| Boiler Clearances | 5 |
| Boiler Exploded View | 11 |
| Burner Exploded View | 38 |
| Control Box Exploded View | 38 |
| Electrical Connections | 22 |
| Electrical Regulations | 7 |
| Extension Ducts - Fitting | 21 |
| External Controls | 22 |
| Fault Finding | 35 |
| Flue Installation | 6 |
| Rear installation | 14 |
| Side installation | 17 |
| Gas Safety | 4 |
| Gas Supply | 6 |
| Health & Safety Document | 4 |
| Initial lighting | 25 |
| Installation | 11 |
| Mandatory Requirements | 4 |
| Pump | 8 |
| Servicing | 27 |
| Short List of Parts | 36 |
| Spares Replacement | 29 |
| System Diagrams | 23 |
| Terminal Guards | 6 |
| Water and Systems | 7 |
| Water Treatment | 7 |

BENCHMARK LOG BOOK DETAILS

| Boiler | Page |
|---|--|
| Make and model | 3 |
| Appliance Serial No. on Data Badge | 11 |
| Controls | as applicable |
| For all boilers | |
| Flushing to BS.7593 | 7 |
| Inhibitor | 7 |
| Gas inlet working pressure | 2 |
| Burner operating pressure | 2 |
| Heat input | to be calculated |
| Temperature differential | measure and record |
| For combination boilers only | Not applicable |
| For domestic hot water mode | Not applicable |
| For condensing boilers | Not applicable |
| For all boilers: | complete, sign & hand over to customer |

For assistance see Technical Helpline on the back page

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



INTRODUCTION

The **Classic FF350-380 Propane** is a range of automatically fully controlled, wall mounted, balanced flue, fanned gas boilers.

The heat exchanger is cast iron. The boiler casing is of white enamelled mild steel.

The boiler casing has a removable controls pod containing a drop-down door. The boiler thermostat is located behind the drop-down door.

Note.

These boilers cannot be used on systems which include gravity circulation.

If gravity circulation is required the **Classic RS** range of boilers is suitable.

See Frame 1 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") to 600 mm (23 1/2").

The boilers are suitable for connection to the following open vented or sealed systems:

- Fully pumped CH and indirect DHW
- Pumped heating only.
- Pumped indirect DHW only.

OPTIONAL EXTRA KITS

Downward Piping Kit

Programmer Kit.

Vertex Flue Kit. For vertical flue connection

Roof Flue Kit.

**90° Flue Elbow
Turret Kit**

Sealed System Unit. Fits on top of the appliance.

Extension ducts. Up to 3 m (118").

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

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

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

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

| | |
|-----------|--|
| BS.5482 | Domestic butane and propane burning appliances |
| 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 and 3rd 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. |
| BS.7593 | Treatment of water in domestic hot water central heating systems. |

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 Ideal Limited** in writing. If in doubt please enquire.

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

SAFE HANDLING OF SUBSTANCES

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

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 must not be fitted outside.**

Timber Framed Buildings

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

Bathrooms

This range of appliances is rated **IP 1XB**.

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

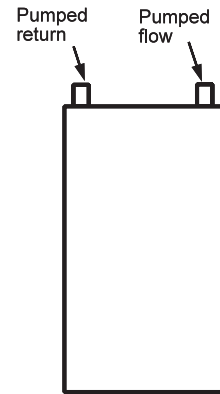
GENERAL

1 BOILER WATER CONNECTIONS

This appliance is NOT suitable for use in a direct hot water system or for gravity circulation.

FF 380P boiler ONLY

must be fitted with the 22mm x 28mm copper sockets, provided in the Hardware Pack (or equivalent 22mm x 28mm compression fittings), and the pumped flow and return pipes run in 28mm pipe.



2 BOILER CLEARANCES

The following minimum clearances must be maintained for operation and servicing

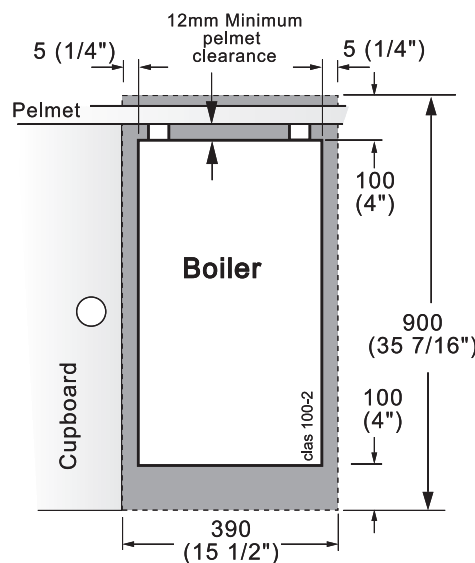
Additional space will be required for installation, depending upon site conditions.

Side and Rear Flue

- Provided that the flue hole is cut accurately, e.g. with a core drill, the flue can be installed from inside the building.

Installation from inside ONLY

- 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.
- If using the Complete Sealed System Unit then refer to the instructions packed with the unit for the necessary clearances.



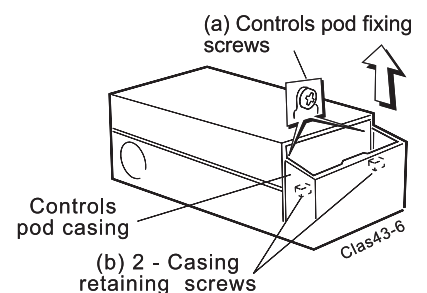
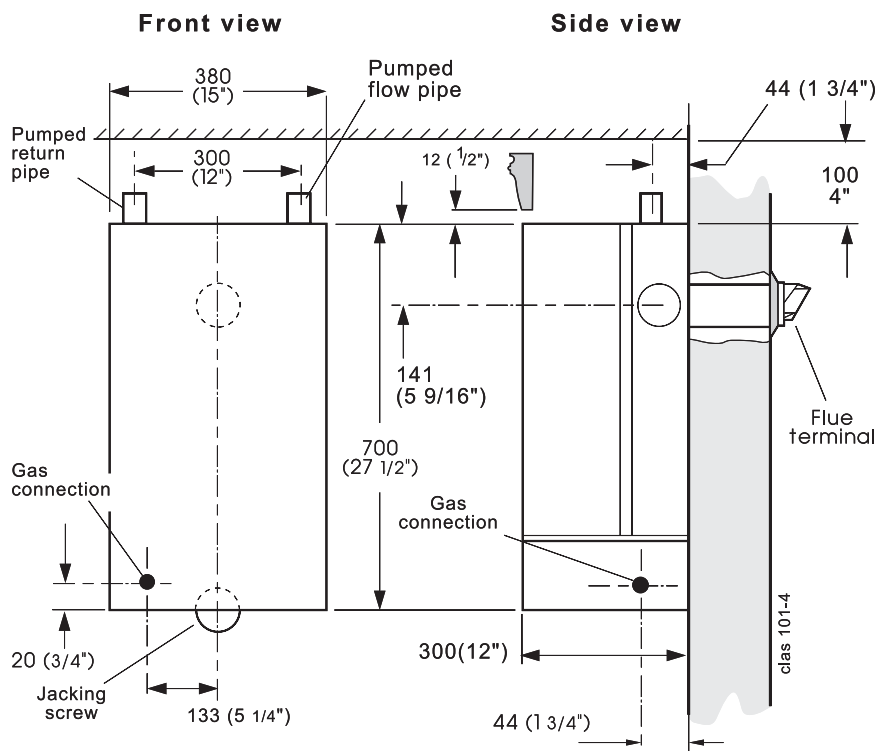
Front clearance: 533mm (21") from the front of the boiler casing.

Minimum front clearance when built in to cupboard is 75 mm (3").

Pelmet restrictions.

If the ability to fit or remove the casing during installation and subsequent servicing is impaired by pelmets etc. this operation can be made easier by first removing the controls pod casing in line with the following instructions:

- Release the controls pod casing fixing screws (a) 3 full turns only. Remove the pod by pulling it forward to disengage from the keyhole slots.
- Undo the 2 screws (b) retaining casing to the back panel.
- The casing can now be removed in the direction of the arrow, first lifting the casing slightly to disengage the casing top return from the back panel. (For this purpose a minimum clearance of 12mm is required between the top of the boiler and pelmet or other similar obstruction.



GENERAL

I.E.E. (BS.7671) Wiring Regulations and, in Scotland, the electrical provisions of the building regulations applicable in Scotland with respect to the installation of the boiler in a room or internal space containing a bath or shower.

If the appliance is to be installed in a room containing a bath or shower then, providing waterjets are not going to be used for cleaning purposes (such as communal baths/showers), the appliance can be installed in Zone 3, as detailed in BS.7671.

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

Compartment Installations

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

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

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

- BS. 6798.
- The position selected for installation MUST allow adequate space for servicing in front of the boiler and for air circulation around the boiler, see section on 'Air Supply'.
- For the minimum clearances required for safety and subsequent service, see the wall mounting diagram, Frame 2. In addition, sufficient space may be required to allow lifting access to the wall mounting plate.

GAS SUPPLY

A local propane supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas.

Installation pipes, cylinders and pressure regulators MUST be fitted in accordance with BS. 5482.1.

Pipework from the supply to the boiler MUST be of an adequate size.

Bulk tank installations must comply with the Home Office code of practice for the storage of liquefied petroleum gas at fixed installations.

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

FLUE INSTALLATION

Plumbing may occur at the terminal so terminal positions which would cause a nuisance should be avoided.

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

The following notes are intended for general guidance.

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

**Table 3 - Balanced flue terminal position
Approved Manufacturer's Clearances**

| Terminal Position | Minimum Spacing |
|--|-----------------|
| 1a. Directly BELOW an opening, air brick, opening window, etc. | 300 mm (12") |
| 1b. Directly ABOVE an opening, air brick, opening window, etc. | 300 mm (12") |
| 1c. HORIZONTALLY to an opening, air brick, opening window, etc. | 300 mm (12") |
| 2. Below guttering, drain pipes or soil pipes | 25 mm (1") |
| 3. Below eaves | 25 mm (1") |
| 4. Below balconies or a car port roof | 25 mm (1") |
| 5. From vertical drain pipes or soil pipes | 25 mm (1") |
| 6. From internal or external corners | 25 mm (1") |
| 7. Above adjacent ground, roof or balcony level | 300 mm (12") |
| 8. From a surface facing the terminal | 600 mm (24") |
| 9. From a terminal facing a terminal | 1200 mm (48") |
| 10. From an opening in a car port (e.g. door or window) into dwelling | 1200 mm (48") |
| 11. Vertically from a terminal on the same wall | 1500 mm (60") |
| 12. Horizontally from a terminal on the wall | 300 mm (12") |

Nos. 2,3, 4, 5 and 6 would be 75mm in order to allow a terminal guard to be fitted.

Terminals guards are available from boiler suppliers. Ask for TFC Flue Guard, Model K1. In case of difficulty seek advice from:

Grasslin (UK) Ltd., Tower House,
Vale Rise, Tonbridge, Kent TN9 1TB
Telephone No. 01732 359888. Fax 01732 354445
www.tfc-group.co.uk

Ensure that the guard is fitted centrally.

5. The flue assembly shall be so placed or shielded as to prevent ignition or damage to any part of any building.
6. The air inlet/products outlet duct and the terminal of the boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS.5440-1:2000.
7. Where it is essential that the terminal wall plate is fitted, i.e. wall thicknesses over 600mm (23 1/2") or with an inaccurately cut hole, the minimum spacing in Table 3 Nos. 2,3, 4, 5 and 6 would be 60mm (2 1/2") 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, labelled 'unsafe' and corrective action taken.

TERMINAL

The terminal assembly can be adapted to accommodate various wall thicknesses. Refer to Frame 10.

GENERAL

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 in Table 4 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 Table 4 for details of air vent position and sizing.

Table 4 - High and low vent areas

| Boiler | Air from room/internal space cm ² (in ²) | Air direct outside cm ² (in ²) |
|----------|---|---|
| FF 350 P | 170 (26) | 83 (13) |
| FF 360 P | 198 (31) | 102 (16) |
| FF 380 P | 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 refer to 'Introduction' and Frame 1.

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 and ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing - particularly where pipes run through roof spaces and ventilated under floor spaces.

The boiler must be vented (not on sealed system).

IMPORTANT

A minimum length of 1m of copper pipe MUST be fitted to both flow and return connections from the boiler before connection to any plastic piping. **This applies to ALL types of installation.**

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" BSP nominal size and 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 5.

Maximum boiler operating temperature should be 82 °C (180°F).

Table 5 - Water flow rate and pressure loss

| Boiler Size | | FF 350 P | FF 360 P | FF 380 P |
|-------------|---------|----------|----------|----------|
| Boiler | kW | 14.7 | 17.6 | 23.5 |
| Output | Btu/h | 50 000 | 60 000 | 80 000 |
| Water Flow | l/min | 19.0 | 22.8 | 30.3 |
| Rate | gal/h | 250 | 300 | 400 |
| Pressure | mbar | 31.5 | 41.7 | 77.0 |
| Loss | in w.g. | 12.6 | 16.7 | 30.9 |

WATER TREATMENT

These boilers incorporate a cast iron heat exchanger. As part of the installation the central heating system should be thoroughly flushed with appropriate water treatment in order to comply with BS7593:1992.

Caradon Ideal Limited recommend the use of Fernox or G E Betz water treatment products, which must be used in accordance with the manufacturers instructions. For further information contact :-

Fernox Manufacturing Co. Ltd, c/o Cookson Electronics, Forsyth Road, Sheerwater, Woking, Surrey. GU21 5RZ. Tel. 01799 550811 or

Sentinel Division, G E Betz Ltd, Foundry Lane, Widnes, Cheshire, WA8 8UD. Tel. 0151 420 9563

Important: Any other treatment for this product will render the guarantee of **Caradon Ideal Limited** INVALID.

Notes.

1. If an inhibitor is used, and in hard water areas where treatment to prevent lime deposits is necessary, it is most important that the water treatment MUST be maintained at the correct concentrations recommended by the treatment manufacturer.
2. Artificially softened water must not be used in the system, under any circumstances.

THERMOSTATIC RADIATOR VALVES

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

When thermostatic radiator valves are used, the space heating temperature control over a living / dining area or hallway having a heating requirement of at least 10% of the boiler heat output should be achieved using a room thermostat, whilst other rooms are individually controlled by thermostatic radiator valves. However, if the system employs thermostatic radiator valves on all radiators or two port valves without end switches then a bypass must be fitted to ensure a flow of water should all valves be in the closed position.

ELECTRICAL SUPPLY

WARNING. The appliance MUST be efficiently earthed.

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

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.

GENERAL

3 OPEN VENT SYSTEM REQUIREMENTS - FULLY PUMPED.

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 150mm (6") away from the vent connection.

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

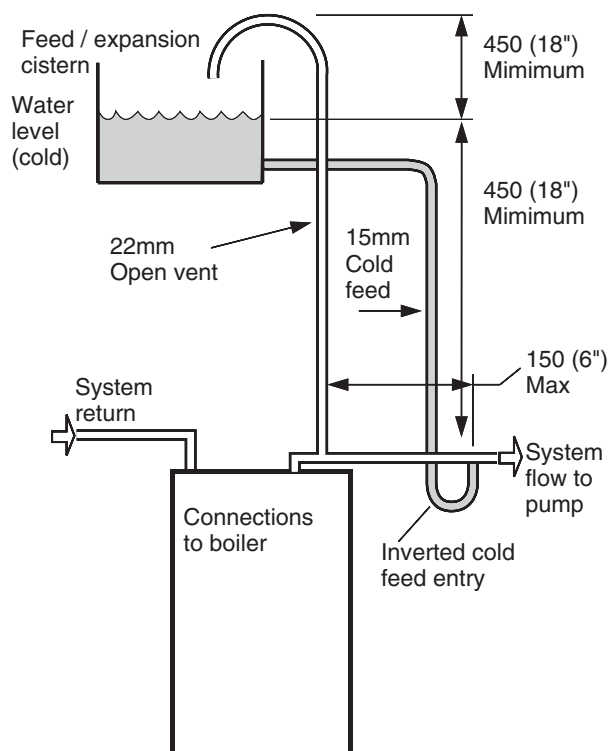
The vertical distance between the highest point of the system and the feed/expansion cistern water level **MUST** not be less than 450mm (18").

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 Ideal Limited**.

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.



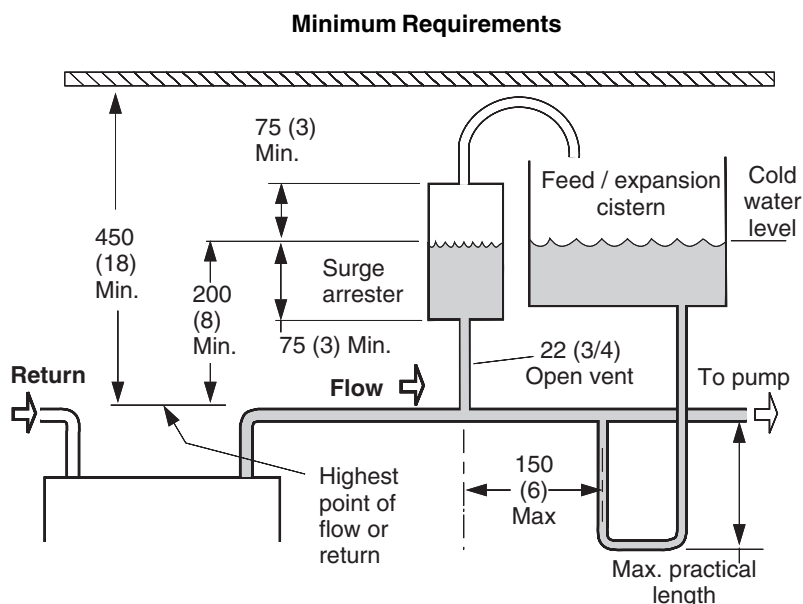
4 LOW HEAD INSTALLATIONS

The **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:

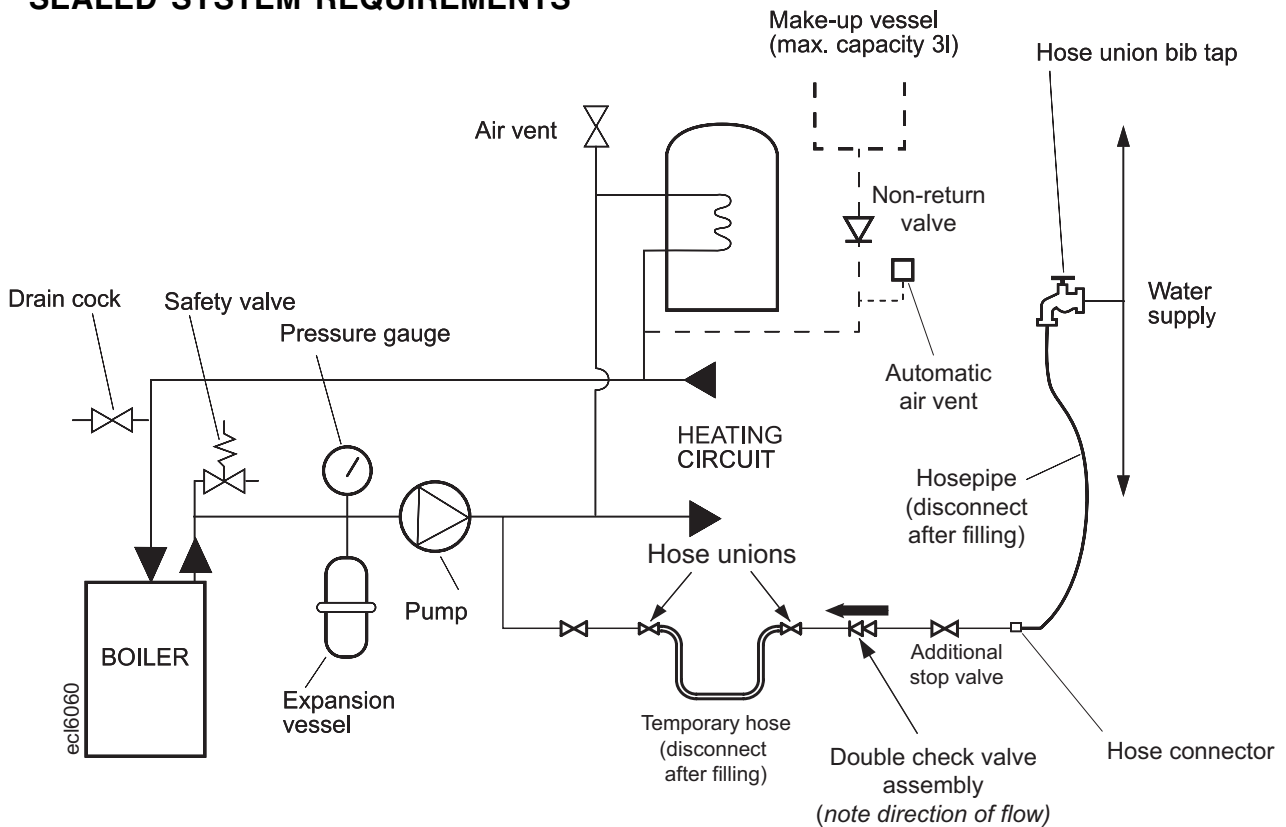
1. The surge arrester must be at least 42mm in diameter x 150mm long, thus ensuring a MINIMUM air gap and a MINIMUM depth of water below the static water level (cold) of 75mm.
2. The static water level (cold) must be at least 200mm above the top of the horizontal flow pipe, fitted as shown. The vent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

Note. *The pump manufacturers minimum requirements must be complied with.*



All dimensions in mm (in.). **NB.** Imperial dimensions are approximate.

5 SEALED SYSTEM REQUIREMENTS



Note.

The method of filling, refilling, topping up or flushing sealed primary hot water circuits from the mains via a temporary hose connection is only allowed if acceptable to the local water authority.

1. General

- The installation must comply with the requirements of BS.6798 and BS.5449.
- The installation should be designed to work with flow temperatures of up to 82°C.
- All components of the system, including the heat exchanger of the indirect cylinder, must be suitable for a working pressure of 3 bar (45 lb/in²) and temperature of 110°C. Care should be taken in making all connections so that the risk of leakage is minimised.

2. Safety Valve

A spring loaded safety valve complying with the relevant requirements of BS.6759 must be fitted in the flow pipe, as close to the boiler as possible and with no intervening valve or restriction. The valve should have the following features:

- A non-adjustable pre-set lift pressure not exceeding 3 bar (45 lb./in²)
- A manual testing device.
- Provision for connection of a discharge pipe. *The valve or discharge pipe should be positioned so that the discharge of water or steam cannot create a hazard to the occupants of the premises or cause damage to electrical components and wiring.*

3. Pressure Gauge

A pressure gauge covering at least the range 0-4 bar (0-60lb./in²) must be fitted to the system. The gauge should be easily seen from the filling point and should preferably be connected at the same point as the expansion vessel.

4. Expansion Vessel

- A diaphragm type expansion vessel must be connected at a point close to the inlet side of the pump, the connecting pipe being not less than 15mm (1/2" nominal) size and not incorporating valves of any sort.
- The vessel capacity must be adequate to accept the expansion of the system water when heated to 110°C (230°F)
- The charge pressure must not be less than the static water head above the vessel. The pressure attained in the system when heated to 110°C (230°F) should be at least 0.35 bar (5lb/in²) less than the lift pressure of the safety valve.

For guidance on vessel sizing refer to the table in Frame 6. For further details refer to BS.5449 and the British Gas Corporation publication : Material and Installation Specifications for Domestic Central Heating & Hot Water.

5. Cylinder

The cylinder must be either of the indirect coil type or a direct cylinder fitted with an immersion calorifier which is suitable for operating on a gauge pressure of 0.35 bar (5lb./in²) in excess of the safety valve setting. *Single feed indirect cylinders are not suitable for sealed systems.*

6. Make-up Water

Provision must be made for replacing water loss from the system, either:

- From a manually fitted make-up vessel with a readily visible water level. The vessel should be mounted at least 150mm (6") above the highest point of the system and be connected through a non-return valve to the system, fitted at least 300mm (12") below the make-up vessel on the return side of the domestic hot water cylinder or radiators.
- Where access to a make-up vessel would be difficult by pre-pressurisation of the system. Refer to 'Filling.'

6 SEALED SYSTEM REQUIREMENTS - cont.

7. Mains Connection

There must be no direct connection to the mains water supply or to the water storage tank supplying domestic water, even through a non-return valve, without the approval of the local water authority.

8. Filling

The system may be filled by one of the following methods:

- a. Through a cistern, used for no other purposes, via a ball valve permanently connected directly to a service pipe and / or a cold water distributing pipe.

The static head available from the cistern should be adequate to provide the desired initial system design pressure. The cold feed pipe from the cistern should include a non-return valve and a stop valve with an automatic air vent connected between them, the stop valve being located between the system and the automatic air vent. The stop valve may remain open during normal operation of the system if automatic water make-up is required.

- b. Through a self-contained unit comprising a cistern, pressure booster pump (if required) and, if necessary, an automatic pressure reducing valve and flow restrictor. The cistern should be supplied through a temporary connection from a service pipe or cold water distributing pipe.

This unit may remain permanently connected to the heating system to provide limited automatic water make-up. Where the temporary connection is supplied from a service pipe or distributing pipe which also

supplies other draw-off points at a lower level then a double check valve shall be installed upstream of the draw-off point.

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

The following fittings shall form a permanent part of the system and shall be fitted in the order stated:

A stop valve complying with the requirements of BS. 1010, Part 2 (the hose from the draw-off tap shall be connected to this fitting).

A test cock.

A double check valve of an approved type.

- Thoroughly flush out the whole of the system with cold water, without the pump in position.
- With the pump fitted, fill and vent the system until the pressure gauge registers 1.5 bar (21.5lb/in²).

Examine for leaks.

- Check the operation of the safety valve by manually raising the water pressure until the valve lifts. This should occur within ± 0.3 bar (± 4.3 lb/in²) of the pre-set lift pressure.
- Release water from the system until the initial system design pressure is reached.
- Light the boiler and heat the system to the maximum working temperature. Examine for leaks.
- Turn off the boiler and drain the system while still hot.
- Refill and vent the system.

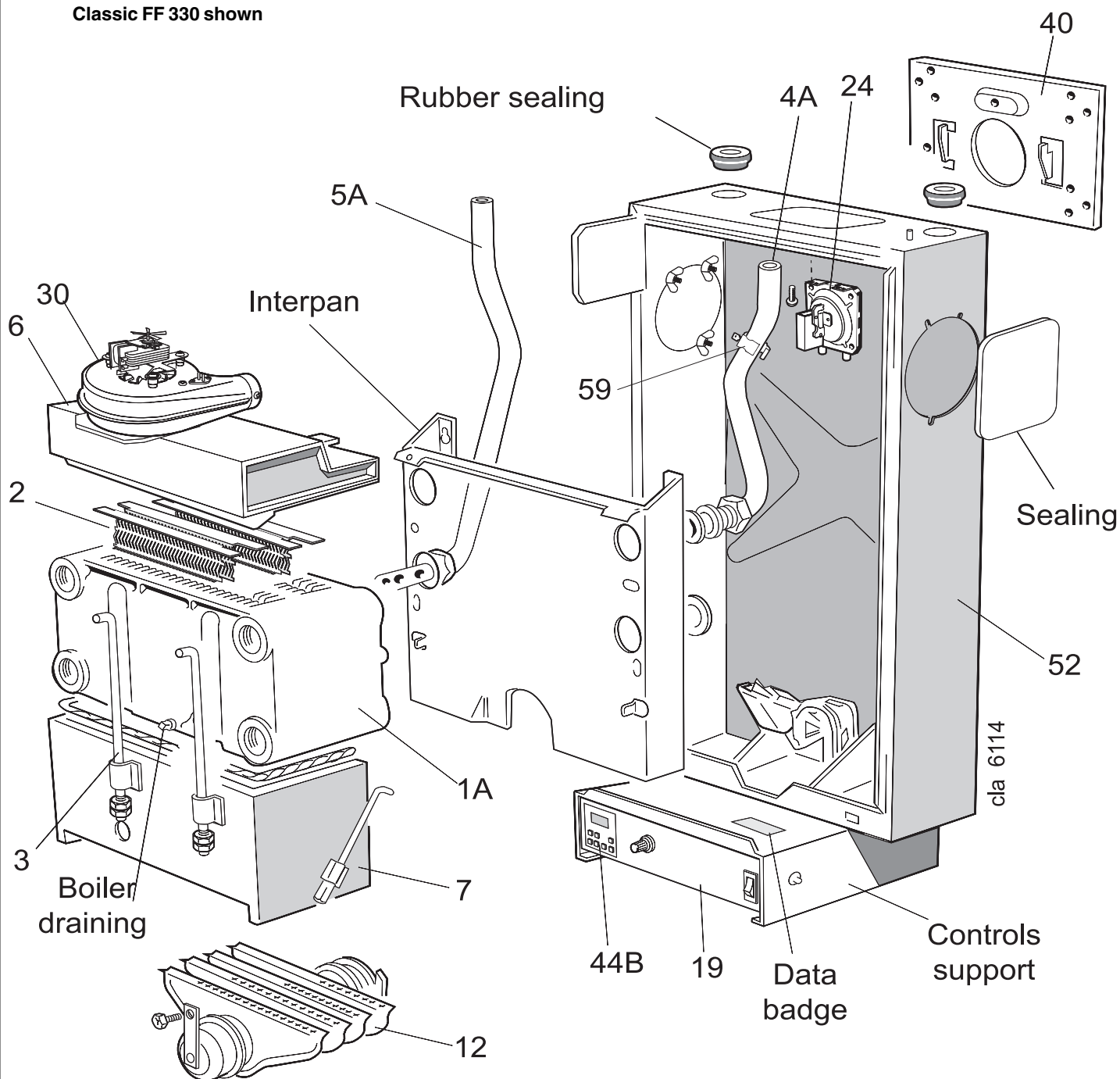
Sizing procedure for expansion vessels: The volume of the expansion vessel (litres) fitted to a sealed system shall not be less than that given by the table on the following page, multiplied by a factor of 0.8 (for flow temperatures of less than 88 °C).

| Safety valve setting | 3.0 bar | | | 2.5 bar | | | 2.0 bar | |
|---|----------------------------------|---------|---------|---------|---------|---------|---------|---------|
| Vessel charge and initial system pressure | 0.5 bar | 1.0 bar | 1.5 bar | 0.5 bar | 1.0 bar | 1.5 bar | 0.5 bar | 1.0 bar |
| Total water content of system (litres) | Expansion vessel volume (litres) | | | | | | | |
| 25 | 2.1 | 2.7 | 3.9 | 2.3 | 3.3 | 5.9 | 2.8 | 5.0 |
| 50 | 4.2 | 5.4 | 7.8 | 4.7 | 6.7 | 11.8 | 5.6 | 10.0 |
| 75 | 6.3 | 8.2 | 11.7 | 7.0 | 10.0 | 17.7 | 8.4 | 15.0 |
| 100 | 8.3 | 10.9 | 15.6 | 9.4 | 13.4 | 23.7 | 11.3 | 20.0 |
| 125 | 10.4 | 13.6 | 19.5 | 11.7 | 16.7 | 29.6 | 14.1 | 25.0 |
| 150 | 12.5 | 16.3 | 23.4 | 14.1 | 20.1 | 35.5 | 16.9 | 30.0 |
| 175 | 14.6 | 19.1 | 27.3 | 16.4 | 23.4 | 41.4 | 19.7 | 35.0 |
| 200 | 16.7 | 21.8 | 31.2 | 18.8 | 26.8 | 47.4 | 22.6 | 40.0 |
| 225 | 18.7 | 24.5 | 35.1 | 21.1 | 30.1 | 53.3 | 25.4 | 45.0 |
| 250 | 20.8 | 27.2 | 39.0 | 23.5 | 33.5 | 59.2 | 28.2 | 50.0 |
| 275 | 22.9 | 30.0 | 42.9 | 25.8 | 36.8 | 65.1 | 31.0 | 55.0 |
| 300 | 25.0 | 32.7 | 46.8 | 28.2 | 40.2 | 71.1 | 33.9 | 60.0 |
| Multiplying factors for other system volumes | 0.0833 | 0.109 | 0.156 | 0.094 | 0.134 | 0.237 | 0.113 | 0.20 |

INSTALLATION

7 BOILER ASSEMBLY - Exploded view

Classic FF 330 shown



LEGEND

- | | | |
|-------------------------|-----------------------------|-----------------------------|
| 1A. Heat exchanger. | 6. Collector hood assembly. | 30. Fan. |
| 2. Flue baffles. | 7. Combustion chamber. | 40. Wall mounting plate. |
| 3. Tie rods. | 12. Main burner. | 44B. Programmer (optional). |
| 4A. Pumped flow pipe. | 19. Control box. | 52. Back panel. |
| 5A. Pumped return pipe. | 24. Pressure switch. | 59. Limit thermostat. |

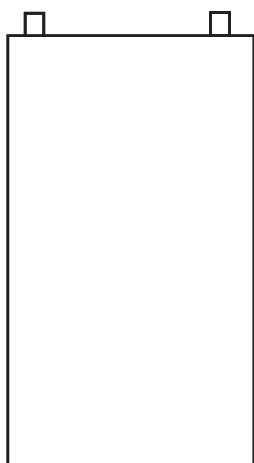
8 UNPACKING

The boiler is supplied fully assembled in **Pack A**, together with a standard flue assembly for lengths up to 600mm (23 1/2"), rear or side flue outlet, in **Pack B**.

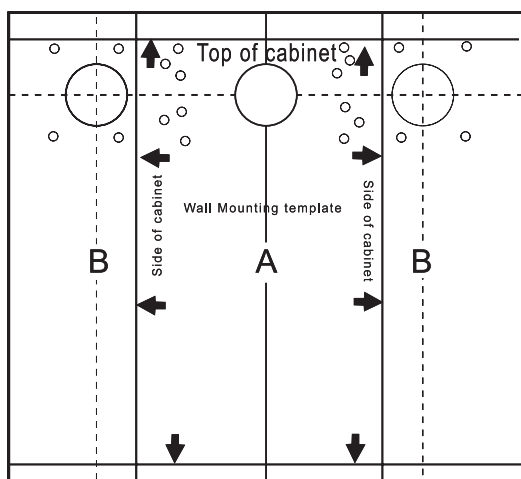
Unpack and check the contents.

Pack A Contents

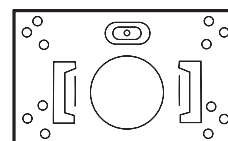
- The complete boiler
- Installation & Servicing Instructions
- User's Instructions
- Hardware Pack (listed below)
- Wall mounting template
- Wall mounting plate
- Side outlet terminal mounting plate
- Flue extension tube, 1 off
- Boiler sealing ring, 1 off



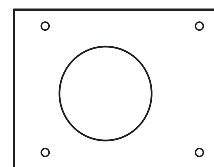
Complete boiler



Wall mounting template



Wall mounting plate



Side outlet terminal mounting plate

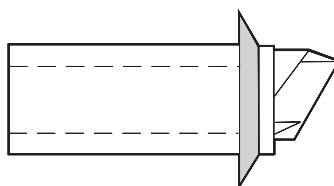
CL40-1

Hardware Pack Contents

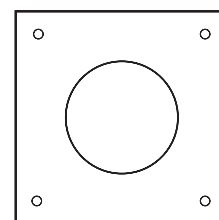
- 50mm x No. 14 wood screw, 4 off
- 50mm x No. 10 wood screw, 8 off
- Wall plug, 12 off
- M8 washer, 1 off
- 22mm x 28mm copper reducing socket (FF 380 P ONLY), 2 off
- M5 wing nut, 3 off
- Sealing plate, 1 off
- M8 x 12 lg. screw, 1 off

Pack B Contents

- Duct cutting support, 1 off (cardboard)
- Terminal wall plate, 1 off.
- Terminal grille assy, 1 off.
- Polyurethane foam seal 400 lg., 1 off.
- No. 8 x 8 lg. Pozi pan hd. screws, 3 off.



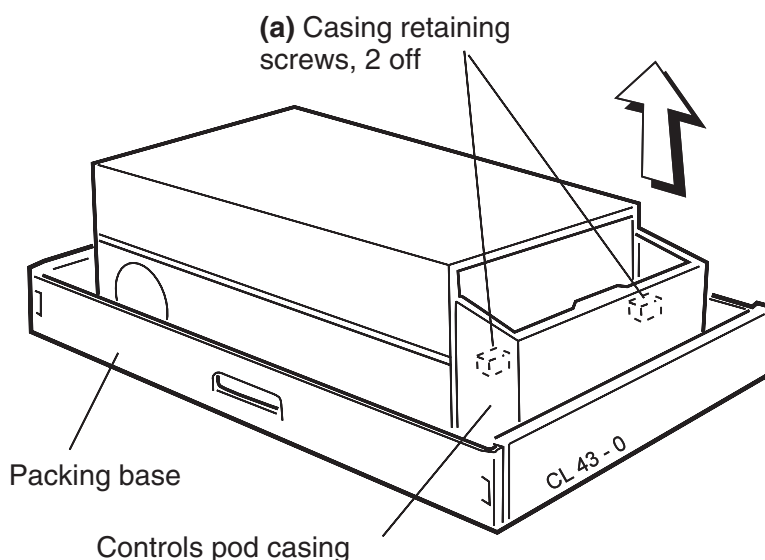
Flue terminal



Terminal wall plate

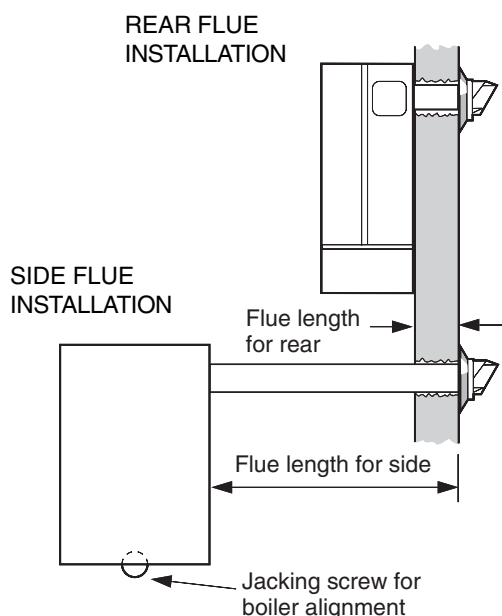
9 PACKAGING AND CASING REMOVAL

1. Unpack the boiler
2. Remove the casing as follows and place to one side to avoid damage.
 - a. Undo the 2 casing retaining screws (a) retaining the casing to the back panel.
 - b. Swing the bottom of the boiler casing up until the controls pod casing has cleared the controls then unhook the top from the back panel.
3. Remove the boiler from its packaging base. The boiler may now be stood upright on its controls support protection frame to ease handling and installation.
4. Unpack the boiler terminal box and, if applicable, the extension flue box(es)



10 DETERMINING THE FLUE LENGTH

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



Note.

Vertex and roof flue kits are available as optional extras for vertical flue installation, supplied with separate fitting instructions.

FLUE KITS

Pack B: supplied as standard.

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

1. A maximum of 3 extension ducts (plus the standard flue duct) may be used together.
2. Flue extensions of greater than 1m (39") should be supported with the bracket provided. If the stand off brackets have been used, it is necessary, in order to keep the flue aligned, to use the spacer bracket with the support bracket.

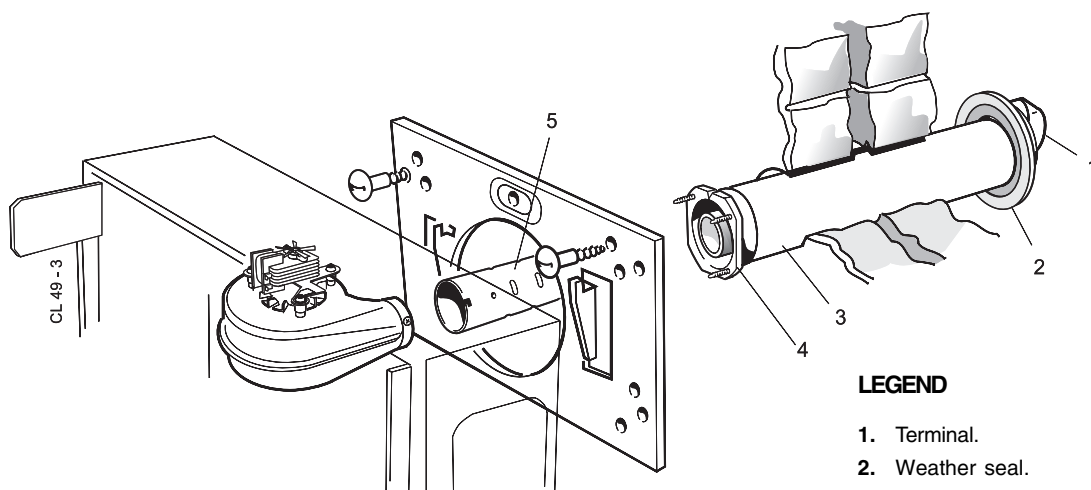
| Flue length mm | Accessories | Product No. |
|----------------|------------------------------|--------------------------|
| Up to 600 | B Pack 1 off | 150308 |
| 600 to 1550 | B Pack 1 off + D Pack, 1 off | 150308+153883 |
| 1550 to 2500 | B Pack 1 off + D Pack, 2 off | 150308+ 153883, 2 off |
| 2500 to 3000 | B Pack 1 off + D Pack, 3 off | 150308+ 153883, 3 off |

INSTALLATION

11 FLUE ASSEMBLY - Exploded View

1. An optional flue duct extension kit is required for wall thicknesses greater than 600mm (23 1/2") Refer to Frame 10.

2. When cutting the ducts, always use the cardboard support rings provided.



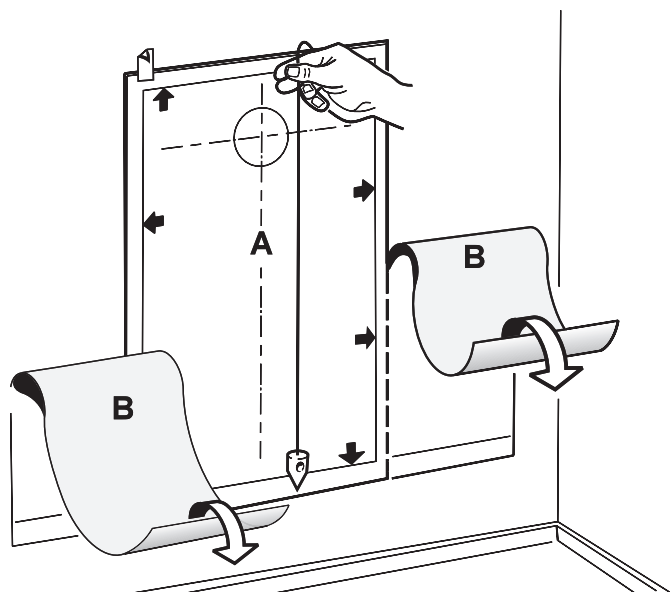
LEGEND

1. Terminal.
2. Weather seal.
3. Flue assembly.
4. Boiler sealing ring.
5. Flue extension tube.

12 WALL MOUNTING TEMPLATE

Note. The template shows the positions for the fixing holes and the flue hole centres for standard installation. Care must be taken to ensure the correct holes are drilled.

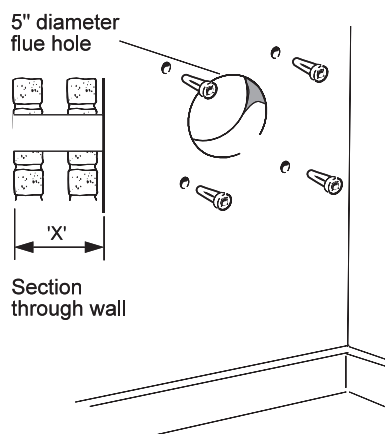
1. Separate the templates.
2. Tape the templates into the selected position.
3. Ensure squareness by hanging a plumb line as shown.
4. Mark onto the wall (if required) the following:
 - a. The wall mounting plate screw positions (choose one from each group). **Note.** Mark the centre of the flue hole as well as the circumference.
 - b. The position of the flue duct hole.
 - c. Downward pipe routing bracket screw positions
5. Remove the templates from the wall.



13 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 125mm (5") 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 125mm (5") diameter at the two wall faces.
2. Drill 4 holes for the wall mounting plate with an 8mm (5/16") masonry drill. If the stand-off brackets are used ensure the correct holes are chosen.
3. Insert the plastic plugs provided.



Note. Check all of the hole positions **BEFORE** drilling

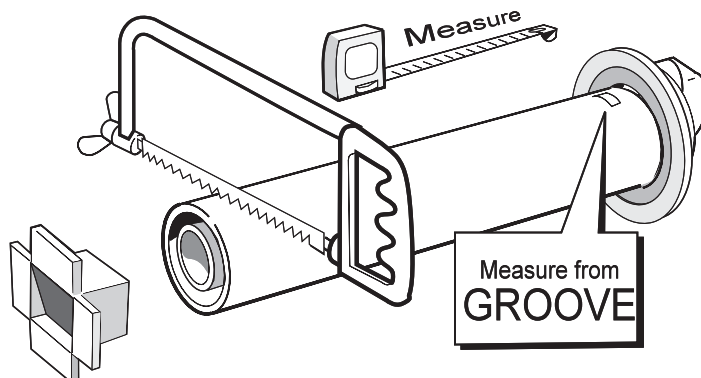
Note. If the terminal is to be sited within 25-40mm of a corner or vertical pipe (refer to Table 3) then the hole **MUST** be accurately cut and the rubber weather seal trimmed around the groove provided. The terminal wall plate need not be fitted.

INSTALLATION

14 CUTTING THE FLUE - wall thicknesses of 114 to 600mm

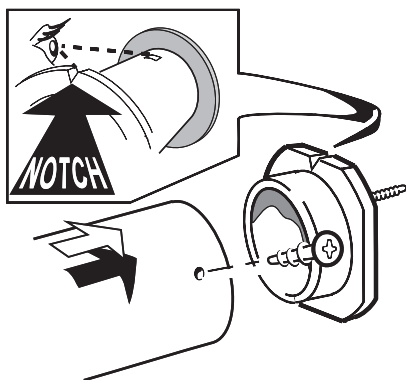
Note. If the stand-off brackets are used it is essential that 30mm is added to the measured wall thickness when marking the flue, (to allow for the thickness of the brackets).

1. Measure and note the wall thickness 'X'.
2. Mark the wall thickness onto the flue .
3. To ensure the tube is cut square, mark the flue all the way round.
4. Cut to length 'X', using the cardboard ring for support.
5. Remove cardboard ring and remove any burrs.



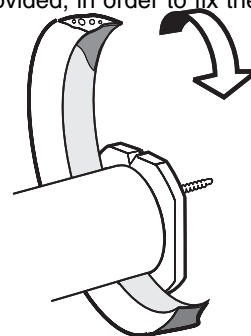
15 FITTING BOILER SEALING RING TO THE FLUE

1. Fit the boiler sealing ring inside the outer flue duct. Ensure boiler sealing ring is fully engaged. Ensure the notch aligns with the groove on the outer flue duct. This ensures correct alignment of the flue terminal.



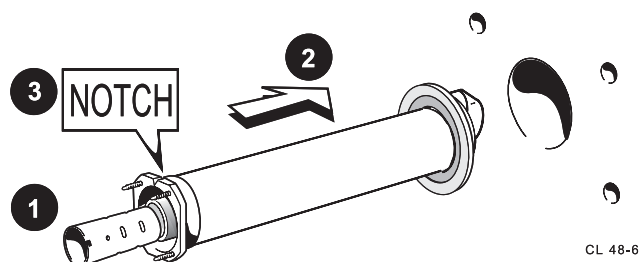
2. Drill 3 holes 3.2mm (1/8") dia. through the outer flue duct and boiler sealing ring. **Do NOT drill the inner flue duct.**

3. Insert the self tapping screws, provided, in order to fix the boiler sealing ring in position.
4. Stick the self adhesive foam strip, provided in the hardware pack, onto the flue immediately behind the boiler sealing ring.



16 FITTING THE FLUE ASSEMBLY

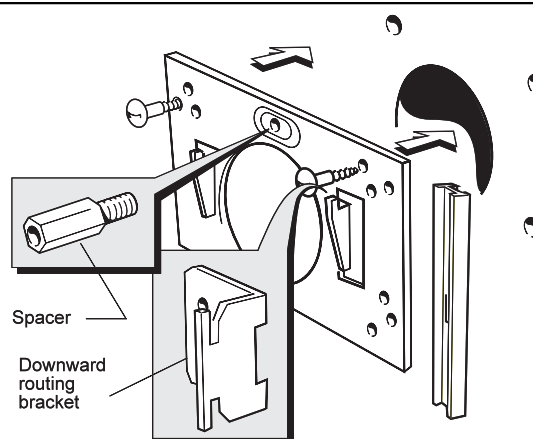
1. Insert the flue extension tube into the flue assembly.
2. Insert the flue assembly through the hole sufficiently far enough to allow the rubber seal to unfold completely and form an adequate seal on the outside wall.
3. Ensure the notch is at the top. This will aid the location of the studs into the boiler back panel.



CL 48-6

17 WALL MOUNTING PLATE

1. Fix the mounting plate to the wall with the No.14 x 50mm wood screws.
2. If the down ward routing of pipes is required, then the downward routing pipe brackets and M8 spacer (supplied in the Downward Piping Kit) should be fitted to the wall mounting plate now.
3. Fit the bottom 2 screws to secure the bracket(s) to the wall, through the wall mounting plate.
4. Check with a spirit level that the plate is vertical.



INSTALLATION

18 MOUNTING THE BOILER

Note. Have ready to hand the M8 screw, washer and rectangular plate supplied in the hardware pack. For downward routing of pipes the M5 spacer (supplied in the Downward Piping Kit) should now be fitted to the back of the boiler.

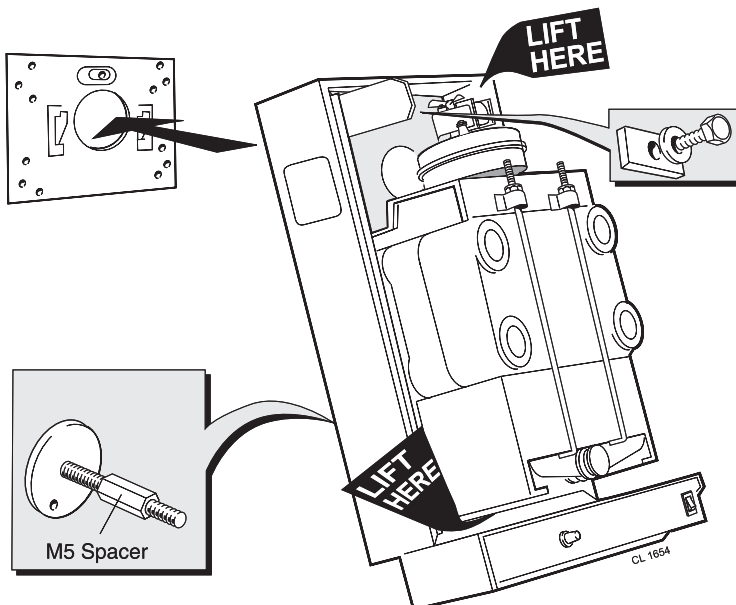
1. Lift the boiler onto the wall mounting plate hooks as shown.

Do not use the burner / controls for lifting

2. Fit the M8 screw washer and 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.

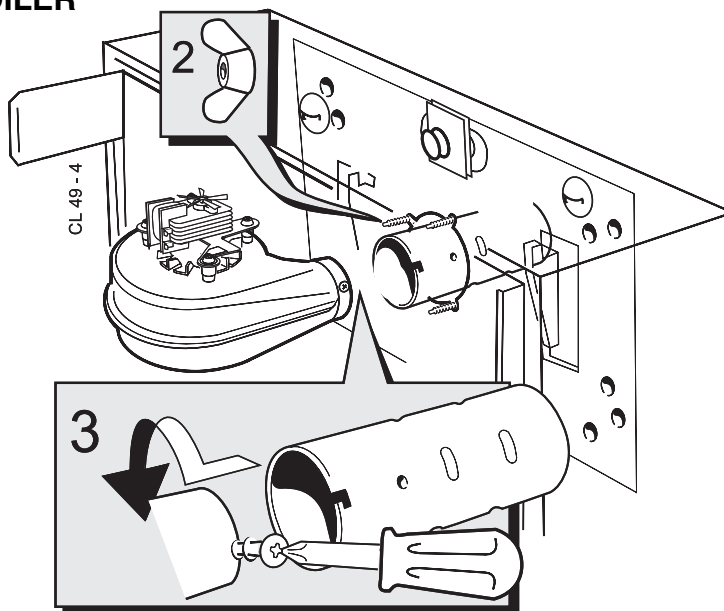


19 CONNECTING THE FLUE TO THE BOILER

1. Pull the flue through the wall mounting plate and locate the 3 studs in the holes in the back panel.
2. Secure the flue to the boiler, using the three M5 wing nuts provided.
3. Pull the flue extension tube and engage onto fan, locate and secure with the M4 screw attached to the fan.

Note.

The sealing ring studs will locate in the back panel one way only. This will ensure that the terminal grille is correctly aligned.

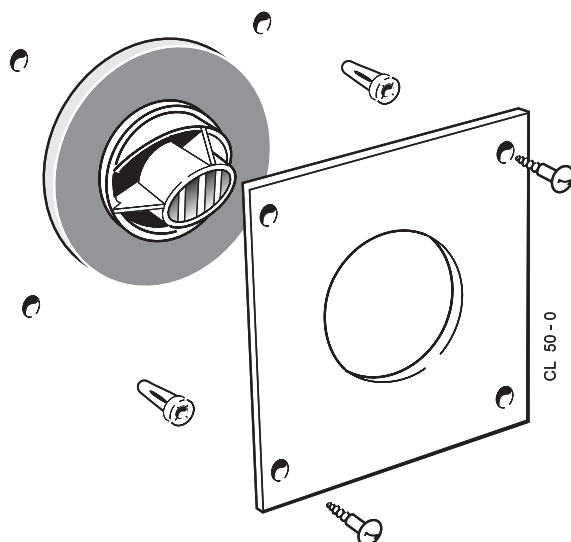


20 TERMINAL WALL PLATE

This plate allows 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.

1. Position the terminal wall plate over the terminal.
2. Mark and drill 4 fixing holes with an 7mm (9/32") masonry drill.
3. Insert the 4 plastic plugs provided.
4. Secure the plate with 4 of the No.10 x 2" screws provided.

Note. If the terminal is less than 2m (6' 6") above ground level, an approved terminal guard should be fitted. Refer to the Contents List on Page 3.

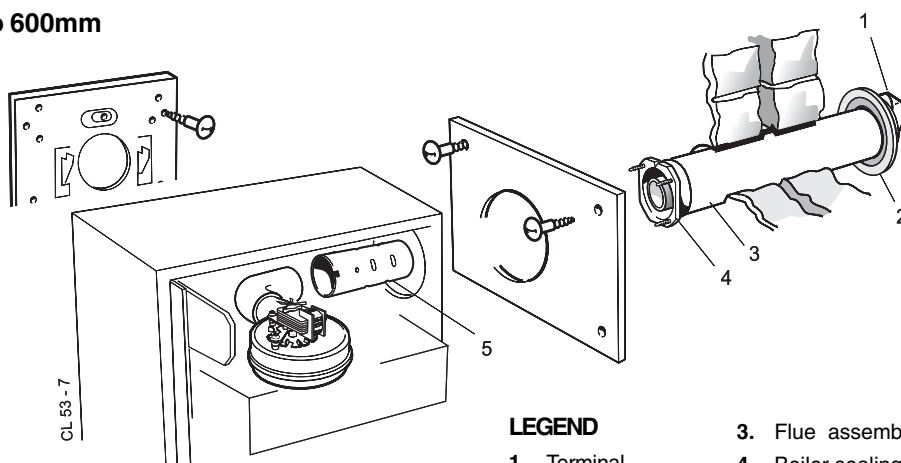


INSTALLATION

21 FLUE ASSEMBLY - Exploded view

For wall thickness 114mm to 600mm

1. An optional flue duct extension kit is required for lengths (distance from the outside wall to the relevant side of the boiler casing) greater than 600mm (23 1/2"). Refer to Frame 10.
2. When cutting the ducts always use the cardboard support provided.



LEGEND

- | | |
|------------------|--------------------------|
| 1. Terminal. | 3. Flue assembly. |
| 2. Weather seal. | 4. Boiler sealing plate. |
| | 5. Flue extension tube. |

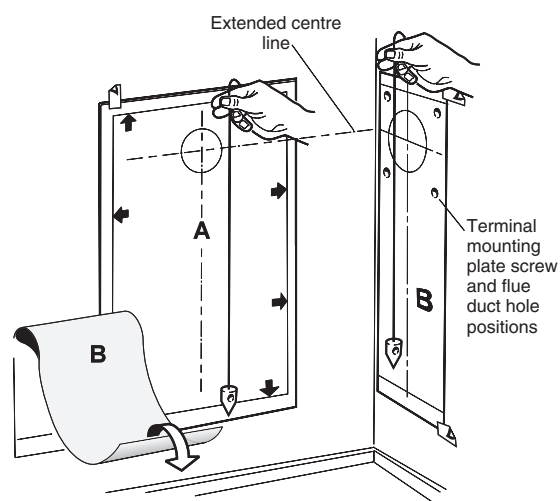
22 WALL MOUNTING TEMPLATE

Note. The template shows the positions for the fixing holes and the flue hole centres for standard installation.

If the flow and return pipes are to be routed down behind the boiler, the downward routing pipe brackets (supplied in the Downward Piping Kit) must be used. These brackets are secured to the wall mounting plate and it is essential to use only those holes as shown on the wall mounting template.

Care **MUST** be taken to ensure the correct holes are drilled.

1. Separate the templates.
2. Tape both templates into the selected position locating template B through an extended centre line as shown.
3. Ensure squareness by hanging a plumb line as shown.
4. Mark onto the wall (if required) the following:
 - a. The four wall mounting plate screw positions (choose one from each group). If the downward routing pipe brackets are used ensure the correct holes are chosen.
 - b. The 4 screw positions for the side outlet plate.
 - c. The position of the flue duct hole (ensure that the correct centre is marked depending on whether the downward routing pipe brackets are used or not).



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

d. The side of the casing nearest the flue outlet.

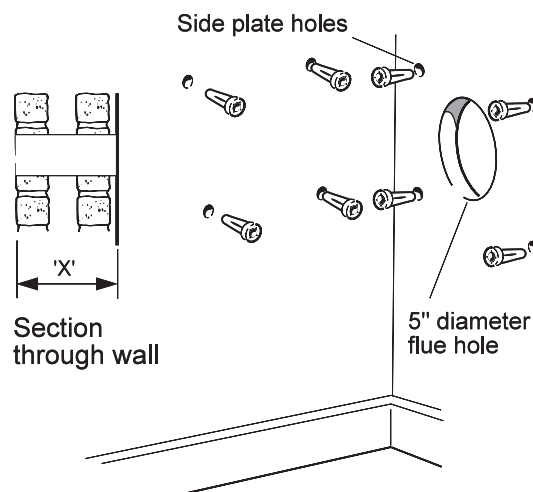
5. Remove both templates from the wall.

23 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 125mm (5") core boring tool ensuring that the hole is square to the wall. If the hole has been 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 125mm (5") diameter at the 2 wall faces.
2. Drill 4 holes with an 8mm (5/16") masonry drill and insert the plastic plugs provided, for the wall mounting plate.
3. Drill 4 holes with an 7mm (9/32") masonry drill and insert the plastic plugs provided, for the side mounting plate.

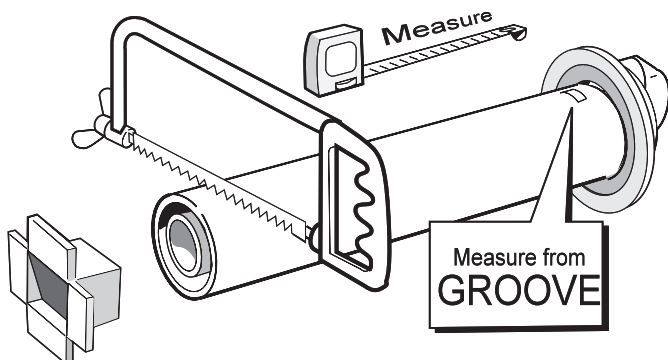
Note. If the terminal is to be sited within 25-40mm of a corner or vertical pipe (refer to Table 3) then the hole **MUST** be accurately cut and the rubber weather seal trimmed around the groove provided. The terminal wall plate need not be fitted.



INSTALLATION

24 CUTTING THE FLUE**For flue lengths 114 to 600mm ONLY**

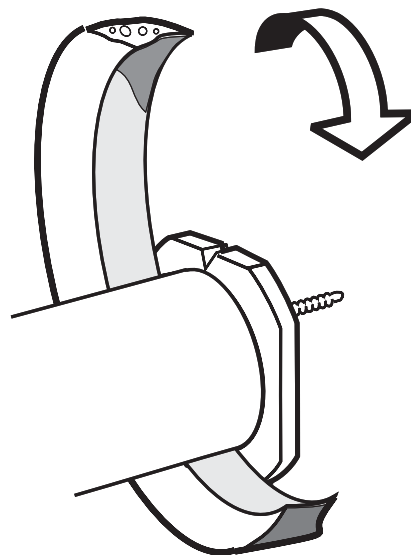
1. Measure the flue length required (i.e. the distance from the side of the boiler to the outside face of the wall) - Refer to Frame 10.
2. Mark the flue length required onto the flue, measuring from the groove near the terminal.
3. To ensure the tube is cut square, mark the flue all the way round.
4. Insert the cardboard support, and cut to length.
5. Remove cardboard support and remove any burrs.



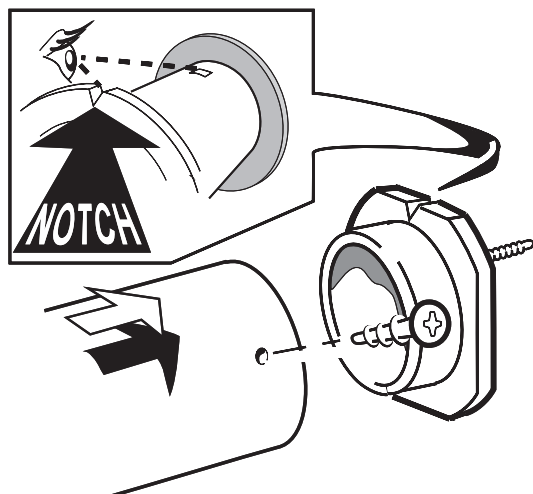
For flue lengths greater than 600mm refer to Frames 33 & 34 - Flue extension ducts.

25 FITTING THE FOAM SEAL

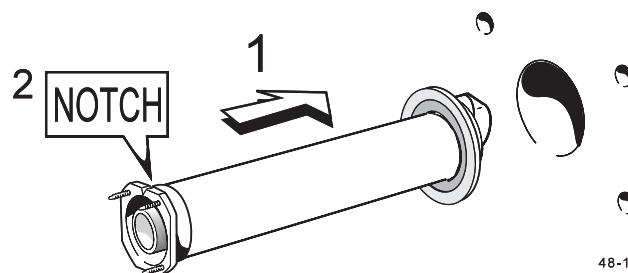
1. To determine the position for the foam seal measure the wall thickness and mark it onto the flue, measuring from the groove near the terminal.
2. Wrap the self adhesive foam strip round the flue, ensuring that the foam is on the terminal side of the line. This seals the gap between the flue and the wall.

**26 FITTING BOILER SEALING RING TO THE FLUE**

1. Fit the boiler sealing ring inside the outer flue duct. Ensure boiler sealing ring is fully engaged. Ensure the notch aligns with the groove on the outer flue duct. This ensures correct alignment of the flue terminal.
2. Drill 3 holes 3.2mm (1/8") dia. through the outer flue duct and boiler sealing ring. **Do not drill the inner flue duct.**
3. Insert the self tapping screws, provided, in order to fix the boiler sealing ring in position.

**27 FITTING THE FLUE ASSEMBLY**

1. Insert the flue assembly through the hole sufficiently far enough to allow the rubber seal to unfold completely and form an adequate seal on the outside wall. This will also ensure the correct alignment of the flue terminal.
2. Ensure the notch is at the top. This will aid the location of the studs into the boiler back panel.



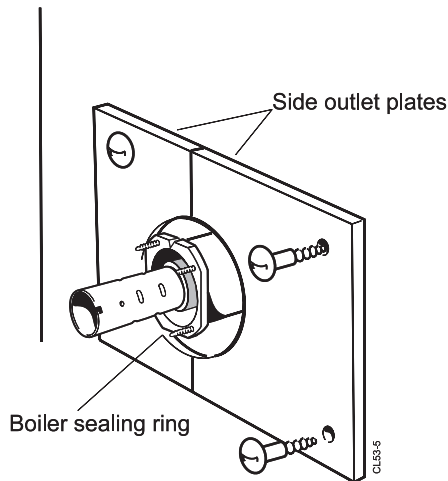
48-1

INSTALLATION

28 FITTING THE SIDE OUTLET PLATES

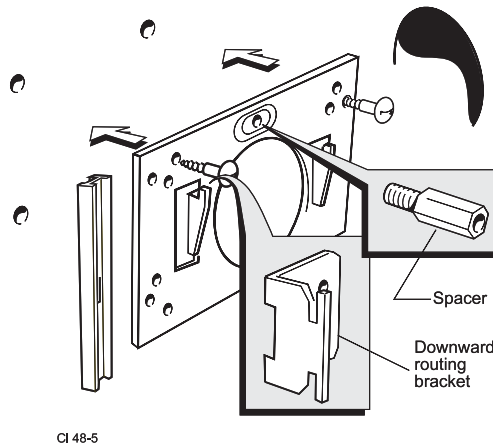
Note. If the boiler is fitted closer than 25mm to the side wall the side outlet plate must be fitted now.

1. Split the side outlet plate into 2 down the split line.
2. Fit the 2 halves of the side outlet plate to the wall, ensuring they are behind the boiler sealing ring.



29 WALL MOUNTING PLATE

1. Fix the mounting plate to the wall with the No.14 x 50mm wood screws.
2. If the downward routing of pipes is required, then the downward routing pipe brackets and M8 spacer (supplied in the Downward Piping Kit) should be fitted to the wall mounting plate now.
3. Fit the bottom 2 screws to secure the bracket(s) to the wall, through the wall mounting plate.
4. Check with a spirit level that the plate is vertical.



30 MOUNTING THE BOILER

- Notes**
1. Have ready to hand the M8 screw, washer and rectangular plate supplied in the hardware pack.
 2. For downward routing of pipes the M5 spacer (supplied in the Downward Piping Kit) should now be fitted to the back of the boiler.

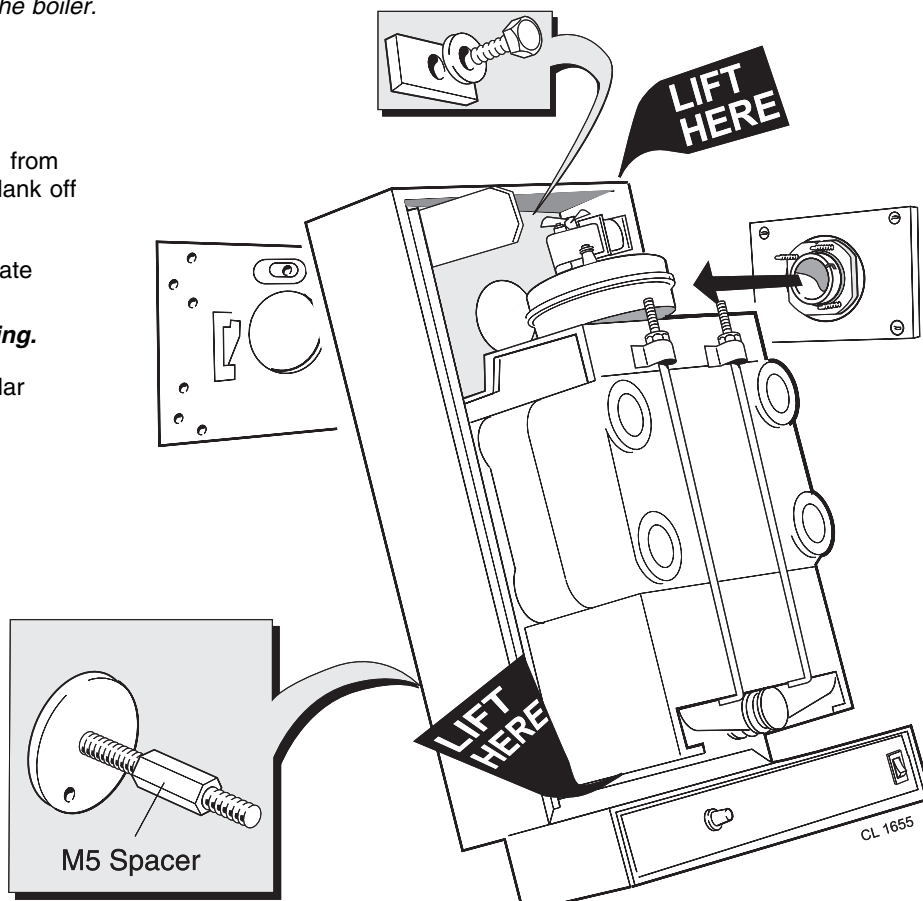
1. The boiler is supplied for rear outlet installation. Remove the blanking plate from the direction required and use this to blank off the rear outlet.

2. Lift the boiler onto the wall mounting plate hooks as shown.

Do not use the burner/controls for lifting.

3. Fit the M8 screw, washer and 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.

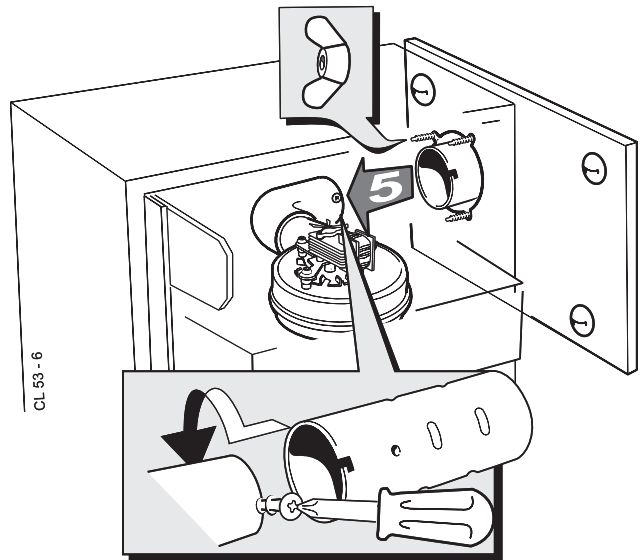


INSTALLATION

31 CONNECTING THE FLUE TO THE BOILER

1. Pull the flue through the side outlet plate and locate the 3 studs in the hole in the side of the boiler.
2. Secure the flue to the boiler using the three M5 nuts provided.
3. Insert the flue extension tube into the flue.
4. Fit the 90° flue elbow, supplied with the boiler, onto the fan in the direction required, after first removing the underside screw, which is not required. Secure in position with the screw attached to the fan.
5. Pull the flue extension tube and engage onto the fan elbow and secure with the screw attached to the elbow.

Note. The sealing ring studs will locate in the back panel one way only. This will ensure that the terminal grille is correctly aligned.

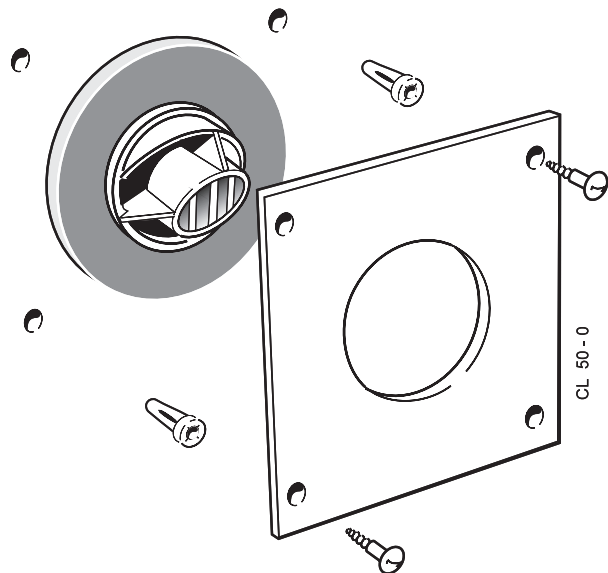


32 TERMINAL WALL PLATE

This plate allows 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.

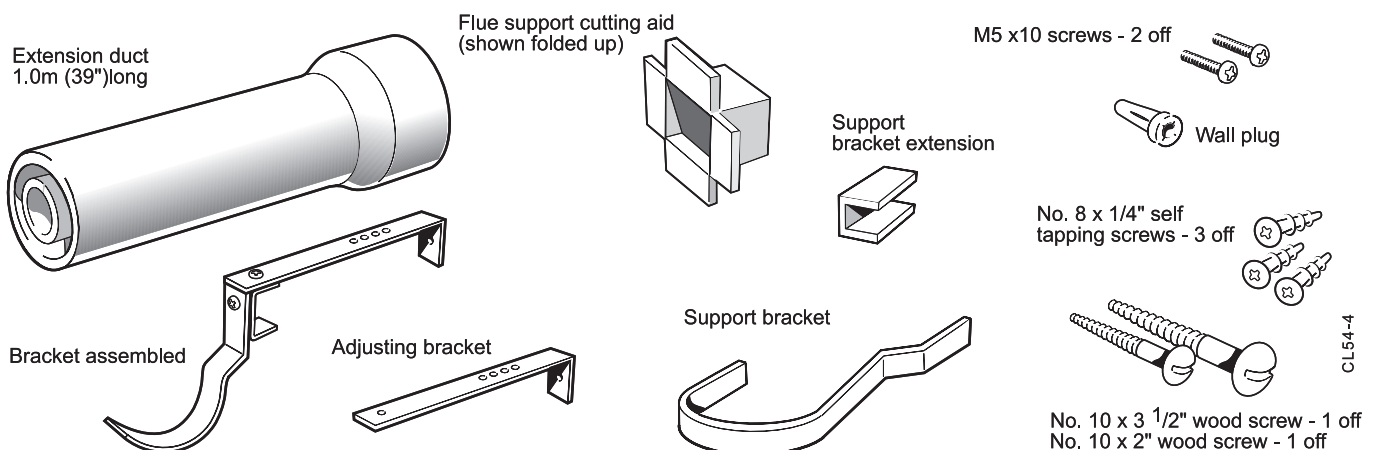
1. Position the terminal wall plate over the terminal.
2. Drill 4 fixing holes with a 7mm (9/32") masonry drill.
3. Insert the 4 plastic plugs provided.
4. Secure the plate with 4 of the No.10 x 2" screws provided.

Note. If the terminal is less than 2m (6' 6") above ground level, an approved terminal guard should be fitted. Refer to the Contents List on Page 3.



33 FLUE EXTENSION DUCTS - For flue lengths greater than 600mm

PACK D Flue extension duct kit contents



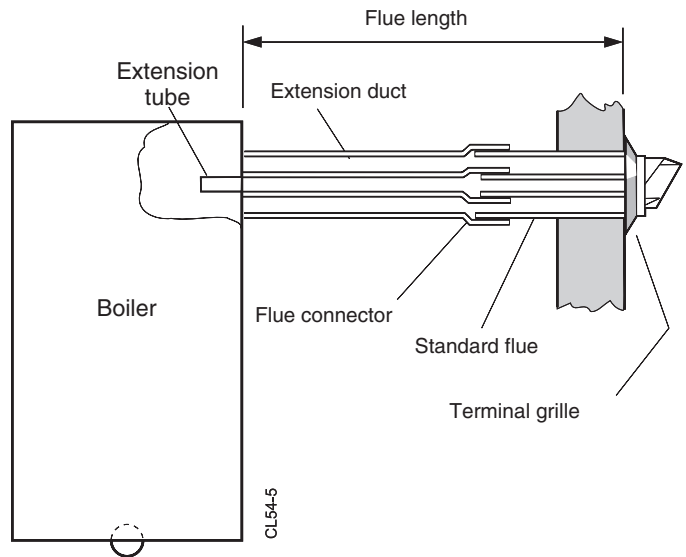
34 FLUE EXTENSION DUCTS - continued

General arrangement

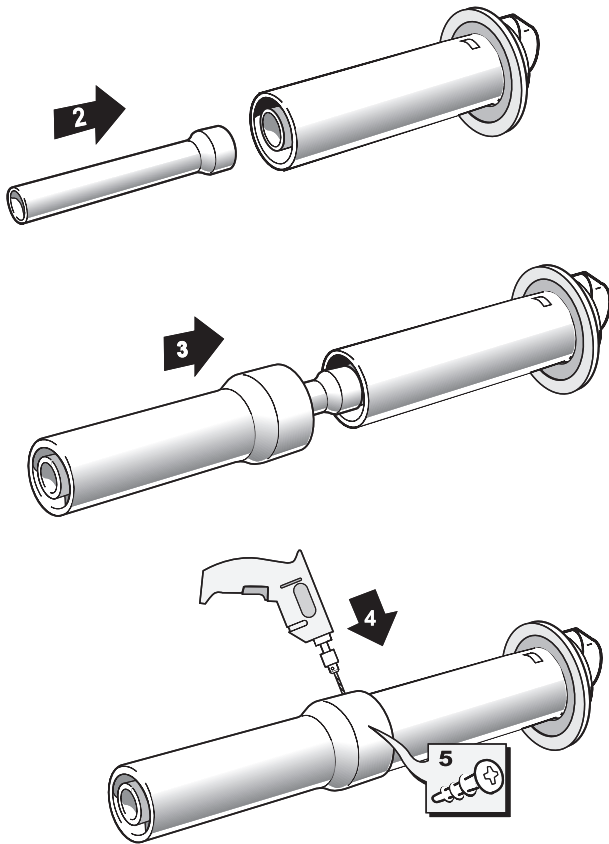
Note. Side flue shown.

1. A *maximum* of 3 extension ducts (plus the standard flue duct) may be used together.
2. Flue extensions of greater length than 1m (39") should be supported with the bracket provided. If the stand-off brackets have been used it is necessary, in order to keep the flue aligned, to use the spacer bracket with the support bracket.

| Flue length | Accessories | Product No. |
|--------------|------------------------------|--------------|
| Up to 600 | B Pack 1 off | see Frame 10 |
| 600 to 1550 | B Pack 1 off + D Pack, 1 off | see Frame 10 |
| 1550 to 2500 | B Pack 1 off + D Pack, 2 off | see Frame 10 |
| 2500 to 3000 | B Pack 1 off + D Pack, 3 off | see Frame 10 |



35 FITTING THE KIT



1. Remove the cardboard support aid from the flue and place safely to one side.
2. Fit the inner flue extension duct onto the inner flue duct.
3. Fit the outer flue extension duct onto the outer air duct.
4. Drill one - 3.2mm (1/8") dia. holes through the outer air duct. **Do not drill the inner flue duct.**
5. Insert the self tapping screw provided to fix the air duct in position.
6. Repeat steps 1-5 if a second flue extension is required.

36 GAS CONNECTION

Refer to 'Gas Supply', page 6.

Refer to Frame 2 for gas inlet service dimensions.

A **minimum** pressure of 37 mbar **MUST** be available at the boiler inlet with the boiler operating. The main gas cock is on the left hand side of the gas control valve, as shown. To facilitate connection the gas cock may be removed from the gas control valve.

37 WATER CONNECTIONS

1. Remove the plastic plugs from the flow and return pipes.
2. Make all water connections and check for water soundness.

38 ELECTRICAL CONNECTIONS

WARNING. The appliance must be efficiently earthed.

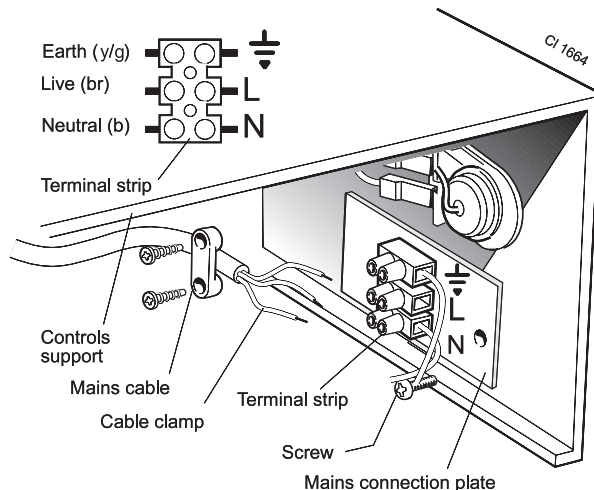
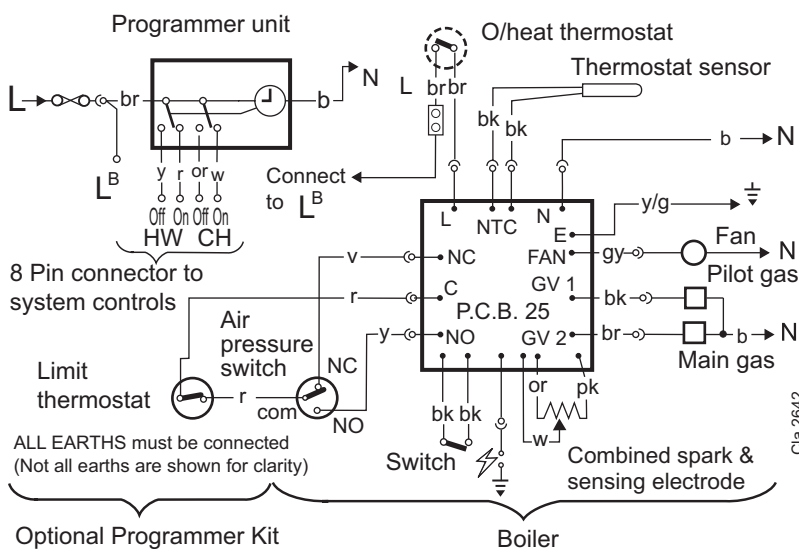
A mains supply of 230 V ~ 50 Hz is required.

All external controls and wiring must be suitable for mains voltage. Wiring should be in 3-core PVC insulating cable, not less than 0.75mm² (24 x 0.2mm) to BS. 6500 Table 16 Wiring Regulations and local regulations.

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

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

Flow wiring diagram



Note. If an optional programmer is to be fitted refer to the instructions provided with the kit and Frame 39.

1. Remove the control box securing screws. Swing the box down into the servicing position. Refer to Frame 46.
2. Route the mains cable into the box from the RHS of the boiler.
3. Connect the live, neutral and earth wires into the terminal strip as shown.
4. Secure the mains lead with the cable clamp.
5. On completion of all wiring connections, relocate the control box and secure.

39 EXTERNAL CONTROLS

The wiring diagrams illustrated in Frames 41-43 cover the systems most likely to be fitted to this appliance.

For wiring external controls to the Classic FF boiler, reference should be made to the system wiring diagrams supplied by the relevant manufacturer, in conjunction with the wiring diagrams shown in Frames 41-43.

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

1. Controls that switch the system on or off, e.g. a time switch, must be wired, in series, in the live mains lead to the boiler.
2. Controls that override an on/off control, e.g. frost thermostat, must be wired into the mains lead, in parallel, with the control(s) to be overridden. Refer to Frame 43.

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 manufacturer.
5. System designs featuring controls or wiring arrangements which allow the boiler to fire when there is no pump circulation taking place should not be fitted.

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

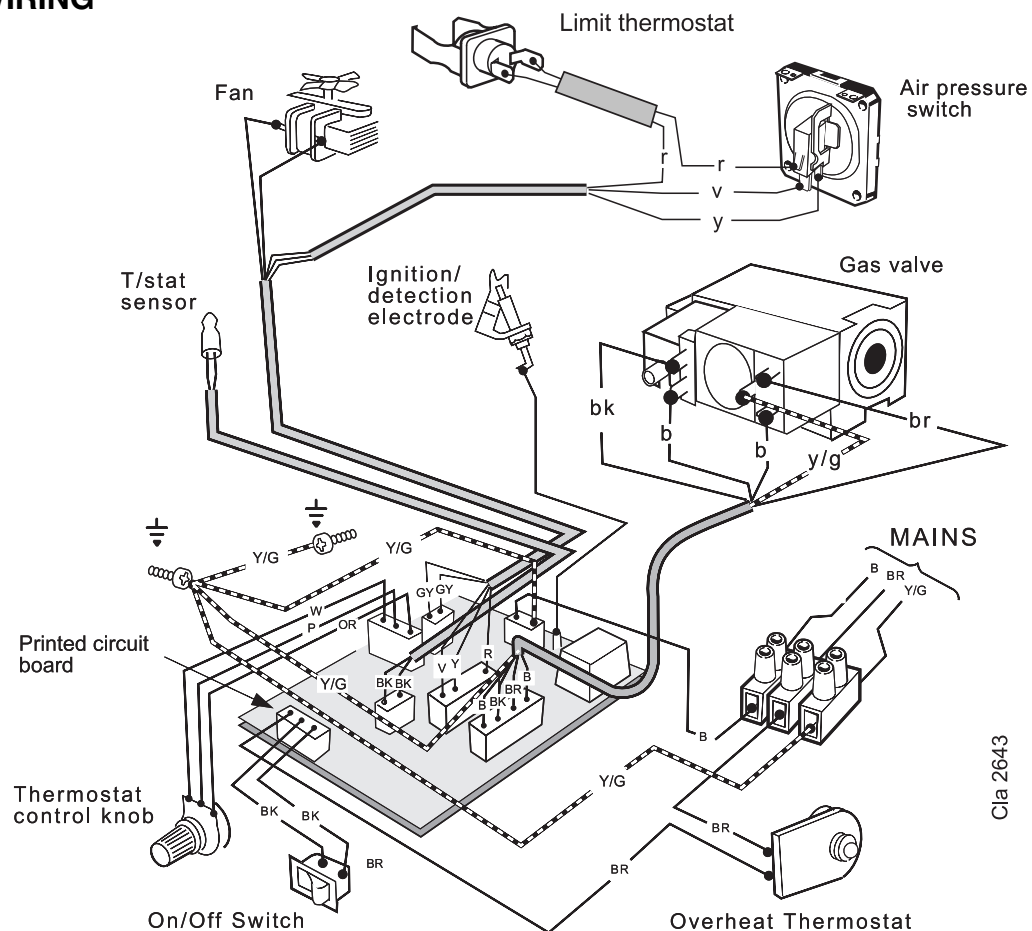
Notes.

1. Connection between a frost thermostat and 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.

40 PICTORIAL WIRING

LEGEND

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



Cla 2643

41 MID POSITION VALVE

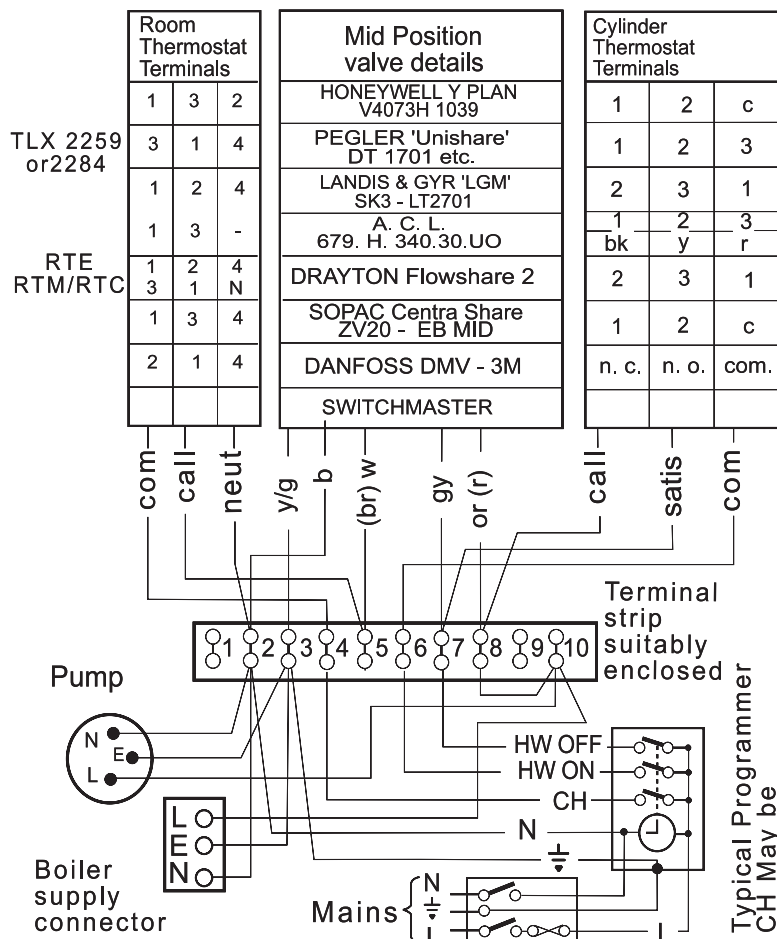
Pumped only

Notes.

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



Class 1-4

42 TWO SPRING CLOSED VALVE

Pumped only

Notes.

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 fully controlled system - set the boiler thermostat to maximum.
4. Switchmaster valve has grey & orange auxiliary switch leads but the GREY wire must be connected to the incoming live supply.

TLX 2259
or 2284

RTE
RTM/RTC

| Room Thermostat Terminals | | |
|---------------------------|---|---|
| 1 | 3 | 2 |
| 3 | 1 | 4 |
| 1 | 2 | 4 |
| 1 | 3 | - |
| 1 | 2 | 4 |
| 3 | 1 | N |
| 1 | 3 | 4 |
| 2 | 1 | 4 |
| 1 | 3 | - |

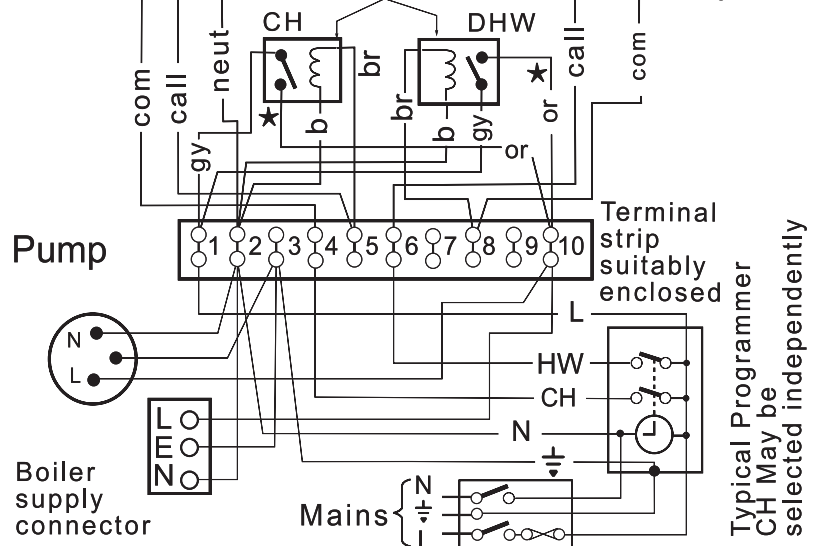
| Spring - shut valve details | | Aux ★ switch wires |
|---------------------------------|------------|--------------------|
| HONEYWELL S PLAN V4043H 1056 | gy | or |
| PEGLER system 4 SZ 1301 or 1326 | gy | or |
| LANDIS & GYR SK2 - LL4453 etc. | gy | or |
| A. C. L. 679. H. 308 | gy | or |
| DRAYTON ZV22 or ZV28 | gy | or |
| SOPAC ZV20 - 2 EB etc. | gy | bk |
| DANFOSS DMV - 2 | gy | or |
| SWITCHMASTER Auto Zone VM4 | see note 4 | |

| Cylinder Thermostat Terminals | |
|-------------------------------|------|
| 1 | c |
| 1 | 3 |
| 2 | 1 |
| 1 | 3 |
| bk | r |
| 2 | 1 |
| 1 | c |
| n. c. | com. |
| 2 | 1 |

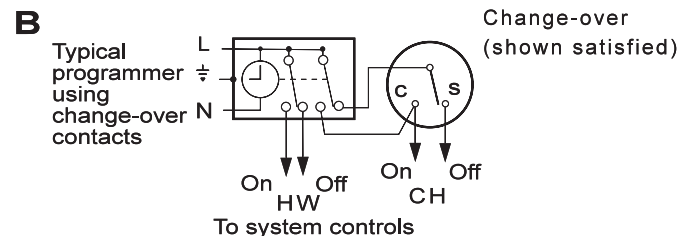
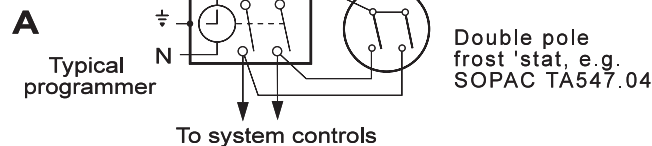
Class 1-1

LEGEND

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



43 FROST PROTECTION



Central heating systems fitted wholly inside the house do not normally require frost protection as the house acts as a 'storage heater' and 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 'thermostat' should be wired into the system.

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

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

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.

If a boiler is installed in a garage it may be necessary to fit a pipe thermostat.

Diagram A shows a double pole frost 'thermostat', 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.

44 COMMISSIONING AND TESTING

(a) Electrical Installation

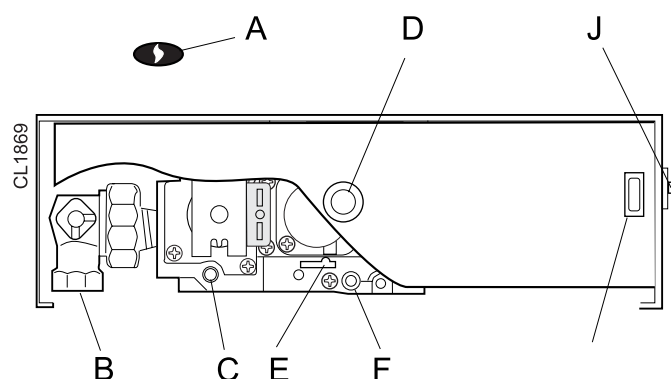
1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit using a suitable test meter.

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.**

(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 union on the gas service cock on the boiler and purging until gas is detected.
3. Retighten the union and check for gas soundness.

45 INITIAL LIGHTING



LEGEND

- | | |
|------------------------------|-------------------------------------|
| A Sightglass. | E Main burner pressure adjuster. |
| B Gas service cock. | F Burner pressure test point. |
| C Inlet pressure test point. | H Boiler mains on/off switch. |
| D Thermostat knob | J Overheat thermostat reset button. |

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 OPEN and the boiler mains On/Off switch is OFF.

3. Fitting the Boiler Casing

The boiler casing must be refitted with the controls support casing attached for alignment purposes. Lift the boiler casing up to the boiler assembly, with the casing top angled forward. Hook the top edge of the boiler casing into the channel on the top of the boiler assembly. Swing the bottom of the casing down and secure with the 2 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 Unit is fitted remove the unit casing in order to inspect the top casing seal.

To gain access to the gas valve:

- a. Remove the controls support casing. Release the controls support front fixing screws 3 turns only. Remove the pod by pulling it forward to disengage from the keyhole slots.
- b. Remove the control box securing screws and swing it down into the servicing position. See diagram B, Frame 46.

4. Slacken the screw in the burner pressure test point (F) and connect a gas pressure gauge via a flexible tube.
5. Swing the control box back into its working position.
6. Press the overheat thermostat reset button (J).
7. Switch the electricity supply ON and check that all external controls are calling for heat.
8. Set the boiler thermostat knob (D) to position 6 and the boiler Mains On/Off switch to ON. 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 cross-light smoothly. If this sequence does not occur, refer to the Fault Finding section.
9. Test for gas soundness around ALL boiler gas components using leak detection fluid.
10. Operate the for 10 minutes to stabilise the burner temperature.

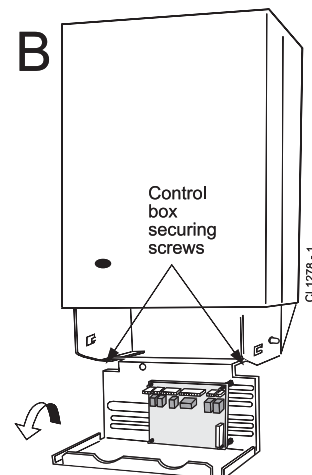
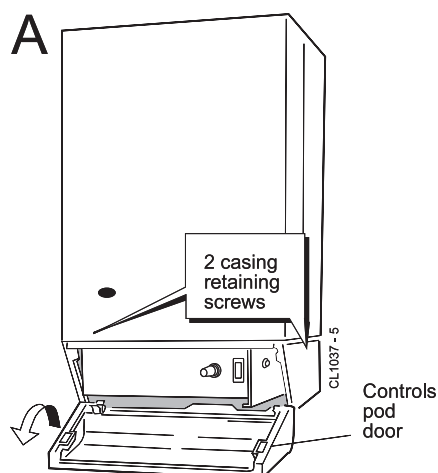
The boiler is preset at the factory to its nominal rating. Check the burner pressure against the values quoted in Table 2 (page 2). The inlet pressure measured at the gas control valve must be 37mb.

11. Set the main On/Off switch to OFF.
12. Switch the electricity supply OFF.
13. Swing the control box down into the servicing position.
14. Remove the pressure gauge and tube. Retighten the sealing screw in the pressure test point. Ensure a gas tight seal is made.

INSTALLATION

46 INITIAL LIGHTING - continued

15. Swing the control box back into its working position and secure.
16. Remove the boiler casing.
17. Refit the controls pod to the boiler casing and tighten the 2 front fixing screws.
18. Refit the complete casing to the boiler.
19. Close the pod door.



47 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 Circulating 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. Refill 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.

48 HANDING OVER

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

1. Hand the User's Instructions to the Householder and explain his or her responsibilities under the current Gas Safety (Installation and Use) or rules in force.
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 overheat thermostat and emphasise that if cutout persists, the boiler should be turned off and a CORGI registered 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 is fitted, then draw attention to the Programmer User's Instructions and hand them to the Householder.
9. **After installation, commissioning and customer hand-over, please complete the *benchmark* appliance log book and leave this with the customer.**
10. Stress the importance of regular servicing by a CORGI registered installer and that a comprehensive service should be carried out AT LEAST ONCE A YEAR.

49 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 CORGI registered installer.

As the installer you may wish to undertake the service contract yourself or alternatively offer to the customer the benefits of the Caradon Ideal Services, details of which are outlined in the household pack supplied with this boiler.

- Light the boiler and carry out a pre-service check, noting any operational faults. Operate the boiler for at least 20 minutes. Check the gas consumption.
- Connect a suitable gas analyser to the sampling point on the top RHS of the back panel. For correct boiler operation the CO/CO₂ content of the flue gas should not be greater than 0.004 ratio. If this is the case and the gas input is at least 90% of the nominal, then no further action need be taken. If not, proceed to paragraph c.
- Clean the main burner. Refer to Frame 53.

- Clean the heat exchanger. Refer to Frame 52.
- Clean the main and pilot injectors. Refer to Frame 53.
- Remove any debris from inside the base of the casing.
- Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
- 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 50 to 54 and must be carried out in sequence.

WARNING.

Disconnect the electrical supply and turn off gas supply.

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

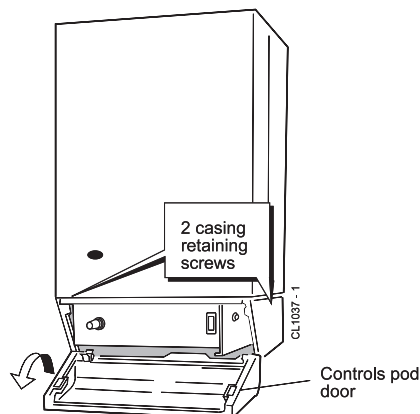
When work is complete the casing **MUST** be correctly refitted, ensuring that a good seal is made.

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

Note. In order to carry out either servicing or replacement of components, the boiler casing must be removed (Frame 50).

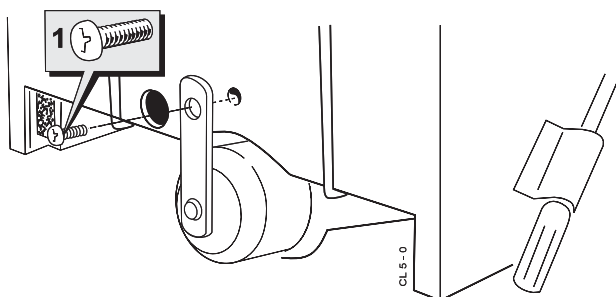
50 BOILER CASING REMOVAL

- If the **Classic Sealed System Unit** is fitted lift off the casing.
- Open the controls pod door and release the 2 captive screws at the bottom of the casing. Swing the bottom of the boiler casing out until the controls pod casing has cleared the controls, then unhook the casing top from the back panel. Retain the casing in a safe place. Where the removal of the casing is impaired by a pelmet, the instruction in Frame 2 should be followed.
- Isolate the gas supply at the service cock fitted to the boiler.

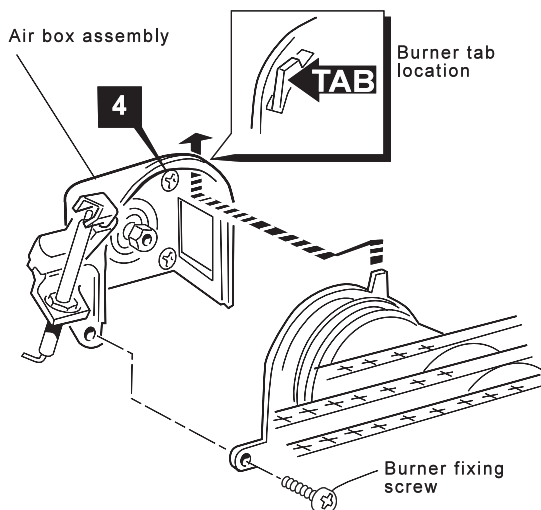


51 BURNER AND AIR BOX REMOVAL

- Remove the screw retaining the front burner support bracket to the combustion chamber. Remove the M5 pozi situated at the LH bottom rear of the burner and pull the burner downwards to disengage the retention tab. Remove burner to a safe place for inspection and cleaning.
- Remove the control box fixing screw. Pull the box forward and downward to disengage.



- Pull the HT lead connection off the printed circuit board and pull the lead upwards through the bottom panel grommet.
- Remove the four screws retaining the air box /pilot assembly to the vertical manifold and carefully remove the assembly



52 CLEANING THE FAN ASSEMBLY / THE FLUEWAYS

1. Remove the 2 silicon rubber tubes from the fan sensing points.
2. Disconnect the fan leads.

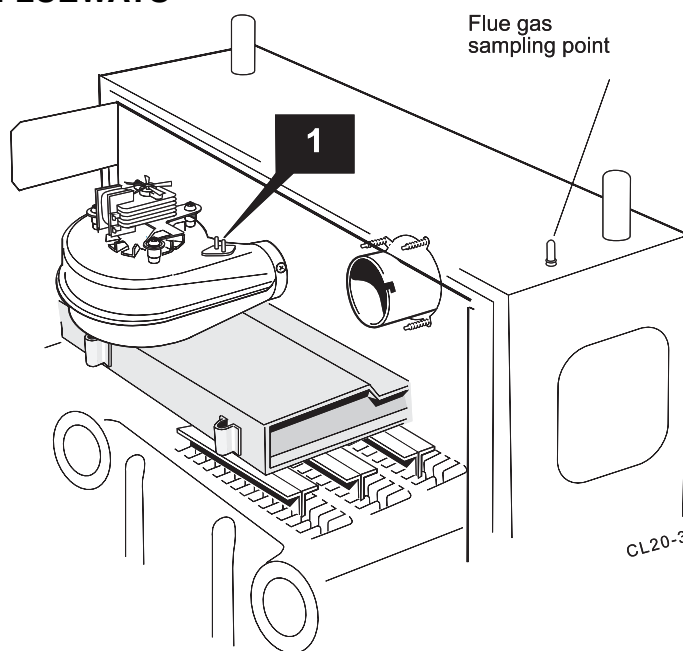
3a. Rear flue

Slacken the M4 screw securing the flue connector to the fan. Disconnect the connector from the fan and slide into the flue.

3b. Side or top flue

Slacken off two M4 screws securing the flue elbow and flue connector. Disconnect the flue connector from the elbow and slide into the flue. Remove the flue elbow.

4. Disconnect the silicon rubber tube from the rear of the collector hood.
5. Slacken the two M5 nuts on the front tie rods, releasing the tie rods from the combustion chamber.
6. Remove the M5 central fixing screw at the rear of the collector hood and remove collector hood/fan assembly.
7. Check that the fan impeller runs freely. Remove any debris from the impeller with a soft brush.
8. Remove the flue baffles.



9. Remove all loose deposits from the heat exchanger, particularly between the fins, using a suitable brush.
10. Reassemble in reverse order, ensuring the fan leads and 3 sensing tubes are reconnected.

53 CLEANING THE BURNER AND PILOT ASSEMBLY

1. Brush off any deposits that may have fallen on to the burner head, ensuring that the flame ports are unobstructed, 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 that 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 and ignition / detection electrode. Ensure that they are clean and in good condition.

Check that:

- a. The pilot burner injector is not blocked or damaged. Refer to Frame 61 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 61). Clean or renew as necessary.

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

54 REASSEMBLY

Reassemble 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 / fan assembly. The boiler efficiency will be adversely affected if incorrectly fitted. Refit the collector hood and retain with the 2 front tie rods and the rear central fixing screw. Tighten the nuts and screw. Ensure that the sealing gasket is compressed. Refit the pressure pipe.
3. Refit the positive pressure tubes 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. Reconnect the gas supply and the electrical wiring. Refer to Frames 36 & 38.
6. Check the sightglass in the boiler casing. Clean or renew as necessary. Refer to Frame 57.
7. Check for gas soundness. Check the gas service cock and pressure test point.
8. Refit the boiler casing (refer to Frame 46). Note that it is not necessary to disturb the controls casing pod.
9. Close the controls pod door.

55 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 61) and ensuring that there is an inlet pressure of 37 mbar available, the pilot does not light then contact **Caradon Ideal Limited**.

Relight in accordance with 'Initial Lighting.' Refer to Frame 45.

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.

REPLACEMENT OF PARTS

56 GENERAL

When replacing any component:

1. Isolate the electricity supply.
2. Turn OFF the gas supply.
3. Remove the boiler casing - refer to Frame 50.

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 2 indicator lights which represent the following boiler conditions:

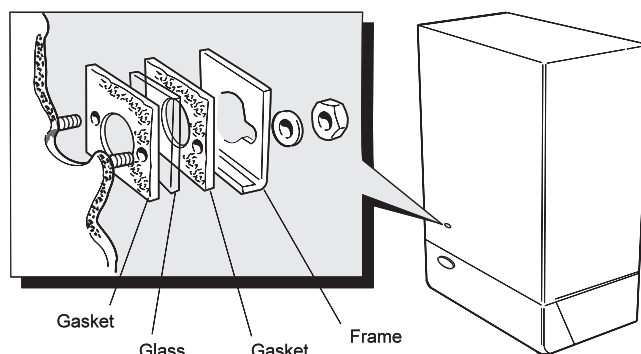
Neon I3. Mains electricity ON.

Neon SG1. Flashes to indicate spark operation (stops after detection).

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

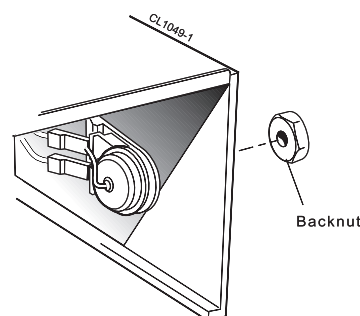
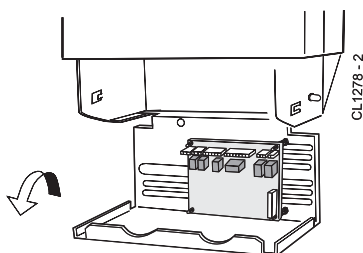
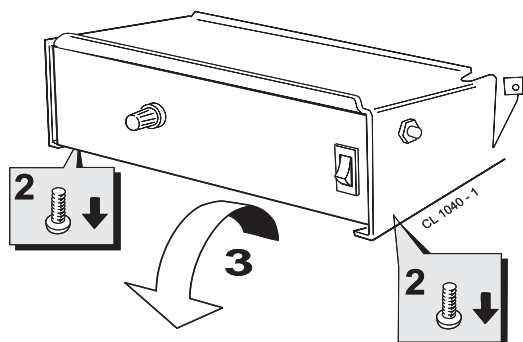
57 SIGHTGLASS REPLACEMENT

1. Refer to Frame 56.
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. Retighten the 2 nuts to ensure an airtight seal. Do NOT overtighten.
6. Replace the boiler casing. Refer to Frame 54.



58 OVERHEAT THERMOSTAT REPLACEMENT

1. Refer to Frame 56.
2. Remove the control box fixing screws.
3. Swing the control box down into the servicing position.
4. Pull off the electrical connections at the thermostat. Remove the backnut retaining the thermostat to the bracket. Withdraw the thermostat phial from the heat exchanger pocket.
5. Fit the new thermostat and reassemble in reverse order.
6. Check the operation of the boiler.



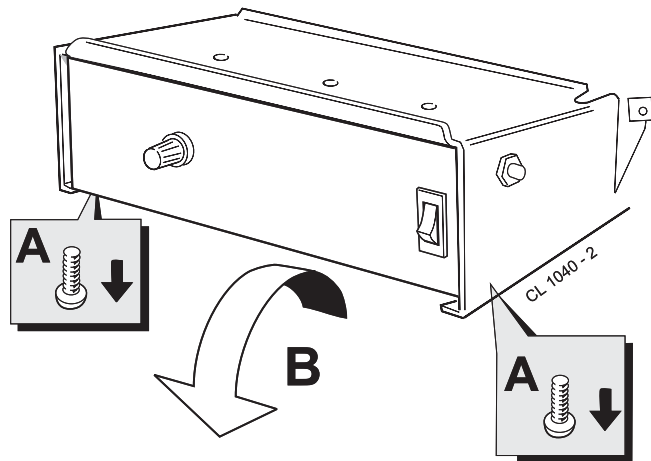
59 THERMOSTAT CONTROL, THERMISTOR SENSOR LEAD & ON/OFF SWITCH REPLACEMENT

Refer also to Frame 56.

- A. Remove the fixing screws
- B. Swing the control box down into the servicing position.

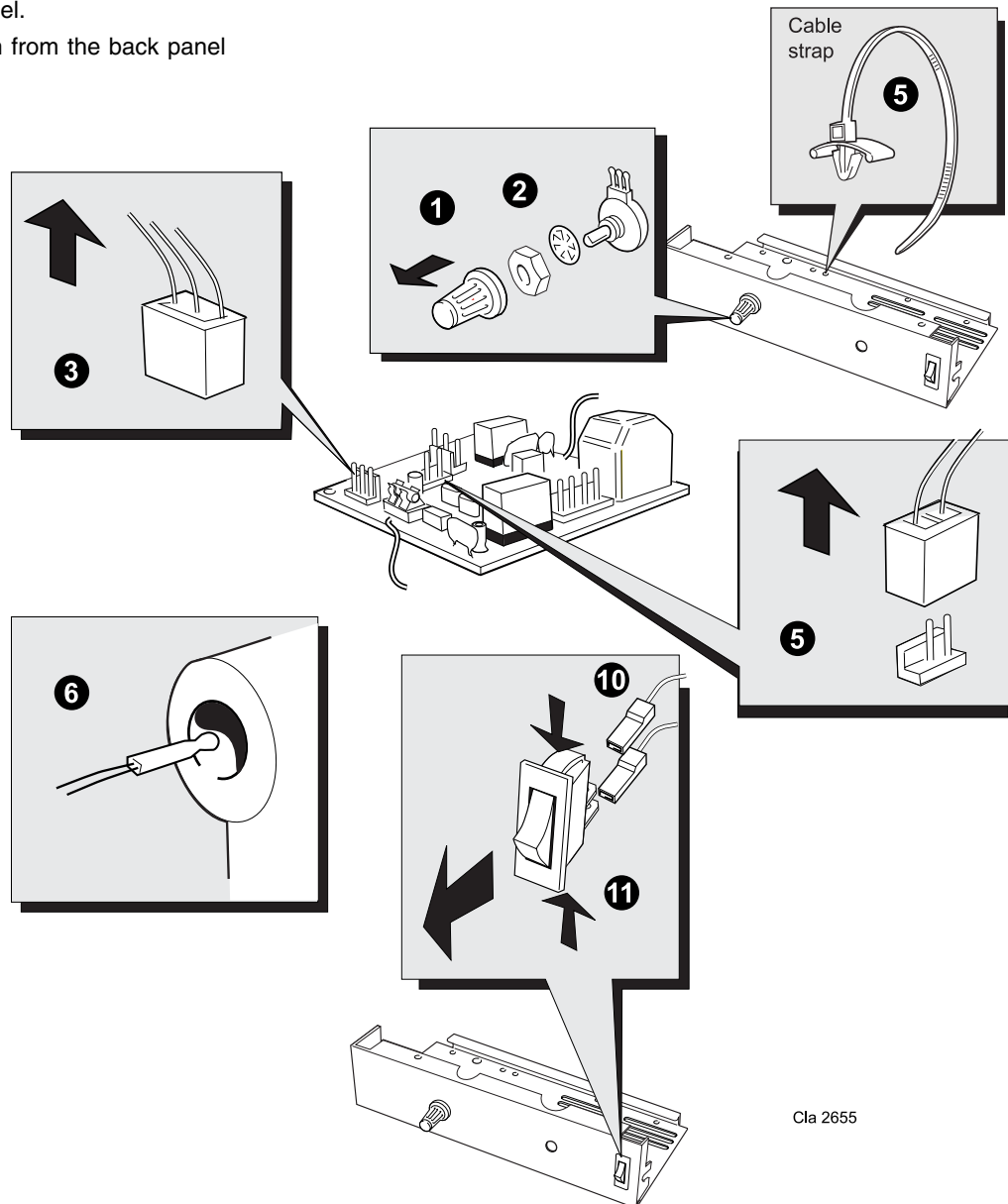
Thermostat control

1. Pull the knob off the shaft.
2. Remove the backnut securing the thermostat control to the control box.
3. Pull off the Molex connector from the printed circuit board.
4. Replace and reassemble in reverse order.



Thermistor sensor lead

5. Pull the sensor lead connector off the printed circuit board and cut the cable strap securing the thermistor harness to the bottom panel of the control box (if fitted) and remove the strap.
6. Remove the sensor from the heat exchanger pocket and unclip from the back panel.
7. Remove the strain relief bush from the back panel base.
8. Remove the sensor lead through the grommet in the control box.
9. Replace and reassemble in reverse order, ensuring the new cable strap is fitted and securing the thermistor harness.



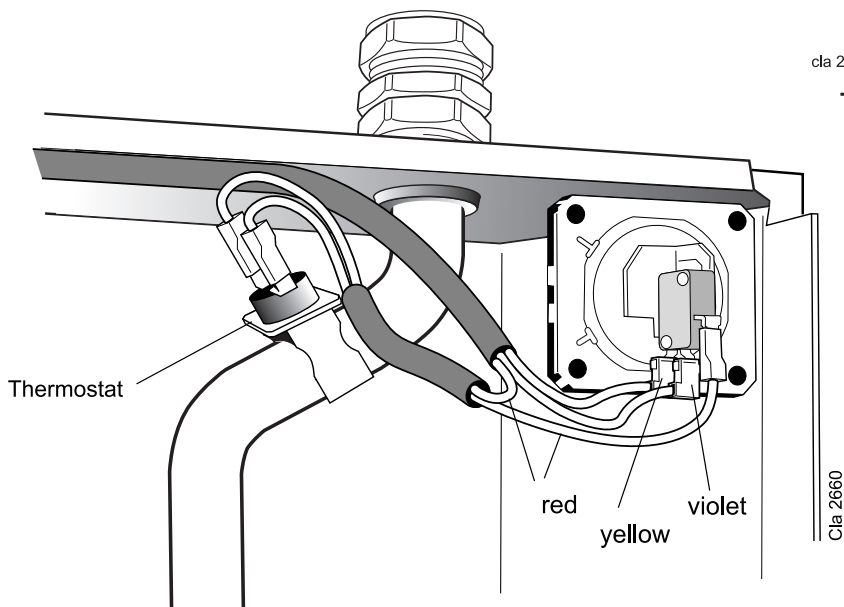
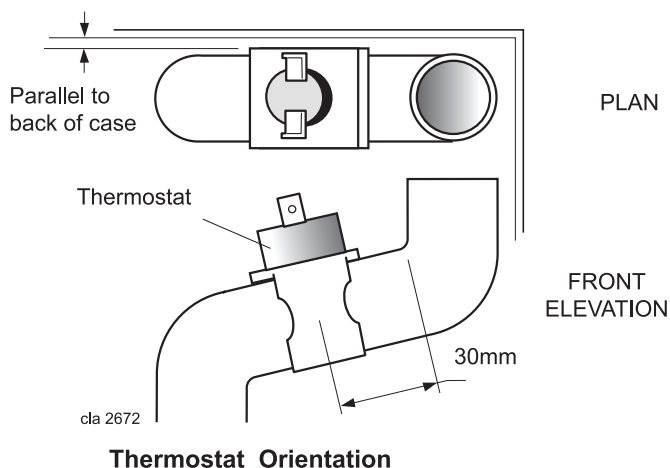
On/off switch

10. Disconnect the electrical connectors from the rear of the switch.
11. Press in the 2 side retaining clips and remove the switch.
12. Reassemble in reverse order.

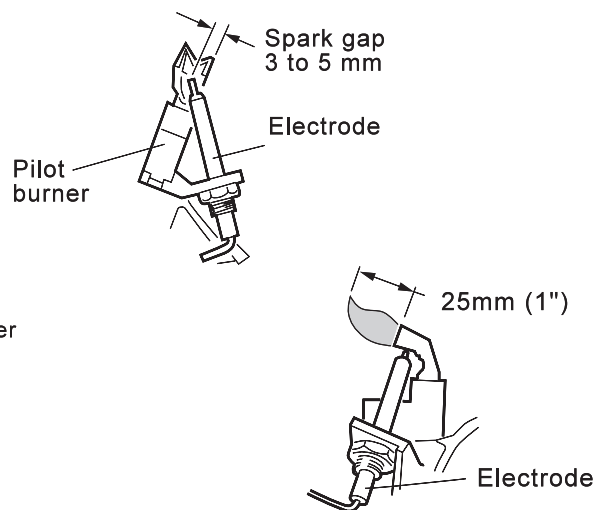
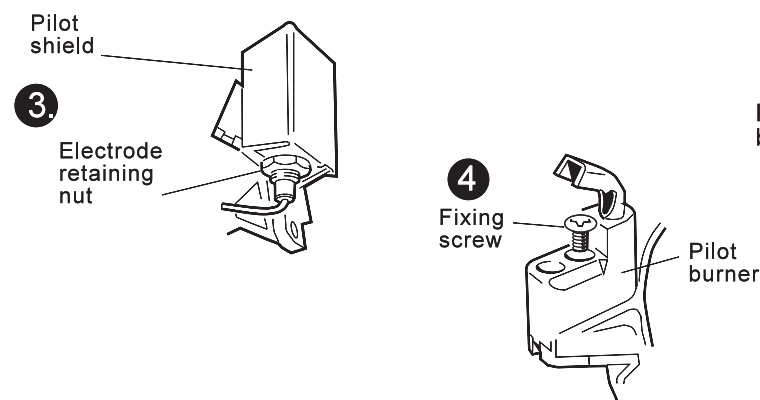
Cla 2655

60 LIMIT THERMOSTAT REPLACEMENT

1. Refer to Frame 56.
2. Remove the limit thermostat assembly from the boiler flow pipe.
3. Disconnect the electrical connectors
4. Replace and reassemble in reverse order, taking care to correctly position the limit thermostat as shown in the orientation diagram opposite.



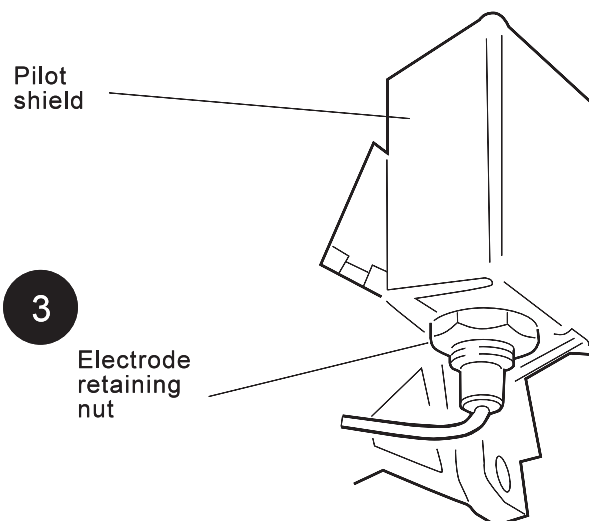
61 PILOT BURNER REPLACEMENT



1. Refer to Frame 56.
2. Remove the burner and air box assembly. Refer to Frame 51.
3. Remove the electrode retaining nut and remove the pilot shield and electrode.
4. Unscrew the central pilot fixing screw and lift the pilot clear of the pilot injector. The pilot injector may now be unscrewed if required.
5. Replace the pilot burner (injector if necessary) and retain with the M4 screw previously removed. Ensure the copper sealing washer is replaced when refitting the pilot injector.
6. Replace the electrode and pilot shield, retaining both with the electrode nut. Check the spark gap.
7. Reassemble in reverse order.
8. Check the operation of the boiler.
9. The pilot is factory set to maximum and no further adjustment is possible. Ensure there is an inlet pressure of 20 mbar available. Also check burner ignition and cross-lighting.

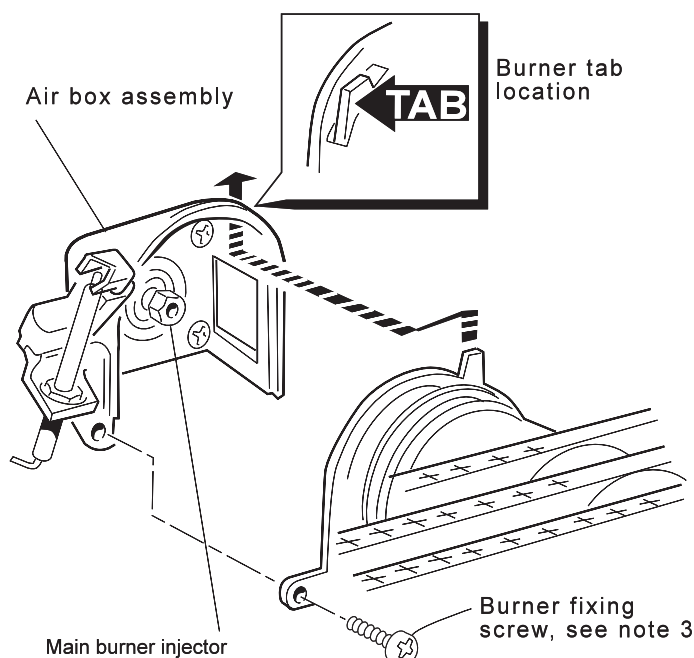
62 IGNITION ELECTRODE AND LEAD REPLACEMENT

1. Refer to Frame 56.
2. Remove the burner and air box assembly. Refer to Frame 51.
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 61.
8. Reassemble in reverse order.
9. Check the operation of the boiler.



63 MAIN BURNER & MAIN BURNER INJECTOR REPLACEMENT

1. Refer to Frame 56.
2. Remove the screw retaining the front burner support strap to the combustion chamber.
3. Remove the M5 pozi screw, 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 and reassemble in reverse order.
6. Check the burner for cross-lighting and flame stability.



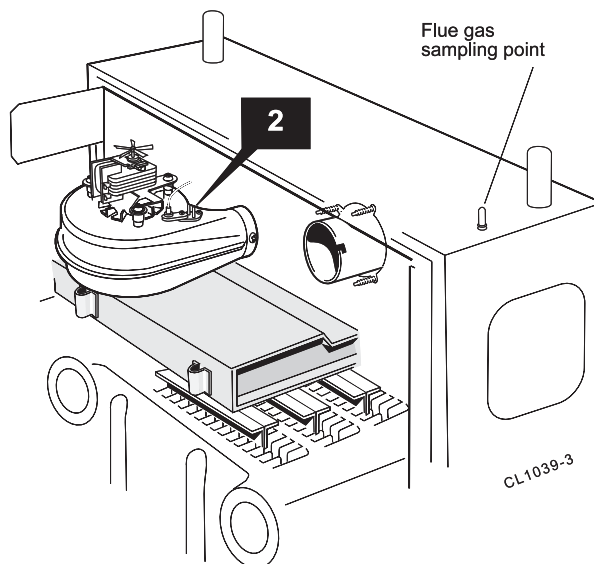
64 GAS CONTROL VALVE REPLACEMENT

Note. Refer also to Frame 75 of 'Exploded Views' for illustration of the procedure detailed below.

1. Refer to Frame 56.
2. Remove the burner and air box assembly. Refer to Frame 51.
3. Remove the fixing screws. Swing the control box down into the servicing position.
4. Disconnect the gas control valve electrical leads.
5. Undo the gas cock union.
6. Whilst supporting the gas control valve, remove the 2 screws retaining the manifold to the back panel.
7. Remove the gas control / manifold assembly.
8. Remove the 4 screws retaining the manifold to the gas control valve, and fit the manifold to the new valve. Ensure that the new control is fitted the correct way round (an arrow engraved on back indicates the direction of flow).
9. Transfer the gas cock union to the new gas control valve, using an approved jointing compound.
10. Reassemble in reverse order.
11. Check the operation of the boiler.

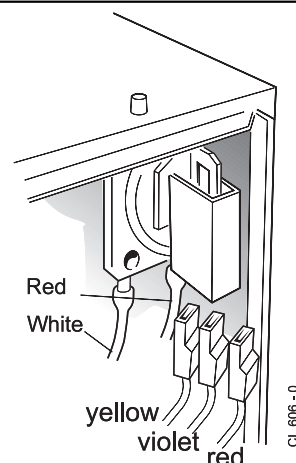
65 FAN REPLACEMENT

1. Refer to Frame 56.
2. Remove the 2 silicon rubber tubes from the fan sensing points.
3. Disconnect the fan leads.
- 4a. **Rear flue.** Slacken the M4 screw securing the flue connector to the fan. Disconnect the connector from the fan and slide into the flue.
- 4b. **Side or top flue.** Slacken off two M4 screws securing the flue elbow and flue connector. Disconnect the flue connector from the elbow and slide into the flue. Remove the flue elbow.
5. Disconnect the silicon rubber tube from the rear of the collector hood.
6. Slacken the two M5 nuts on the front tie rods, releasing the tie rods from the combustion chamber.
7. Remove the M5 central fixing screw at the rear of the collector hood and remove collector hood / fan assembly.
8. Remove the three M4 screws retaining the fan to the collector hood.
9. Fit the new fan and reassemble in reverse order, ensuring the fan leads, and 3 sensing tubes are reconnected.
10. Check the operation of the boiler.



66 AIR PRESSURE SWITCH (APS) REPLACEMENT

1. Refer to Frame 56.
2. Remove the APS fixing screw.
3. Remove both sensing tubes from the APS.
4. Remove the 3 electrical connections from the APS.
5. Fit the new APS and reassemble in reverse order.
6. Check the operation of the boiler.



67 PRINTED CIRCUIT BOARD (PCB) REPLACEMENT

Note. Refer to Frame 74 of 'Exploded Views' for illustration of the procedure detailed below.

1. Refer to Frame 56.
2. Remove the fixing screws and swing the control box down into the servicing position.
3. Disconnect the detection lead from the PCB.
4. Unplug all the Molex connectors from the PCB.

5. Disengage the PCB from the mounting posts and withdraw from the control box.

6. Fit the new PCB and reassemble in reverse order.
7. Check the operation of the boiler.

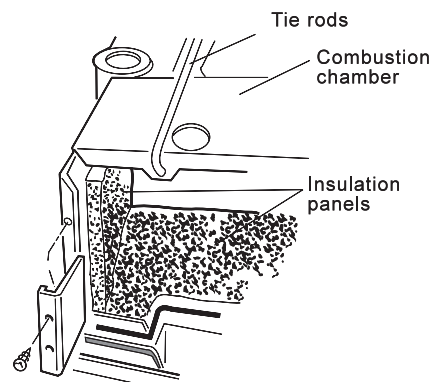
Fuse.

To change the fuse, prise it out of the holder and disengage the fuse. Refer to Frame 74 for fuse location.

68 COMBUSTION CHAMBER INSULATION REPLACEMENT

1. Refer to Frame 56.
2. Remove the burner and air box assembly. Refer to Frame 51.
3. Remove the 4 tie rods.
4. Remove the combustion chamber.
5. Remove the 2 side panel retaining brackets.
6. Remove the side insulation panels.

7. Remove the front and rear insulation panels.
8. Fit the new front and rear insulation panels.
9. Fit the new side panels and retain with the brackets and screws previously removed.
10. Reassemble in reverse order.



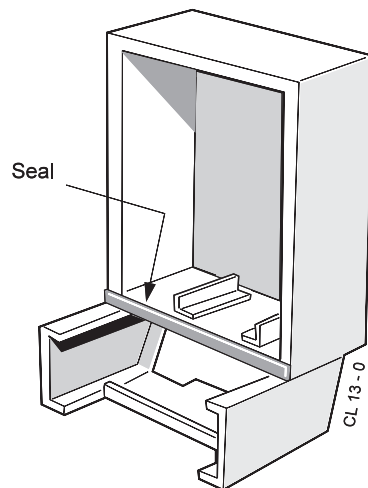
69 HEAT EXCHANGER REPLACEMENT

Note. Refer to Frame 7 (Boiler Assembly - Exploded view) for illustration of the procedure detailed below.

1. Refer to Frame 56.
2. Remove the burner / air box assembly. Refer to Frame 51.
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 exchange assembly to be removed. Remove the heat exchanger drain plug and drain the residual water into a suitable receptacle.
5. Remove the fan / collector hood assembly. Refer to Frame 52.
6. Remove the combustion chamber by unscrewing the 4 tie rods.
7. Remove the thermostat sensors from the pockets on the heat exchanger by removing the M3 screws and plates.
8. Slacken 3 turns only the 4 heat exchanger / interpanel retaining screws.
9. Lift the heat exchanger / interpanel assembly upward and forward to disengage key hole fixings. Pull the assembly downward to clear the water pipes from the back panel.
10. Remove the 2 rubber sealing grommets from the top of the back panel to facilitate fitting the new assembly.
11. Fit the new heat exchanger assembly, complete with water pipes, and hang it on the key hole slots and screws. Retighten the screws.
12. Replace the 2 rubber sealing grommets.
13. Reassembly in reverse order.
14. Remake all water connections, ensuring that the compression fittings (if used) are correctly refitted.
15. Fully test all functions, including water and gas soundness.

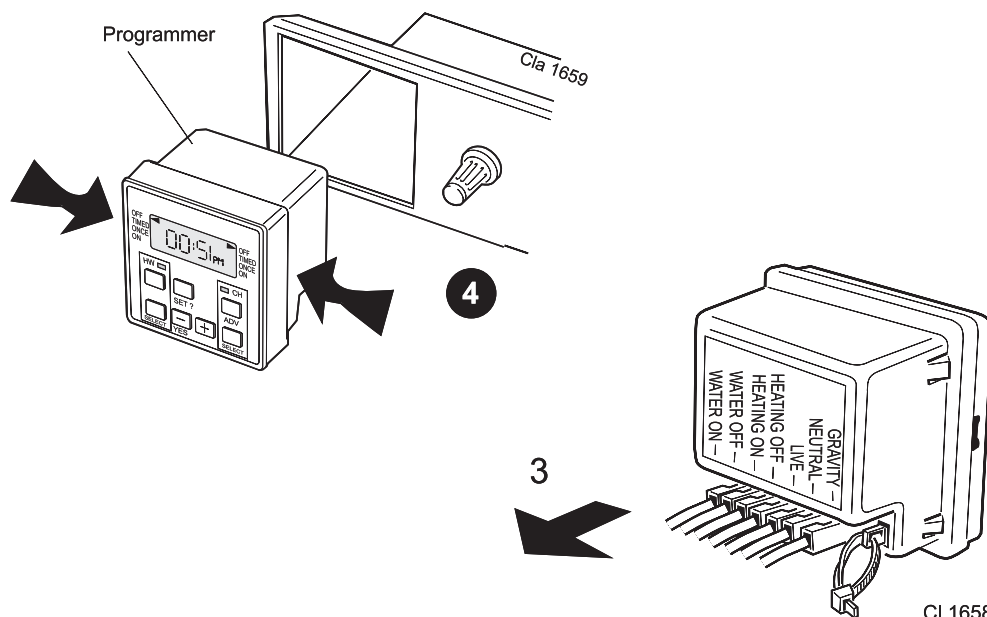
70 CASING SEAL REPLACEMENT

1. Refer to Frame 56.
2. Remove the old seal from the bottom edge of the casing and also from the edges of the boiler back panel.
3. Fit the new self adhesive seals.
4. Replace the boiler casing.

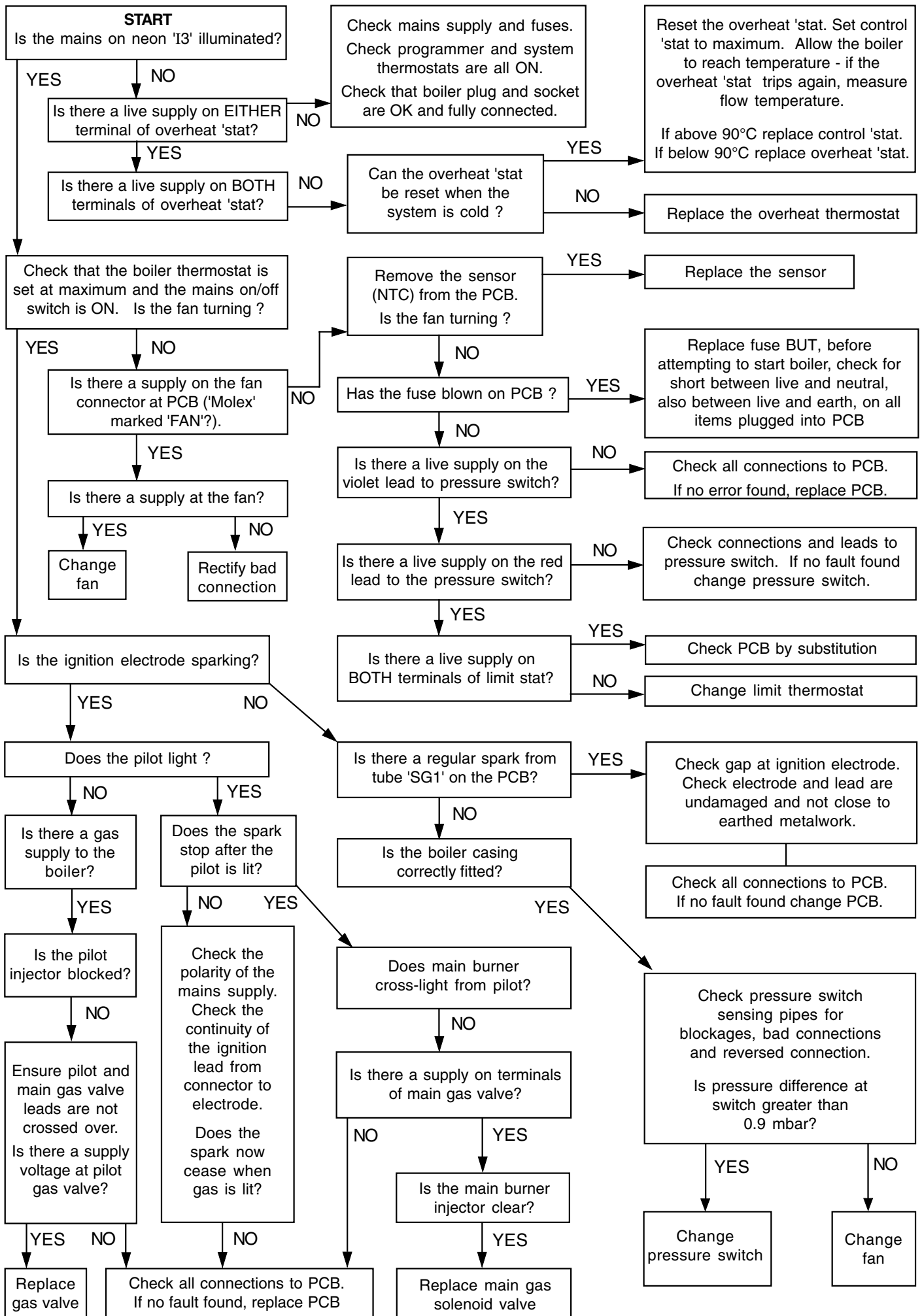


71 PROGRAMMER REPLACEMENT (IF FITTED)

1. Refer to Frame 56.
2. Remove the fixing screws and swing the control box down into the servicing position.
3. Pull off the terminal connections from back of programmer.
4. Compress the lugs at each side of the programmer and withdraw it from the control panel.
5. Fit the new programmer in reverse order.
6. Set the programmer to the desired programme and check the operation of the boiler.



FAULT FINDING



SHORT LIST OF PARTS

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

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

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

When ordering spares please quote:

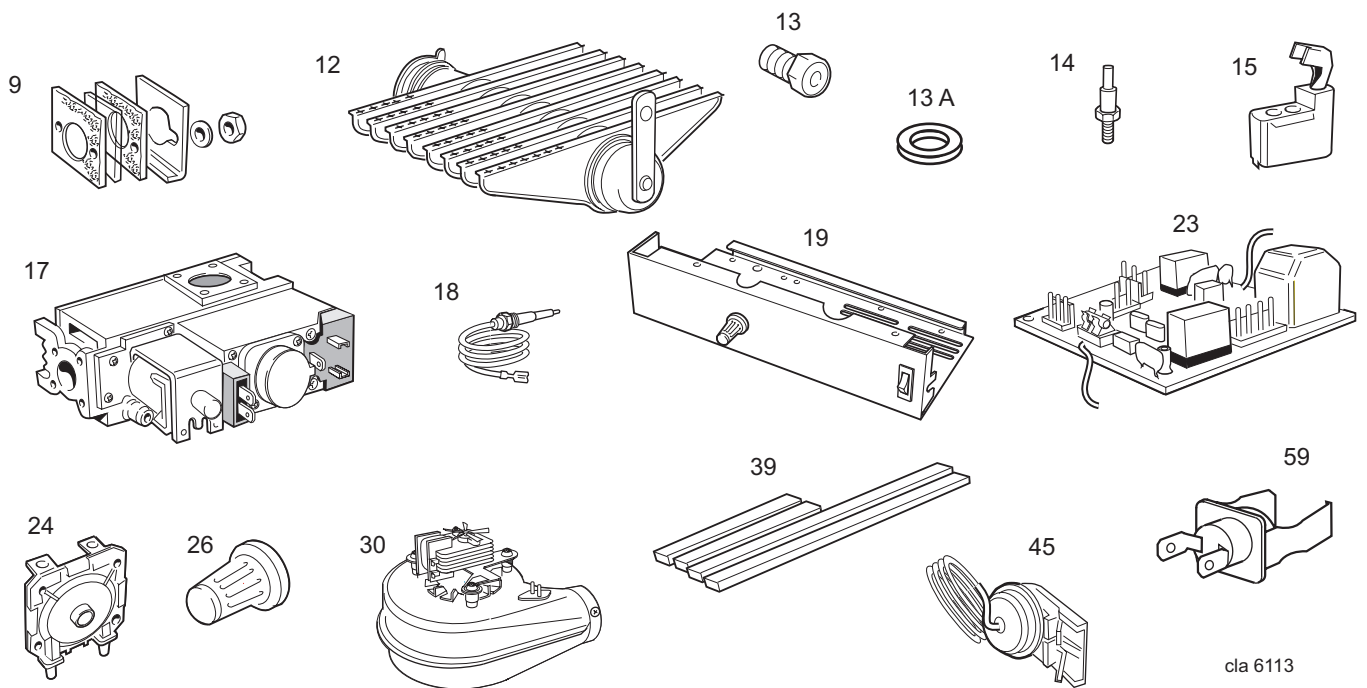
1. Boiler Model
2. Appliance G.C. Number
3. Description
4. Quantity
5. Product Number

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

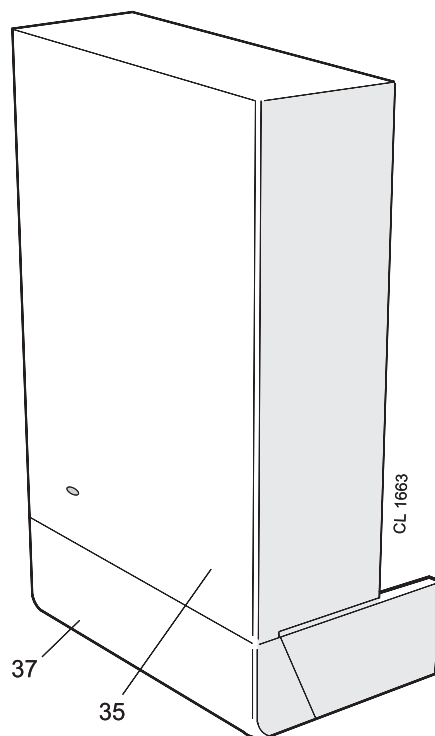
| Key No. | GC Part No. | Description | Qty. | Product No. |
|---------|-------------|---|------|-------------|
| 9 | E83-619 | Sightglass assembly kit | 1 | 171 414 |
| 12 | | Main burner | | |
| | 173 115 | FF 350 P & FF 360 P | 1 | 171 961 |
| | 173 116 | FF 380 P | 1 | 171 417 |
| 13 | | Main burner injector | | |
| | 389 612 | FF 350 P | | 171 431 |
| | 389 540 | FF 360 P | 1 | 171 432 |
| | 398 043 | FF 380 P | 1 | 171 433 |
| 14 | 397 925 | Pilot burner injector: Propane (stamped 20/23P) | 1 | 171 436 |
| 15 | 173 117 | Pilot burner head with injector: Propane | 1 | 171 440 |
| 17 | | Gas control valve | 1 | 172 006 |
| 18 | 308 317 | Ignition electrode complete with lead and backnut 410 mm long | 1 | 171 442 |
| 19 | | Controls box assembly, including PCB | 1 | 171 894 |
| 23 | | Automatic ignition printed circuit board | 1 | 171 450 |
| 24 | E83-653 | Pressure switch assembly | 1 | 171 454 |
| 26 | 308 283 | Thermostat knob | 1 | 171 929 |
| 30 | E83-665 | Fan assembly | 1 | 171 461 |
| 35 | | Boiler casing assembly complete with sightglass assy, insulation and M5 x 16 dogpoint pozipan head screws | 1 | 171 471 |
| 37 | | Controls casing door with Lighting Instr. | 1 | 171 475 |
| 39 | E85-313 | Casing sealing pack complete with screws | 1 | 171 479 |
| 45 | E83-682 | Overheat thermostat | 1 | 171 950 |
| 59 | | Limit thermostat | 1 | 173 353 |

LIST OF PARTS

72 SHORT PARTS LIST



73 BOILER CASING ASSEMBLY

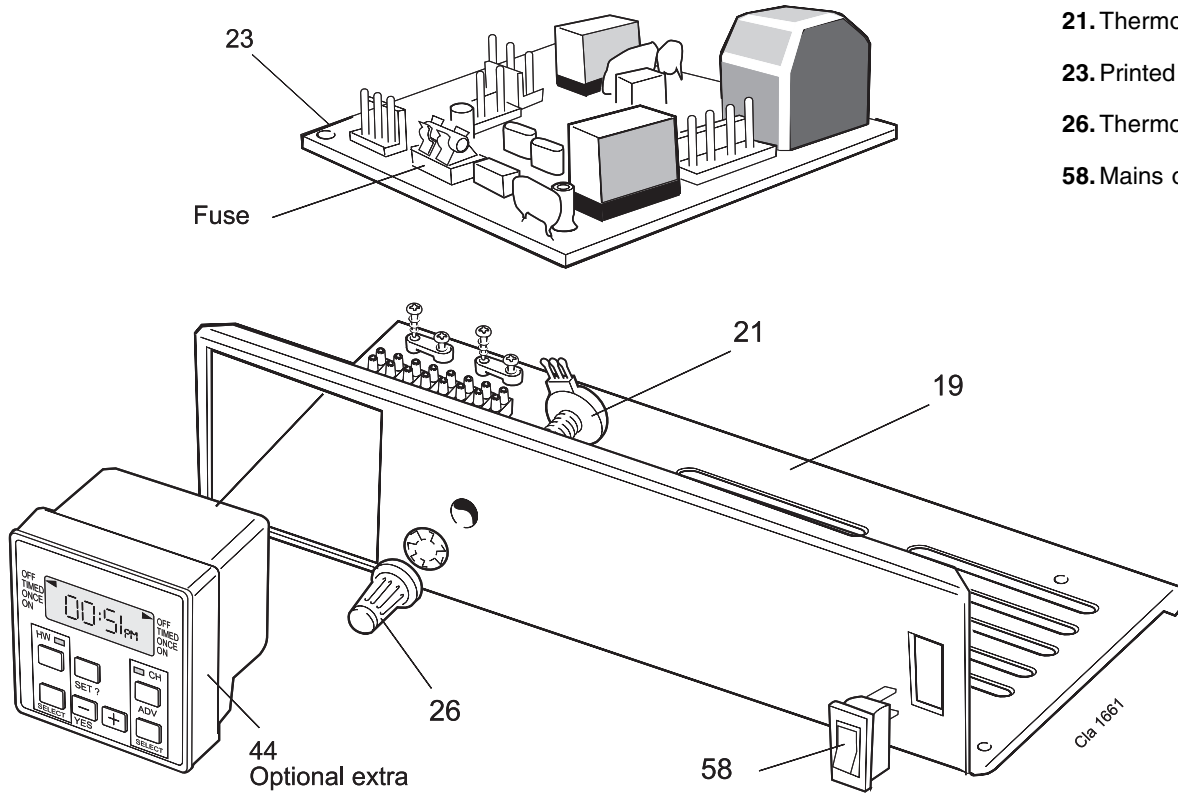


LIST OF PARTS

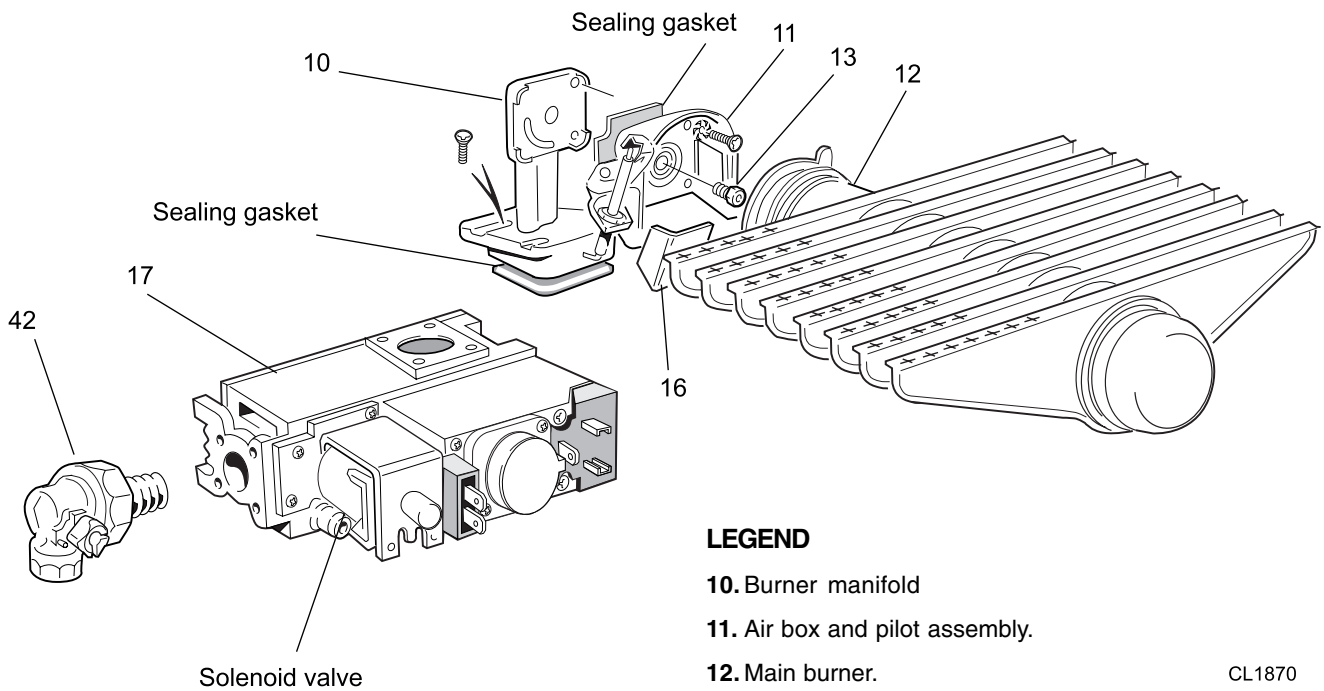
74 CONTROL BOX - Exploded view

LEGEND

- 19. Control box.
- 21. Thermostat potentiometer.
- 23. Printed circuit board.
- 26. Thermostat knob.
- 58. Mains on/off switch.



75 BURNER ASSEMBLY - Exploded View



LEGEND

- 10. Burner manifold
- 11. Air box and pilot assembly.
- 12. Main burner.
- 13. Main burner injector.
- 16. Pilot shield.
- 17. Gas control valve.
- 42. Gas service cock.

CL1870

NOTES



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



**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.

Technical Training

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

For details of courses please ring: 01482 498432



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

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

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



i Ideal BOILERS
ENGINEERED FOR PEACE OF MIND

December 2002 UIN 157365 A03

Caradon
Ideal Limited

Ideal Installer/Technical Helpline: 01482 498663

www.idealboilers.com

users guide

Classic

Your Ideal users guide

FF 350P - 380P

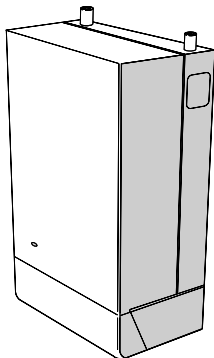
When replacing a part on this appliance use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal Boilers.

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

CLASSIC FF

(Propane Gas Models Only)

| Classic | G.C. No |
|----------------|-----------|
| FF 350 P | 41 392 06 |
| FF 360 P | 41 392 07 |
| FF 380 P | 41 392 08 |



Introduction

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

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

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

Electricity Supply

This appliance must be efficiently earthed.

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

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

Important notes

- This appliance must not be operated without the casing correctly fitted and forming an adequate seal.
- If the boiler is installed in a compartment then the compartment MUST NOT be used for storage purposes.
- The ventilation provided for the boiler during installation MUST NOT be blocked, and a check should be made periodically that the ventilation areas are free from any obstruction.
- If it is known or suspected that a fault exists on the boiler then it MUST NOT be used until the fault has been corrected by a CORGI registered installer.
- Inflammable materials must not be placed in close proximity to the appliance. Materials giving off flammable vapours must not be stored in the same room as the appliance.
- Under NO circumstances should any of the sealed components on this appliance be used incorrectly or tampered with.
- Where the boiler is fitted with a Vertex Flue System with a draught diverter in the loft, the loft space MUST NOT be used as a dwelling area.

Minimum clearances

A clearance of 533mm (21") MUST be available at the front of the boiler for servicing.

The minimum clearances given below MUST be complied with in order to maintain the safe running of the boiler and to facilitate servicing.

| | | |
|----------------------------|--------|-----------|
| Above the boiler | 100 mm | (4") |
| At each side of the boiler | 5 mm | (1/4") |
| Underneath the boiler | 100 mm | (4") |
| In front of the boiler | 450 mm | (17 3/4") |

To light the boiler. Refer to Frame 1

- CHECK THAT THE ELECTRICITY SUPPLY TO THE BOILER IS OFF.
- Open the controls access door by hinging downwards.
- Ensure that the gas service cock (D) is OPEN.
- Press the overheat reset button (E), located as shown in Frame 1.
- Ensure that the mains on/off switch (C) is in the OFF position.
- Switch ON the electricity supply to the boiler. Check that all external controls, e.g. room thermostat etc., are ON.
- Turn the boiler thermostat knob (B) to position 6 and the mains on/off switch (C) to ON. After about 15 seconds the boiler will light automatically - this can be viewed through the sight glass (A). Set the boiler thermostat to the desired position.
- Close the controls access door.

In **winter conditions**, i.e. central heating and domestic hot water, the thermostat should be set at position 5 or 6.

For **summer conditions**, i.e. domestic hot water only, the thermostat should be set at position 3.

These settings, however, are offered for general guidance only and other settings may be found preferable, dependent upon the type of system installed or as recommended by the installer.

Approximate flow temperatures for the boiler thermostat settings are:

| Knob Setting | Flow Temperature °C | °F |
|--------------|------------------------|-----|
| 1 | 56 | 133 |
| 2 | 61 | 142 |
| 3 | 66 | 152 |
| 4 | 72 | 161 |
| 5 | 77 | 170 |
| 6 | 82 | 180 |

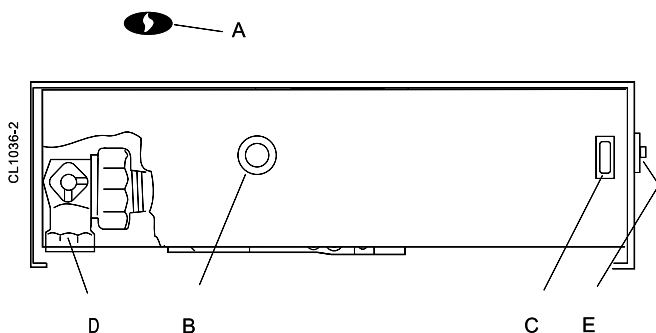
To shut down the boiler

- For short periods:** Turn the boiler on/off switch (C) to OFF. When heating is again required, restore the switch to ON.
- For longer periods:** Turn the boiler on/off switch (C) to OFF. Switch the electricity supply to OFF.

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

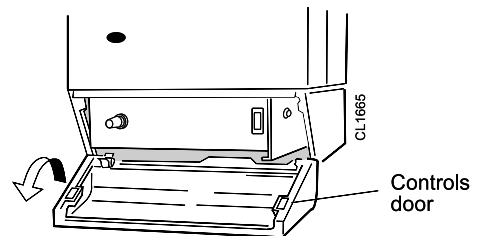
1 BOILER CONTROLS

View inside boiler controls area



LEGEND

- A Sightglass
- B Thermostat knob
- C Mains on/off switch
- D Gas service cock (shown in the OPEN position)
- E Overheat thermostat reset button



Frost protection

If no frost protection is provided and frost is likely during a short absence from home, leave the heating controls at a reduced temperature setting.

For longer periods, the entire system should be drained - including the domestic water supply. If the system includes a frost thermostat then, during cold weather, the boiler should be turned OFF at the time switch(es) ONLY. The mains supply should be left switched ON, with the boiler thermostat left in the normal running position.

Boiler Overheat Thermostat

The boiler is fitted with a safety 'cutout' thermostat. This will shut down the boiler in the event of overheating. Should this occur allow the boiler to cool, press the reset button (E) then relight as detailed in steps 1-8 in 'To light the boiler'.

If the cutout condition still persists turn off the boiler and consult a CORGI registered installer.

Control of water temperature

1. Adjust the boiler thermostat (B) to give the required temperature for central heating.
2. The boiler thermostat automatically switches the main burner OFF and ON to maintain the selected temperature.

To relight the boiler

Repeat the procedure 1 - 8, detailed in 'To light the boiler'.

Loss of system water pressure

Boilers fitted with Classic Sealed System Units only

If the red arrow on the unit pressure gauge is set above zero and the system pressure is seen to fall below this value over a period of time then a water leak is indicated. In this event a CORGI registered installer should be consulted.

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

Escape of gas

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

Do NOT search for gas leaks with a naked flame.

Cleaning

For normal cleaning simply dust with a dry cloth.

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

Do NOT use abrasive cleaning materials.

Maintenance

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

THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS, STATUTORY INSTRUMENT 1994, NO. 1886, AND AMENDMENTS 1996, IMPOSE CERTAIN LEGAL OBLIGATIONS ON GAS USERS.

Changing gas cylinders

- a. Ensure that the replacement gas cylinder is the correct one for the installation.
- b. Extinguish any fire, flame or source of ignition (including cigarettes, pipes and pilot lights) before changing the gas cylinders.
- c. Change cylinders with caution.
- d. Ensure that the gas cylinder valve(s) is/are closed before disconnecting an empty cylinder or before removing any plastic cap or plug on the outlet connection of the replacement cylinder.
Never use tools on cylinder valves, hand wheels or levers.

Note. Cylinders with threaded connections have a left hand thread. For cylinders with self-sealing clip-on valves, ensure that the regulator tap is closed before disconnection.

All CORGI registered installers carry a CORGI ID card, and have a registration number. Both should be recorded in your **Benchmark** Log Book. You can check your installer by calling CORGI direct on 01563 72300

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



- e. Ensure that the replacement cylinder connections are gastight. Any leaking vapour will have a distinctive odour. Test by using leak detection solution around the connections - bubbles will form if vapour is leaking.

NEVER USE A NAKED FLAME

- f. It is essential that the correct pressure regulator, with the correct pressure setting and capacity for the installation, is used in accordance with the manufacturer's instructions.
- g. In the case of a connection on a pressure regulator or gas appliance which relies upon a sealing washer to maintain a gastight joint, it is essential to check that the washer is present and that it is sound and correctly positioned prior to making the connection. Where the connection relies on a metal-to-metal seating or bullnose connection to obtain a gastight joint, it is essential that the mating surfaces be clean and undamaged.

Under no circumstances should a damaged valve or connection be used.

- h. Where connections are designed to be tightened with a spanner, it is essential that a spanner of the correct size is used and that the union is firmly tightened - hand tightness is not sufficient.

When self sealing valves are incorporated in a gas cylinder, connection should be made in accordance with the manufacturer's instructions and tools should not be used.

- i. If the continuation of supply is interrupted when a cylinder is changed, it is essential that all appliance taps are turned off before the change is made.
- j. With bulk storage tanks always ensure that the site is kept clean and clear of rubbish. Such vessels are designed to be filled on site by the gas distributors.

EMERGENCY ACTION

GAS LEAK

(usually detected by a distinctive smell)

DO NOT use electrical switches

DO NOT look for a leak with a naked flame

IMMEDIATE ACTION:

- CLOSE all supply valves.
- EXTINGUISH all sources of ignition.
- Open all doors and windows.
- If leakage cannot be stopped REMOVE CYLINDERS to a safe place in the open air and advise the supplier. If this is not possible, evacuate the premises and call the fire brigade.
- Do not use the installation until it has been checked by a CORGI registered installer.

EMERGENCY ACTION

FIRE

IMMEDIATE ACTION:

IF SAFE TO DO SO, SHUT OFF THE GAS SUPPLY

Do not attempt to extinguish gas flame by any other means.

Raise the alarm and call the fire brigade stating that a liquefied petroleum gas cylinder is involved, and give its location.

DO NOT GO NEAR A CYLINDER if a cylinder is being heated by fire.

ALERT EVERYONE in the immediate area of the fire and evacuate the building.

ADVISE THE FIRE BRIGADE on their ARRIVAL of the LOCATION of the cylinder.

If a cylinder is not involved in the fire and it is **SAFE TO DO SO**, close all cylinder valves and remove the cylinders to a safe place.



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

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

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

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August 2001

UIN 157366 A01

Caradon
Ideal Limited

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www.idealboilers.com