



Installation Instructions

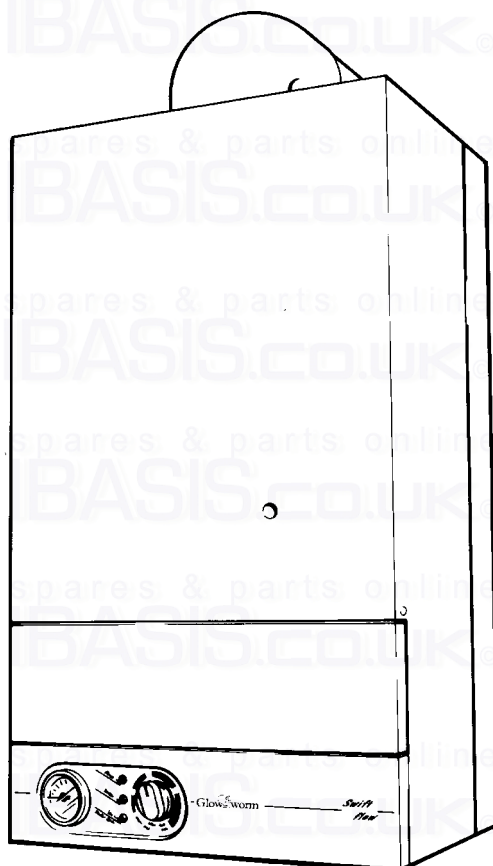
To be left with the user

*Swift
flow*

120

G.C. No. 47 313 13

Fanned Flue Combination Boiler



This is a Cat I_{2H} appliance

HEATCALL

One Contact Total Service

Customer Services:

Tel: (01773) 828100

Fax: (01773) 828070

Hepworth Heating Ltd.,

Nottingham Road, Belper, Derbyshire. DE56 1JT

General/Sales enquiries:

Tel: (01773) 824141 Fax: (01773) 820569

1.1 Important Notice

This boiler is for use only on natural gas (G20).

Certification

The boiler is certificated for safety and performance. It is, therefore, important that no alteration is made to the boiler unless approved, in writing, by Hepworth Heating Ltd.

Any alteration not approved by Hepworth Heating Ltd., could invalidate the certification, boiler warranty and may also infringe the current issue of the statutory requirements.

CE Mark

This boiler meets the requirements of Statutory Instrument, No. 3083, The Boiler (Efficiency) Regulations, and therefore is deemed to meet the requirements of Directive 92/42/EEC on the efficiency requirements for new hot water boilers fired with liquid or gaseous fuels.

Type test for purpose of Regulation 5 certified by:-
Notified body 0087.

Product/production certified:- Notified body 0087.

The CE Mark on this appliance shows compliance with:-

1. Directive 90/396/EEC on the approximation of the Laws of the Member States relating to appliances burning gaseous fuels.
2. Directive 73/23/EEC on the harmonization of the Laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
3. Directive 89/336/EEC on the approximation of the Laws of the Member States relating to electromagnetic compatibility.

1.2 Sheet Metal Parts

WARNING. When installing the boiler, care should be taken to avoid any possibility of injury when handling sheet metal parts.

1.3 Notes for Information

The instructions consist of three parts, Installation, Servicing and Instructions for Use, which includes the Guarantee Registration Card. The instructions are an integral part of the appliance and must be handed to the user on completion of the installation.

Materials and equipment should be fit for their purpose and of suitable quality and workmanship.

1.4 Requirements

The installation of this boiler must be carried out by a competent person in accordance with the rules in force in the countries of destination.

Manufacturer's instructions, supplied.

Manufacturer's instructions must not be taken as overriding statutory requirements.

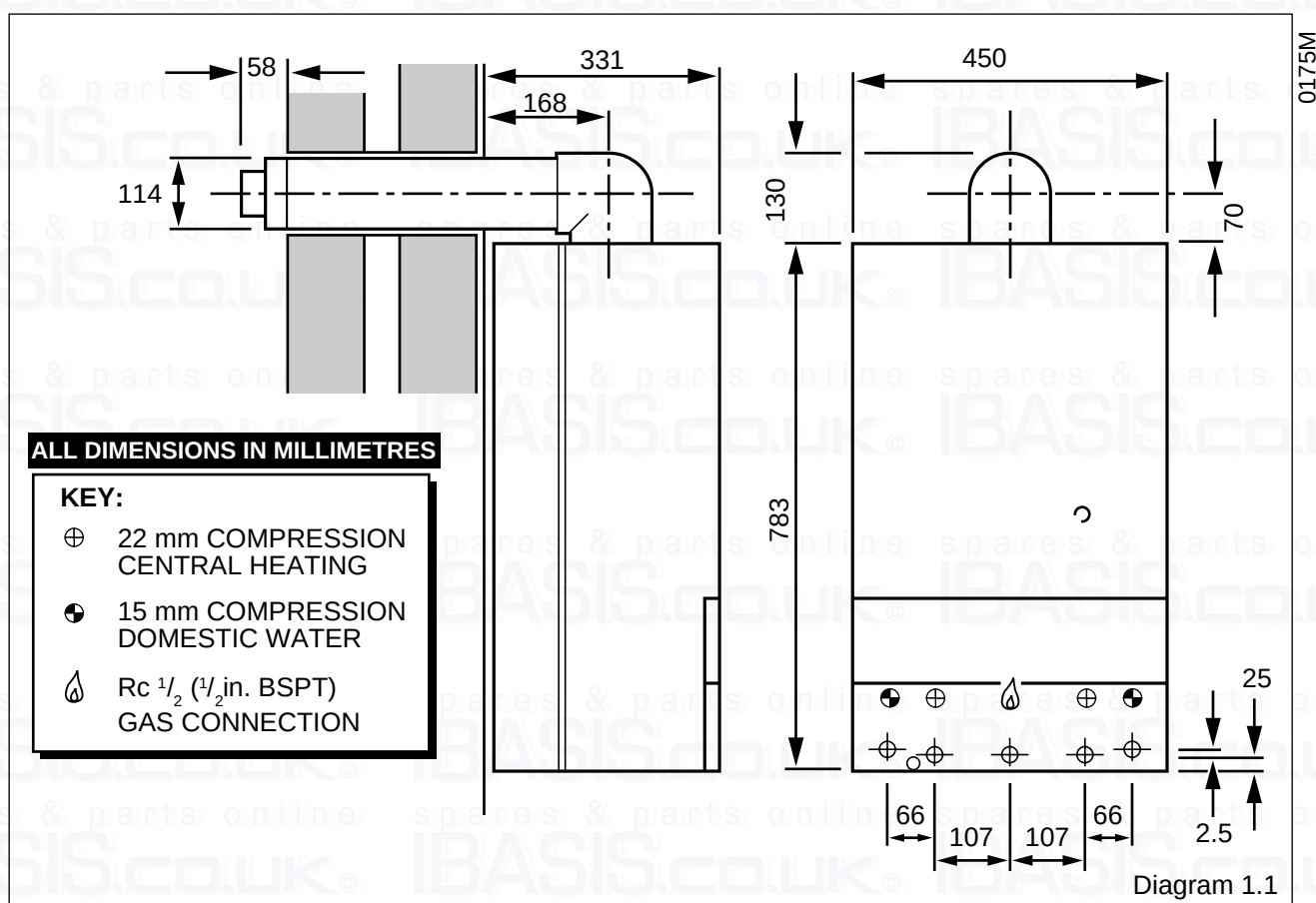
1.5 Data Label

The data label is on the inner case cover.

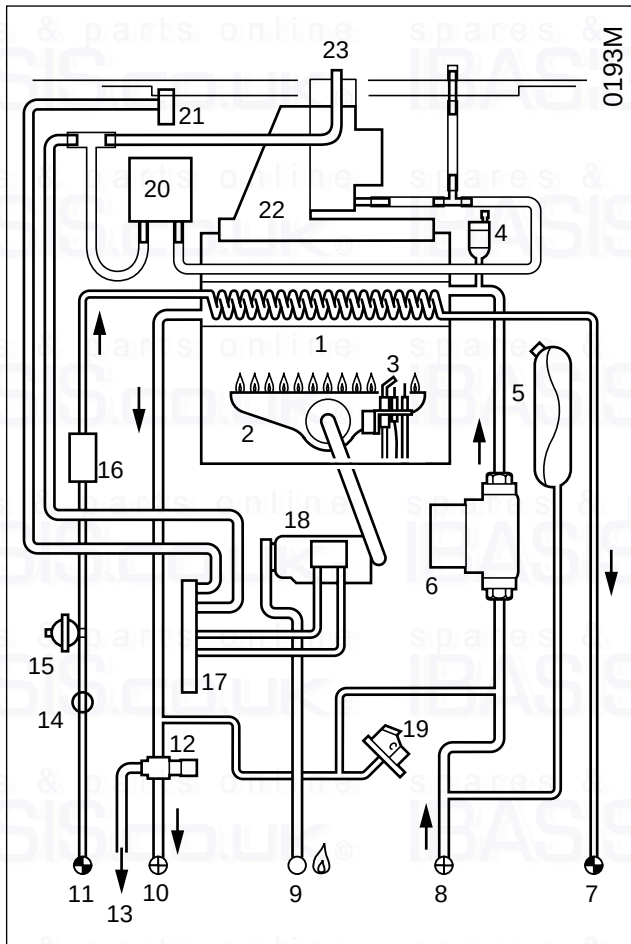
1.6 Data

See Tables 1 and 2.

All dimensions are given in millimetres (except as noted).



1 General



KEY

- | | |
|------------------------|------------------------------|
| 1 - Heat Exchanger | 13- Safety Valve Discharge |
| 2 - Main Burner | 14- Water Throttle |
| 3 - Pilot Burner | 15- Mini Expansion Vessel |
| 4 - Automatic Air Vent | 16- Flow Switch |
| 5 - Expansion Vessel | 17- Gas/Air Ratio Unit |
| 6 - Pump | 18- Multi-Functional Control |
| 7 - D.H.W. Hot Outlet | 19- Pressure Switch-Water |
| 8 - C.H. Return | 20- Air Pressure Switch |
| 9 - Gas Supply | 21- Venturi |
| 10- C.H. Flow | 22- Flue Collector |
| 11- D.H.W. Cold Inlet | 23- Pressure Sensing Probe |
| 12- Safety Valve | |

Diagram 1.2

TABLE 1

	C.H. Max	D.H.W Max	MIN
NOMINAL HEAT INPUT	26.9	39.2	9.8
NOMINAL HEAT OUTPUT	23.5 †	35.2	8.8
BURNER PRESSURE	6.3 ††	13.1	0.3
APPROX. GAS RATE	2.8	4.1	1.0

† FACTORY PRESET TO 17.6 kW

†† FACTORY PRESET TO 2.7 mbar

TABLE 2

Lift Weight	39.0 kg (85.98 lb)	* D.H.W working pressure	0.6 to 10bar (8.70 to 188lbf/in ²)
Total Weight	52.8 kg (116.40 lb)	■ Maximum Heating system water content using fitted expansion vessel.	119 litres (26.2 gallons) with a cold fill pressure of 0.7bar
● Gas connection	Rc ¹ / ₂ (1/2in BSPT)	Electrical supply	240V~50Hz
● Heating and return	22mm compression	Electrical rating	130W
● Domestic hot water	15mm compression	Internal Fuse rating: Fuse 1 Type 2AT Fuse 2 Type 3.15AT	
Safety valve	Preset 3bar (43.5lbf/in ²)		
Safety valve discharge	15mm copper		
Water content	1.74 litres (0.38 gallon)		
■ Expansion vessel capacity	8 litres (1.76 gallons)		
Heating cold fill pressure minimum	0.7bar (10.1lbf/in ²)		

● Ball valves are fitted in water and gas connections, plus a drain point on all water connections.

* Boiler starts at an inlet pressure of 0.6bar but requires 0.8bar for maximum output.

■ For larger systems use an additional expansion vessel, see Section 4.

1.7 Gas Supply

The gas installation must be in accordance with the rules in force in the countries of destination.

The supply from the governed gas meter must be of adequate size to provide a steady inlet working pressure of 20mbar (8in wg) at the boiler.

1.8 Electrical Supply

WARNING: The boiler must be earthed.

The installation must be in accordance with the rules in force in the countries of destination.

All system components shall be of an approved type.

Connection of the whole electrical system of the boiler and any heating system controls to the electrical supply, must be through one common isolator.

Isolation should preferably be by a double pole switched 3A fused spur box, with a minimum separation of 3mm in both poles. The fused spur box should be readily accessible and preferably adjacent to the appliance. It should be identified as to its use.

A fused 3A three pin plug and shuttered socket outlet may be used instead of the fused spur box, provided that they are not used in a room containing a fixed bath or shower.

2.1 Boiler Position

The boiler must be installed in accordance with the rules in force of the countries of destination.

The boiler is not suitable for outside installation.

Any electrical switch or boiler control using mains electricity must be positioned so that it cannot be touched by a person using a bath or shower.

The boiler must be mounted on a flat wall which is sufficiently robust to take its weight, refer to Table 2.

If the boiler is to be fitted into a cupboard, compartment or unusual location, special procedures are necessary.

Make sure that the cupboard or compartment air vents are positioned to be clear of obstructions at all times, refer to Section 3.7.

2.2 Clearances

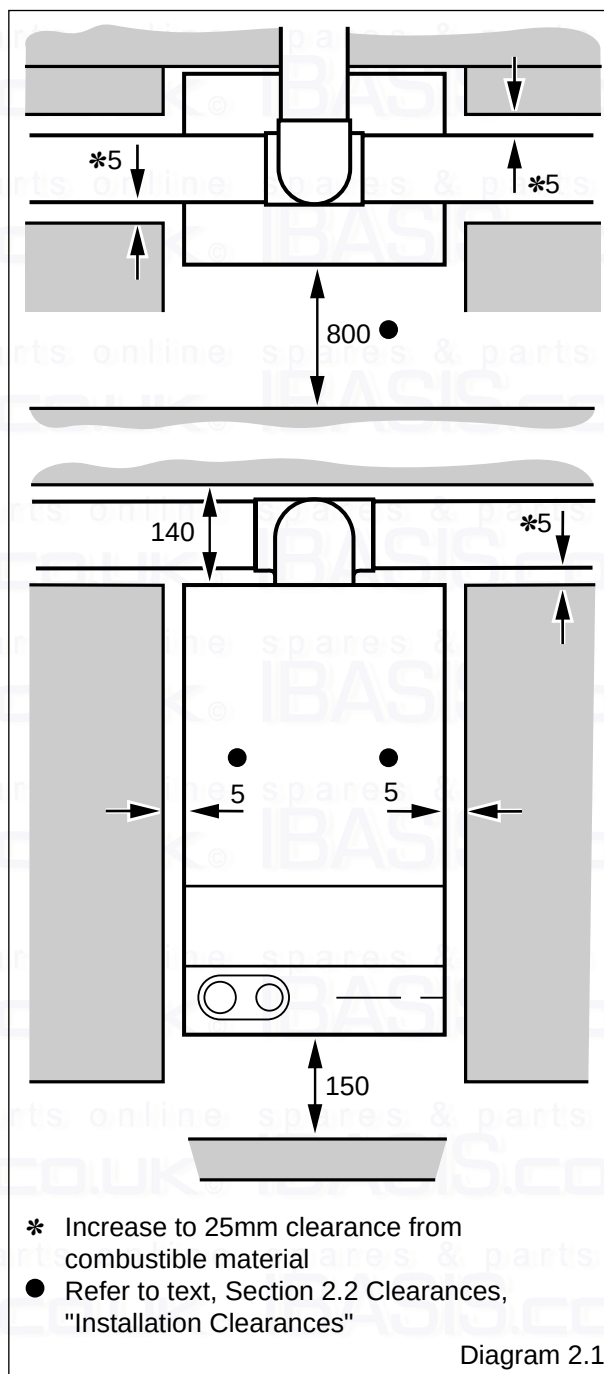
The boiler should be positioned so that at least the minimum operational and servicing clearances are provided, see diagram 2.1.

Installation Clearances

For rear flue installation the dimension between the boiler mounting wall and a permanent facing wall must be a minimum of "X", see diagram 3.1 and 3.3, plus 272mm.

For side flue installation the dimension between any adjacent permanent walls must be a minimum of "Y", see diagram 3.2 and 3.3, plus 332mm.

For flue installations where internal clearances are not practicable, then external installation will be necessary.



Note. All flue assemblies are designed for internal installation, given that there is sufficient clearances opposite to the flue for the installation of the flue.

For a wall thickness up to 300mm, provided there is sufficient space available, the flue can be fully installed from the inside.

For a wall thickness over 300mm the external flue hole will need to be made good from the outside.

If there is insufficient clearance the flue can be installed from outside.

3.1 Flue

The flue must be installed in accordance with the rules in force in the countries of destination.

3.2 Flue Position and Length

The air and flue ducting connect to the top of the boiler using a flue elbow and can be positioned in one of three directions:

rearward, left or right.

The standard flue will provide the range shown in diagram 3.1 for a rear flue or diagram 3.2 for a side flue.

If a longer flue duct is required, do not extend the ductings. A 1, 2 or 3metre flue system and elbow/terminal kit must be used and can be supplied. This will provide the range shown in diagram 3.3 for a rear flue, diagram 3.4 for a side flue.

A Flue Bend Kit or Vertical Flue Kit can be supplied, with instructions.

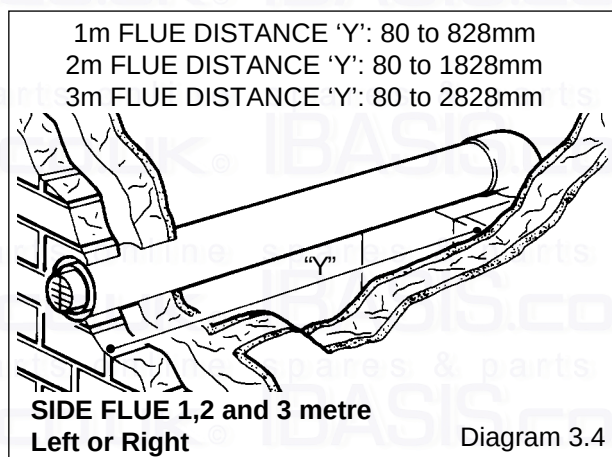
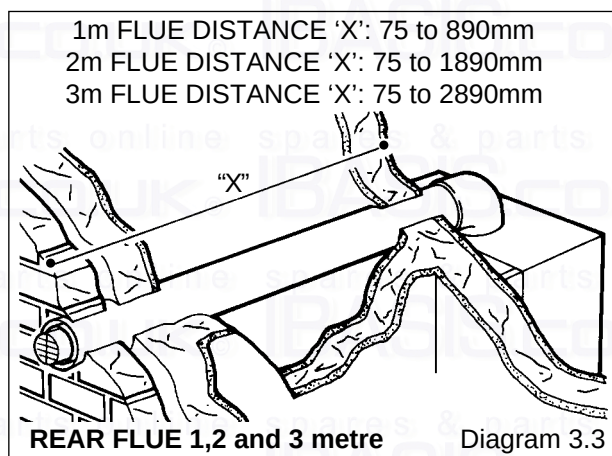
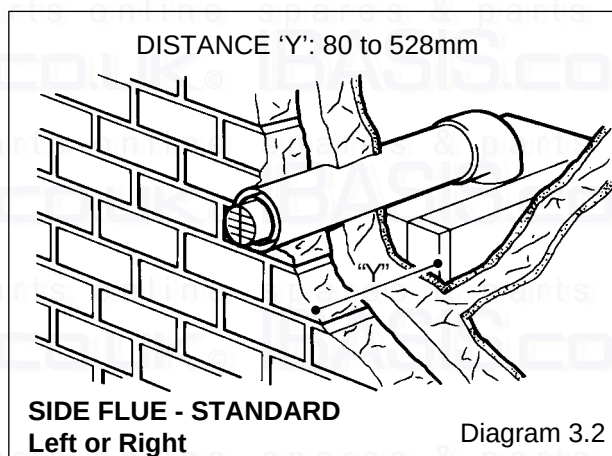
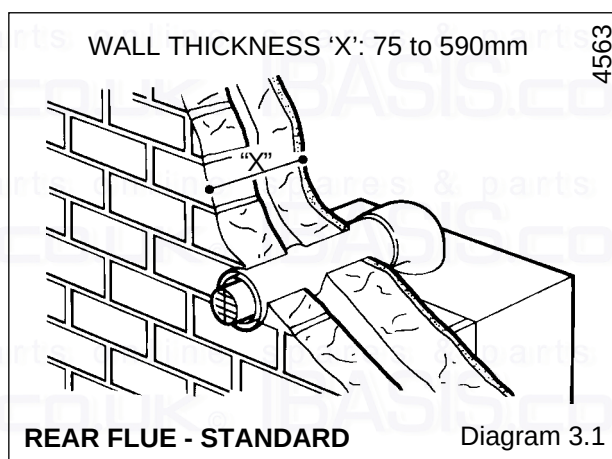
3.3 Terminal Position

The minimum acceptable siting dimensions for the terminal from obstructions, other terminals and ventilation openings are shown in diagram 3.5.

The terminal must be exposed to the external air, the position allowing free passage of air across it at all times.

Car ports or similar extensions of a roof only, or a roof and one wall, require special consideration with respect to any openings, doors, vents or windows under the roof. Care is required to protect the roof if made of plastic sheeting. If the car port comprises of a roof and two or more walls, seek advice from the local gas undertaking before installing the boiler.

If the terminal is fitted within 600mm below plastic guttering, an aluminium shield 1500mm long should be fitted immediately beneath the guttering or eaves. If the terminal is fitted within 450mm below painted eaves or a painted gutter, an aluminium shield 750mm long should be fitted immediately beneath the guttering or eaves.



3.4 Terminal Guard

A terminal guard is required if persons could come into contact with the terminal or the terminal could be subject to damage.

If a terminal guard is required, it must be positioned to provide a minimum of 50mm clearance from any part of the terminal and be central over the terminal.

The guard should be similar to that shown in diagram 3.5, and can be bought from:

Tower Flue Components Ltd
Morley Road
Tonbridge
Kent
TN9 1RA
their type K3.

3.5 Timber Frame Buildings

If the boiler is to be installed in a timber frame building, seek advice from the local gas undertaking or from Hepworth Heating Ltd.

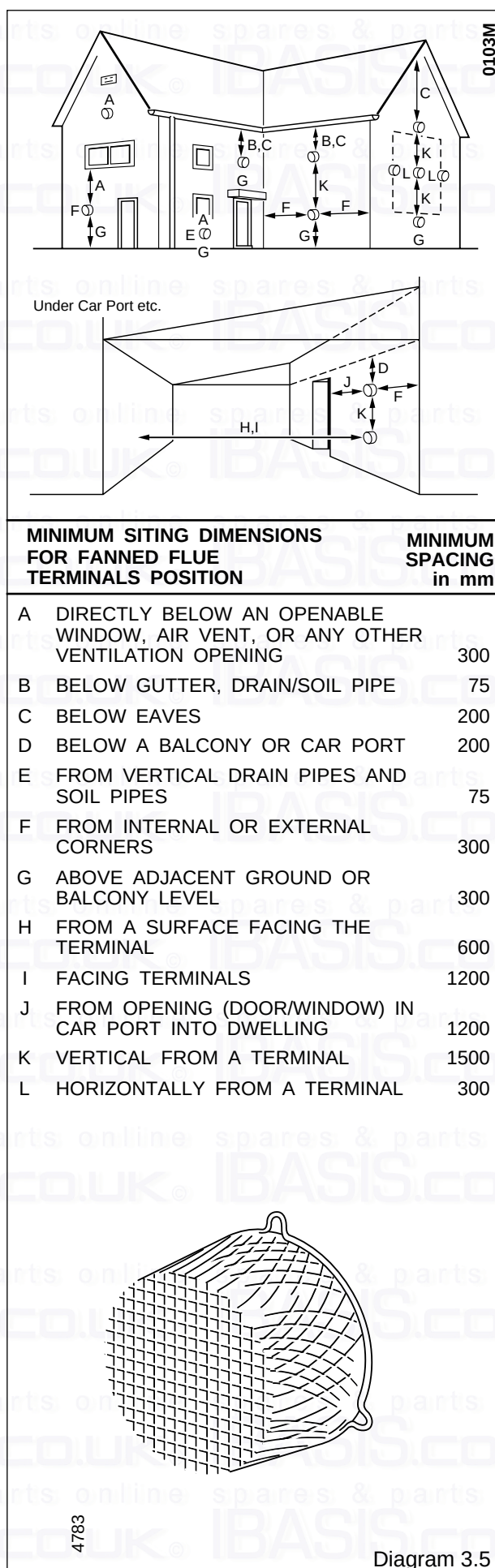
3.6 Room Ventilation

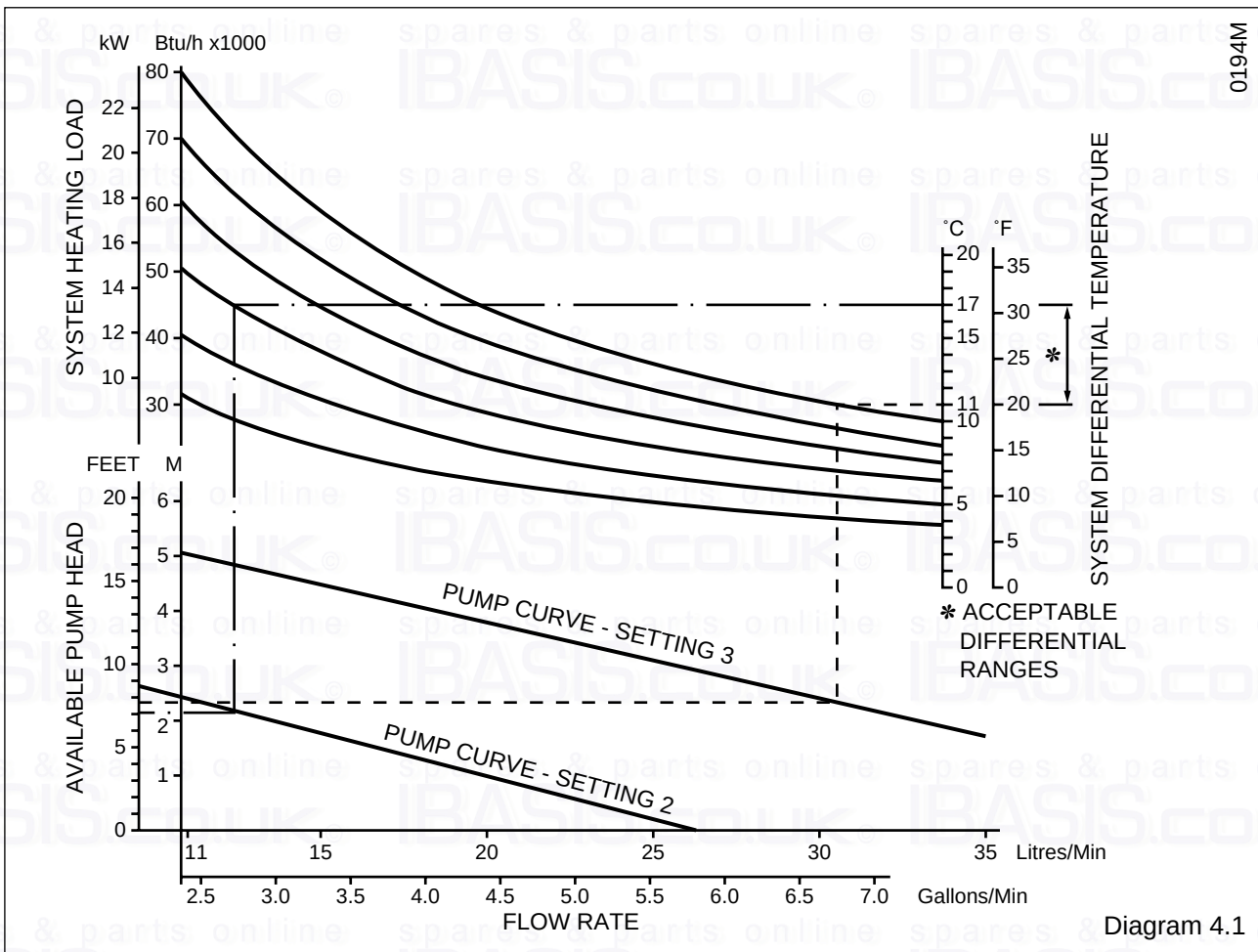
The boiler is room sealed, so when it is installed in a room or space, a permanent air vent is not required.

3.7 Cupboard or Compartment Ventilation

If the boiler is to be fitted in a cupboard or compartment, permanent high and low level air vents must be provided. The vents must have at least the effective areas as given in Table 3.

TABLE 3		
Position of Air Vent	Air from Room or Internal space	Air Direct from Outside
High Vent	392cm ² (60.8in ²)	196cm ² (30.4in ²)
Low Vent	392cm ² (60.8in ²)	196cm ² (30.4in ²)





4.1 General Notes

The boiler is for use in sealed water systems only.

4.2 Safety Valve

The safety valve is an integral part of the boiler and it cannot be adjusted.

4.3 Pressure Gauge

A pressure gauge is incorporated into the boiler to indicate the system pressure.

4.4 Pump

The pump is integral with the boiler.

The remaining circulating pressure head available from the pump is shown in diagram 4.1.

4.5 Expansion Vessel

The boiler has an integral expansion vessel with a capacity of 8Litres (1.76gallons), with a charge pressure of 0.75bar.

The maximum heating system water content using the fitted expansion vessel ranges from 119Litres with a cold fill pressure of 0.7bar, to 98Litres with a cold fill pressure of 1.05bar. If, due to a high static head, the cold fill pressure is higher, then the expansion vessel pre-fill pressure must be increased, and the maximum system volume decreased.

4.6 Flow Rate

A valve must be incorporated in the main flow or return of the system, valve "A" shown in the flow in diagram 4.2. This valve must be lockable and positioned so that inadvertent closure or unauthorised interference is not possible. The design differential can be between 11°C (20°F) and 17°C (30°F), dependent on the system resistance and the available pump head. The pump adjuster should normally be left at maximum (3) but in some cases it is permissible to adjust the pump to a lower setting (2). See diagram 4.1.

To use diagram 4.1 start with the required heating system load.

In the example shown the maximum boiler output has been chosen, 23.5kW (80,000Btu/h).

Draw a horizontal line from the required system differential temperature axis to intersect the curve. In the example 11°C (19.8°F) has been chosen, shown -----. At the point of intersection draw a vertical line to cross the pump curve. From this point draw a further horizontal line to determine the available pump head. In the example 2.4m (7ft9in) is available. A greater pump head can be achieved by choosing a higher system differential temperature, up to a maximum of 3.8m (12ft 6in) at a system differential of 17°C (30.6°F). The system must be designed such that the available pump head is not exceeded.

If the heating system load is less than 14.7kW (50,000Btu/h) then it is permissible to adjust the pump setting to (2), shown - - - - - This results in an available pump head of 2.1m (7ft). This is the maximum that can be achieved with the pump at this setting.

4.7 Bypass

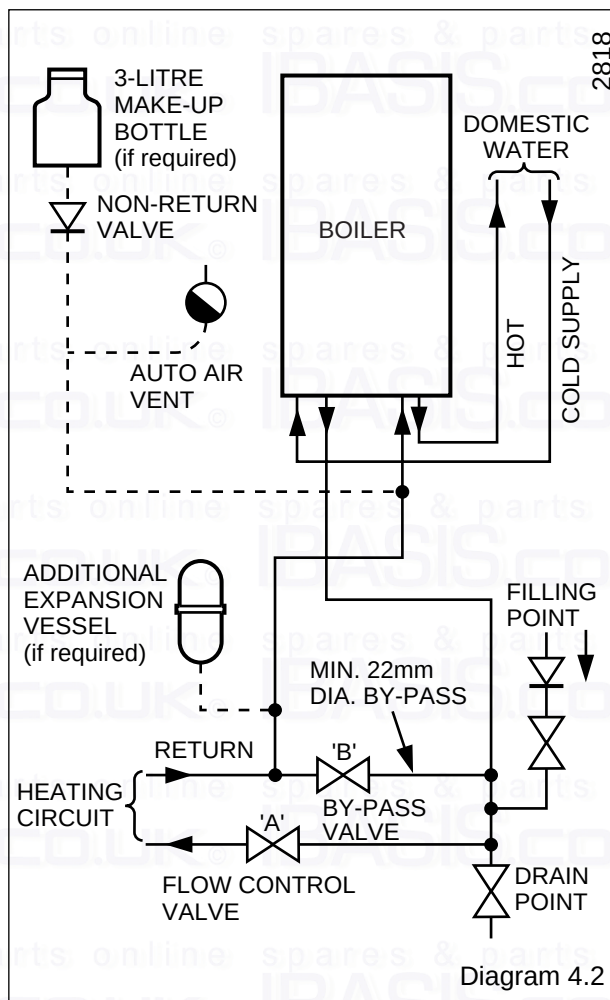
It is ESSENTIAL that a bypass of 22mm od minimum is fitted to all installations. The bypass must have a lockable valve, "B" in diagram 4.2, incorporated in a position so that inadvertent closure is not possible.

The bypass MUST be fitted before any system control. A radiator bypass is NOT recommended.

4.8 Make Up

Provision should be made for replacing water lost from the system using a make up bottle mounted in a position higher than the top point of the system, connected through a non-return valve to the return side of the heating circuit, see diagram 4.2.

Alternatively, provision for make up can be made by pre-pressurisation of the circuit.



4.9 Filling Sealed Systems

Provision for filling the system at a low level must be made. Three methods of filling are shown in diagram 4.3. There must be no permanent connection to the mains water supply, even through a non-return valve.

4.10 Corrosion Inhibitor

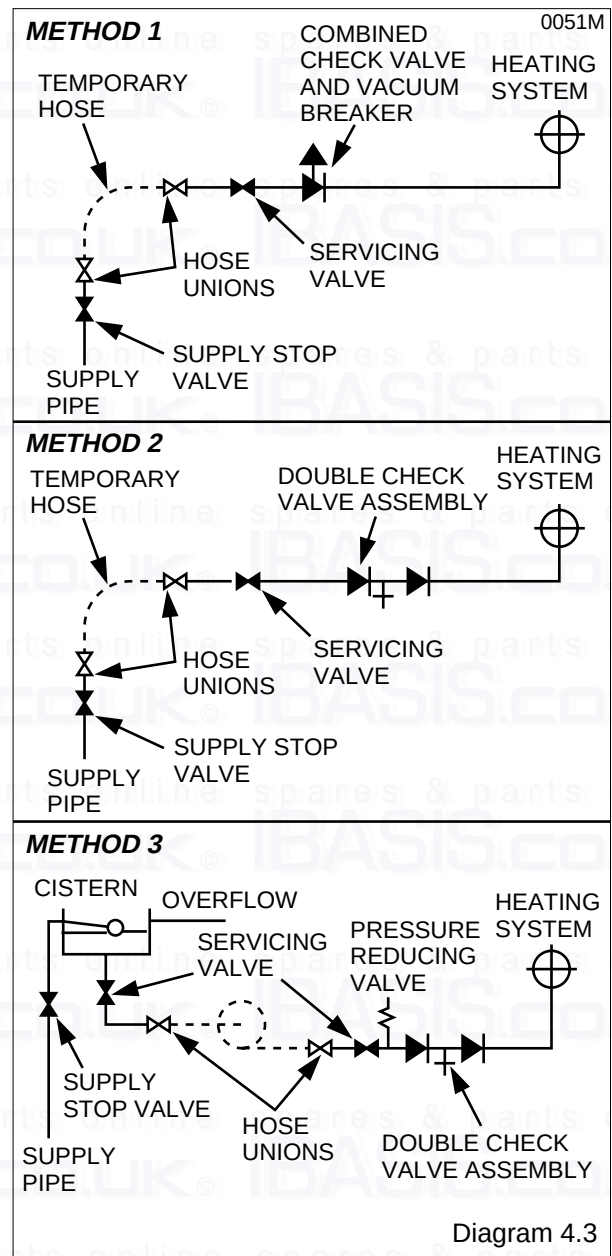
If an inhibitor is to be used in the system, contact a manufacturer so that they can recommend their most suitable product.

When fitting the boiler into an existing system, special care should be taken to drain the entire system, including radiators, then thoroughly cleaning out before fitting the boiler whether or not adding an inhibitor.

4.11 Draining Tap

A draining tap must be provided at the lowest points of the system, which will allow the entire system to be drained. An additional draining tap **MUST** be fitted close to the boiler.

The flow and return isolation valves are provided with drain points for boiler heat exchanger drainage.



5.1 General

The domestic hot water service must be in accordance with the rules in force in the countries of destination.

5.2 Water Pressure

For the minimum and maximum working pressures of the domestic hot water circuit of the boiler, refer to Section 1.6. If the cold water supply pressure exceeds the maximum, a pressure reducing valve must be fitted in the supply to the boiler to reduce the pressure to within the limits given.

5.3 “Hard” Water Areas

In areas where the water is “hard”, that is, more than 200mg/litre, it is recommended that a proprietary scale reducer is fitted in the cold supply to the boiler. Check the total water “hardness” using the kit supplied, in the door, following the instructions given. Consult the local water company for additional advice.

A double check valve assembly must be fitted upstream of the scale reducer. For the relative position of the scale reducer and pressure reducing valve, if required, refer to the manufacturer’s instructions.

6.1 Unpacking

Remove the top carton and cut out the flue template from the inner flap.

Open the control door, see diagram 6.1.

Remove the two screws securing the outer case and then lift it at the top and pull it forwards and off, see diagram 6.1.

Remove the cover of the inner case, secured with four screws, see diagram 6.2

Slacken flue collector thumb screws.

Remove the fan securing screws.

Disconnect the electrical plug connector and air pressure tube from the fan, see diagram 6.3.

Pull the fan forwards, at the bottom and rotate to disengage the fan outlet from rear bracket.

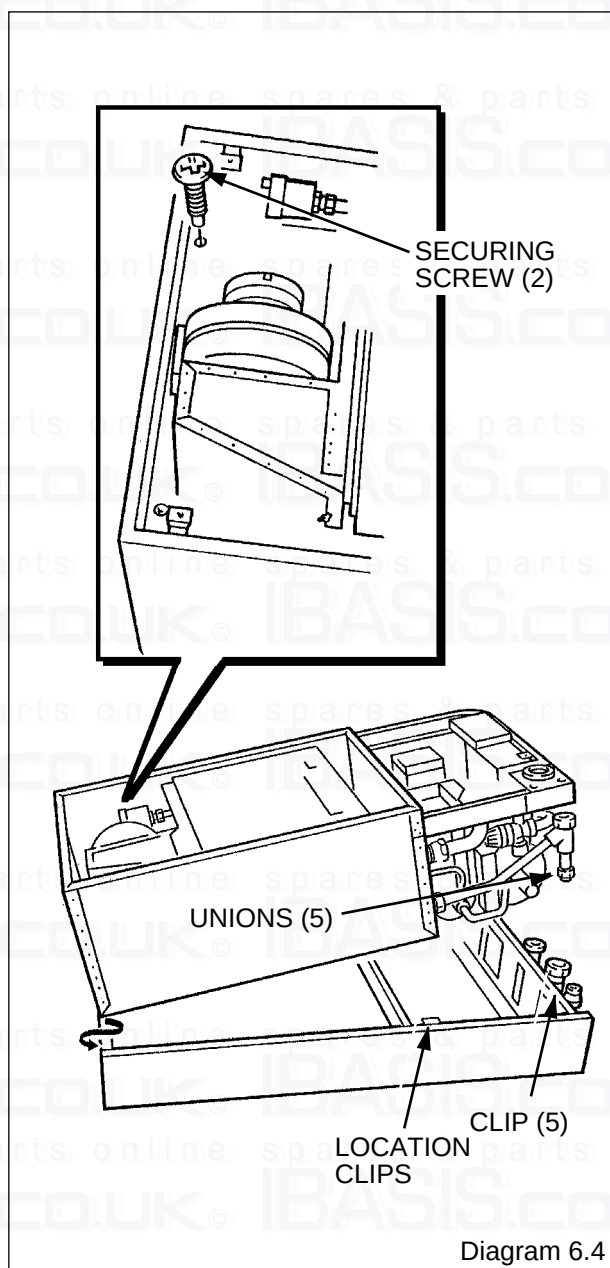
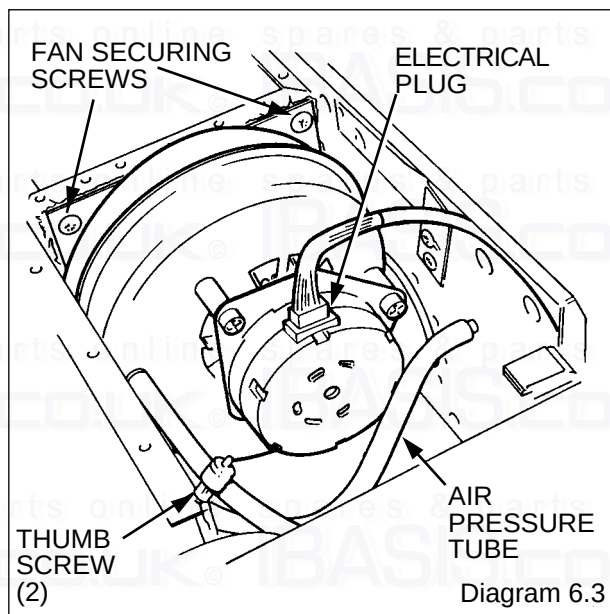
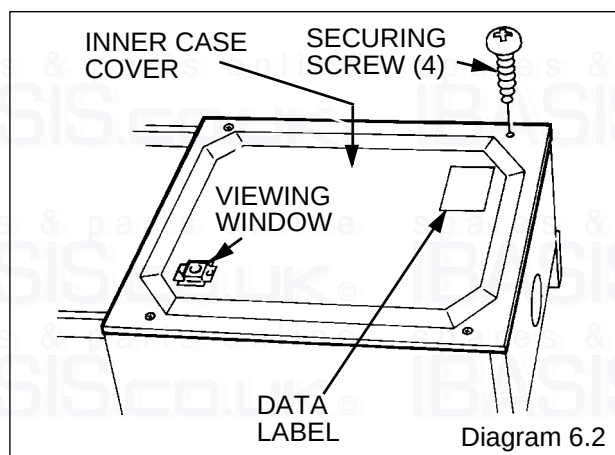
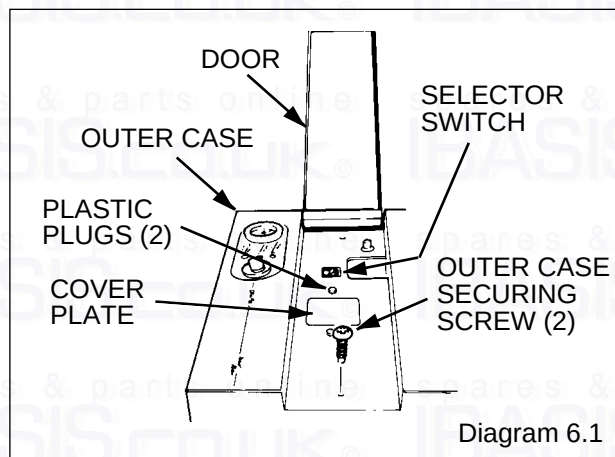
Take care not to damage the seal.

Tilt the fan and withdraw.

Disconnect the gas cock union and the front unions of the isolation valves, see diagram 6.4.

Slightly loosen the clips of the gas service cock and the isolating valves.

Remove the two boiler securing screws then remove the boiler from the mounting frame, by pulling the studs from the clips and unhooking it at the top.



6.2 Marking

The boiler mounting frame is the same width as the boiler case. The flue connection is on the top.

Place the boiler mounting frame on the wall in the required position, see diagram 2.1, to maintain minimum clearances. Make sure that the isolation valves are at the bottom facing forward and that the frame top is horizontal, then mark the four wall fixing points through the holes in the two horizontal straps.

Position the flue template on the wall, the arrow points on the centres of the two upper fixing points previously marked, see diagram 6.5 which also gives dimensions.

For a rear flue, mark the position as required.

For a side flue, mark the horizontal flue centre line at the sides of the template. Extend the flue centre line horizontally left or right to the internal corner where the flue is required to exit to outside.

Mark the position of the circular hole, on the flue exit wall, using the dimensions given in diagram 6.6.

From the flue position marks, check that the flue terminal will be in a suitable position, see diagram 3.5.

6.3 Flue Hole Cutting

Having marked out the flue centre, cut a hole for the flue, using, preferably, a 130mm minimum core drill.

Cut the hole horizontally in the wall, making sure that it does not slope down towards the boiler.

6.4 Wall Sleeve

If the wall thickness "Q" is less than 300mm cut the wall sleeve to the required length, see diagram 6.7.

Fit the wall sleeve.

Make good around the wall sleeve at both internal and external wall faces, through the wall sleeve if internal access only is available.

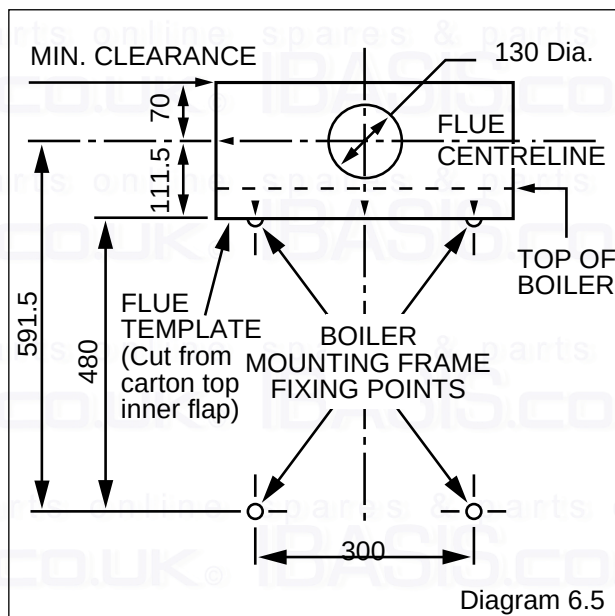
If the wall thickness "Q" is greater than 300mm the wall sleeve must be fitted flush with the INSIDE wall face. If the inner end of the sleeve sticks out into the cavity then, if desired, the wall sleeve can be trimmed back to the depth of the inner skin of brickwork. Make good at the internal wall face but leave the external wall face until the flue has been fitted.

6.5 Boiler Mounting Frame Fixing

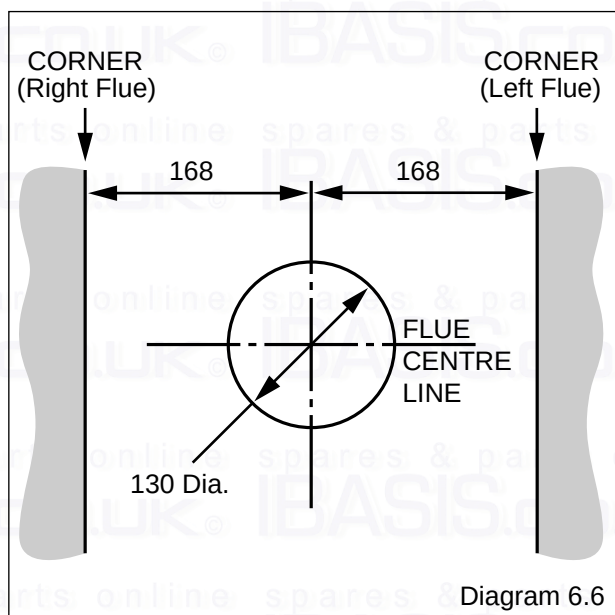
Position the flue template over the flue hole and check the position of the wall fixing points. Mark the position of the fixing holes again, if required.

Drill the four fixing holes and insert wall plugs to suit No.10x50mm screws.

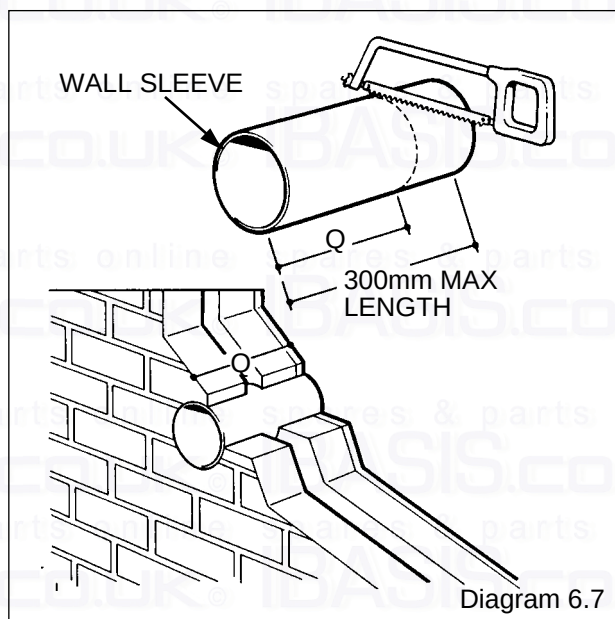
Secure the boiler mounting frame to the wall using No.10x50mm screws.



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7.1 Flue Length

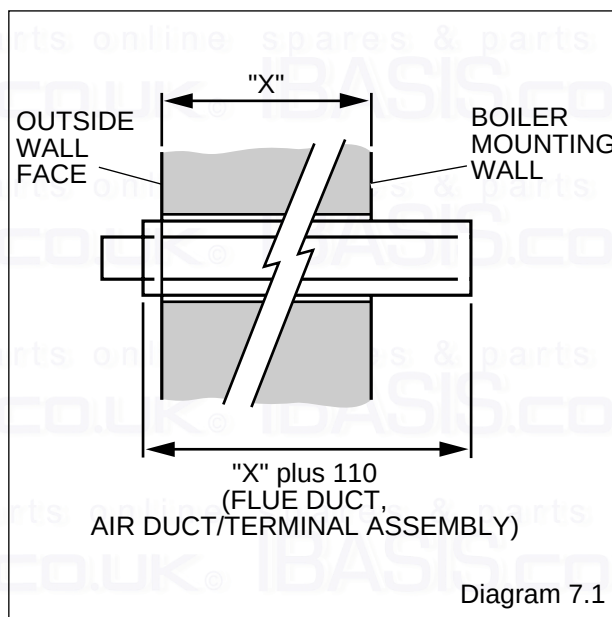
For a rear flue, measure the distance from the outside wall face to the boiler mounting wall. Check that the flue length will be suitable, see diagram 3.1 for a standard flue system or diagram 3.3 for a 2 or 3 metre flue system.

For a side flue, measure the distance from the outside wall face to the side of the boiler mounting frame. Check that the flue length will be suitable, see diagram 3.2 for a standard flue system or diagram 3.4 for a 2 or 3 metre flue system.

7.2 Rear Flue

Note. Do not cut the flue duct at the pre-drilled end.

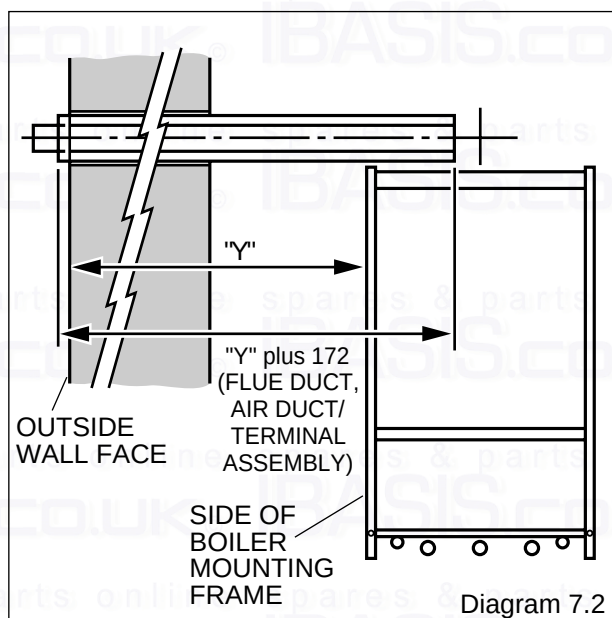
Mark the air duct/terminal assembly and the flue duct at the lengths shown in diagram 7.1 then cut to length, cutting square and removing any burrs.



7.3 Side Flue

Note. Do not cut the flue duct at the pre-drilled end.

Mark the air duct/ terminal assembly and the flue duct at the lengths shown in diagram 7.2 then cut to length, cutting square and removing any burrs.

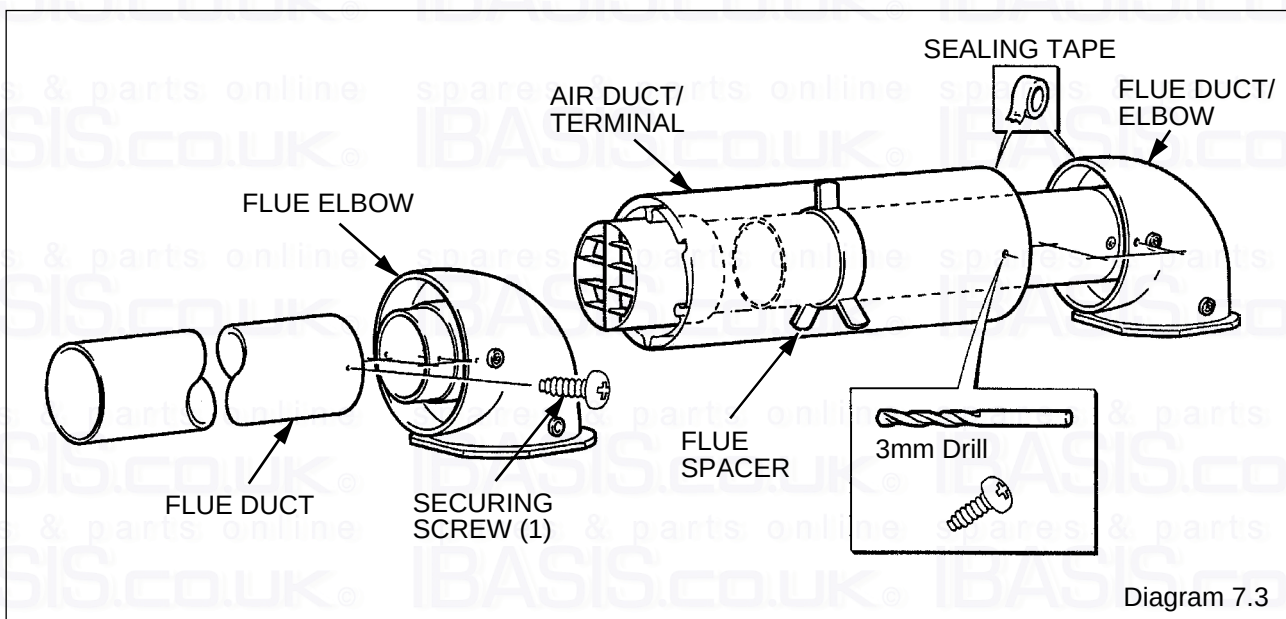


7.4 Flue Assembly

Locate the flue duct, drilled end, onto the flue elbow and secure with screw supplied in loose items pack, see diagram 7.3.

Slide the spacer onto the flue duct.

Locate the flue duct/elbow into the air duct/terminal spigot and the air duct/terminal into the flue elbow making sure of the correct alignment of top. Drill the air duct and secure/seal (external fixing, do not seal) as shown in diagram 7.3.



7.5 Wall Thickness up to 300mm

Fit the self adhesive seal provided in the loose items pack around the air duct/terminal at the position shown in diagram 7.4.

7.6 Wall Thickness over 300mm

Fix the self adhesive foam seal around the air duct/terminal such that, when installed, the seal will be within the wall sleeve, see diagram 7.5.

If the boiler is not to be fitted for some time cover the hole.

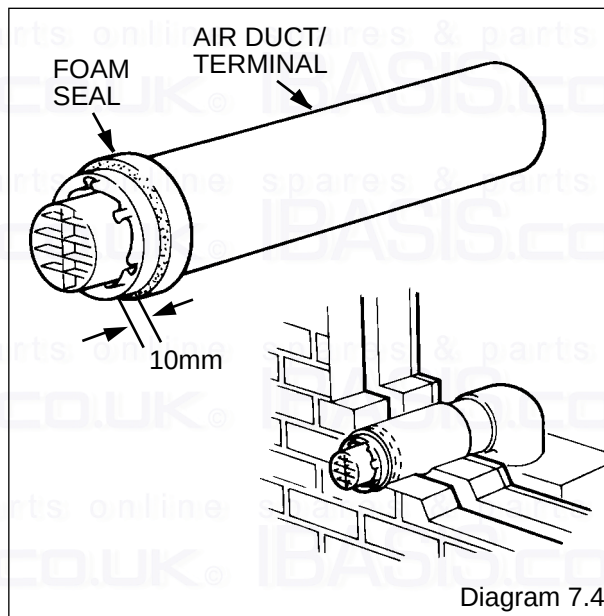
7.7 Internal Flue Assembly

Place the flue assembly into the flue hole to make sure that the flue terminal is correctly positioned and is the correct distance from the outside wall face, see diagram 7.6 and the appropriate diagram 7.1 or 7.2.

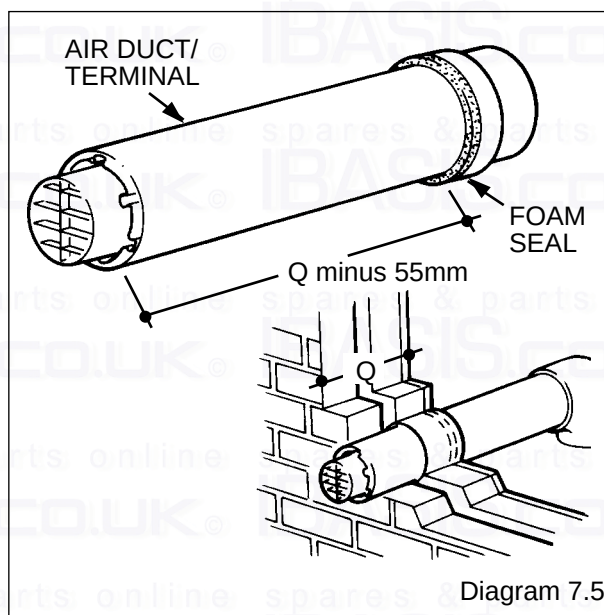
7.8 External Flue Assembly

Remove the flue elbow from the air/terminal duct and the flue duct.

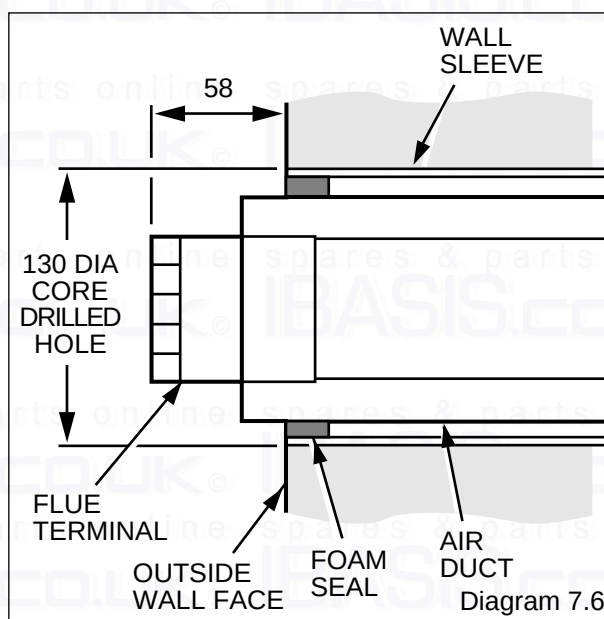
From outside place the flue/air duct assembly into and through the wall sleeve.



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8.1 Gas Connection

The gas supply can be connected from below or through the wall at the rear of the boiler, see diagram 8.1 for position.

Refer also to Section 1.7.

Make the gas supply connection to the gas service cock. Slacken or remove the clip, as desired, whilst making the connection. Do not subject the gas service cock to heat.

8.2 Water Connections

Provision is made for the water connections to be made from below or through an internal wall at the rear of the boiler, see diagram 8.1 for position.

Provision is made for the domestic hot water outlet and heating flow and return pipes to be connected from above, if desired, passing down either side of the boiler, see diagram 8.2 for clearances. Take care that any pipework connected from above, within the boiler mounting frame will clear the expansion vessels.

Flush out the domestic hot water and the heating systems before connecting to the boiler.

Make the connections to the domestic hot water and heating systems by way of the isolating valves, see diagram 8.1.

Slacken or remove the clips, as desired, while making the connections. Do not subject any of the isolating valves to heat.

Make sure that the drain points on the isolating valves are positioned towards the front of the boiler, also that the drain and operating screw heads are accessible.

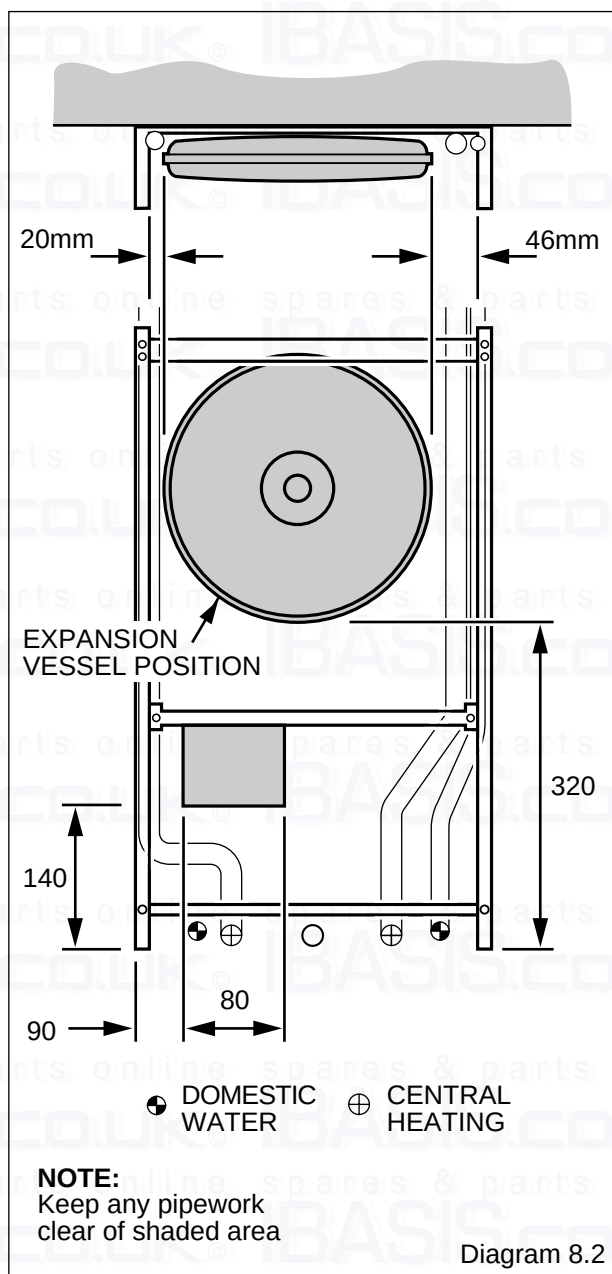
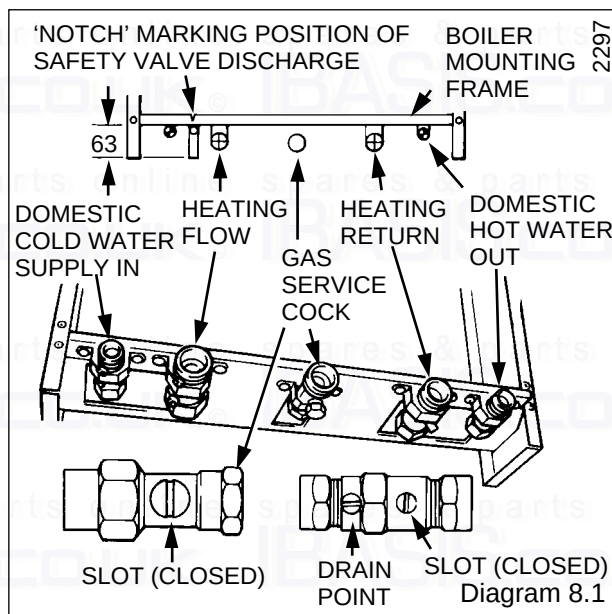
8.3 Safety Valve Discharge

WARNING. It must not discharge above an entrance or window or any type of public access area.

A short discharge pipe is supplied loose with the boiler, which when fitted to the safety valve, will end below the boiler at the mark between the cold water inlet and the heating flow, for position and dimension see diagram 8.1.

This must be extended, using not less than 15mm od pipe, to discharge, in a visible position, outside the building, facing downward, preferably over a drain. The pipe must have a continuous fall and be routed to a position so that any discharge of water, possibly boiling, or steam cannot create any danger to persons, damage to property or external electrical components and wiring.

Note. To make future servicing easier it is advisable to use a compression type fitting to extend the discharge pipe.



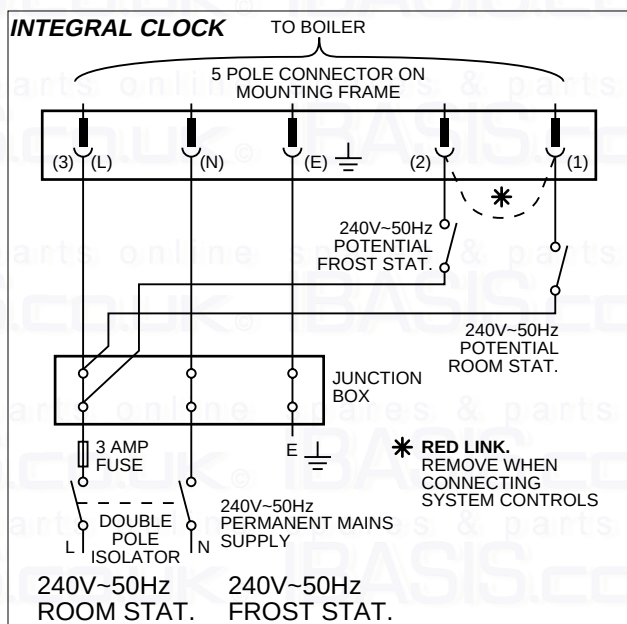
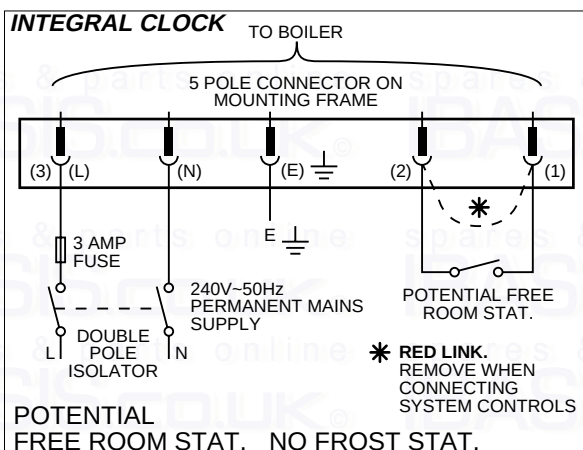
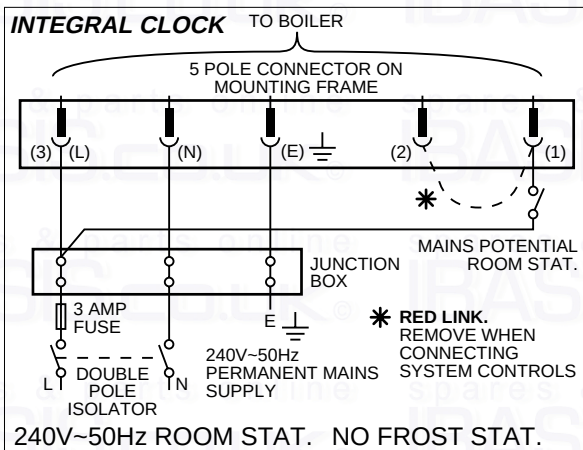
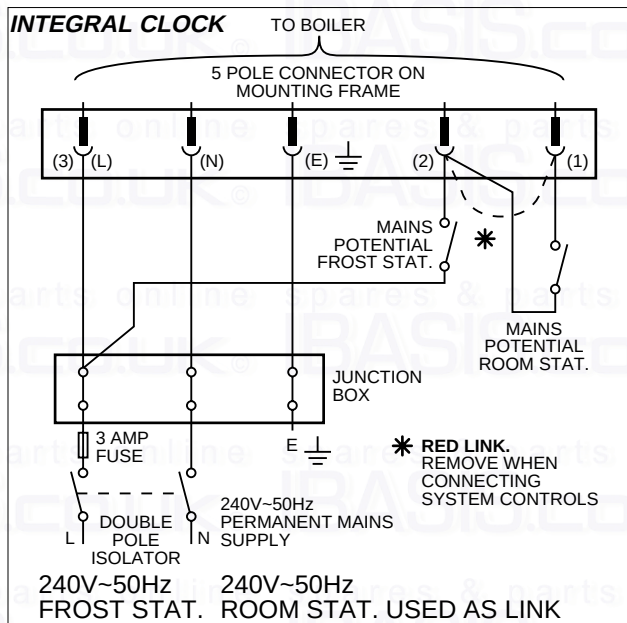
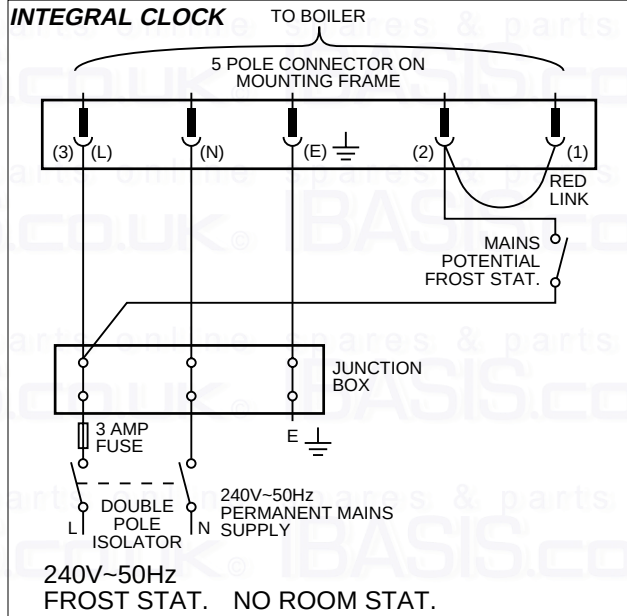
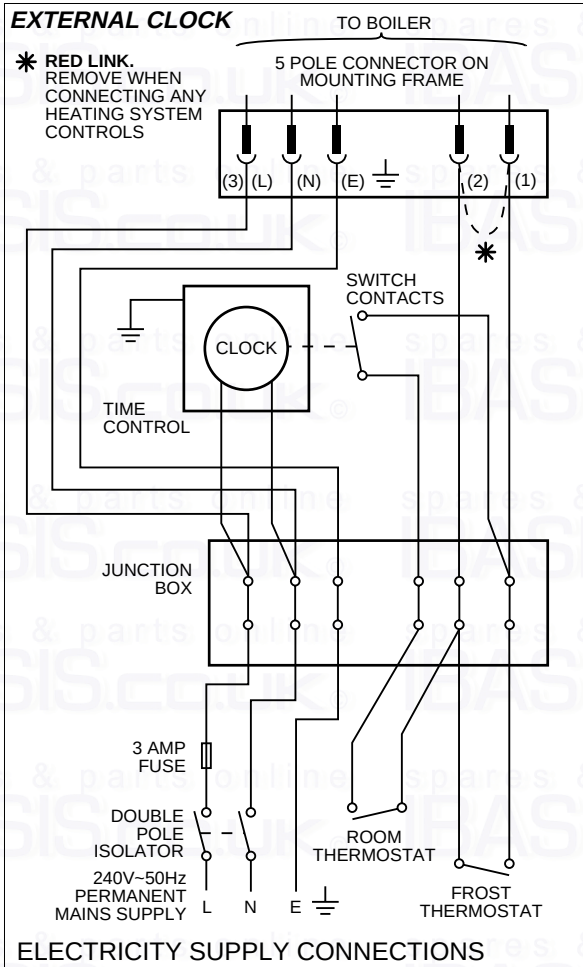


Diagram 9.1

9.1 Supply Cable Connection

The boiler requires a permanent mains supply through an isolator which must also isolate any heating system controls, see diagram 9.1.

Any heating system controls must not interrupt the permanent mains supply to the boiler.

Remove the electrical connector from the loose items pack.

Remove the two screws and cover from the connector, see diagram 9.2.

Using PVC cable of suitable length and rating as stated in Section 1.8, connect the mains supply cable to the appropriate terminals of the connector, see diagram 9.1.

Standard colours are, Brown - Live; Blue - Neutral; Green and Yellow - Earth.

The mains cable outer insulation must not be cut back external to the plug, see diagram 9.2.

Make the earth cable of a greater length so that if the cable is strained the earth would be the last to become disconnected.

CAUTION. It is essential that the polarity is correct.

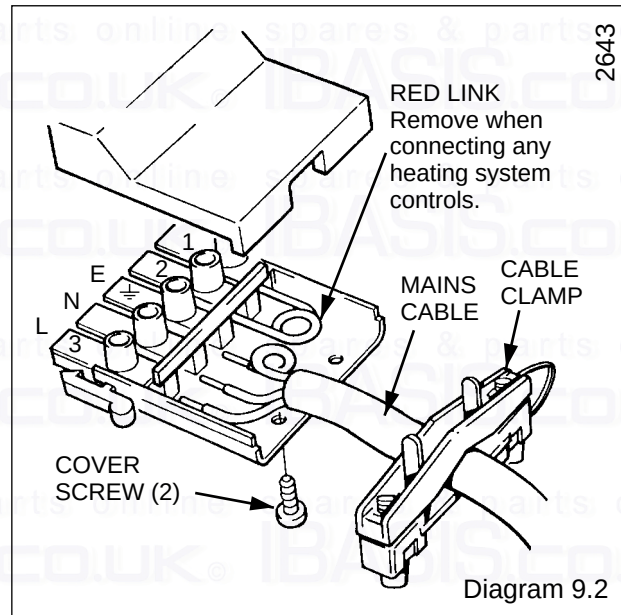


Diagram 9.2

9.2 Heating System Controls

It is recommended that the heating system is controlled by a Time-switch and Room Thermostat, (controls may be mains, low voltage or potential free), or by thermostatic radiator valves.

If electrical controls are not being used, **DO NOT REMOVE** the red link between terminals 1 and 2.

If electrical controls are being used the red link between terminals 1 and 2 should be removed and the heating controls connected in series.

The mains cable outer insulation must not be cut back external to the plug.

9.3 Clock/Timer

An internal clock/timer kit can be supplied, refer to the literature supplied with it.

9.4 Frost Thermostat

If the installation requires protection by a “frost thermostat”, connect a single pole type, to the appropriate terminals of the connector.

9.5 Cable and Connector Securing

After completing all the connections to the boiler, secure the cable(s) with the cover, using the two screws previously removed, see diagram 9.2.

10.1 Mounting the Boiler

After installing the flue, boiler mounting frame, gas, domestic and heating systems, making the electrical connections and preparing the flue components, continue as below:

Lift the boiler into position, hooking it onto the boiler mounting frame at the top, fully push the boiler back to the mounting frame, locating the studs into the clips, then loosely fit the two boiler securing screws at the top, see diagram 10.1.

10.2 Internal Flue Fixing

Fit gasket to flue elbow.

Secure the flue assembly to the boiler, see diagram 10.1.

Fit the fan to the flue elbow spigot making sure the fan sealing ring is fitted correctly and secure with the previously removed screws.

Secure the flue collector thumb screws.

10.3. External Flue Fixing

Fit gasket to flue elbow.

Locate flue elbow onto the boiler.

Fit the fan to the flue elbow spigot making sure the fan sealing ring is fitted correctly and secure with the previously removed screws.

Secure the flue collector thumb screws.

Pull the flue/air duct(s) forward and engage onto the flue elbow, see diagram 10.2. Check the wall face to terminal dimension, see diagram 7.6.

Push the air duct back into the wall sleeve, whilst holding the flue duct onto the flue elbow, then secure the flue duct to the elbow, see diagram 10.2.

Pull the air duct back into engagement with the flue elbow and secure/seal.

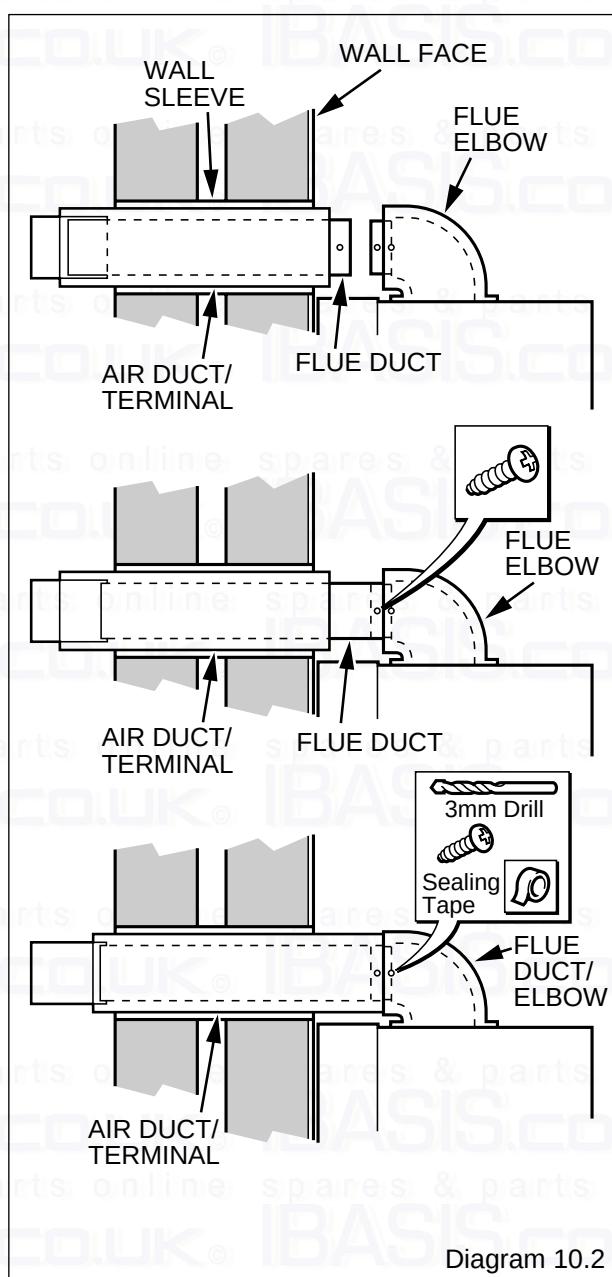
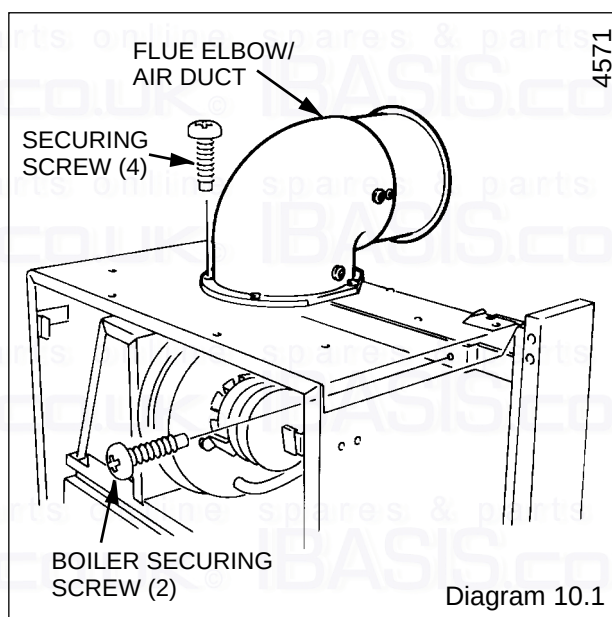
10.4 Gas and Water Connections

Locate the boiler water pipes into the isolation valves and the gas service into the gas cock union halves.

Make the compression joint on the isolating valves and join the gas service cock union. Secure all of the valves and gas service cock with the clips.

10.5 Boiler Securing

Secure the boiler by tightening the two boiler securing screws at the top.



10.6 Discharge Pipe

Remove the control housing cover front securing screw and the two control housing securing screws, see diagram 10.3.

Note. When removing and replacing the control box make sure you protect the cables from damage.

Remove the control housing and support as shown in diagram 10.4. If this is not possible, place on a surface, making sure that the control knob is protected.

Remove the pressure gauge complete with bracket, see diagram 10.5.

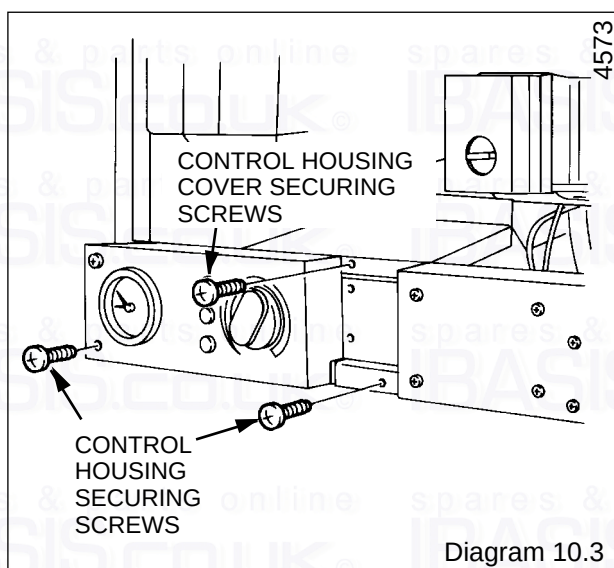


Diagram 10.3

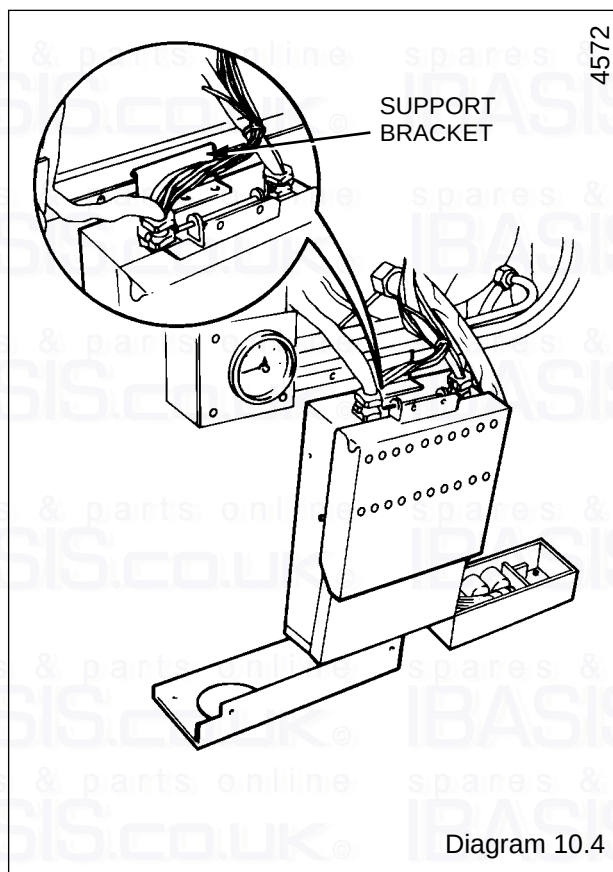


Diagram 10.4

Fit the short discharge pipe to the safety valve using the nut and olive supplied loose, see diagram 10.6.

Extend the discharge, refer to Section 8.3.

Refit the pressure gauge.

10.7 Clock/timer Kit (if applicable)

Fit the clock/timer kit following the appropriate sections of the instructions supplied with it.

10.8 Electrical Connector

Connect the two halves of the electrical connector together.

Clip the connector into position on the boiler mounting frame and secure the cables with cable clamp immediately behind the connector.

Carry out preliminary electrical system checks using a suitable Multimeter and its instructions.

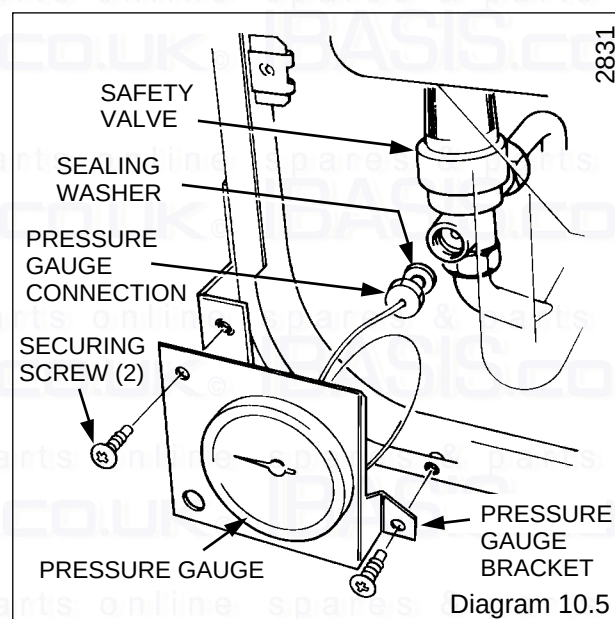


Diagram 10.5

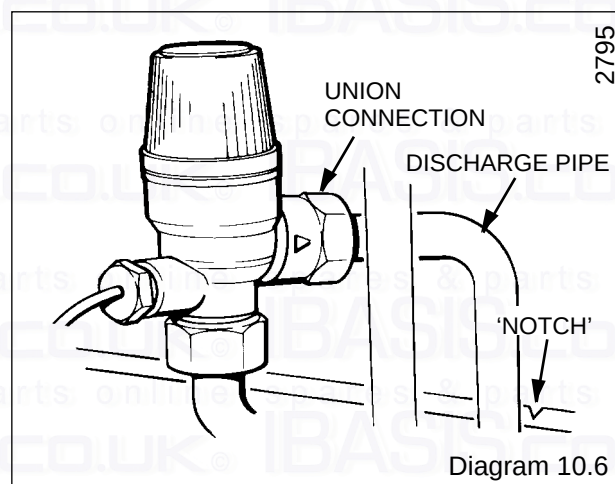


Diagram 10.6

11.1 Filling Domestic Water Circuit

Check that the boiler is isolated from the electrical supply, at the external isolator.

Fully open the domestic water supply stop cock or valve in the supply to the boiler.

Open the two domestic water isolation valves, slots in line with the length of the valve, see diagram 8.1.

Open all hot water draw-off taps and close them when the water flows. Check for water soundness of the complete domestic water system.

11.2 Filling the Heating Circuit

REMINDER: It is essential that a bypass is fitted in all installations, refer to Section 4.7.

Open the two central heating isolating valves, slots in line with the length of the valve, see diagram 8.1.

Flush, fill and vent the system and refer to Section 4.9.

WARNING. Several components operate on mains voltage and with the Outer Case removed they become EXPOSED.

Note. In the event of an electrical fault, refer to Servicing Instructions, Section 3.5.

To assist in filling and venting, the pump may be used. Turn on the electrical supply, set switch "C" to "ON" (white flash showing) any remote heating system controls, time switch and room thermostat, for duty, see diagram 11.1.

Note. If the clock/timer is fitted into the boiler, refer to the setting instructions in the Instructions for Use.

Make sure that the automatic air vent is operating correctly, see diagram 11.2.

Alternate the position of switch "C" between "ON" and "OFF" to make sure that water flows through all parts of the boiler and air is not trapped in the boiler internal bypass.

Pressurise the system until the pressure is 1.5bar (21.5lbf/in²).

Check the heating system and boiler for water soundness.

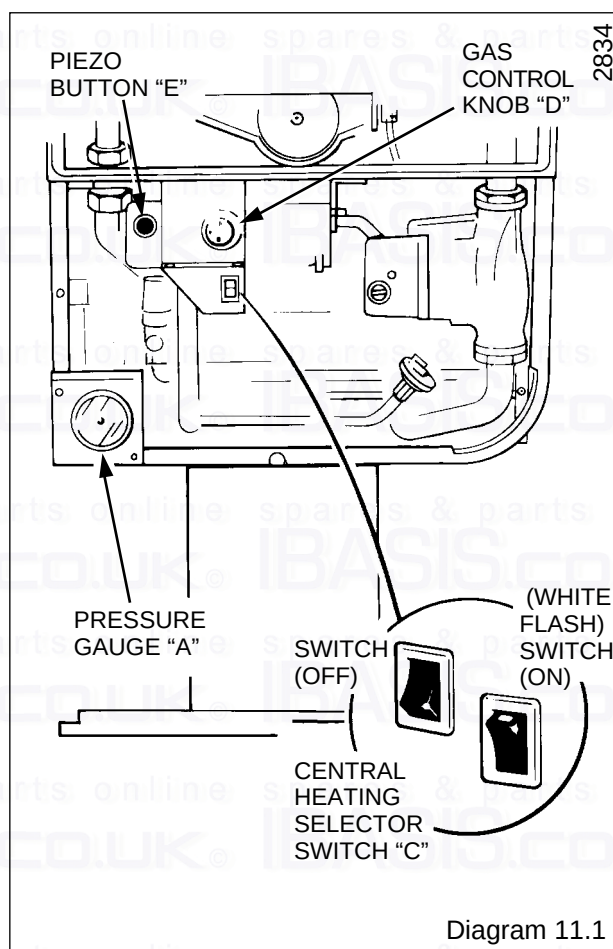


Diagram 11.1

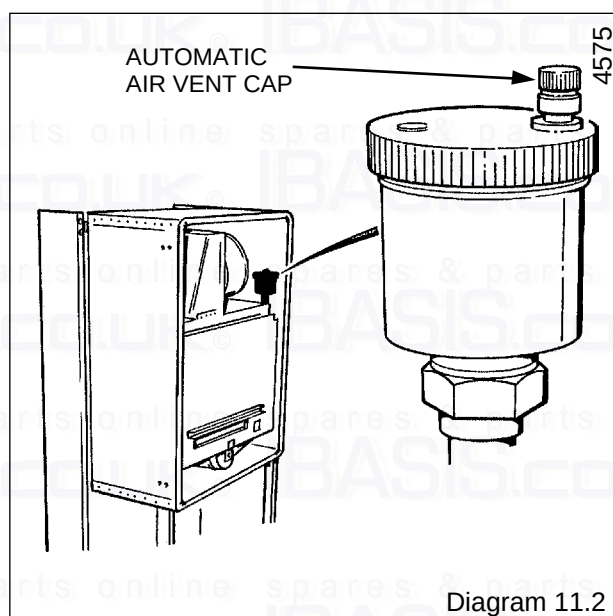


Diagram 11.2

11.3 Preparation for Lighting

Isolate the boiler from the mains electrical supply at the external isolator.

Test for soundness and purge air from the gas supply in accordance with the rules in force in the countries of destination. Turn on the gas service cock, slot in line with the length of the cock.

Slacken the burner pressure test point screw and connect a suitable pressure gauge, see diagram 11.3.

11.4 Initial Lighting of the Pilot

Identify the boiler controls, see diagram 11.1.

Fully push in and hold in gas control knob "D".

Press and release piezo button "E" until the pilot burner lights, at this stage, air may be present in the gas components of the boiler and this operation may need to be repeated. When the pilot burner has lit and the flame is stable, keep knob "D" fully pushed in for 15 seconds, then release. The pilot burner should stay alight.

IF THE PILOT FLAME GOES OUT NOW OR AT ANY TIME, A SAFETY DEVICE PREVENTS IMMEDIATE RELIGHTING. WAIT FOUR MINUTES BEFORE ATTEMPTING TO RELIGHT.

If the pilot flame goes out on releasing knob "D", repeat the lighting procedure but now keep knob "D" depressed for a little longer after the pilot has lit.

If the pilot burner will not stay alight, refer to "Thermocouple and Overheat Cutoff" in Fault Finding section of the Servicing Instructions.

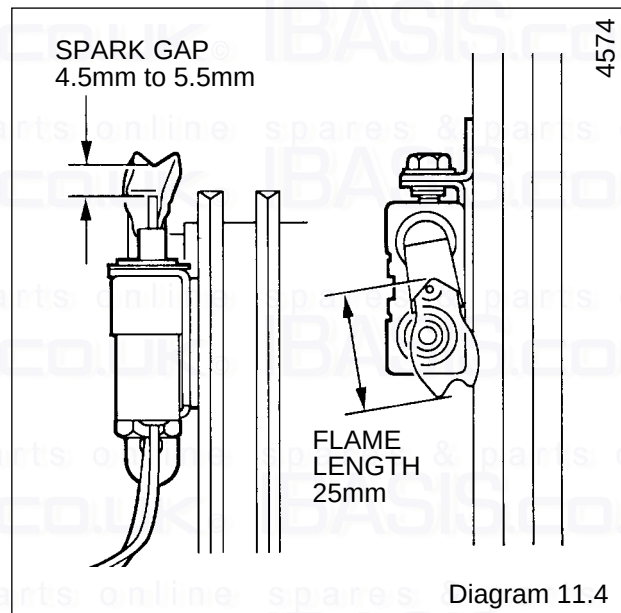
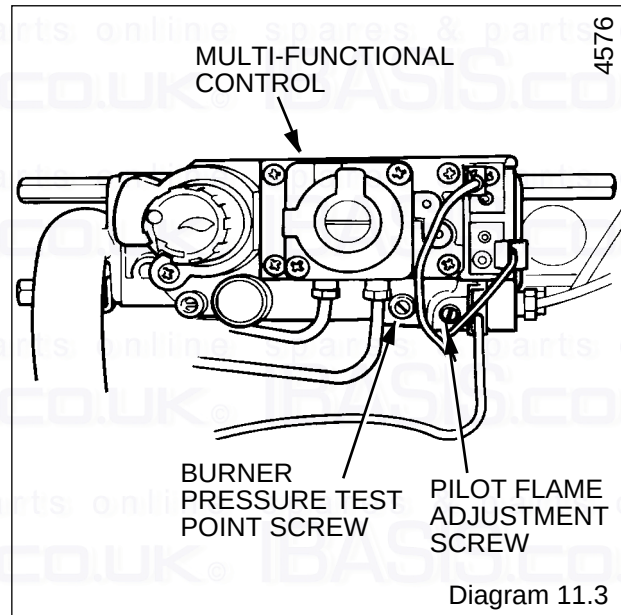
The pilot flame size is factory preset and should envelop the thermocouple to about the size given in diagram 11.4. If the flame size is incorrect, refer to diagram 11.3 and "Pilot Burner" in the Servicing Instructions.

Check for gas soundness of the pilot supply using a leak detection fluid.

Test the operation of the flame supervision system by turning knob "D" clockwise to release, to make sure that it shuts down within 60 seconds, indicated by a "click" from the valve.

Fit the cover of the inner case, make sure that it is fitted and seals correctly, using the four screws previously removed, see diagram 6.2.

Make sure that all hot water draw off taps are closed then set switch "C" to the "Off" position, see diagram 11.1.



11.5 Burner Pressure - Hot Water.

Switch on the electrical supply, the pump and fan will operate for about 30 seconds, then the fan will reduce speed and the pump stop.

Relight the pilot.

Fully open the largest hot water draw off tap and the main burner will light, the flames gradually increasing to maximum.

Check the soundness of the gas joints, with the main burner on, using a suitable leak detection fluid.

Adjust the water throttle to obtain a flow rate of 16 Litre/min (3.5gall/min), clockwise to increase, see diagram 11.5. This is equal to 3.8 seconds to fill a 1 Litre container, 2.1 seconds to fill a 1 pint container.

To achieve this flow rate a water pressure of at least 0.8bar is required during commissioning, although subsequently the appliance will work at a minimum pressure of 0.5bar.

This flow rate should prevent any modulation of the gas pressure.

Check that the burner pressure is 13.1mbar +/- 0.35mbar (5.3in wg +/- 0.14in wg).

Recheck after five minutes. If appliance operating with a long flue, this may require a longer period before checking.

If this is incorrect, the burner pressure may be adjusted by turning the hot water gas pressure adjuster, (potentiometer), using an insulated screwdriver, see diagram 11.6.

To gain access to the adjusters on the control board remove the control housing cover securing screw, see diagram 10.3 and the bottom control housing cover, see diagram 11.6.

Turn the adjuster slowly, always making adjustments by reducing below the required pressure then increasing up to the required setting, turn clockwise to increase.

Close the hot water draw off.

If the maximum pressure cannot be obtained, check that the gas supply is of adequate size, refer to Section 1.8.

11.6 Gas Rate - Modulation

The minimum gas rate is factory preset and no adjustment is required.

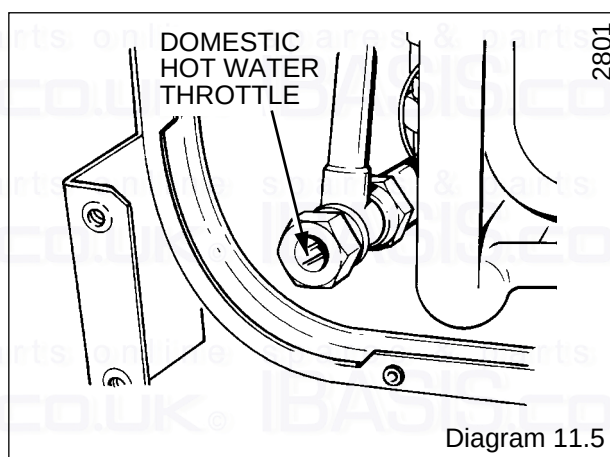


Diagram 11.5

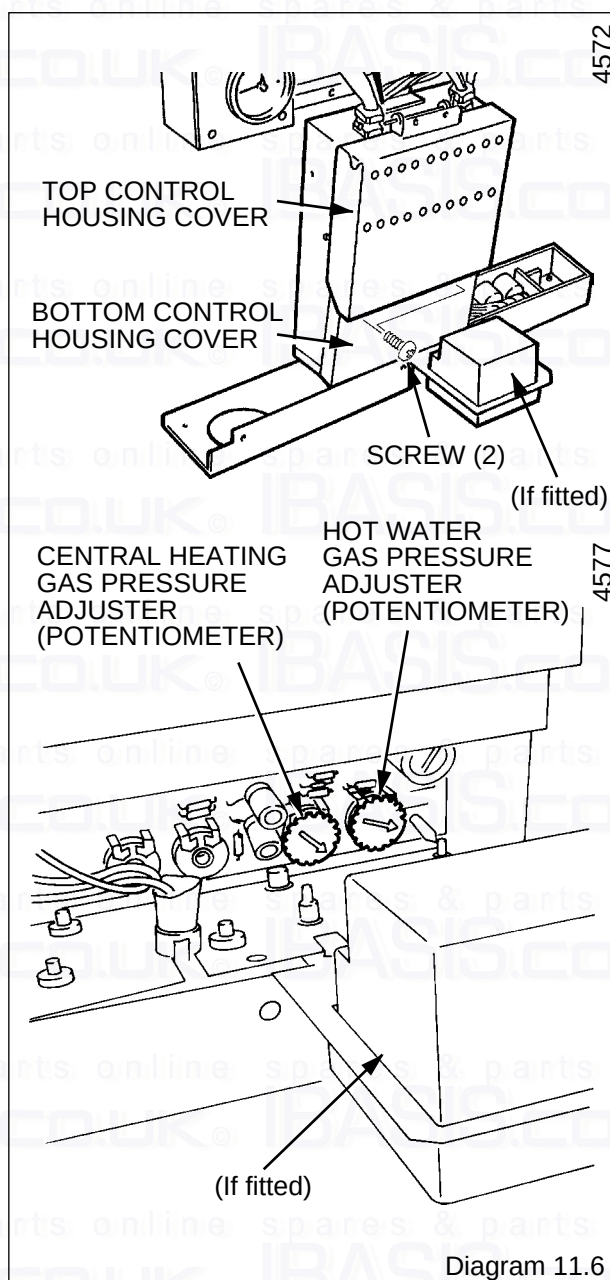


Diagram 11.6

11.7 Domestic Water Flow Rate

Fully open the largest domestic hot water draw off tap.

Adjust the water throttle to obtain a flow rate of 14.4 Litre a minute (3.2gall/min), clockwise to increase, see diagram 11.5. This is equal to 4.2 seconds to fill a 1Litre container, 2.3 seconds to fill a 1pint container.

Close the tap when adjustment is satisfactory.

The minimum water flow rate for operation of the boiler is 3.6Litre a minute, (0.8gall/min), equal to 16.7 seconds to fill a 1Litre container, 9.4 seconds for 1pint. If this flow rate cannot be achieved, check that there is no blockage and that the supply pressure is adequate.

Refer to Table 2.

Close the domestic hot water draw off tap.

11.8 Burner Pressure - Heating

Note. This appliance is preset to a central heating output of about 60,000 Btu/h (17.6kW).

If required the central heating output may be adjusted up to 80,000 Btu/h (23.5kW), see Table 1.

Check that all remote heating system controls, room thermostats, time switches and the like are switched on and calling for heat.

Set switch "C" to "ON", white flash showing, see diagram 11.1.

The pump will circulate water through the boiler and the main burner will light.

Check that the burner pressure, with the heating system cold and temperature control knob at maximum, to prevent any modulation of the gas pressure, is within $\pm 0.2\text{mbar}$ ($\pm 0.08\text{in wg}$), at 2.7mbar (1.1in wg). If required the burner pressure can be adjusted to within $\pm 0.2\text{mbar}$ ($\pm 0.08\text{in wg}$) at 5.6mbar (2.2in wg) this is equal to 80,000 Btu/h (23.5kW).

If the burner pressure is incorrect, it may be adjusted to the correct setting by turning the central heating gas pressure adjuster (potentiometer) using an insulated screwdriver, see diagram 11.6. Turn the adjuster slowly, always making adjustment by reducing below the required pressure then increasing up to the required setting, turn clockwise to increase.

Recheck after five minutes. If appliance is operating with a long flue, this may require a longer period before checking.

Isolate the boiler from the electrical supply.

Remove the pressure gauge and tighten the test point screw.

Test for gas soundness around the burner pressure test point with the main burner alight, using a suitable leak detection fluid.

Refit and secure the bottom cover of control housing and secure the housing to the boiler.

11.9 Temperature Settings

The domestic hot water outlet and central heating flow temperatures are factory preset and sealed.

The nominal temperature setting for the domestic hot water outlet is 60°C (140°F) at a flow rate of 3.6Litre a minute (0.8gall/min).

The nominal flow temperature setting for central heating is 82°C (180°F), with the user central heating temperature control set to maximum.

11.10 Heating System Commissioning

Check that all remote heating system controls are calling for heat.

Fully open all radiator valves, flow control valve "A" and bypass valve "B", see diagram 4.2.

Set the heating system in operation and balance the radiators.

Adjust flow control valve "A" to achieve the required system differential temperature between the boiler flow and return.

Turn off all radiators, then adjust bypass valve "B" to achieve the same temperature difference between the boiler flow and return.

Refer to Section 4.6 and diagram 4.1.

Allow the system to reach maximum temperature then switch off, isolate the boiler from the electrical supply and drain the system rapidly whilst hot, using the external drain tap at the lowest point of the system.

Fill and vent the system as described previously in Section 11.2. Add the inhibitor, if required, refer to Section 4.10.

Lower the pressure to the initial cold fill design pressure, using the draining tap, close to the boiler refer to Table 2 and Section 4.11.

Set pointer on the pressure gauge to this pressure.

Lock or remove the handles from the spindles of flow controls valve "A" and bypass valve "B" to prevent unauthorised adjustment.

The permanent mains electrical supply to the boiler must not be switched off whilst the pilot flame is alight.

11.11 Completion

The user control door is designed for left or right hand hinging. If required the hinge can be moved to the other side to that supplied, as follows:

Remove the hinge pin bracket securing screw then remove the hinge pin retaining bracket and holding the door, remove the hinge pin. Prise out the hinge pin bushes and fit on to the opposite side of the door, see diagram 11.7.

Remove the screw and nut and fit to the opposite side of the case. After removing the other hinge pin retaining bracket refit the door and hinge pin. Refit the hinge pin retaining bracket and fit the securing screw.

Adjust the fit of the door using the hinge side bracket securing screw.

Fit the catch assembly, supplied in the loose items pack, see diagram 11.7.

If required, fit the plastic covers to hide the bracket securing screws.

Change the position of the "Push" label to suit the new door opening.

Clock/timer, if fitted, remove the plastic retaining clips to release the cover plate. Fit the new plastic plugs, see diagram 11.7.

Stick the casing label to the right hand side of the clock/timer.

Note. Some adjustment of the clock/timer bracket may be required to allow for a satisfactory alignment of the outer casing.

Fit the outer case, secure with the two screws, see diagram 6.1

Set the boiler and any remote heating control to the desired settings, then close the door.

11.12 Instruct the User

Instruct and demonstrate the lighting procedure and advise the user on the safe and efficient operation of the boiler.

Instruct on and demonstrate the operation of any heating system controls.

Advise the user on the use and maintenance of any scale reducer and pass on any relevant instructional documents.

Advise that to ensure the continued efficient and safe operation of the boiler it is recommended that it is checked and serviced at regular intervals. The frequency of servicing will depend upon the installation conditions and usage, but in general, once a year should be enough.

Draw attention, if applicable, to the current issue of the Gas Safety (Installation and Use) Regulations, Section 35, which imposes a duty of care on all persons who let out any property containing a gas appliance.

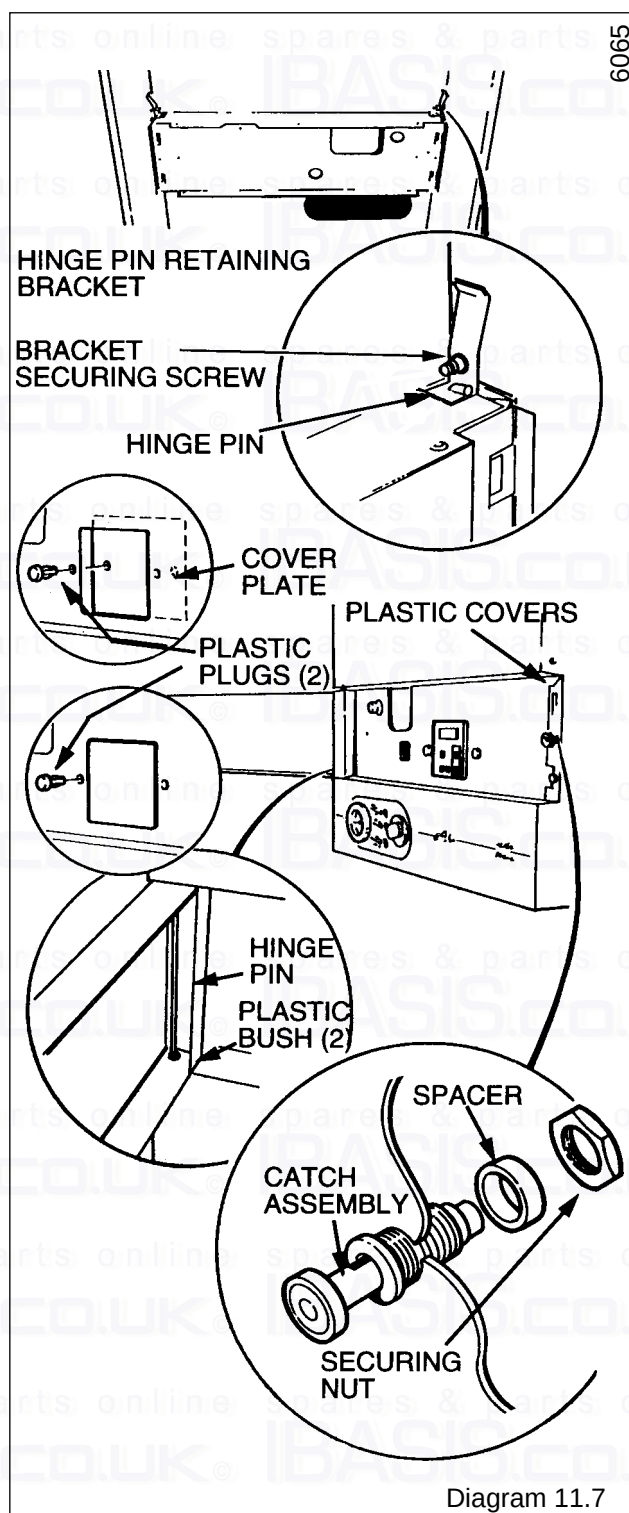


Diagram 11.7

It is the Law that all gas appliances are serviced by a competent person.

Advise the user of the precautions necessary to prevent damage to the system, boiler and the building, in the event of the heating system being out of use during frost or freezing conditions.

Advise the user that the permanent mains electrical supply must not be switched off whilst the pilot flame is alight.

Reminder, leave the Installation and Servicing Instructions with the user.

The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

INSULATION PADS/CERAMIC FIBRE

These can cause irritation to skin, eyes and the respiratory tract.

If you have a history of skin complaint you may be susceptible to irritation. High dust levels are usual only if the material is broken.

Normal handling should not cause discomfort, but follow normal good hygiene and wash your hands before eating, drinking or going to the lavatory.

If you do suffer irritation to the eyes or severe irritation to the skin seek medical attention.



Because of our constant endeavour for improvement details may vary slightly from those in the instructions.