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INSTALLATION AND SERVICING

Betacom

Betacom 24

G.C. No. 47-019-04

Betacom 30

G.C. No. 47-019-05

High Efficiency Combination Boilers

Glow•worm

Glow-worm, Nottingham Road, Belper, Derbyshire. DE56 1JT

www.glow-worm.co.uk

Guarantee Registration

Thank you for installing a new Glow-worm appliance in your home.

Glow-worm appliances' are manufactured to the very highest standard
so we are pleased to offer our customers' a Comprehensive First Year Guarantee.

We recommend you complete and return as soon as possible
your Guarantee Registration Card.

If your guarantee registration card is missing
you can obtain a copy or record your registration
by telephoning the Glow-worm customer service number 01773 828100.

Customer Service:

01773 828100

Technical Helpline:

01773 828300

General and Sales enquiries:

Tel. 01773 824639

Fax: 01773 820569

To register your Glow-worm appliance call:

0800 0732142

CE

benchmark
The code of practice for the installation, commissioning & servicing of gas central heating

The instructions consist of two parts, Installation and Servicing Instructions. The instructions are an integral part of the appliance and must, to comply with the current issue of the Gas Safety (Installation and Use) Regulations, be handed to the user on completion of the installation.

WARNINGS

Gas Leak or Fault

Turn off the gas emergency control valve immediately. Eliminate all sources of ignition, i.e.smoking, blowlamps, hot air guns etc. Do not operate electrical lights or switches either on or off. Open all doors and windows,ventilate the area.

Sheet Metal Parts

This boiler contains metal parts (components) and care should be taken when handling and cleaning, with particular regard to edges.

Sealed Components

Under no circumstances must the User interfere with or adjust sealed parts.

Important Information

Gas Category

This boiler is for use only on G20 natural gas or G31 propane with the use of an appropriate kit.

Gas Safety (Installation and Use) Regulations

In your own interests and that of safety, it is the Law that ALL gas appliances are installed by a competent person in accordance with the current issue of the above regulations.

Testing and Certification

This boiler is tested and certificated for safety and performance. It is, therefore, important that no alteration is made to the boiler, without permission, in writing, by Glow-worm.

Any alteration not approved by Glow-worm, 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 purposes of Regulation 5 certified by: Notified body 0087.

Product/production certified by: Notified body 0086.

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 harmonisation 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.

Control of Substances Hazardous to Health

Under Section 6 of The Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health.

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

Electrical Supply

The boiler must be earthed.

All system components shall be of an approved type and all wiring to current I.E.E. wiring regulations.

External wiring must be correctly earthed, polarised and in accordance with the relevant standards.

In GB this is BS 7671.

In IE this is the current edition of I.S.813 “Domestic Gas Installations”.

The boiler must be connected to a permanent 230V ac, 50Hz supply.

Connection of the whole electrical system of the boiler, including any heating controls, to the electrical supply must be through one common isolator and must be fused 3 Amp maximum.

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

Alternatively connection can be made through an unswitched shuttered socket and 3A fused 3-pin plug both to the current issue of BS 1363, provided they are not used in a room containing a bath or shower.

Wiring to the boiler must be PVC 85°C insulated cable, not less than 0.75mm² (24/0.20mm).

IMPORTANT NOTE

ALL electrical connections to the boiler must be permanently fixed to a wall or a sturdy support feature in a tidy manner.

General Information

General Note

This boiler is designed for use as part of a sealed water central heating system with fully pumped circulation. The pump, expansion vessel and associated safety devices are all fitted within the boiler.

Once the controls are set the boiler operates automatically.

Please read these instructions and follow them carefully for the correct installation and economical use of your boiler.

Water Treatment

In the case of an existing system, it is ESSENTIAL that prior to installing the new boiler the system is thoroughly flushed. For optimum performance after installation of a new system, the boiler and its associated central heating system should also be flushed. Flushing should be carried out in accordance with BS7593: 1992 using a cleanser such as Sentinel X300 or X400, Fernox Restorer or Salamander corrosion guard cleaner.

For long-term corrosion protection, after flushing, a suitable inhibitor should be used, refer to the current issue of BS 5449 and BS 7593 on the use of inhibitors in central heating systems. Examples are Sentinel X100 Fernox Protector or Salamander corrosion guard inhibitor.

Compartment or Cupboard Installations

If the boiler is fitted into a compartment or cupboard it does not require ventilation openings.

Do not use the compartment or cupboard for storage.

Clearances

If fixtures are positioned close to the boiler, space must be left as shown in diagram 2.1.

Condensate Drain

The condensate drain, see diagram 8.2, must not be modified or blocked.

Pluming from flue terminal

Like all boilers with a flue heat exchanger, this appliance will produce a plume of condensation from the flue terminal in cool weather. This is due to the high efficiency and hence low flue gas temperature of the boiler. It is normal and not a fault indication.

Electrical Supply

If the mains electricity and gas are to be turned off for any long periods during severe weather, it is recommended that the whole system, including the boiler, should be drained to avoid the risk of freezing.

NOTE: Contact your installation/servicing company as draining, refilling and pressurising MUST be carried out by a **competent person**.

Manual Handling

IMPORTANT: With regards to the “Manual Handling Operations, 1992 Regulations”, the appliance exceeds the recommended weight for a one man lift.

Appliance Safety Devices

Electrical Supply Failure

The boiler will not work without an electrical supply.

Normal operation of the boiler should resume when the electrical supply is restored.

Reset any external controls, to resume normal operation of the central heating.

If the boiler does not resume normal operation turn the mode knob on ⏻ position. If the boiler does not resume normal operation after this call your Installation/Servicing company.

Overheating safety

In the event of the boiler overheating the safety devices will cause a safety shutdown. If this happens, turn the mode knob on ⏻ position.

Safety Discharge Valve

A safety discharge valve and discharge pipe is fitted to the boiler. This valve must not be touched. Should there be any discharge from the pipe, isolate the boiler electrical supply and call your installer or Glow-worm's own service organisation using the telephone number on the inside front cover of this booklet.

Frost protection

The appliance has a built in frost protection device that protects the boiler from freezing. With the gas and electric supplies ON and irrespective of any room thermostat setting, the frost protection device will operate the pump when the temperature of the boiler water falls below 5°C.

The burner will switch off when the temperature reaches 30°C.

Condensate Drain Blockage

As a safety feature the boiler will stop working if the condensate drain becomes blocked. During freezing conditions this may be due to the forming of ice in the condense drain external to the house. Release an ice blockage by the use of warm cloths on the pipe. The boiler should then restart. Contact your installation/servicing company if the fault persists.

Maintenance and Servicing

Maintenance and Servicing

To ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage.

If this appliance is installed in a rented property there is a duty of care imposed on the owner of the property by the current issue of the Gas Safety (Installation and Use) Regulations, Section 35.

Servicing/maintenance should be carried out by a **competent person** in accordance with the rules in force in the countries of destination.

To obtain service, please call your installer or Glow-worm's own service organisation using the telephone number on the inside front cover of this literature.

Please be advised that the 'Benchmark' logbook, located at back of literature, should be completed by the installation engineer on completion of commissioning and servicing.

Spare Parts

Remember, 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 Glow-worm.

If a part is required contact Glow-worm's own service organisation using the telephone number on the inside front cover of this booklet.

Please quote the name of the appliance, this infomation will be on the name badge on the front of the appliance.

If in doubt seek advice from the local gas company or Glow-worm's own service organisation using the telephone number on the inside front cover of this booklet.

1 Technical Information

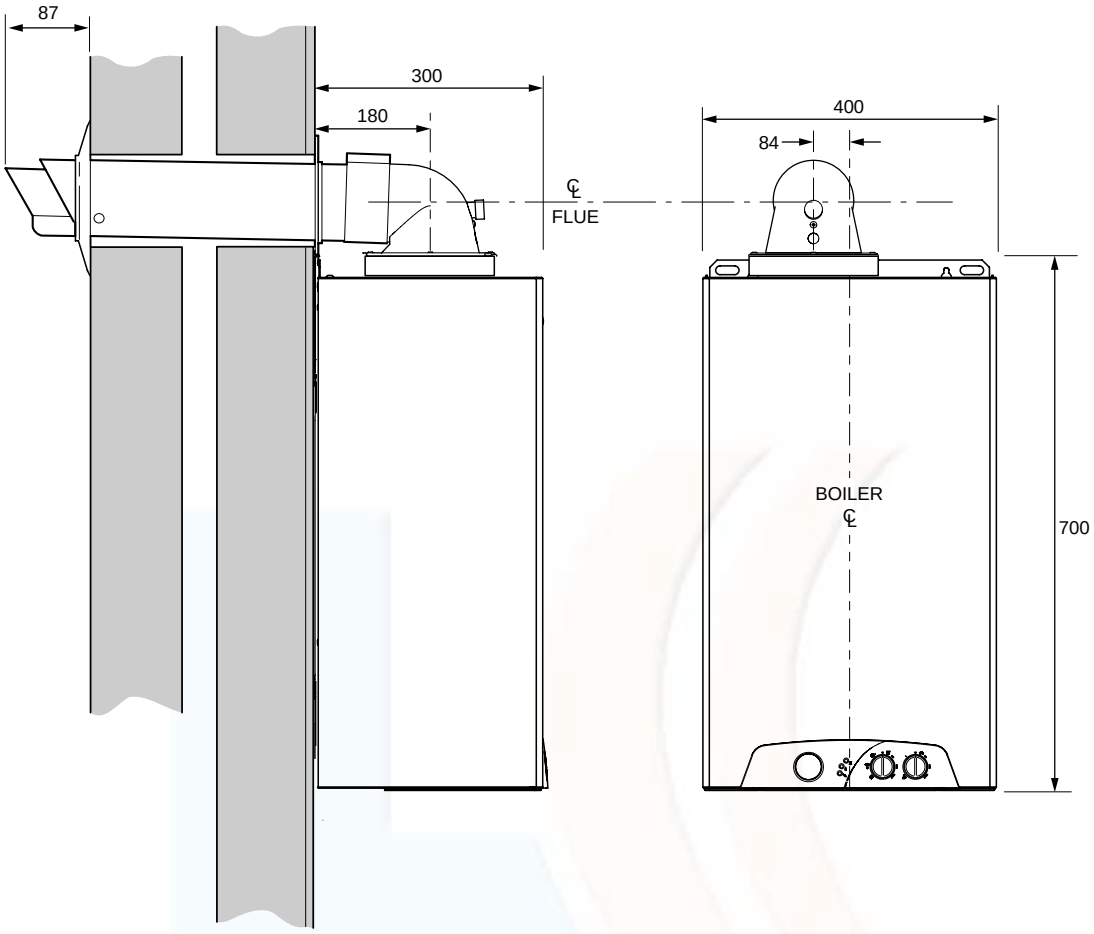


Diagram 1.1

1.1 IMPORTANT

The boiler is supplied in one carton, which includes the appliance packs, see diagram 6.1.

The flue is supplied separately.

Where no British Standards exists, materials and equipment should be fit for their purpose and of suitable quality and workmanship.

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

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

1.2 Statutory Requirements

In GB the installation of the boiler must be carried out by a **competent person** as described in the following regulations:

The manufacturer's instructions supplied.

The Gas Safety (Installation and Use) Regulations.

The appropriate Buildings Regulations either The Building Regulations, The Building Regulations (Scotland),The Building Regulations (Northern Ireland).

The Water Fittings Regulations or Water byelaws in Scotland.

The Health and Safety at Work Act, Control of Substances Hazardous to Health (COSHH).

The Current I.E.E. Wiring Regulations.

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

In IE, the installation must be carried out by a **competent person** and installed in accordance with the current edition of I.S.813 "Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for Electrical Installation.

In GB the following Codes of Practice apply:

BS4814, BS6798, BS5440 Part 1 and 2, BS5546 Part 1, BS5449, BS6891, BS6700, BS7074 Part 1 and 2, BS7593, BS7671.

In IE: I.S.813, BS5546, BS 5449, BS 7074, BS 7593.

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

NOTE: For further information, see the current issue of the Building Regulations, approved document L1 (in the UK) and the following current issues of:

1) Central heating system specification (CheSS)

   and

2) Controls for domestic central heating system and hot water. BRECSU.

1.3 Technical Data

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

See diagrams 1.1 and Boiler Specification table.

The data label is positioned on the base of the boiler.

Boiler specification	Unit	Betacom 24	Betacom 30
Gas category		II_{2H3+}	II_{2H3+}
Heating output at 80°C/60°C (Hi)	kW	18.1 - 24.5	11.1 - 28.6
Efficiency calculated on net calorific value at 80/60°C	%	94.9 - 95.8	95.2 - 97.1
Heating output at 50°C/30°C (P)	kW	19.2 - 26.2	15.9 - 30.6
Efficiency calculated on net calorific value at 50/30°C	%	101.1 - 102.2	100.5 - 103.8
Heat input (Hs) (heating)	kW	21.08 - 28.4	17.76 - 32.74
Heat input (Hs) (DHW)	kW	11.65 - 28.4	13.3 - 32.74
Maximum hot water temperature	°C	83	83
Heating			
Heating temperature range	C°	35 - 78	35 - 78
Expansion vessel, useful capacity	l	8	8
Expansion tank initial pressure	bar	1	1
Safety valve, maximum service pressure (PMS)	bar	3	3
Domestic hot water			
Hot water temperature range	°C	30 - 55	30 - 55
Specific flow rate (D) (ΔT 25°C)	l/min	14.0	16.4
Specific flow rate (D) (ΔT 30°C)	l/min	11.7	13.7
Specific flow rate (D) (ΔT 35°C)	l/min	10.0	11.7
Threshold flow rate	l/min	3	3
Maximum supply pressure	bar	6	6
Minimum operating pressure	bar	0.8	0.8
Combustion			
Product outlet flow rate	g/s	15.9	16.4
Product outlet temperature	°C	85	70
Values of product outlet (measured on nominal heating output with G20 reference gas):			
CO	ppm	38.0	54.8
CO2	%	6.40	7.20
NOx balance	mg/kWh	163.1	122.0

1 Technical Information

Boiler specification	Unit	Betacom 24	Betacom 30
Dimensions:			
Height	mm	700	700
Width	mm	400	400
Depth	mm	300	300
Net weight	kg	41.5	43
Supply voltage	V/Hz	230/50	230/50
Maximum absorbed power	W	145	150
Electric protection		IP X4D	IP X4D
CE number		0694 BN 3710	0694 BN 3710
Technical data depending on the gas type			
Natural gas G 20 (1)			
Flow rate at maximum input	m^3/h	2.71	3.12
Flow rate at minimum input	m^3/h	1.11	1.27
Inlet pressure	mbar	20	20
Burner injector diameter	mm	1.25	1.30

(1) 15 °C, 1013,25 mbar

Burner pressure tables

Betacom 24

HEAT OUTPUT		PRESSURE mbar		
kW	Btu/hr	G20	G30	G31
9.5	32566	2.1	4.6	4.6
10	34120	2.3	5.0	5.1
11	37532	2.7	6.1	6.2
12	40944	3.2	7.2	7.5
13	44356	3.7	8.4	8.9
14	47768	4.3	9.7	10.4
15	51180	4.9	11.1	12.1
16	54592	5.5	12.5	13.9
17	58004	6.1	14.1	15.9
18	61416	6.8	15.7	18.0
19	64828	7.5	17.4	20.3
20	68240	8.2	19.2	22.7
21	71652	9.0	21.1	25.3
22	75064	9.8	23.1	28.0
23	78476	10.6	25.1	31.0
24	81888	11.4	27.2	34.1
24.5	83594	11.6	28.0	35.6

Betacom 30

HEAT OUTPUT		PRESSURE mbar		
kW	Btu/hr	G20	G30	G31
11.1	37832	2.2	4.0	4.0
12	40944	2.6	4.8	4.9
13	44356	3.0	5.8	6.0
14	47768	3.4	6.7	7.0
15	51180	3.9	7.7	8.1
16	54592	4.4	8.7	9.3
17	58004	4.9	9.7	10.5
18	61416	5.5	10.8	11.9
19	64828	6.1	12.0	13.3
20	68240	6.7	13.2	14.9
21	71652	7.3	14.5	16.5
22	75064	7.9	15.8	18.3
23	78476	8.6	17.2	20.1
24	81888	9.3	18.6	22.1
25	85300	10.0	20.0	24.1
26	88712	10.8	21.5	26.3
27	92124	11.5	24.6	30.9
28	95536	12.3	26.3	33.4
28.6	97735	12.7	27.5	35.5

1.4 Gas Supply

The gas installation must be in accordance with the relevant standards.

In GB this is BS6891.

In IE this is the current edition of I.S.813 “Domestic Gas Installations”.

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

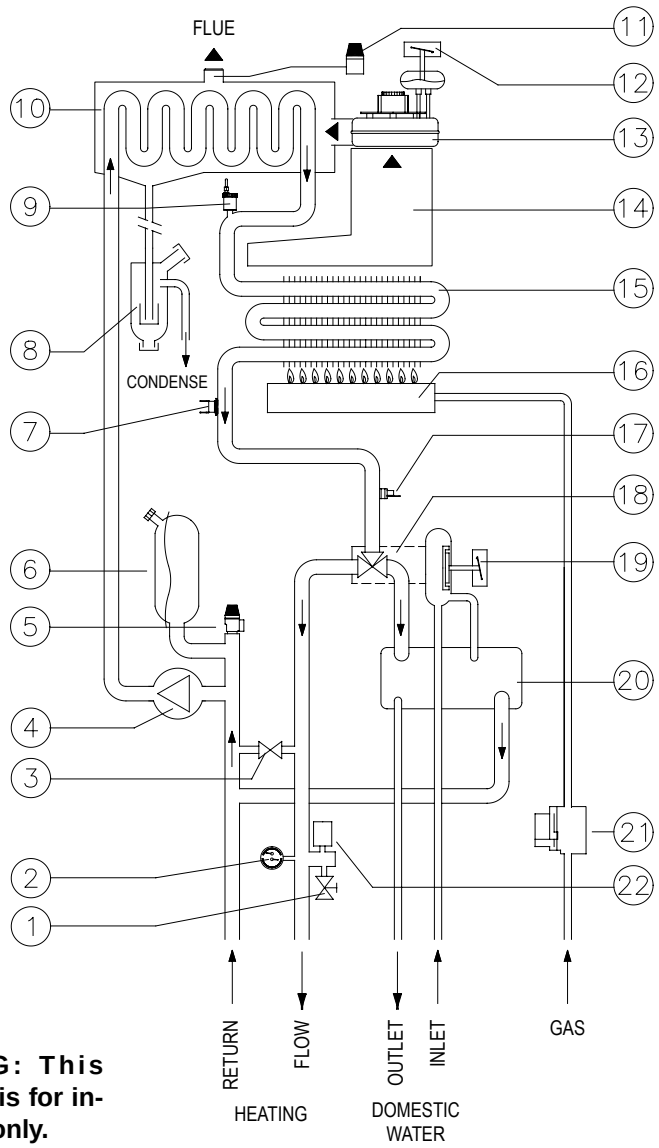
On completion, test the gas installation for soundness using the pressure drop method and suitable leak detection fluid, purge in accordance with the above standard.

1.5 Condensate Drain

A plastic drain pipe must be fitted to allow discharge of condensate to a drain.

Condensate should, if possible, be discharged into the internal household draining system. If this is not practical, discharge can be made externally into the household drainage system or a purpose designed soak away, see section 8 for more details.

1 Drain valve
2 Pressure gauge
3 By-pass
4 Pump
5 Heating system safety valve 3 bar
6 Expansion vessel
7 Overheat thermostat
8 Condense syphonic trap
9 Automatic air vent
10 Recuperator
11 Flue overheat safety thermostat
12 Air pressure switch
13 Fan
14 Flue hood
15 Primary heat exchanger
16 Burner
17 Thermistor
18 Hydraulic 3-way valve
19 Water valve
20 Domestic plate to plate heat exchanger
21 Gas valve
22 Low pressure sensor



WARNING: This schematic is for information only.

Diagram 1.2

2 Boiler Location and Ventilation

2.1 Location

This boiler is not suitable for outdoor installation.

This boiler may be installed in any room, although particular attention is drawn to the installation of a boiler in a room containing a bath or shower where reference must be made to the relevant requirements.

This boiler is suitable for installation in bathroom zones 2 and 3.

In GB this is the current I.E.E. WIRING REGULATIONS and BUILDING REGULATIONS.

In IE reference should be made to the current edition of I.S.813 “Domestic Gas Installations” and the current ETCI rules.

2.2 Clearances

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

Additional clearances may be beneficial around the boiler for installation and servicing.

For flue installations where external access is not practicable, consideration should be given for the space required to insert the flue internally, which may necessitate clearance larger than those specified in diagram 2.1.

2.3 Timber Frame Buildings

If the boiler is to be installed in a timber frame building it should be fitted in accordance with the Institute of Gas Engineers document IGE/UP/7/1998. If in doubt seek advice from local gas undertaking or Glow-worm.

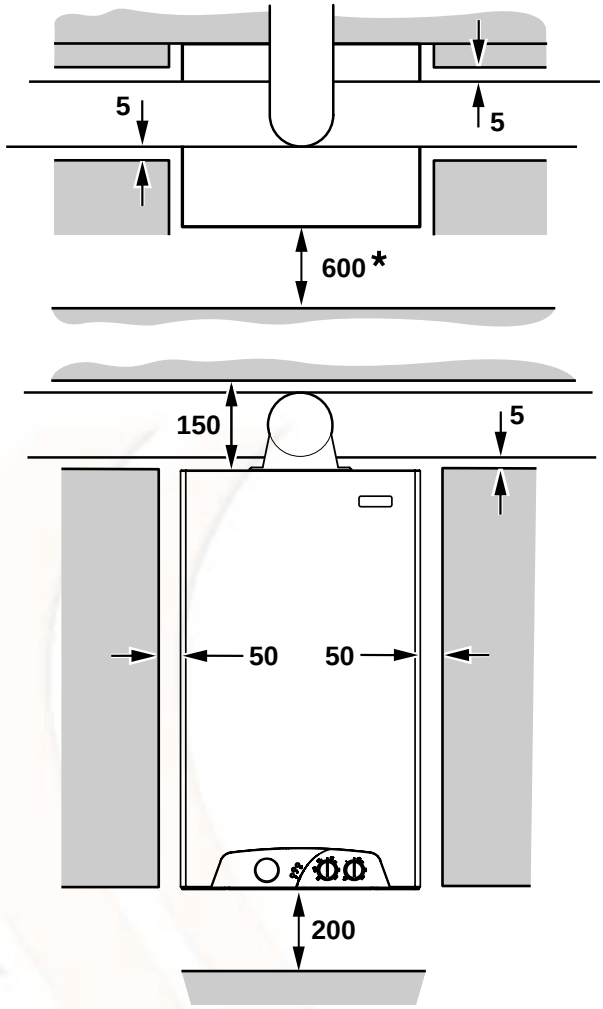
2.4 Room Ventilation

The boiler is room sealed so a permanent air vent is not required.

2.5 Cupboard or Compartment Ventilation

Due to the high efficiency and hence low casing temperature of this boiler, cupboard or compartment ventilation is not necessary.

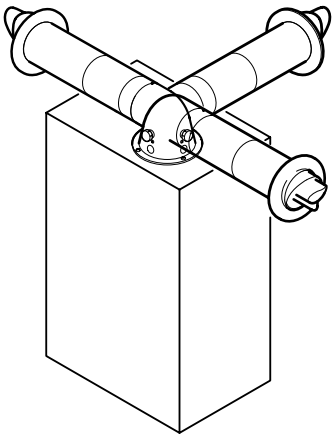
Leave existing air vents.



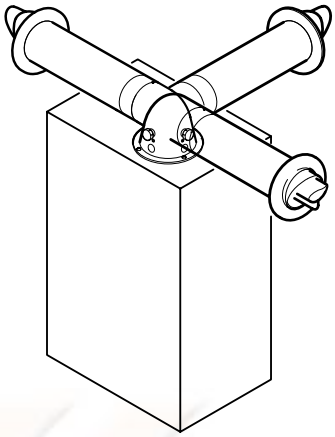
* A removable compartment door can be placed a minimum of 15mm

Diagram 2.1

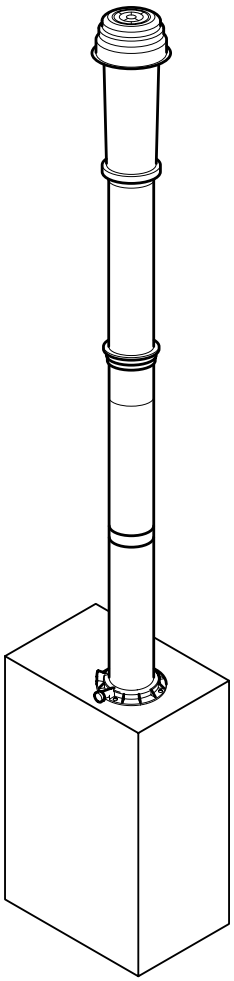
3 Flue Options and Terminal Clearances

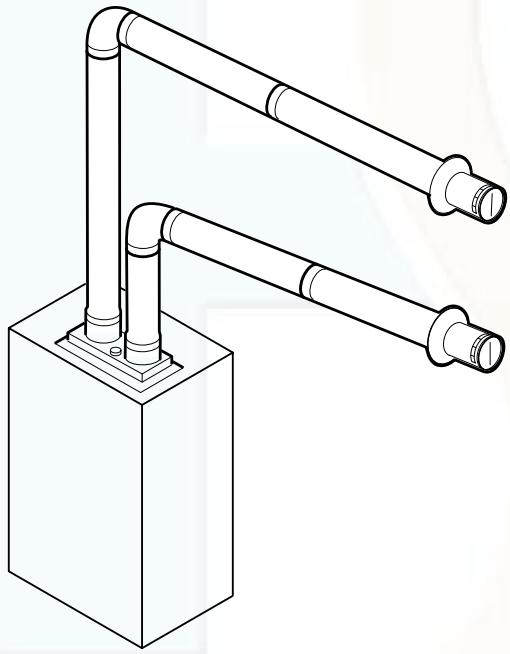


Top horizontal telescopic flue Ø60/100
Part No. A2043600



Top horizontal standard flue Ø60/100
Part No. A2043400





Twin Flue
Twin Flue Adapter, concentric flue Ø80
Part No. A2011000

Flue Accessories

Black Horizontal Terminal Kit, for use with A2043500; A2043600; A2043400
Black Horizontal Terminal Kit, concentric flue Ø60/100 - Part No. A2043700

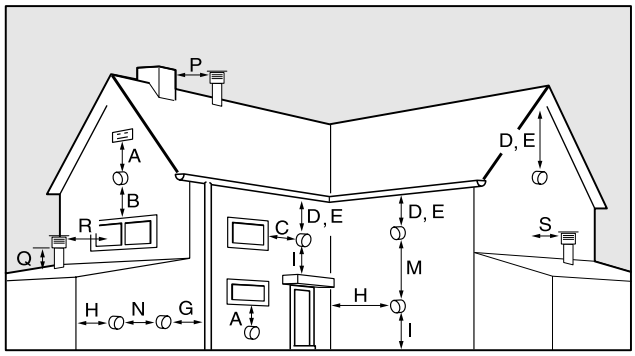
Plume Management Kit, for use with A2043500; A2043600; A2043400
Plume Management Kit, basic set, white, concentric flue Ø60/100 - Part No. A2044100
1m extension, white - Part No. A2044300
87° elbow, white - Part No. A2044700
45° bend (2), white - Part No. A2044500
Plume Management Kit, basic set, black, concentric flue Ø60/100 - Part No. A2044000
1m extension, black - Part No. A2044200
87° elbow, black - Part No. A2044600
45° bend (2), black - Part No. A2044400

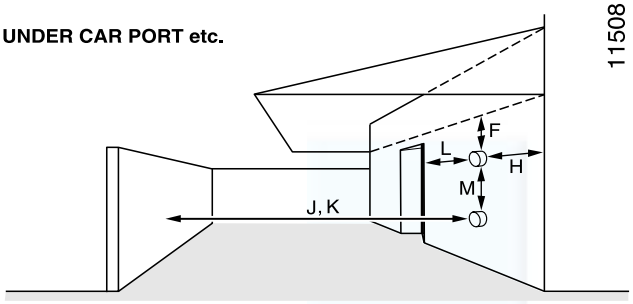
Concentric Flue Ø60/100 accessories:
2 metre extension kit, concentric flue Ø60/100 - Part No. 2000460483
1 metre extension kit, concentric flue Ø60/100 - Part No. 2000460482
0.5 metre extension kit, concentric flue Ø60/100 - Part No. 2000460481
Adjustable flue pipe 0-50mm kit, concentric flue Ø60/100 - Part No. 2000460487
90° flue elbow pack, concentric flue Ø60/100 - Part No. 2000460484
45° flue bend pack, concentric flue Ø60/100 - Part No. 2000460485
Flue support clips (3), concentric flue Ø60/100- Part No. A2043900

Vertical Flue
Vertical Flue Adapter, concentric flue Ø60/100
Part. No. A2024600
Vertical flue terminal kit, concentric flue Ø60/100
Part. No. 2000460480

Diagram 3.1

3 Flue Options and Terminal Clearances





HORIZONTAL FLUES

A	DIRECTLY BELOW AN OPENING, AIR BRICK, OPENING WINDOWS	300
B	ABOVE AN OPENING, AIR BRICK, OPENING WINDOWS	300
C	HORIZONTALLY TO AN OPENING, AIR BRICK, OPENING WINDOWS	300
D	BELOW GUTTER, DRAIN/SOIL PIPE	25
E	BELOW EAVES	25
F	BELOW A BALCONY OR CAR PORT	25
G	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	25
H	FROM INTERNAL/EXTERNAL CORNERS	25
H*	TO A BOUNDARY ALONGSIDE THE TERMINAL	300
I	ABOVE ADJACENT GROUND OR BALCONY LEVEL	300
J*	FROM SURFACE OR A BOUNDARY FACING THE TERMINAL	600
K	FACING TERMINALS	1200
L	FROM OPENING (DOOR/WINDOW) IN CAR PORT INTO DWELLING	1200
M	VERTICAL FROM A TERMINAL	1500
N	HORIZONTALLY FROM A TERMINAL	300

VERTICAL FLUES

P	FROM ANOTHER TERMINAL	600
Q	ABOVE ROOF LEVEL	300
R	FROM ADJACENT OPENING WINDOW	1000
S	FROM ADJACENT WALL TO FLUE	300

Diagram 3.2

3.1 Flue Options

There are various flue options to choose from as illustrated in diagram 3.1. The flue lengths and installation are described in section 9.

3.2 Flue Terminal Position

The minimum acceptable siting dimensions for the terminal from obstructions, other terminals and ventilation openings are shown in diagram 3.2. For Ireland the minimum distances for flue terminal positioning must be those detailed in I.S.813 “Domestic Gas Installations”.

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

Being a condensing boiler some pluming may occur from the flue outlet. This should be taken into consideration when selecting the position for the terminal.

NOTE: If necessary it is permitted to increase the terminal protrusion through the outside wall to greater than the minimum dimension of 87mm but no more than 600mm, see diagram 1.1.

Carports 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 carport comprises of a roof and two or more walls, seek advice from the local gas supply company before installing the boiler.

H* and J* See diagram 3.2 . These dimensions comply with the building regulations, but they may need to be increased to avoid wall staining and nuisance from pluming depending on site conditions.

Plume Management Kit: Part No.A2044100 (white) or A2044000 (black) can be used to overcome many site issues.

3.3 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 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 3.3.

A suitable guard is manufactured by: -

Tower Flue Components
Morley Rd.
Tonbridge
Kent
TN9 1RA.
Size: 280mm x 280mm x 270mm.

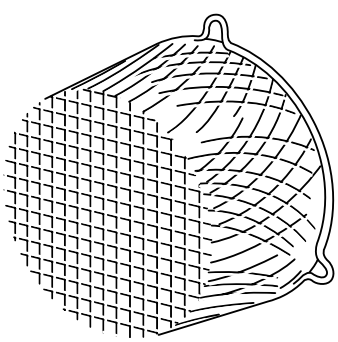


Diagram 3.3

4 Heating System

4.1 General

The boiler is for use only with sealed central heating systems.

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

The pressure gauge indicates the system pressure.

The circulation pump is integral with the boiler.

4.2 Expansion Vessel

The boiler has an integral expansion vessel with a capacity of 8 litres (1.76 gallons), with a charge pressure of 0.5bar.

NOTE: The expansion vessel volume depends on the total water system volume and the initial system design pressure. Guidance on vessel sizing is also given in the current issue of BS5449 and BS7074 Part 1, for IE refer to the current edition of I.S.813 “Domestic Gas Installations”.

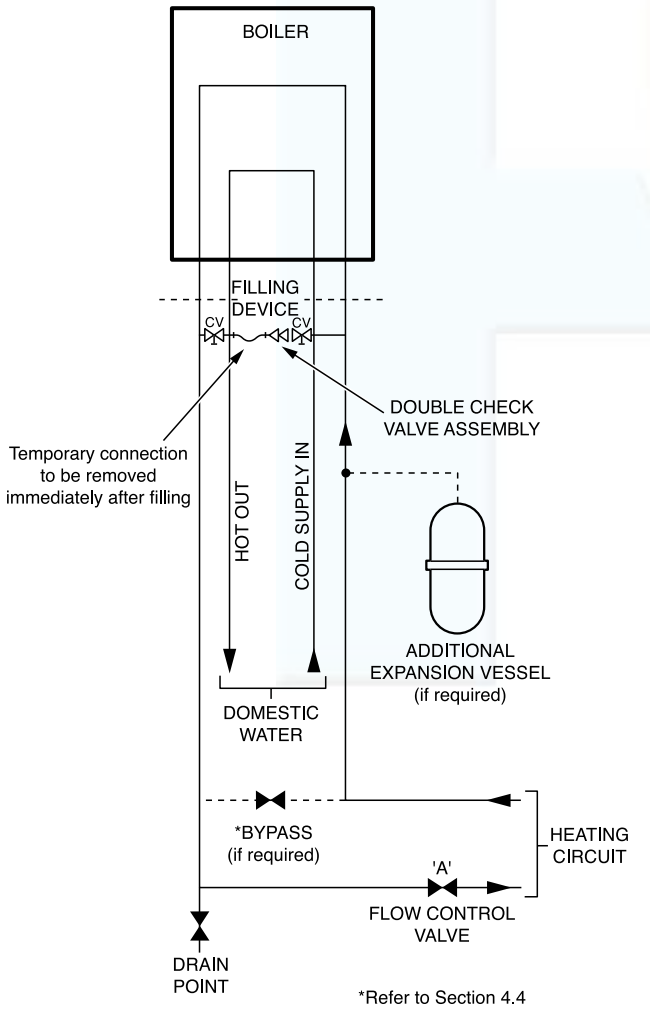


Diagram 4.1

4.3 Flow Rate

If it is necessary to alter the flow rate, the system can be fitted with a lockable balancing valve in the main flow or return pipes shown as valve “A” in diagram 4.1. The flow rate through the boiler must not be allowed to fall below that given in diagram 1.2.

4.4 Bypass

The boiler is fitted with an automatic bypass.

Diagram 4.2 shows the pump head remaining for the heating system depending on the bypass setting and the speed setting of the pump, see section 11 Commisioning.

Ensure that under no circumstances does the flow rate drop below the figure specified, refer to diagram 1.2 and section 11.6.

The installation of the boiler must comply with the requirements of the current issue of BS6798, in Ireland, refer also to the current edition of I.S.813 “Domestic Gas Installations”.

In GB it is necessary to comply with the Water Supply (Water Fittings) Regulations 1999 (for Scotland, the Water Byelaws 2000, Scotland).

To comply with the Water regulations your attention is drawn to: The Water Regulations guide published by the Water Regulations Advisory Service (WRAS) gives full details of the requirements.

In IE the requirements given in the current edition of I.S.813 “Domestic Gas Installations” and the current Building Regulations must be followed.

4.5 Filling the Sealed System

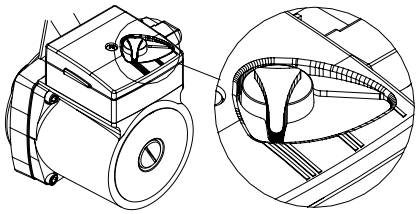
NOTE: The water pressure at the boiler must be at least 1.2bar to enable filling the boiler to a minimum pressure.

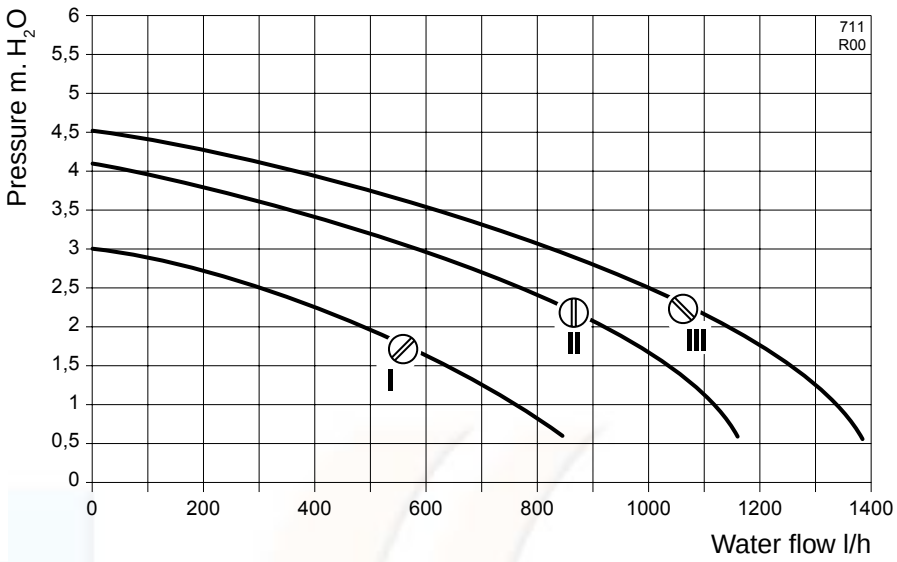
4.6 Water Treatment

In the case of an existing system, it is ESSENTIAL that prior to installing the new boiler the system is thoroughly flushed. For optimum performance after installation of a new system, the boiler and its associated central heating system should also be flushed. Flushing should be carried out in accordance with BS7593: 1992 using a cleanser such as Sentinel X300 or X400, Fernox Restorer or Salamander corrosion guard cleaner.

For long-term corrosion protection, after flushing, a suitable inhibitor should be used, refer to the current issue of BS 5449 and BS 7593 on the use of inhibitors in central heating systems. Examples are Sentinel X100 Fernox Protector or Salamander corrosion guard inhibitor.

Remaining conveyancing capacity
Model Betacom 24
with pump's selector in speed position I, II, III (automatic by-pass, not disconnectable)





Remaining conveyancing capacity
Model Betacom 30
with pump's selector in speed position I, II, III (automatic by-pass, not disconnectable)

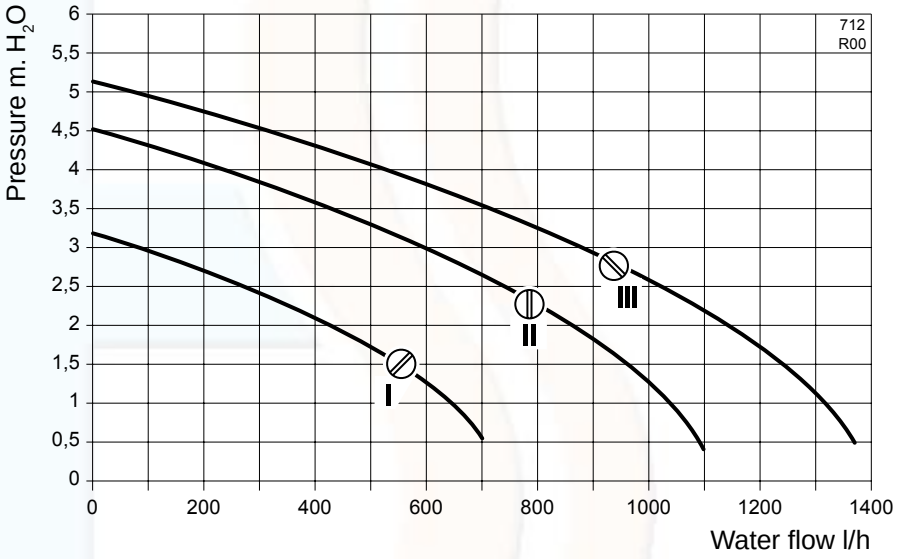


Diagram 4.2

4.7 Draining Points

Draining taps must be provided at the lowest points of the system, which will allow the entire system to be drained.

The drain point for the appliance is provided at the position shown in diagram 4.3.

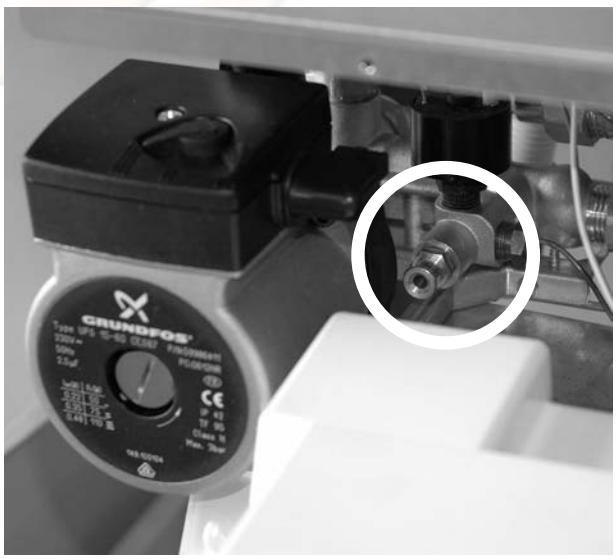


Diagram 4.3

5 Domestic Hot Water System

General

All domestic hot water circuits, connections, fittings must be in accordance with the relevant standards and water supply regulations.

For GB: Guidance G17 to G24 and recommendation R17 to R24 of the Water Regulations Guide.

For IE: The current edition of I.S.813 “Domestic Gas Installations”.

5.1 Water Pressure

The maximum working pressure of the domestic hot water circuit is 6 bar. If the cold water supply pressure exceeds this, then a pressure-reducing valve must be fitted in the supply to the boiler.

5.2 ‘Hard’ Water Areas

The temperatures within the heat exchanger are limited by the boiler control system to minimise scale formation within the hot water pipework. However, in areas where the water is ‘hard’ (i.e. more than 200mg/litre), it is recommended that the hot water setting is reduced and that a scale reducer is fitted.

Refer to the manufacturer’s instructions or consult the local water company for additional advice.

5.3 Domestic Water Flow Rate

The water flow rate is restricted to a maximum 8.4 l/min for 24 and 10.0 l/min for 30, by a restrictor factory fitted within the boiler.

6 Installation Preparation

6.1 Appliance Pack

IMPORTANT: With regards to the Health and Safety Manual Handling requirements, two persons shall be required to lift the appliance, refer to section 16 Manual Handling.

Please check the contents of packs as shown in diagram 6.1.

The wall hanging bracket is located at the rear of the boiler, slide upwards to remove.

6.2 Wall Template

Take the wall template from the document pack and place in the desired position on a flat wall, giving due consideration to the required boiler clearances, see section 2, and the flue you are fitting.

6.3 Flue Hole Cutting

External access flue installation can use a 105mm diameter core drill.

Internal access only flue installation will need a 125mm diameter core drill.

If flue extension pipes are to be used then a core drill size of 125mm is required. This will allow the extension pieces to slope at 44mm/metre (2.5°) towards the boiler.

Top horizontal flue - (standard and telescopic)

The standard horizontal flue is designed with an internal fall of 44mm/metre (2.5°) towards the boiler for disposal of condensate therefore the hole can be drilled horizontally. If the standard flue length alone is being used then the flue hole of diameter 105mm can be cut in the position marked on the wall template.

For standard side flues the horizontal flue centre line on the wall template should be extended to the side wall, and the vertical centre of the flue hole marked at 176mm from the back wall.

For extended side flues, the flue hole centre should be determined by extending the dashed inclined line on the template to the side wall. This dashed line is drawn at 44mm/metre (2.5°) rise from the boiler. Where this line reaches the side wall, a horizontal line should be marked. The vertical centre line of the flue should then be marked at 176mm from the back wall.

To allow for the flue passing through the wall at this angle a 125mm hole should be drilled irrespective of internal or external installation.

Remove the wall template whilst drilling the flue hole.

6.4 Wall Hanging Bracket Assembly

The Wall Hanging Bracket is supplied in the main boiler packaging at the rear of the boiler.

Reposition the wall template over the flue hole and mark the position of the fixing holes for the hanging bracket, see diagrams on the template.

NOTE: Due to the varied site conditions we do not supply fixings and advise that the installer should supply those which are suitable.

Drill fixing holes and insert suitable wall plugs.

6 Installation Preparation

Pipe pack

A - Central Heating × 2
B - Domestic Water outlet
C - Domestic Water inlet
D - Gas

Safety discharge valve pipe
(not illustrated)

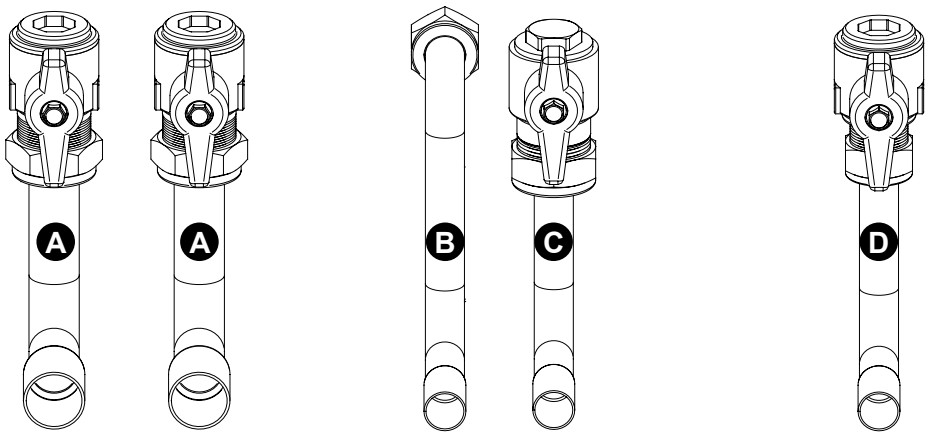


Diagram 6.1

7.2 Appliance Connection

IMPORTANT: With regards to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift, refer to section 16 Manual Handling.

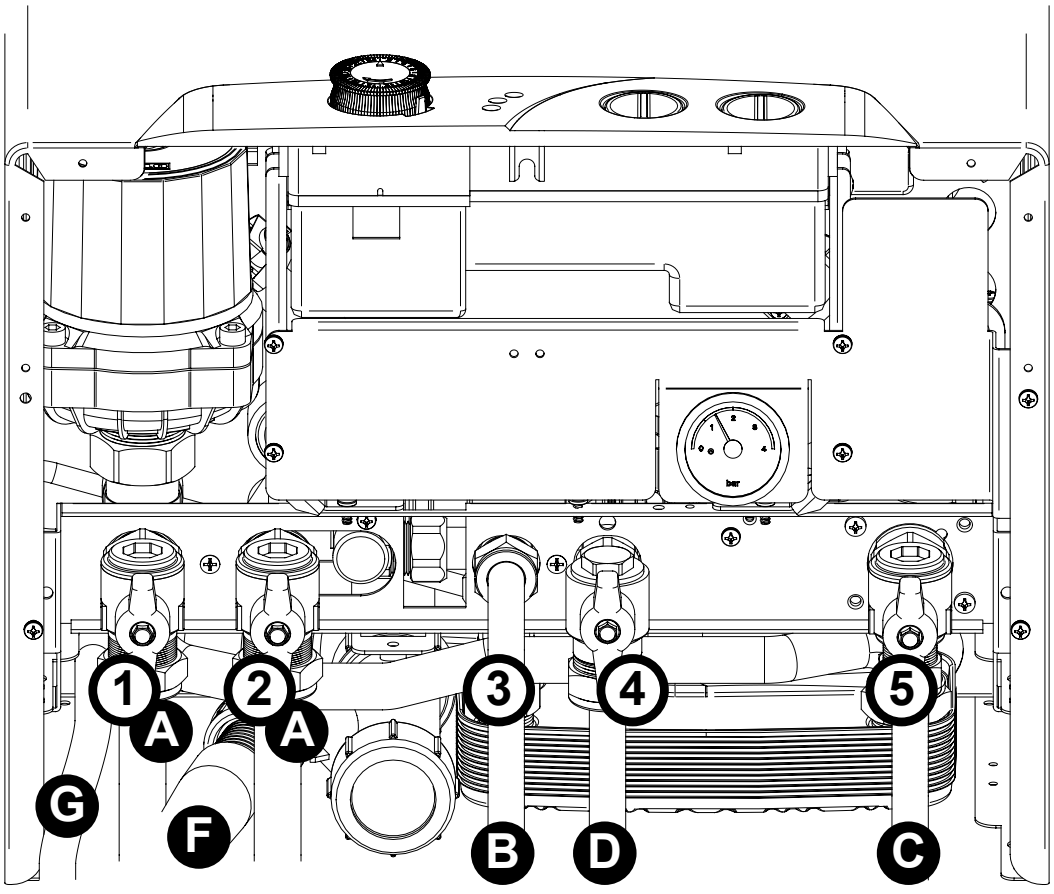
NOTE: The appliance may contain a small amount of water, place a water container beneath the boiler connections.

Lifting the boiler into position, lean the top of the boiler slightly to the wall and position just above the hanging bracket. Lower the boiler slowly push back and engage onto the hanging bracket.

Remove the protective caps.

Do the connections, interposing the sealing washers supplied in the Loose Items pack.

Make good the final connections.



A - Central Heating Isolation Valve
B - Domestic Hot Water
C - Gas Service Cock
D - Domestic Cold Water
E - Washers (not shown)
F - Condensate Connection
G - Safety Discharge Valve

Numbers 1 - 5 show the sequence to be used when tightening to copper tails.

Diagram 7.1

8 Safety Discharge Valve & Condensate Connections

8.1 Safety Discharge Valve

The pipe from the safety discharge valve must not discharge above an entrance, window or any type of public access area.

Take the safety discharge pipe, supplied in the pipe pack and the union nut and seal, supplied in the loose items pack and fit as shown in diagram 8.1.

This must be extended, using not less than 15mm o.d. pipe, to discharge, in a visible position, outside the building, facing downwards, 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.

To ease future servicing it is advisable to use a compression type fitting to extend the safety discharge valve tube.

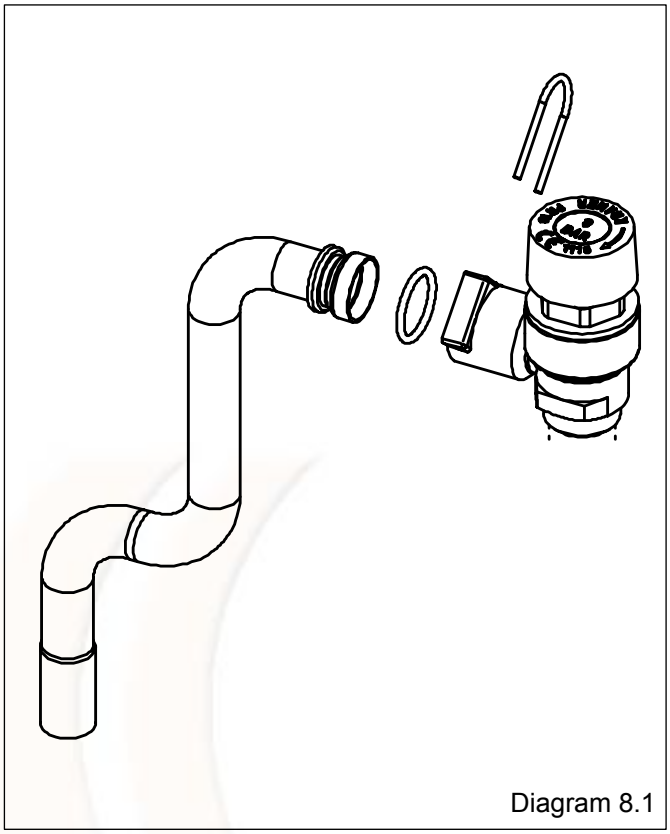


Diagram 8.1

8.2 Condensate Drain Connection

The condensate drain connection is at the rear of the boiler, see diagram 7.1. A flexible condensate outlet pipe is supplied fitted to the boiler and should be used to fit onto the drain connection, to discharge condensate to a drain. The drain pipe 22mm to 25mm OD. non corrosive plastic pipe should have a fall of at least 2.5° away from the boiler.

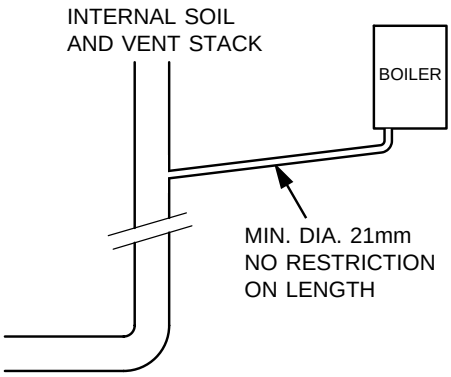
Condensate should, if possible be discharged into the household internal drainage system. If this is not practicable, discharge can be allowed into the external household drains or a purpose designed soak away, refer to diagram 8.2.

It is recommended that any external condensate drain pipe is insulated and also preferably of 32mm diameter, to prevent freezing in adverse weather conditions.

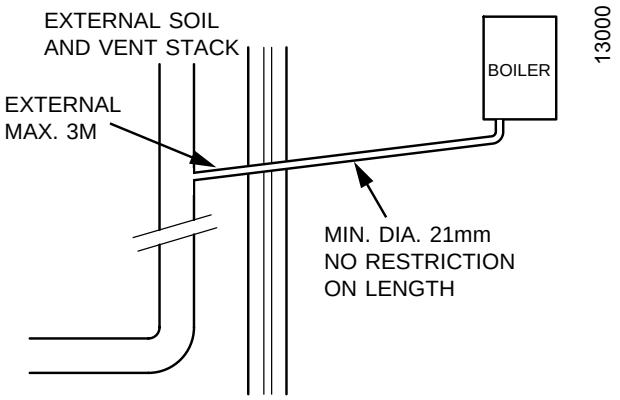
It is not necessary to provide air breaks or extra traps in the discharge pipe as there is already a trap inside the boiler.

Refer to BS5546 or BS6798 for advice on disposal of boiler condensate.

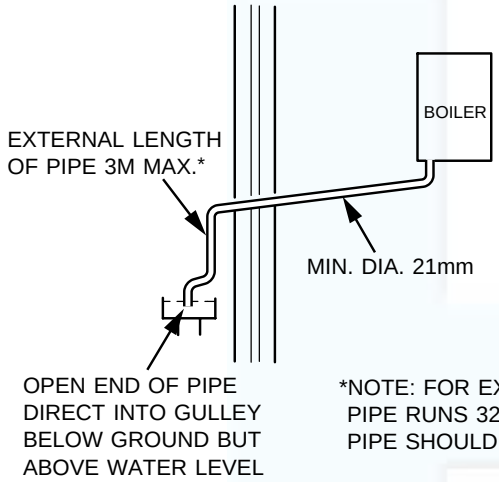
8 Safety Discharge Valve & Condensate Connections



Internal Soil and Vent Pipe

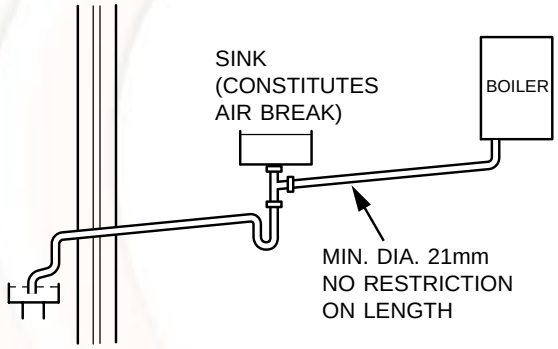


External Soil and Vent Pipe or Rainwater Pipe

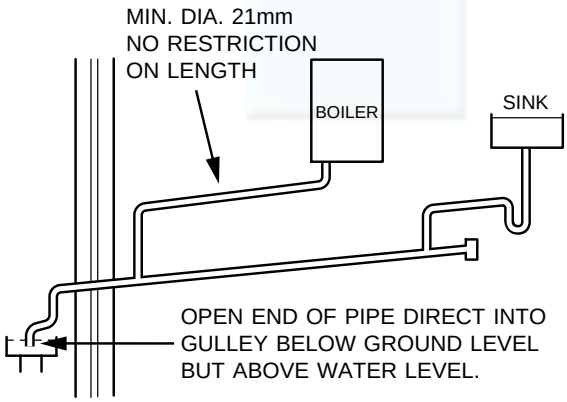


*NOTE: FOR EXTENDED PIPE RUNS 32mm DIA. PIPE SHOULD BE USED.

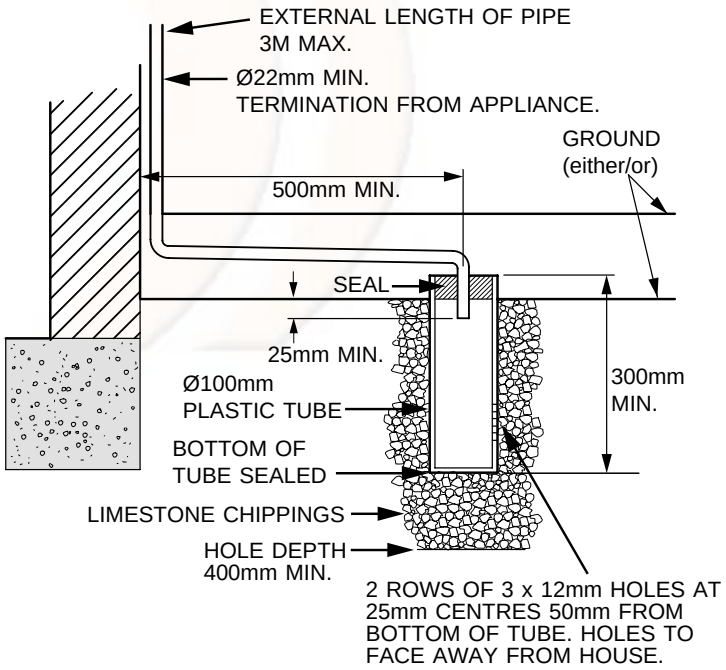
External Termination to a Gulley or Hopper



Internal Termination into Combined Sink Waste



Internal Termination Downstream of Sink Waste



External Termination into Soakaway

NOTE: PIPEWORK SHOULD ALWAYS FALL AWAY FROM BOILER BY AT LEAST 2.5° 44mm FOR EVERY 1M.

Diagram 8.2

9 Flue Preparation and Installation

9.1 Top Horizontal Rear flue - Telescopic Part No. A2043600.

Refer to diagram 9.1 for kit contents.

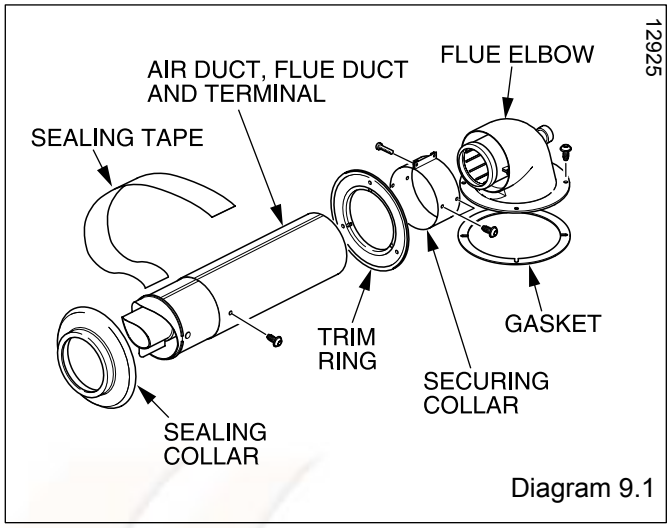


Diagram 9.1

9.2 Flue Length

If a wall thickness of 204mm min. to 409mm max. the Top horizontal rear flue - telescopic can be used without extensions.

If the wall thickness is greater than 409mm then using extensions a maximum horizontal flue length of 4 metres (24kW) & 3 metres (30kW) plus the Top horizontal rear flue - telescopic can be achieved. However, for every 90° or 45° elbows used the flue length MUST be reduced by 1 metre.

When extension pipes are used the flue system must be designed to have a continuous fall to the boiler of at least 44mm/metre (2.5°) to allow condensate to run back into the boiler and out via the drain.

9.3 Preparation

Using these screws inserted into the same holes on the boiler, tighten and secure the flue hood top, see diagram 9.3.

Temporarily fit the flue elbow, measure the distance from the outside wall to flue elbow. If the measurement 'Y' exceeds 525mm, see diagram 9.3, then the appropriate length of extension pipe is required. If the dimension is less than 320mm DO NOT cut the flue, it can project beyond the outside wall face, see diagram 9.4. If this is not desirable then a Top horizontal rear flue - standard MUST be used and cut to length.

9.4 Flue Fitting

Set the flue to the required length 'Y', ensure the air duct seams line up.

Remove the flue elbow.

Mark the securing hole position in the air duct. Drill a 3mm diameter hole at this position, take care not to pierce the inner flue duct. Secure with screw provided and tape the joint, see diagram 9.5.

Fit the sealing collar onto the locating ring on the flue terminal, see diagram 9.6.

Push the flue assembly into the wall, externally or internally, until the end of the assembly protrudes a short way from the inside face of the wall. This will enable the internal trim ring (if required) to be positioned and allow the flue assembly to be drawn back up to the flue elbow.

Secure the flue elbow in position on top of the boiler with four torque headed screws supplied.

Draw the flue assembly from wall and engage the flue duct into the elbow and butt fit between the air duct and flue elbow.

Ensure the correct alignment of the flue.

Fit the securing collar in position, mark through two of the pre drilled holes in the securing collar. Remove securing collar and drill two 3mm diameter holes one in the elbow and one in the air duct, take care not to pierce the inner flue duct. Fit the securing collar and secure with screws provided, see diagram 9.7.

Slide the internal trim ring back against the wall, securing in place with a small amount of sealant if required.

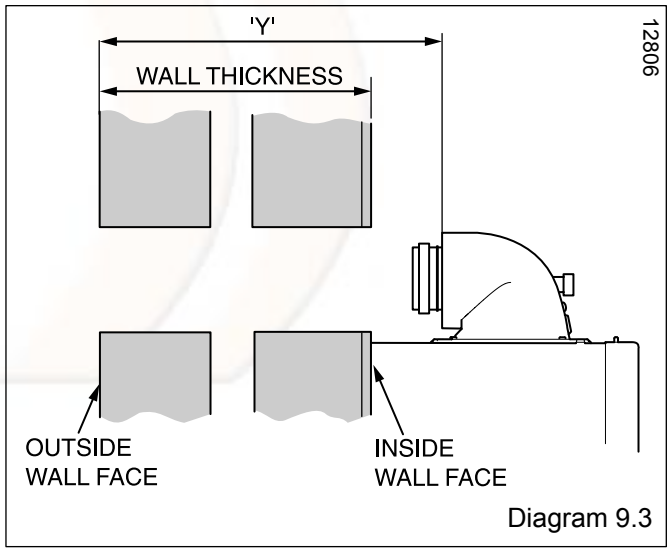


Diagram 9.3

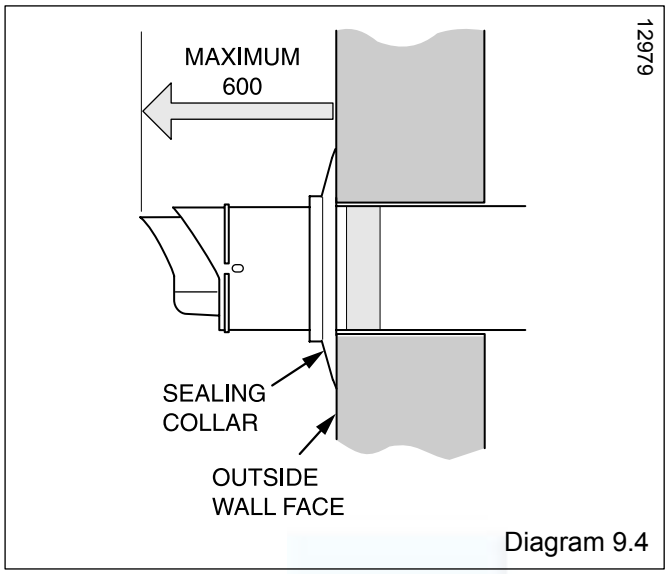


Diagram 9.4

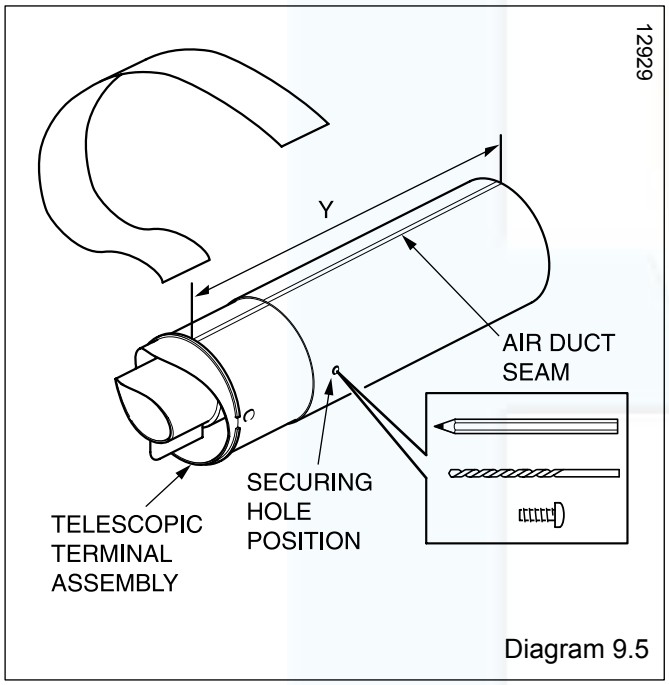


Diagram 9.5

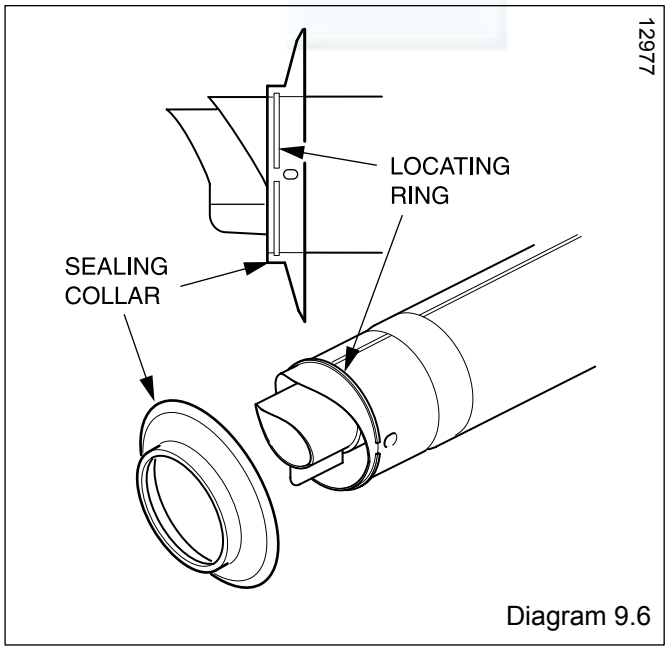


Diagram 9.6

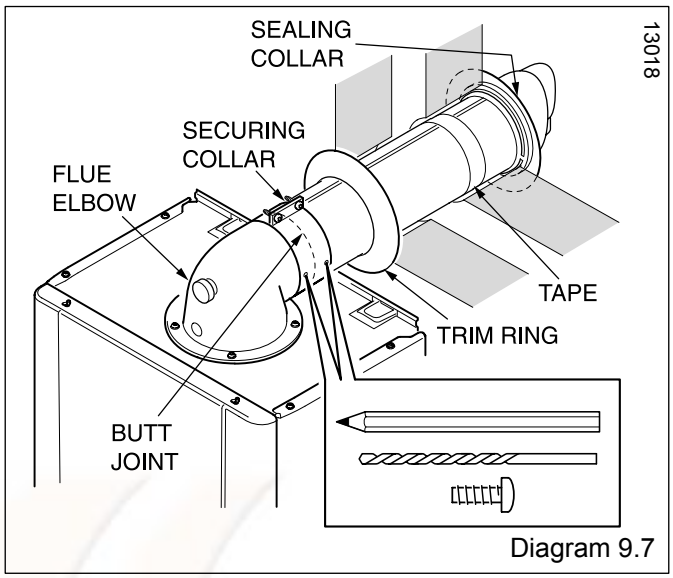


Diagram 9.7

9.5 Top Horizontal Rear flue - Standard Part No. A2043400.

Refer to diagram 9.8 for kit contents.

9.6 Flue Length

If a wall thickness of 75 min. to 507 max. the Top horizontal rear flue - standard can be used without extensions.

If the wall thickness is greater than 507 then using extensions a maximum horizontal flue length of 4 metres (24kW) & 3 metres (30kW) plus the top horizontal rear flue - standard can be achieved. However, for every 90° or 45° elbows used the flue length MUST be reduced by 1 metre.

When extension pipes are used the flue system must be designed to have a continuous fall to the boiler of at least 44mm/metre (2.5°) to allow condensate to run back into the boiler and out via the drain.

Temporarily fit the flue elbow, measure the distance from the outside wall to flue elbow. If the measurement 'Y' exceeds 652mm, then the appropriate length of extension pipe is required. The minimum dimension is 187 to suit a 75 min. wall thickness, see diagram 9.3.

9.7 Flue Fitting

Remove the flue elbow.

Separate the flue duct from the terminal by twisting to release the terminal catch, then pull out of the retaining seal, refer to diagram 9.9.

The flue duct cutting length (L + 11mm.) is shown in diagram 9.9.

The air duct should be cut at the opposite end to the terminal

The plastic flue duct MUST be cut at the opposite end to the terminal catch.

The plastic flue duct extensions MUST be cut at the opposite end to the seal.

9 Flue Preparation and Installation

The cut ducts must be de-burred and all filings and debris removed.

Insert the flue duct into the air duct terminal assembly, remembering to engage the catch within the terminal.

NOTE: If you require to lubricate the seals to ease installation, do not use mineral oils or grease, silicon grease or water is recommended.

Fit the sealing collar onto the locating ring on the flue terminal, see diagram 9.6.

Push the flue assembly into the wall, externally or internally, initially until the end of the assembly protrudes a short way from the inside face of the wall. This will enable the internal trim ring (if required) to be positioned and allow the flue assembly to be drawn back into the flue elbow.

Secure the flue elbow in position on top of the boiler with four torque headed screws supplied.

Draw the flue assembly from wall and engage the flue duct into the elbow and butt fit between the air duct and flue elbow.

Ensuring the correct alignment of the terminal.

Fit the securing collar into position, mark through two of the pre drilled holes in the securing collar. Remove securing collar and drill two 3mm diameter holes one in the elbow and one in the air duct, take care not to pierce the inner flue duct. Fit the securing collar and secure with screws provided, see diagram 9.10.

Slide the internal trim ring back against the wall, securing in place with a small amount of sealant if required.

NOTE: If the air and flue ducts have been correctly cut to the instructions given, the sealing collar should fit flush with the outside wall, check this.

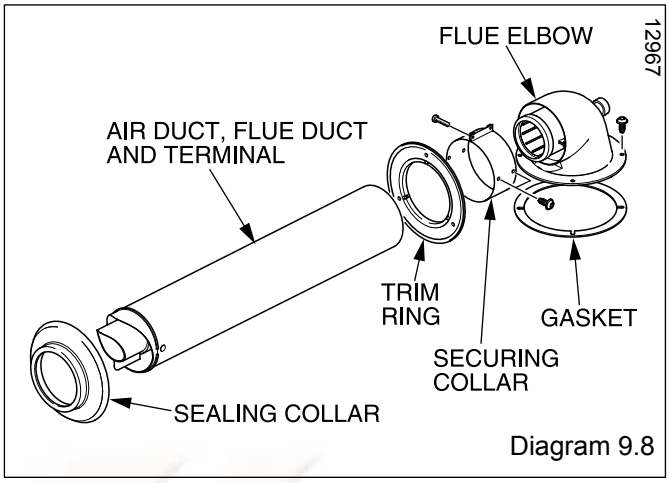


Diagram 9.8

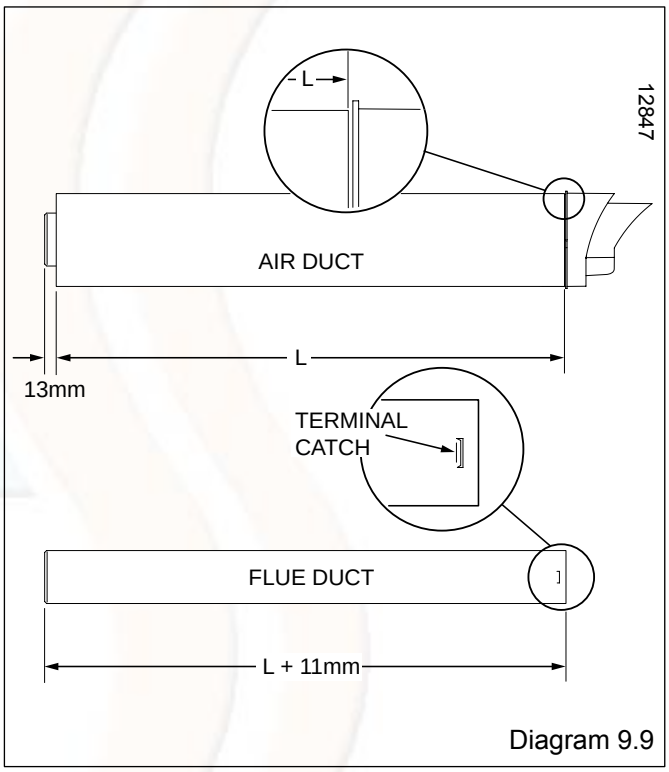


Diagram 9.9

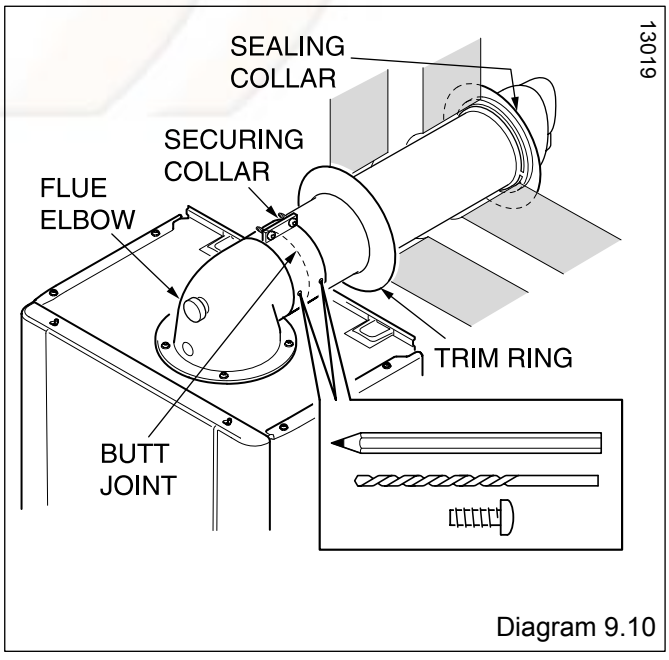


Diagram 9.10

9.8 Top Horizontal Side flue - Telescopic Part No. A2043600.

Refer to diagram 9.1 for kit contents.

9.9 Flue Length

The maximum permissable horizontal flue length is 4 metres (24kW) & 3 metres (30kW) plus the Top horizontal side flue - telescopic. This can be achieved by the use of extensions, however, for every 90° or 45° elbows used the flue length MUST be reduced by 1 metre.

When extension pipes are used the flue system must be designed to have a continuous fall to the boiler of at least 44mm/metre (2.5°) to allow condensate to run back into the boiler and out via the drain.

9.10 Preparation

Temporarily fit the flue elbow, measure the distance from the outside wall to flue elbow. If the measurement 'Y' exceeds 525mm, see diagram 9.11 then the appropriate length of extension pipe is required. If the dimension is less than 320mm DO NOT cut the flue, it can project beyond the outside wall face, see diagrams 9.4. If this is not desirable then a Top horizontal side flue - standard MUST be used and cut to length.

9.11 Flue Fitting

Set the flue to the required length 'Y', ensure the air duct seams line up.

Remove the flue elbow.

Mark the securing hole position in the air duct. Drill a 3mm diameter hole at this position, take care not to pierce the inner flue duct. Secure with screw provided and tape the joint, see diagram 9.5.

Fit the sealing collar onto the locating ring on the flue terminal, see diagram 9.6.

Push the flue assembly into the wall, externally or internally, until the end of the assembly protrudes a short way from the inside face of the wall. This will enable the internal trim ring (if required) to be positioned and allow the flue assembly to be drawn back up to the flue elbow.

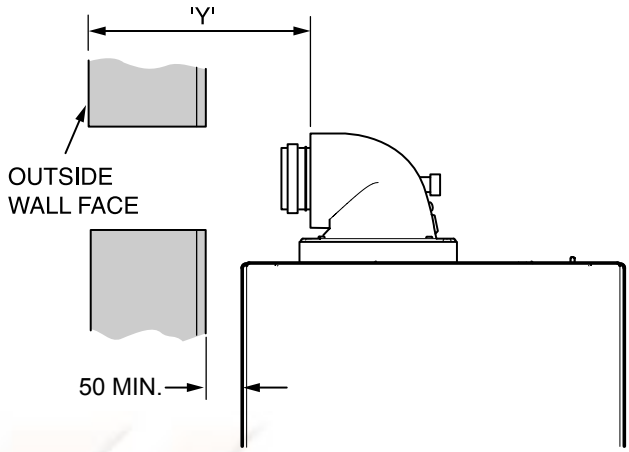
Secure the flue elbow in position on top of the boiler with four torque headed screws supplied.

Draw the flue assembly from wall and engage the flue duct into the elbow and butt fit between the air duct and flue elbow.

Ensure the correct alignment of the flue.

Fit the securing collar in position, mark through two of the pre drilled holes in the securing collar. Remove securing collar and drill two 3mm diameter holes one in the elbow and one in the air duct, take care not to pierce the inner flue duct. Fit the securing collar and secure with screws provided, see diagram 9.12.

Slide the internal trim ring back against the wall, securing in place with a small amount of sealant if required.



Left Hand illustrated

Diagram 9.11

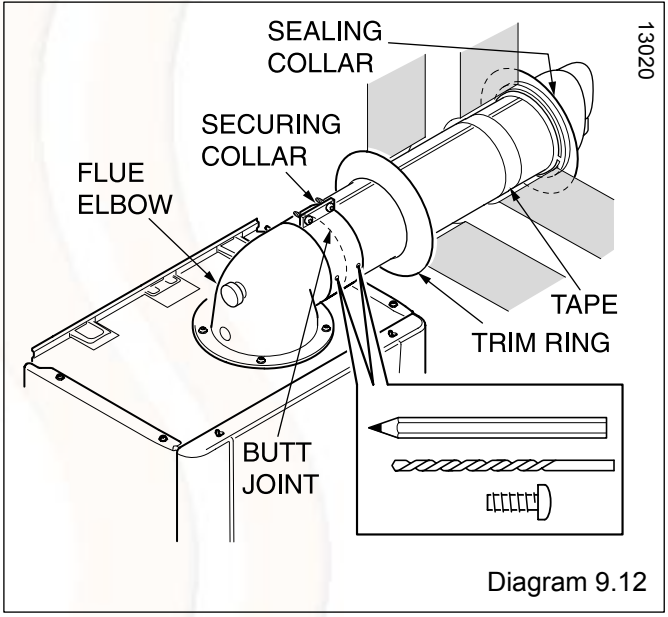


Diagram 9.12

9.12 Top Horizontal Side flue - Standard Part No. A2043400.

Refer to diagram 9.8 for kit contents.

9.13 Flue Length

Remove the top flue outlet cover secured with four screws, see diagram 9.2.

Temporarily fit the flue elbow, measure the distance from the outside wall to flue elbow. If the measurement 'Y' exceeds 652mm, then the appropriate length of extension pipe is required.

9.14 Flue Fitting

Remove the flue elbow.

Separate the flue duct from the terminal by twisting to release the terminal catch, then pull out of the retaining seal, refer to diagram 9.9.

The flue duct cutting length (L + 11mm.) is shown in diagram 9.9.

The air duct should be cut at the opposite end to the terminal

The plastic flue duct MUST be cut at the opposite end to the terminal catch.

The plastic flue duct extensions MUST be cut at the opposite end to seal.

The cut ducts must be de-burred and all filings and debris removed.

Insert the flue duct into the air duct terminal assembly, remembering to engage the catch within the terminal.

NOTE: If you require to lubricate the seals to ease installation, do not use mineral oils or grease, silicon grease or water is recommended.

Fit the sealing collar behind the locating lugs on the flue terminal, see diagram 9.6.

Push the flue assembly into the wall, externally or internally, initially until the end of the assembly protrudes a short way from the inside face of the wall. This will enable the internal trim ring (if required) to be positioned and allow the flue assembly to be drawn back into the flue elbow.

Secure the flue elbow in position on top of the boiler with four torque headed screws supplied.

Draw the flue assembly from wall and engage the flue duct into the elbow and butt fit between the air duct and flue elbow.

Ensuring the correct alignment of the terminal.

Fit the securing collar into position, mark through two of the pre drilled holes in the securing collar. Remove securing collar and drill two 3mm diameter holes one in the elbow and one in the air duct, take care not to pierce the inner flue duct. Fit the securing collar and secure with screws provided, see diagram 9.13.

Slide the internal trim ring back against the wall, securing in place with a small amount of sealant if required.

NOTE: If the air and flue ducts have been correctly cut to the instructions the sealing collar should fit flush with the outside wall, check this.

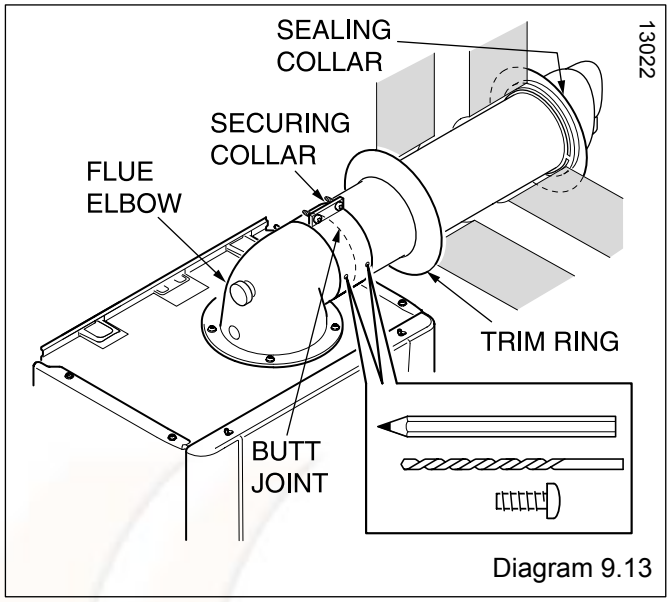


Diagram 9.13

9.15 Vertical flue

The vertical flue system is available as an option where the boiler position does not permit the use of the top horizontal or rear flue system.

The system is made up of accessories. The accessories include terminal assembly, bends 45° and 90°, flue extensions, fixing bracket and appropriate weather collar, see diagram 9.17.

The maximum permitted straight flue length is 8 metres plus the terminal. for each 90° or 2x45° bends fitted, the maximum length must be reduced by 1 metre, see diagram 9.22.

NOTE: 2x45º bends can replace 1x90° bend if necessary. When using 90º bends any horizontal extension pipe should be inclined by a minimum of 44mm/metre (2.5°) towards the boiler to facilitate condense removal, see (a) in diagram 9.22.

Alternatively use 45º bends to avoid horizontal runs, see (b) in diagram 9.22.

The terminal should be positioned at least 600mm from any opening into the building, refer to diagram 3.2.

Measure the distance of flue length required for the installation.

The flue must be designed with a continuous fall towards the boiler.

Remove the top flue outlet cover secured with four screws, see diagram 9.2.

Refer to diagram 9.18. Secure the flue adapter in position on top of the boiler with four torx headed screws supplied, making sure the nib fits into the locating slot in the boiler casing to ensure correct orientation.

The rubber 'O' rings of each section should be lubricated prior to assembly.

NOTE: Do not use mineral oils or grease, silicon grease or water is recommended.

Secure the first extension pipe to the flue adapter with the securing collar supplied by positioning the collar centrally over the joint, then tighten the two screws on the securing collar, see diagram 9.19.

Fit more extension pipes as required using the collar and screws supplied with each extension pipe. To fit position the collar centrally over the joint, tighten the two screws on the securing collar. Using the holes provided in the securing collar drill and insert the two self tapping srews supplied, see diagram 9.20.

The rubber 'O' rings of each section should be lubricated prior to assembly.

NOTE: Do not use mineral oils or grease, silicon grease or water is recommended.

When building the flue up it is recommended that it is supported every 2 metres and at every bend by a fixing bracket.

Project the rise of the flue pipe to roof level and cut a 150mm hole in the roof.

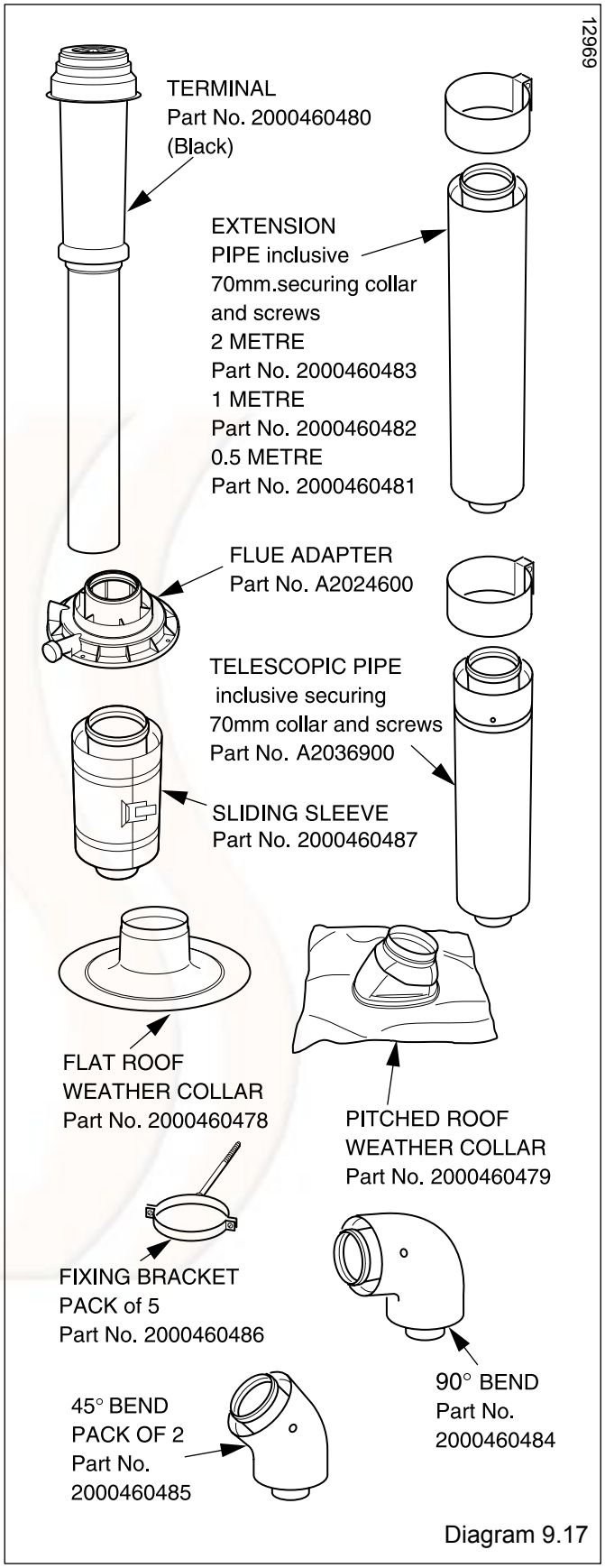


Diagram 9.17

Flue Terminal Installation

(a) Pitched Roof

Fit the required pitched roof weather collar over the 150mm hole in the roof. Make good the tiling or slating around the collar incorporating the flashing of the weather collar. Position the angle cap over the weather collar in the correct orientation to attain the correct angle for your roof.

(b) Flat Roof

Fit the aluminium weather collar over the 150mm hole in the roof ensuring a weather tight seal.

From above carefully place the flue terminal through the weather collar.

Completion of Installation

With the flue terminal positioned in the roof the length of the final pipe can be determined. If a telescopic length cannot be used, then a standard flue length can be cut to make the correct length. Cut the flue to the desired length measuring from the 'O' ring end and discard the plain end of the tube. The cuts must be square and made free of burrs to allow correct assembly. (**NOTE:** The flue pipe is 10mm longer than the air pipe), see diagram 9.21. Carefully push the terminal assembly upwards to allow room for fitting the final flue piece. Fit a fixing bracket to the terminal assembly. Pull the terminal assembly down and join to the flue system. Ensure that the terminal is making a weather tight seal on the weather collar. Secure the fixing bracket fitted to the terminal to the roofing struts or a purpose made batton.

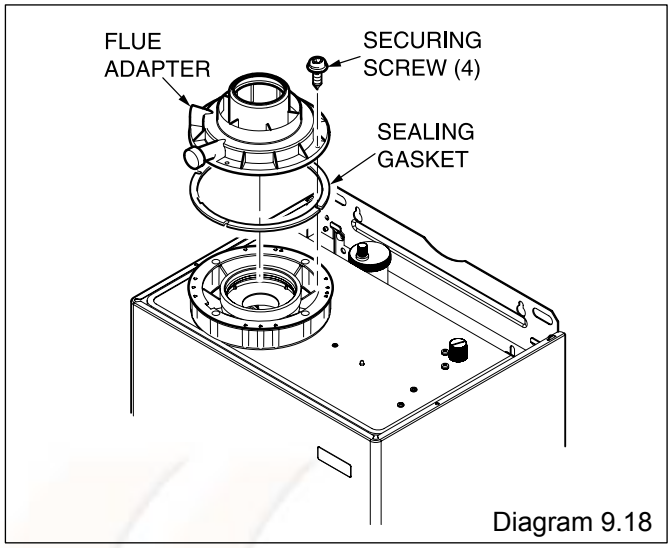


Diagram 9.18

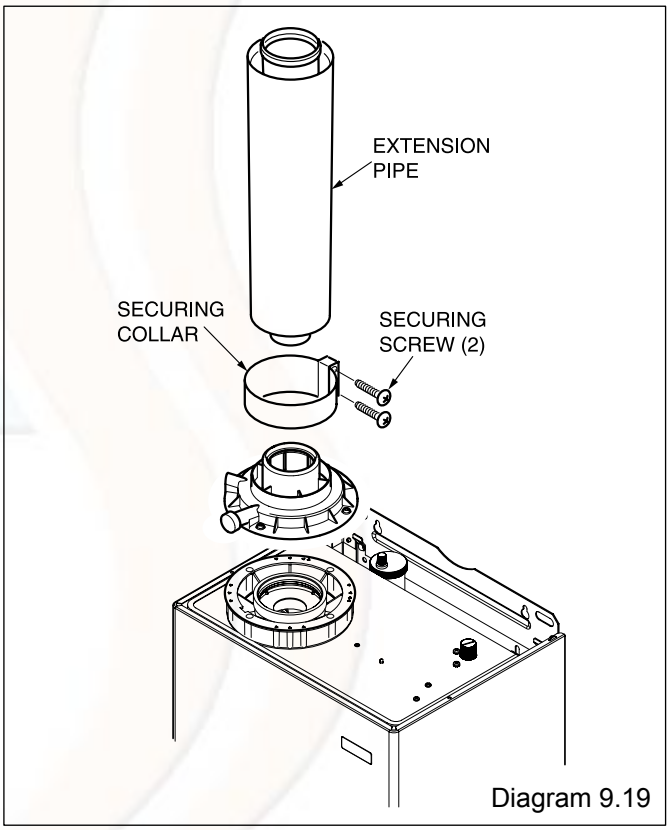


Diagram 9.19

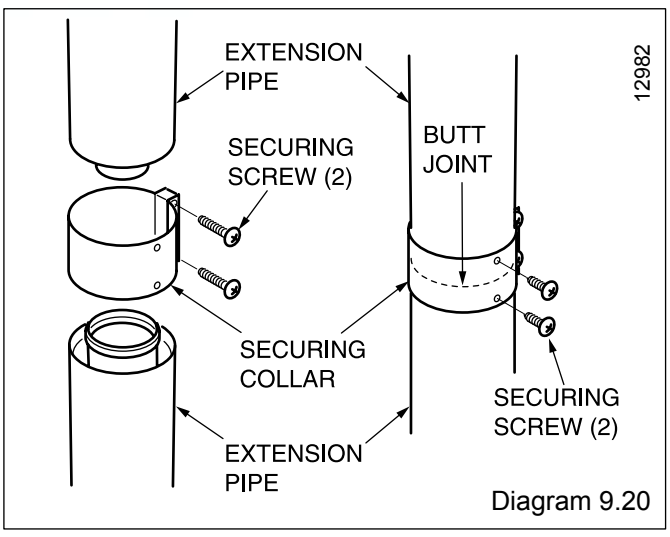


Diagram 9.20

9 Flue Preparation and Installation

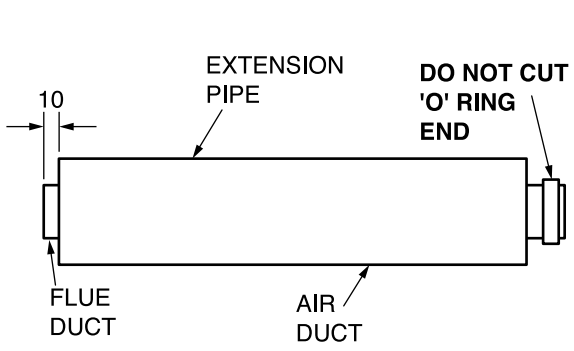
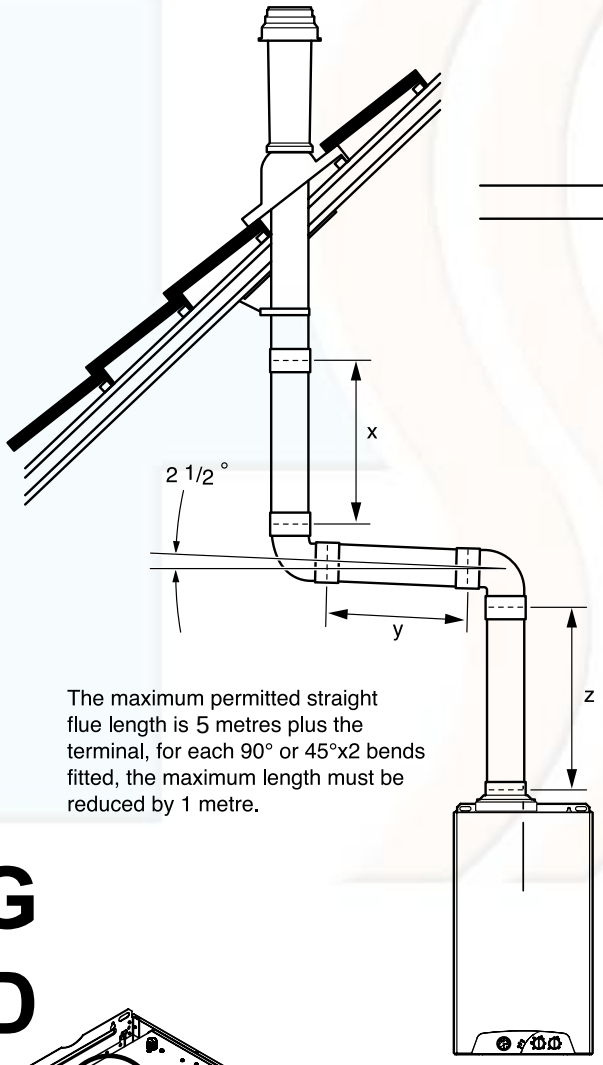
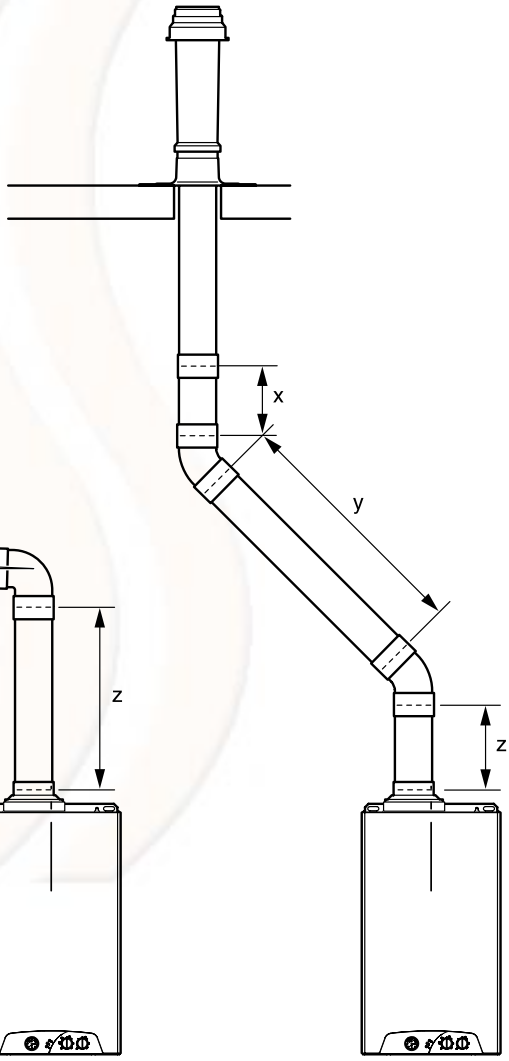


Diagram 9.21

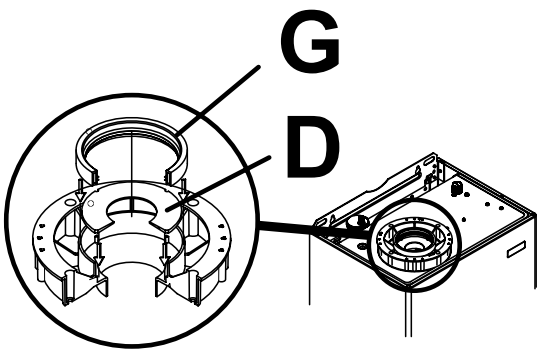


The maximum permitted straight flue length is 5 metres plus the terminal, for each 90° or 45°x2 bends fitted, the maximum length must be reduced by 1 metre.



(a)
Maximum flue length
x, y and z = 3 metres

(b)
Maximum flue length
x, y and z = 4 metres



When the length of the flue system is less than 2 metres, it is necessary to install the flue restrictor “D”. The length of the system is specified for each flue configuration.

Remove the gasket “G”, install the restrictor “D” and install the gasket “G”.

Diagram 9.22

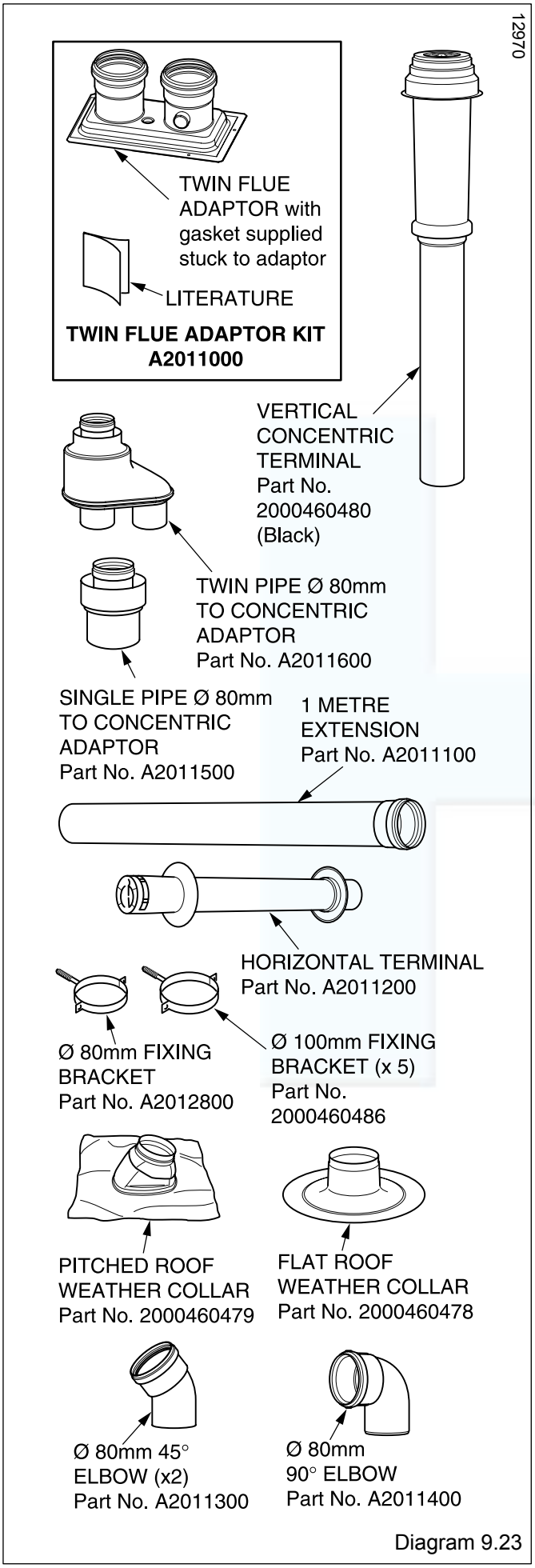


Diagram 9.23

9.16 Twin flue

The twin flue system is available as an option when the top horizontal, rear or vertical flue system is not appropriate.

The system can provide an independent horizontal air inlet and flue outlet, horizontal air inlet and vertical flue outlet or vertical air inlet and flue outlet via a concentric terminal.

NOTE: The air and flue outlets do not have to be equal lengths. 2x45° bends can replace 1x90° bend if necessary.

The maximum permitted straight pipe length is 10 metres plus terminal assemblies, for each 90° or 45° x 2 bends fitted, the maximum length must be reduced by 1 metre.

NOTE: When using 90° bends any horizontal run should be inclined by a minimum of 44mm/metre (2.5°) towards the boiler to facilitate condense removal.

Alternatively use 45° bends to avoid horizontal runs in the flue pipe.

Terminal Position

The clearances for a flue outlet are given in the "Flue Location and Ventilation" section.

In addition the horizontal air inlet must not be closer than 300 mm from a flue outlet on the same wall or 1200mm from an opposing flue outlet.

Installation Details

The parts available for a twin flue system installation are shown in diagram 9.23.

Boiler Connection

Remove the top flue outlet cover secured with four screws, see diagram 9.2

Push the twin flue adaptor onto the outlet of the boiler with the air inlet to the left hand side. Secure the adaptor to the top panel with the screws provided. Care should be taken when inserting the screw through the hole in adaptor top.

To facilitate engagement, it is recommended that the rubber 'O' rings are lubricated with silicone grease or water prior to assembly.

See diagram 9.24 new adaptor in position.

Air and Flue Pipe Installation

The air and flue pipes can now be built up from the boiler.

The flue must be designed with a continuous fall towards the boiler. If using the horizontal flue pipe or 90° bends the pipe must be inclined at 44mm/metre (2.5°) minimum, see diagram 9.25.

Alternatively if space allows, use 45° bends in place of 90° bends.

The rubber 'O' rings of each section should be lubricated prior to assembly with silicone grease.

When building the flue up it is recommended that it is supported every 2 metres and at every bend by a fixing bracket.

9 Flue Preparation and Installation

Horizontal Terminal Installation

With due consideration to terminal clearances mentioned in Section 3.2 drill the one or two holes as required with a 90mm core drill.

Push the horizontal terminal through the wall allowing approx. 100mm to protrude outside.

Push a grey rubber wall seal onto either side of the wall ensuring that both wall seals are pushed up to the wall surface, see examples (b) and (c) diagram 9.25.

Vertical Terminal Installation

With due consideration to terminal clearances mentioned in Section 3.2, project the rise of the flue pipe to roof level and cut 150mm hole in the roof.

(a) Pitched Roof

Fit the required pitched roof weather collar over the 150mm hole in the roof. Make good the tiling or slating around the collar incorporating the flashing of the weather collar. Position the angle cap over the weather collar in the correct orientation to attain the correct angle for your roof. One way round gives a pitch of 25°-38° and the other gives 37°- 50°.

(b) Flat Roof

Fit the aluminium weather collar over the 150mm hole in the roof ensuring a weather tight seal.

Horizontal Pipes-Completion of Installation

Having built the pipe(s) from the boiler to the terminal(s), the length of the final pipe piece can be determined. Cut pipes at the opposite end to the 'O' ring seal making square and free from burrs. Push the horizontal terminal through the wall to engage the final pipe piece and pull back ensuring the grey wall seals are fully pulled up to the outside and inside wall faces.

Vertical Pipes-Completion of Installation

Refer to diagram 9.25.

For installation of (a), attach the twin pipe to concentric flue adaptor, part number A2011600, to the base of vertical terminal assembly. For installation of (b), attach the single pipe to concentric adaptor, part number A2011500, to the base of vertical terminal assembly.

With the vertical terminal assembly positioned in the roof, the length of the final pipe can be determined. Cut the flue to the desired length measuring from the 'O' ring seal end and discard the plain end of the tube. The cut end should be square and free from burrs. Carefully push the terminal assembly upwards to allow room for fitting the final flue piece(s). Fit a 100mm fixing bracket to the terminal assembly Part No2000460486. Pull the terminal assembly down and join to the flue system. Ensure that the terminal is making a weather tight seal on the weather collar. Secure the fixing bracket fitted to the terminal to the roofing struts or a purpose made batton.

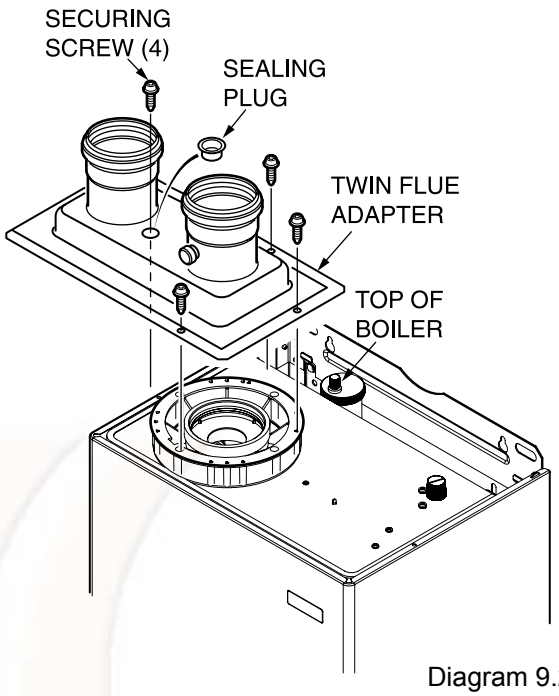
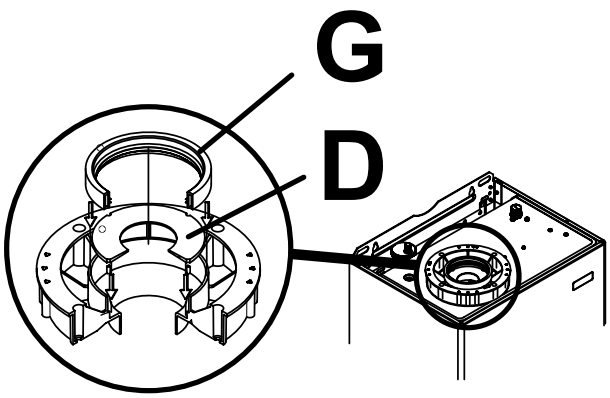


Diagram 9.24

9 Flue Preparation and Installation



When the length of the flue system is less than 4 metres, it is necessary to install the flue restrictor “D”. The length of the system is specified for each flue configuration.

Remove the gasket “G”, install the restrictor “D” and install the gasket “G”.

Diagram 9.25

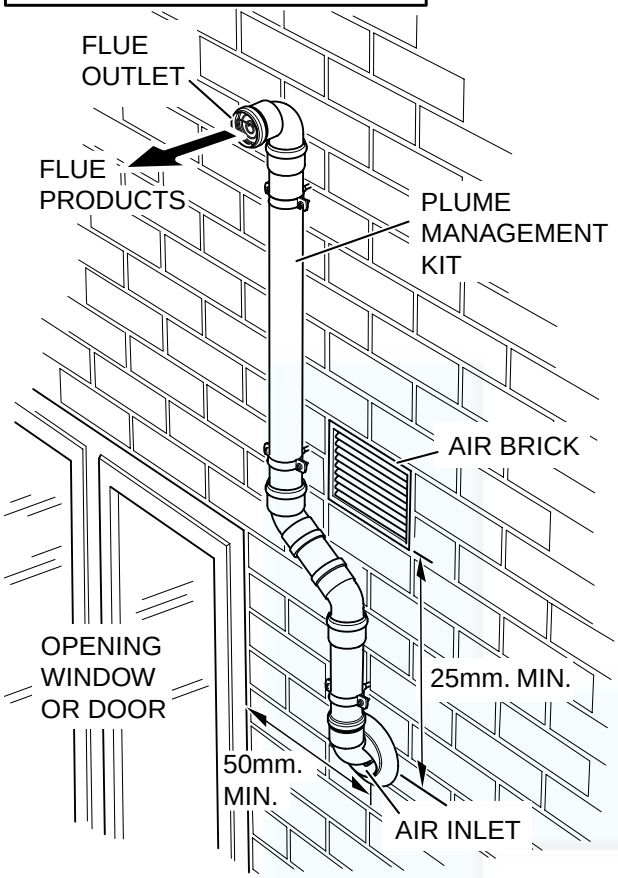


Diagram 9.26

9.17 Plume Management Kit

The Plume Management Kit: Part No. A2044100 (white) or A2044000 (black) can be used to overcome many site issues.

The Plume Management Kit will fit to the Top Horizontal Telescopic, Rear Horizontal Telescopic and Standard Horizontal Flue. This enables the flue products to exhaust further away from the boiler, thereby reducing the impact of pluming. The flue air inlet can be sited closer to doors, opening windows and air bricks, see diagram 9.26.

The maximum length of the Plume Management Kit must NOT exceed 6m with a horizontal concentric flue length of 2m max.

For each 90° bend or 2 x 45° bends the maximum length of the Plume Management Kit must be reduced by 1m.

For more information contact Glow-worm, refer to page 2.

The Plume Management Kit is supplied with installation instructions.

10 Electrical Connection

WARNING: This appliance must be earthed.

This appliance must be wired in accordance with these instructions. Any fault arising from incorrect wiring cannot be put right under the terms of the Glow-worm guarantee.

All system components must be of an approved type.

Electrical components have been tested to meet the equivalent requirements of the BEAB.

Do not interrupt the mains supply with a time switch or programmer.

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

Isolation should preferably be by a double pole switched fused spur box having a minimum contact separation of 3mm on each pole. The fused spur box should be readily accessible and preferably adjacent to the boiler. It should be identified as to its use.

A fused three pin plug and shuttered socket outlet may be used instead of a fused spur box provided that:

a) They are not used in a room containing a fixed bath or shower.

b) Both the plug and socket comply with the current issue of BS1363.

10.1 System Controls

WARNING: UNDER NO CIRCUMSTANCES MUST ANY MAINS VOLTAGE BE APPLIED TO THE CONNECTION LEAD.

Connect the mains supply and system heating controls e.g. room thermostat as diagram 10.1. External controls should be fitted in accordance with the rules in force.

IMPORTANT NOTE

ALL electrical connections to the boiler must be permanently fixed to a wall or a sturdy support feature in a tidy manner.

10.2 Mains Voltage System Controls

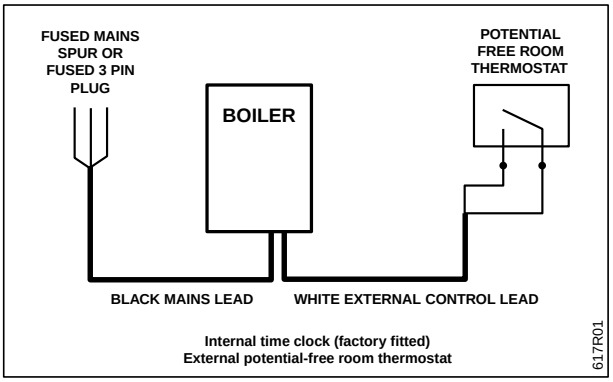
WARNING: The Betacom is designed exclusively for use with potential free system controls. **Under no circumstances must any mains voltage be applied to the white controls connection lead.**

10.3 Electrical Connections - Testing

Carry out preliminary electrical system checks as below:

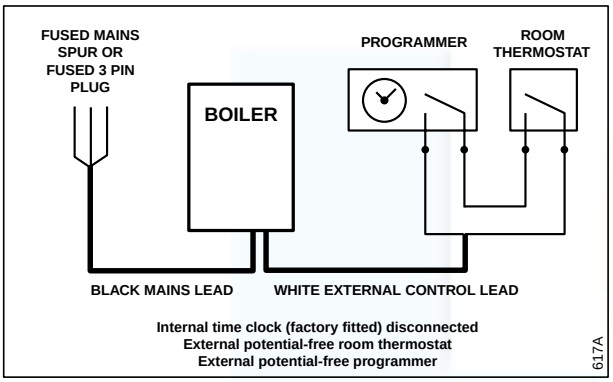
1. Test insulation resistance to earth of mains cables.
2. Test the earth continuity and short circuit of cables.
3. Test the polarity of the mains.

10 Electrical Connection



1) INTERNAL TIME CLOCK WITH EXTERNAL ROOM THERMOSTAT

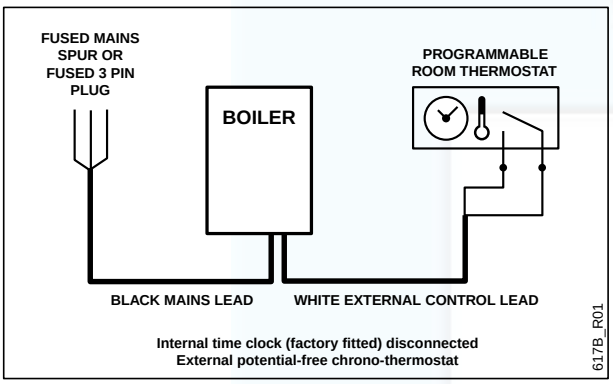
If a room thermostat is required it must be connected to the external controls lead as shown, using a suitable electrical connection.



2) CONNECTION WITH EXTERNAL PROGRAMMER

Any eventual external programmer must be connected in series with the room thermostat.

IMPORTANT: the boiler time clock must be put on position "I" (see Diagram 10.2).



3) CONNECTION WITH EXTERNAL PROGRAMMABLE ROOM THERMOSTAT

As an alternative solution it is possible to connect a single external programmable room thermostat which makes the double function of a room thermostat and a programmer (see figure 3)

IMPORTANT: the boiler time clock must be put on position "I" (see Diagram 10.2).

Diagram 10.1

REMARK: In case of installation of an external programmer or chronothermostat (see Diagram 10.1) the internal time clock (factory fitted) must be put on position "I" (always ON)

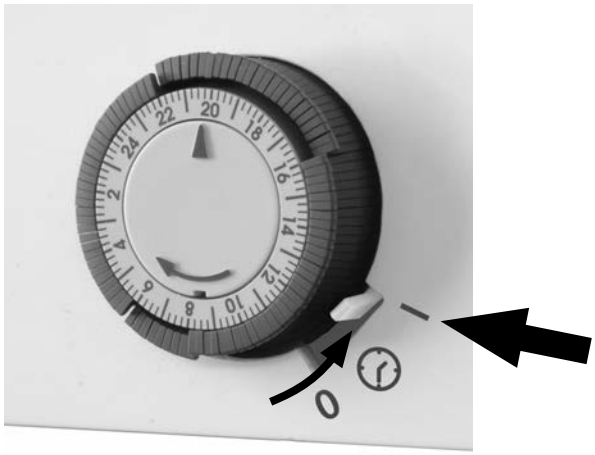


Diagram 10.2

11 Commissioning

11.1 Filling the System

Refer to diagram 11.1

1. Ensure that the filling loop is connected to the filling connections on the heating system.
2. Open the Central Heating Flow and Return cocks marked ‘1’ and ‘2’ - knob in line with the axis of the cock (shown open in diagram).
3. The gauge ‘4’ shows the system pressure.
4. Open the filling loop to fill the heating system to a pressure of 1.0bar, then close it.
5. Vent all air from the system - repeat step 4 as neccessary until the system is full and all the air has been removed.
6. After filling is complete set the Central Heating temperature and the Domestic Hot Water temperature to the desired level. Refer to *“Instructions for Use”* manual for details.
7. Disconnect the filling loop in compliance with the water regulations.

11.2 Filling Domestic Water Circuit

1. Fully open any valves in the domestic water supply to the boiler.
2. Open the domestic water isolation valve marked ‘3’ in Diagram 11.1 - knob in line with the axis of the cock (shown open in diagram).
3. Open all hot water taps in turn and close them when water flows. Check for water soundness of the complete domestic water system.

11.3 Re-pressurising System

1. Ensure that the filling loop is connected to the filling connections on the heating system.
2. The gauge ‘4’ shows the system pressure. Open the filling loop to fill the heating system to a pressure of 1.0bar, then close it.
3. Vent all air from the system - repeat step 2 as neccessary until the system is full and all the air has been removed.
4. Disconnect the filling loop in compliance with the water regulations.

11.4 Water flow rate

The water flow rate is restricted by a restrictor factory fitted to the boiler.

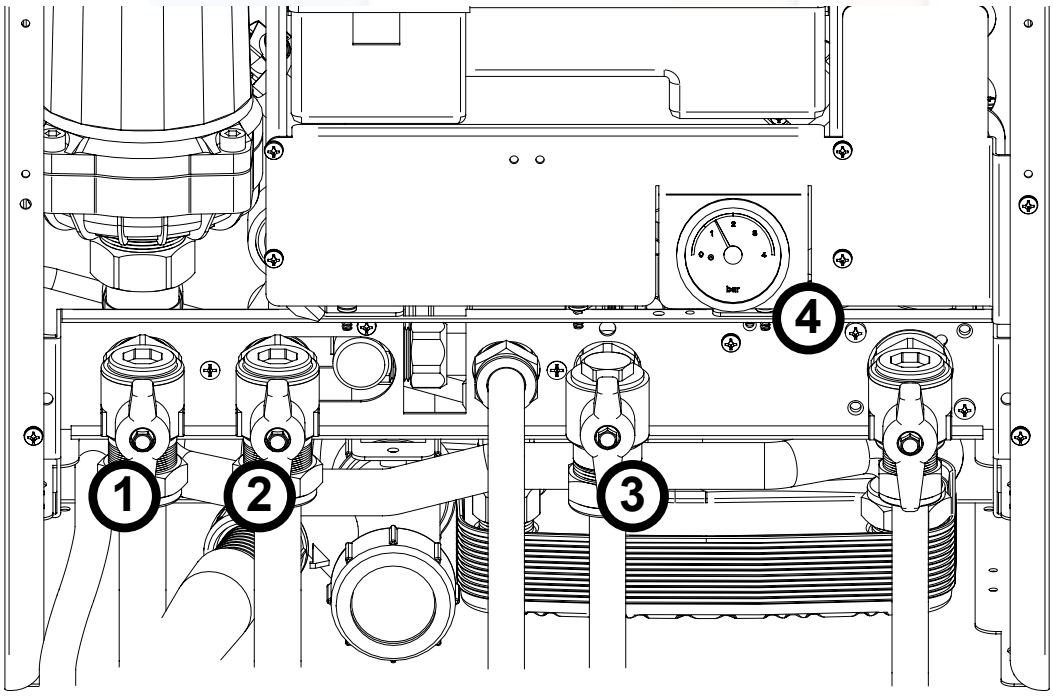


Diagram 11.1

11.5 Initial Lighting

The lighting procedure of the boiler is fully automated.

Check that all external controls are calling for heat.

The appliance will enter a self checking routine then the fan should start and the ignition will commence.

If the burner fails to light the boiler will block. Initially this may be due to air in the gas supply line. The boiler will automatically have some attempts at ignition.

If the burner fails to ignite the indicator will turn on.

Turn the left knob on position and then turn it on previous operating position to repeat the ignition sequence.

Once the system has been purged of air set the hot water to the desired temperature by using the Hot Water knob .

Open a hot water tap, the diverter valve will move to hot water supply.

Check that hot water is available and then close the hot water tap.

Set the Central heating water temperature to the desired temperature by turning the Central Heating knob on the scale .

The appliance will then continue to fire in central heating until the user controls are satisfied or there is another demand made for hot water.

11.6 Testing

Should any doubt exist about the gas rate, check it using the gas meter test dial and stop watch at least 10 minutes after the burner has lit, making sure that all other gas burning appliances and pilot lights are off.

It should be noted that this appliance will modulate the heat input according to demand. This may affect the gas rates measured if the appliance reaches its operating temperature during the measurement.

The approximate gas rates:

Betacom 24: 2.7m³/h

Betacom 30: 3.1m³/h

The gas valve is factory set for natural gas (G20) and should need no adjustment.

Re-setting of the gas valve requires a combustion analyser and any adjustment should only be carried out by a competent person.

11.7 Testing - Heating System

Check that all external controls are calling for heat. The boiler will fire automatically. Fully open all radiator valves, flow control valve, if fitted, see diagram 4.1.

Balance the radiators as required and if fitted adjust valve to give the required system differential. Turn off all radiators that can be shut off by the user and check to see if less than the maximum differential allowed of 20°C can be achieved across flow and return.

The pump's speed can be adjusted depending on the requirements of the central heating system, see diagram 4.2.

The appliances have an inbuilt automatic bypass valve.

Allow the system to reach maximum temperature then switch off the boiler by isolating from the electrical supply.

Drain the entire system rapidly whilst hot, using the drain tap at the lowest part of the system. Fill and vent the system as described previously in section 11.1.

Lock or remove the handle from control valve, if fitted.

11.8 Completion

Adjust the boiler temperature control and any system controls to their required settings. In addition it is necessary to complete the "Benchmark" logbook.

For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S.813. An example of this is given in the current edition of I.S.813.

Testing Flue Gases: If any doubt exists that the flue products are not exhausting correctly, investigate by use of a gas analyser (FGA).

11.9 Heating power adjustment

The maximum heating output must be set in accordance with the system requirements (stated in the project). Once you know the power suitable for the heating system, refer to the “BURNER PRESSURES” tables in Section 1 (Technical Information) and find the burner pressure for the boiler model and for the type of gas used.

The regulation will be performed by the boiler’s controls, following a special procedure that avoids accidental activations by the User.

Refer to Diagram 11.2.

— Loosen (2-3 turns) the screw of pressure tapping point for gas outlet [1] of the gas valve and insert the manometer sensor. Unthread from the “Vent” [3] the silicon tube coming from the sealed chamber;

— supply the boiler and turn the Central Heating knob to Summer position ;

— ensure that there are NOT domestic hot water requests (no open taps); if the room thermostat is installed, make sure it is calling for heat (e.g. raise the requested room temperature manually);

— turn the Hot Water knob on position and wait (approximately five seconds) that both the green and red indicators flash to short “pulses”. When that happens, within 15 seconds turn the Central Heating knob on the MAXIMUM value of the scale of the heating (fully clockwise). The burner ignites to the maximum output not modulated (the yellow indicator turns on);

— read on the manometer the value of the gas pressure to the burner and turn the Central Heating knob along the heating system temperature scale , until you read, on the manometer, the burner pressure corresponding to the power needed:

— do NOT move the Central Heating knob for about 30 seconds, until the green indicator stops flashing and stays on. During this time, check that the pressure displayed on the manometer remains stabilized on the correct value;

— turn the Hot Water knob on the scale from I to ; the burner will turn off for a moment. Wait (about 5 seconds) that both the green and red indicators stay on for about 5 seconds (this is the confirmation that the burner pressure for heating is stored), then the red indicator turns off;

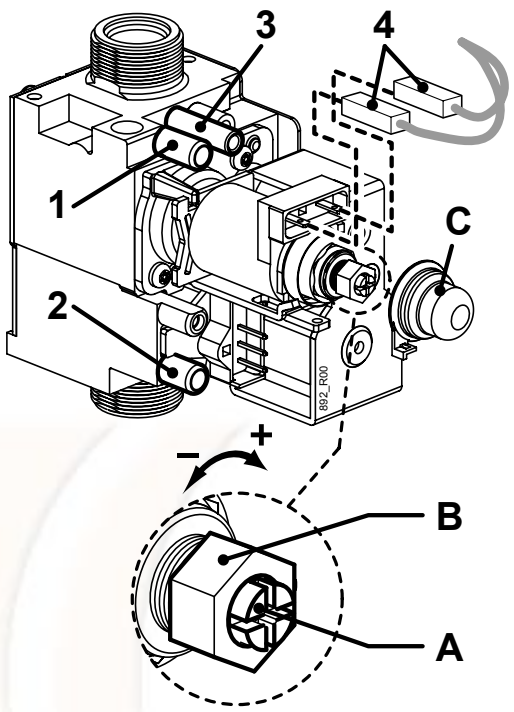
— reinsert the tube in the “Vent” [3] of the gas valve. ATTENTION:after this operation, the value measured by the manometer could decrease due to pressure compensation. This fact is normal and does not require any change of the regulation;

— unthread the manometer sensor and screw the pressure tapping point screw for gas outlet [1]; verify that there is no gas leak;

— to switch off the burner, turn the Central Heating knob to the position .

The MAX power for the heating system is adjusted now.

The whole procedure should be completed within 15 minutes from the start. If you exceed this time, or in case of mistakes, the new pressure will not be stored and it will be necessary to repeat the procedure from the beginning, by turning the Central Heating knob on and the Hot Water knob on the scale from I to .



1 = Pressure tapping point for gas outlet
2 = Pressure tapping point for gas inlet
3 = Vent

Diagram 11.2

11.10 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 in the UK.

The user shall not interfere with or adjust sealed components.

It is the Law that any servicing is carried out by a competent person.

Advise the user that, like all condensing boilers this appliance will produce a plume of condensation from the flue terminal in cool weather. This is due to the high efficiency and hence low flue gas temperature of the boiler.

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 SHOULD NOT be switched off, as the built in frost protection and pump/valve saver program would not be operable.

Reminder, leave these instructions and the ‘Benchmark’ logbook with the user.

Important Notes

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 particular installation and usage, but in general once a year should be enough.

It is the Law that any servicing is carried out by a **competent person.**

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 Glow-worm.

Before commencing with a service or replacement of parts the boiler should be isolated from the electrical supply and the gas supply should be turned off at the gas service cock, see diagram 12.1.

Testing Flue Gases: If any doubt exists that the flue products are not exhausting correctly, investigate by use of a gas analyser (FGA).

Measurement of the products of combustion can be achieved by connecting a probe to the combustion analyser test point on the flue elbow, refer Combustion Check.

IMPORTANT NOTE: Products of combustion will be discharged when the cap is removed. It is important to replace the cap immediately.

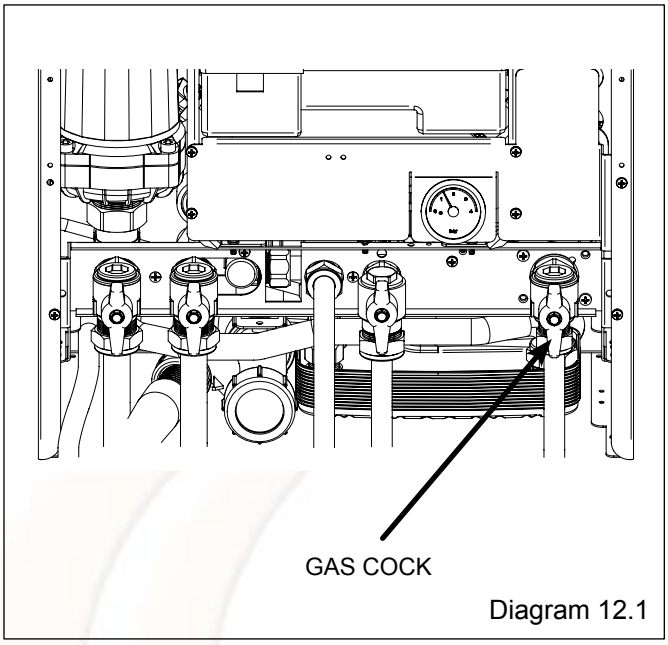


Diagram 12.1

12.1 Combustion Check

A combustion check should not be necessary unless a gas carrying component has been replaced or the combustion setting is suspect.

Connect a CO2 combustion analyser to the test point, see diagram 12.2.

Turn on the gas service cock, see diagram 12.1.

Turn on the electrical supply.

A competent person only should carry out any adjustment to the gas valve.

- supply the boiler and turn the Central Heating knob to Summer position ;
- ensure that room thermostat contact is closed (activated) or open an hot water tap (the heat produced by the boiler will be drained consequently);
- turn the Hot Water knob to the position and wait (about 5 seconds) that green lamp flashes with short intervals. When this occurs, turn the Hot Water knob on the scale from I to . The burner ignites at the maximum output not modulated;
- perform the combustion check;
- switch off the burner, by turning the Central Heating knob to the position . The green lamp flashes with long intervals.

Remark: the burner will switch off automatically when reaching the maximum temperature, and in any case after 15 minutes.

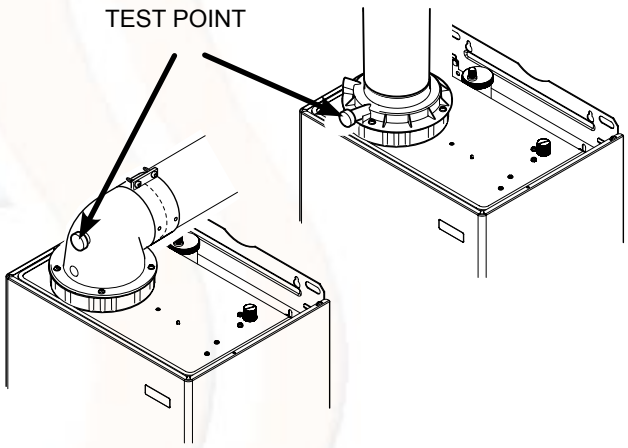


Diagram 12.2

12.2 General

Removal of the front panel is required for all routine servicing. Refer to diagram 12.3.

Unless stated otherwise any part removed during servicing should be replaced in the reverse order to removal.

Servicing should always include the removal of any debris from the condensate pipe and siphon.

1. Unscrew the screws [1];
2. Push the casing [2] upwards and remove it;
3. Unscrew the two screws [3] and hinge downwards the control panel [4];
4. After the regulations, close the boiler repeating everything in the other sense, carefully hooking the casing to the lugs [5].

After completing any servicing of gas carrying components, ALWAYS test for gas soundness and carry out a functional test of the controls.

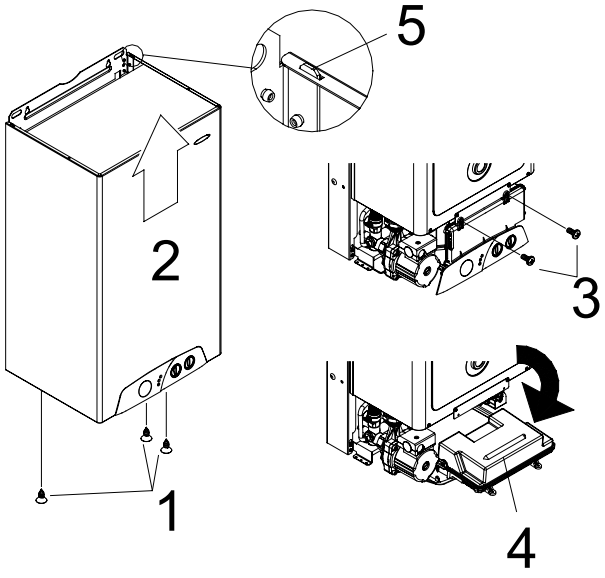


Diagram 12.3

12.3 Burner

Refer to Diagram 12.4.

- Undo main gas supply nut from burner.
- Pull main burner forward, pull off the ignition and flame sense leads from the electrodes and remove burner from boiler.

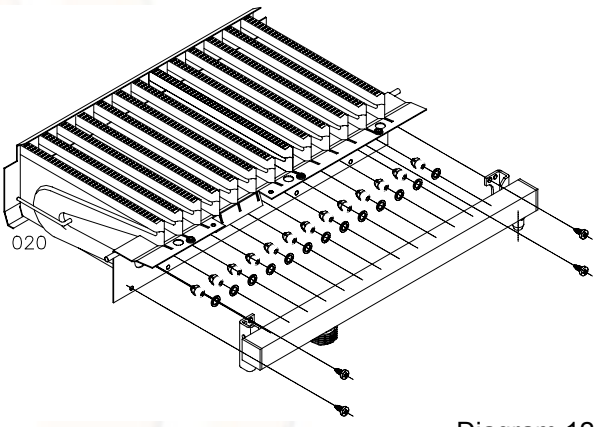


Diagram 12.4

12.4 Heat Exchanger

Remove loose debris from inside the heat exchanger using a soft brush and vacuum cleaner.

12.5 Condensate Trap

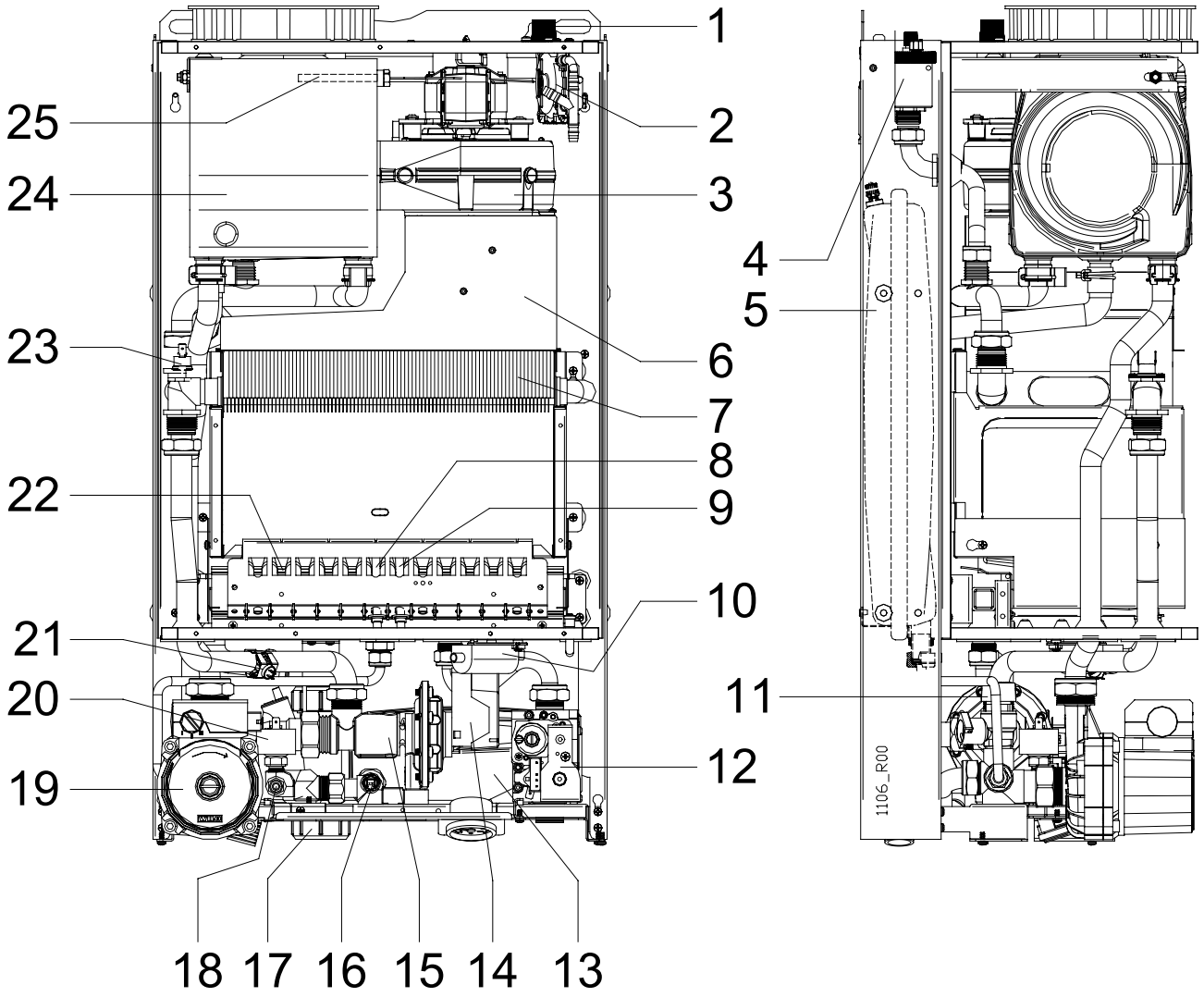
The condensate trap does not normally need removing during servicing.

To flush the condense drain carefully pour water into the flue heat exchanger and check that water flows freely to drain.

12.6 Combustion chamber seal check

Check the condition of the seal and replace if worn or damaged.

To replace remove the old seal and thoroughly clean the casing surfaces. Fit the new seals.



1 Flue overheat thermostat (manual reset control)
2 Air pressure switch
3 Fan
4 Automatic air vent
5 Expansion vessel
6 Flue hood
7 Heat exchanger
8 Flame sense electrode
9 Ignition electrode
10 Electronic igniter
11 Safety valve 3 bar
12 Gas valve
13 Domestic plate-to-plate heat exchanger
14 Priority pressure switch
15 Hydraulic 3-way valve
16 DHW temperature sensor
17 Condensate trap
18 Drain valve
19 Pump
20 Low water pressure switch
21 Heating circuit temperature sensor
22 Burner
23 Overheat thermostat
24 Flue heat recuperator
25 Flue overheat thermostat (probe)

Diagram 12.5

13 Fault Finding

NOTE:

Before trying to operate the boiler make sure that :

- All gas supply cocks are open and that the gas supply has been purged of air.
- There is a permanent mains supply to the boiler.
- There is a heating demand from the external controls.

WARNING

Always isolate the boiler from the electrical supply before carrying out any electrical replacement work.

Always check for gas soundness after any service work.

Electrical Testing

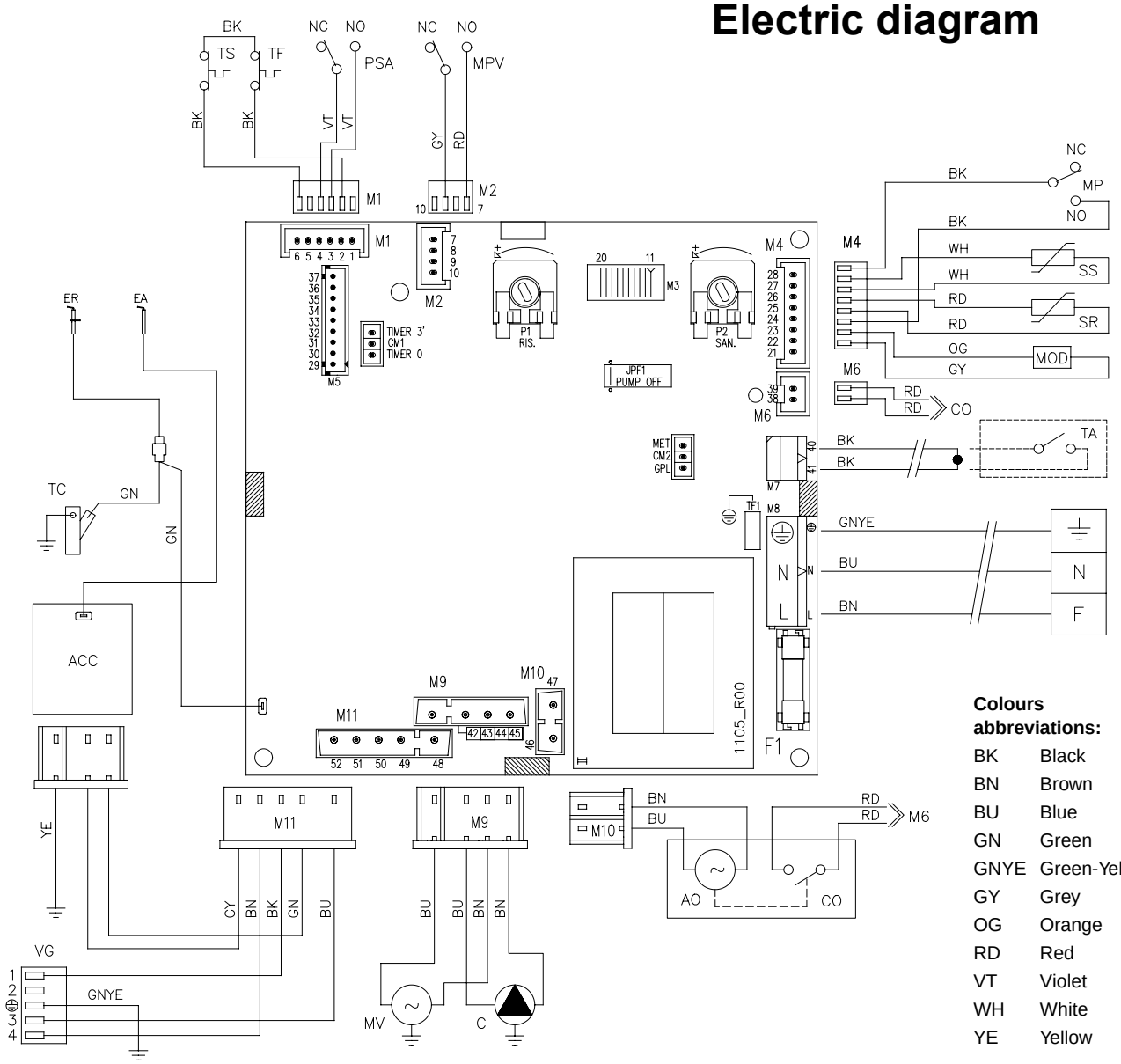
Should there be any doubt about the voltage supply to any of the components, it is possible to carry out a simple electrical test.

Important: On completion of the Service/Fault Finding tasks which have required the breaking and remaking of the electrical connections the earth continuity, polarity, short circuit and resistance to earth checks must be repeated using a suitable multimeter.

To carry out the electrical test, gain access, as follows:

Hinge down the control box and unscrew the rear cover's screws to remove and gain access. Refer to the wiring diagram 13.1.

Electric diagram



Colours abbreviations:

BK	Black
BN	Brown
BU	Blue
GN	Green
GNYE	Green-Yellow
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

ACC	Electronic igniter
AO	Time clock power supply
C	Pump
CO	Time clock contact
EA	Ignition electrode
ER	Flame sense electrode
F1	Fuse (2 A)
MOD	Modulator
MF	Priority pressure switch
MPV	Flue pressure switch
MV	Fan motor
PSA	Low water pressure switch ("N.O." contact closed = in pressure)
SR	NTC sensor, heating
SS	NTC sensor, DHW
TA	Voltage-free Contact for generic Room Thermostat or Cronothermostat (safety extra low voltage SELV)
TC	Condensate trap overflow sensor
TF	Flue overheat thermostat
TS	Overheat thermostat
VG	Gas valve (coils)

Diagram 13.1

14 Replacement of Parts

14.1 General

Refer to Diagram 14.3 for the overall view of disassembled items.

Replacement of parts must be carried out by a competent person.

Before replacing any parts the boiler should be isolated from the mains electric supply and the gas should be turned off at the service cock on the boiler, see diagram 14.1.

Ensure that components with electrical connections are disconnected before removal.

Unless stated otherwise parts are replaced in the reverse order to removal.

After replacing any parts always test for gas soundness and if necessary carry out functional test of the controls.

14.2 Draining of Boiler Heating Circuit

Drain down the Heating Circuit of the boiler only, by closing the heating flow and return isolating valves. Attach a length of hose to the drain point and open the drain valve, see diagram 14.2.

After replacing parts, close the drain valve and remove the hose. Open the heating flow and return isolating valves and refill, vent and pressurise the heating circuit, refer to section 11.

Check for leaks.

14.3 Draining of Boiler Hot Water Circuit

Drain the Domestic Hot Water circuit by closing the cold-water isolation valve, see diagram 14.1.

Open one or more hot water taps to drain the hot water circuit.

After replacing parts open the cold-water isolation valve and slowly open a hot water tap to remove air. Close the hot water tap and check for any leaks.

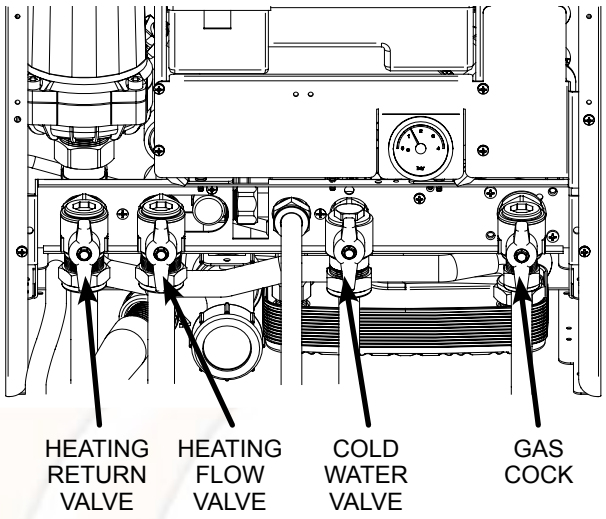


Diagram 14.1

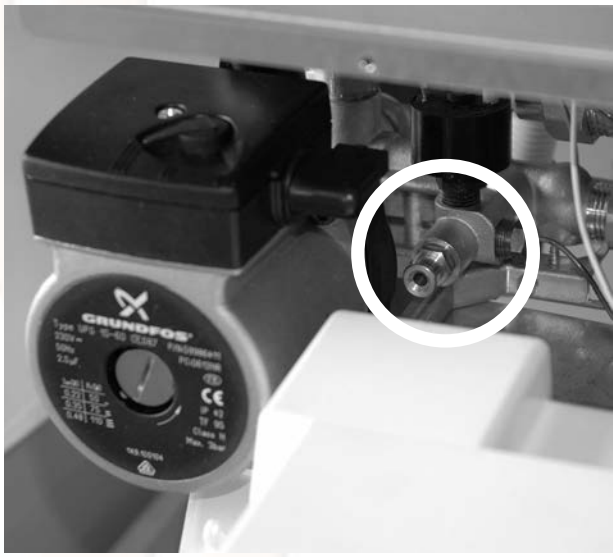


Diagram 14.2

14 Replacement of Parts

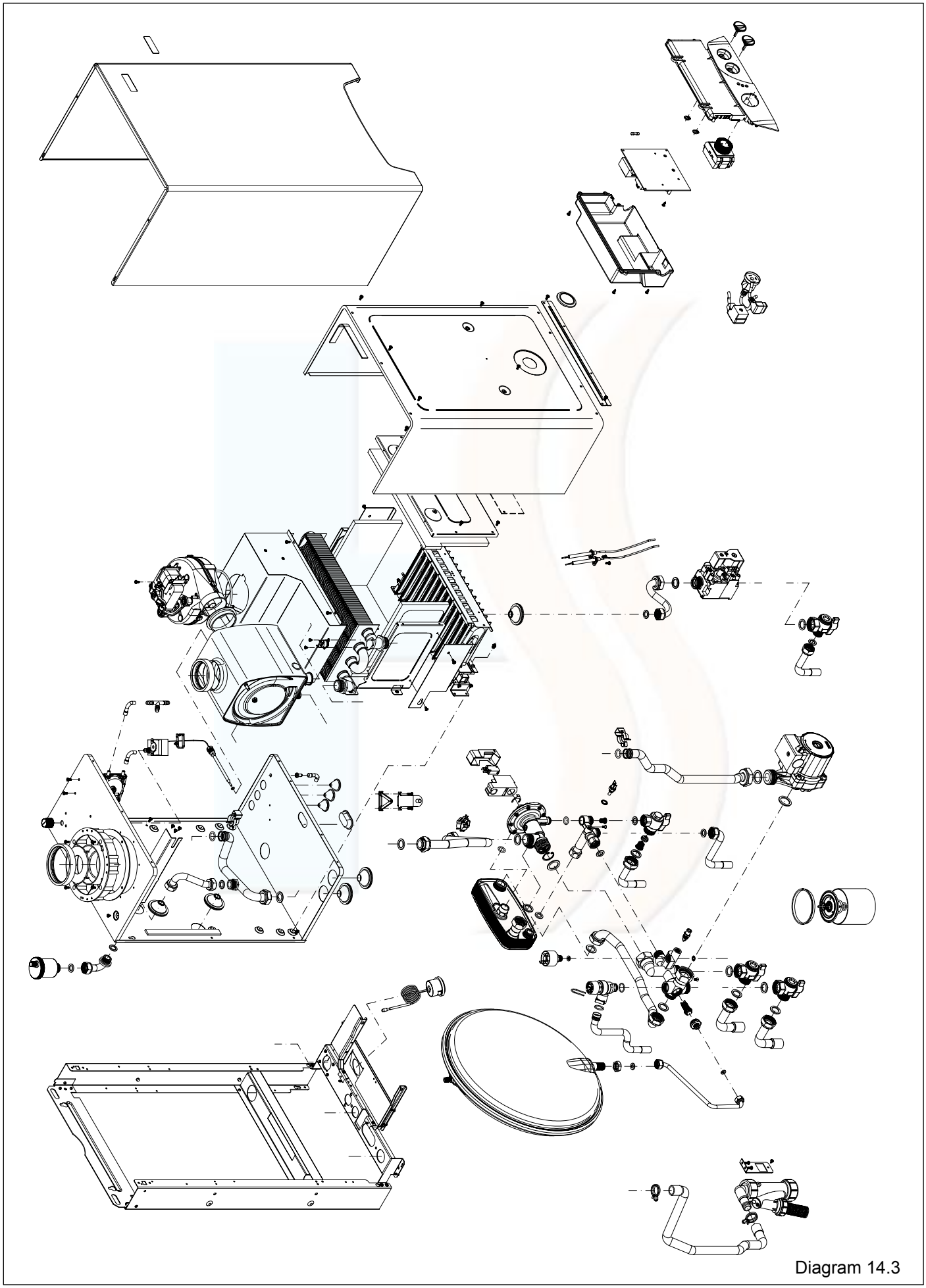


Diagram 14.3

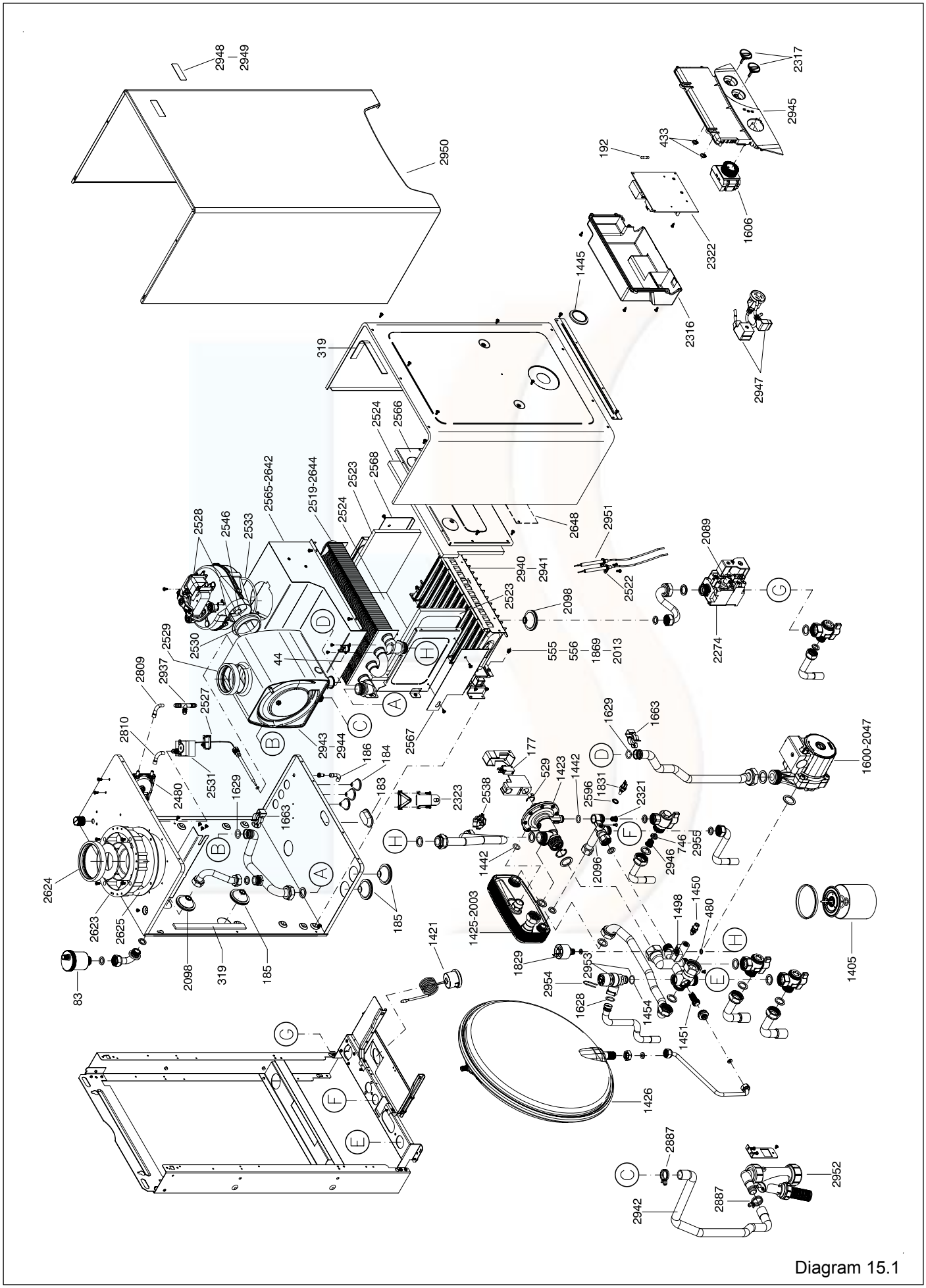


Diagram 15.1

16 Manual Handling

IMPORTANT. With regards to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift.

General recommendations when handling

Clear the route before attempting the lift.
Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. Do not twist – reposition feet instead. If 2 persons performing lift, ensure co-ordinated movements during lift. Avoid upper body/top heavy bending - do not lean forward/sideways. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip. Always use assistance if required.

Removal of carton from delivery van

Recommend 2 person lift or 1 person with use of sack truck. If 1 person is performing lift, straddle the load, tilt and place carton into position on truck. Recommend secure appliance onto truck with suitable straps. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. If 2 persons performing lift, ensure co-ordinated movements during lift. Always use assistance if required.

Carriage of carton from point of delivery to point of installation – ground floor.

Recommend 2 person lift or 1 person with use of sack truck. If 1 person is performing lift, straddle the load, tilt and place carton into position on truck. Recommend secure appliance onto truck with suitable straps. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. If 2 persons performing lift, ensure co-ordinated movements during lift. Clear the route before attempting the lift. If removing boiler from truck straddle the load and tilt forwards to facilitate secure grip. Ensure safe lifting techniques are used – keep back straight – bend using legs. Do not twist – reposition feet instead. Take care to avoid trip hazards, slippery or wet surfaces and when climbing steps and stairs. Always use assistance if required.

Carriage of carton from point of delivery to point of installation – first or higher floor, cellar.

Recommend 2-person lift or 1 person with use of sack truck. If 1 person is performing lift, straddle the load, tilt and place carton into position on truck. Recommend secure appliance onto truck with suitable straps. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. If 2 persons performing lift, ensure co-ordinated movements during lift. Avoid upper body/top heavy bending - do not lean forward/sideways. Clear the route before attempting the lift. If removing boiler from truck straddle the load and tilt forwards to facilitate secure grip. Ensure safe lifting techniques are used – keep back straight – bend using legs. Do not twist – reposition feet instead. Take care to avoid trip hazards, slippery or wet surfaces and when climbing steps and stairs. Always use assistance if required.

Carriage of carton from point of delivery to point of installation – roofspace.

Recommend 2-person lift. Ensure co-ordinated movements during lift. Avoid upper body/top heavy bending - do not lean forward/sideways. Clear the route before attempting the lift. Take care to avoid trip hazards, slippery or wet surfaces and when climbing steps and stairs. When transferring appliance into roofspace, recommend 1 person to be in roofspace to receive the appliance and other person to be below to pass up and support appliance. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. Always use assistance if required. It is assumed safe access, flooring and adequate lighting are provided in the roof space. It is recommended a risk assessment of the roof space area be carried out before moving the appliance into the area to take into account access, stability of flooring, lighting and other factors, and appropriate measures taken.

Unpacking of appliance from carton.

Recommend 2 persons unpack appliance from carton. Always keep working area clear. Recommend cut base end of carton and open carton flaps, then tilt boiler forwards from its side onto its base and remove carton by sliding up over the boiler. Ensure safe lifting techniques are used – keep back straight – bend using legs. Keep load as close to body as possible. Always use assistance if required. Dispose of packaging in a responsible manner. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance outside packaging.

Positioning of Appliance for Final Installation – no obstructions.

Recommend 2 persons lift appliance to position into place. Fit bracket securely onto wall before lifting appliance into position. Obtain firm grip on front and sides of appliance, lift upwards, ensure stable balance achieved and lift upwards to position in place on bracket. Ensure safe lifting techniques are used – keep back straight – bend using legs - when lifting load from floor level. Do not twist – reposition feet instead. Keep boiler as close as possible to body throughout lift to minimise strain on back. Ensure co-ordinated movements to ensure equal spread of weight of load. Always use assistance if required. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance.

Positioning of Appliance for Final Installation – above worktop, foreseeable obstructions etc.

Recommend 2 persons lift appliance to position into place. Fit bracket securely onto wall before lifting appliance into position. Obtain firm grip on front and sides of appliance, lift upwards, onto worktop if practicable. Ensure stable balance achieved and lift upwards to position in place on bracket. If 2 persons positioning onto bracket obtain firm grip at front and sides/base of boiler. Ensure co-ordinated movements during 2 person lifts to ensure equal spread of weight of load. Ensure safe lifting techniques are used – keep back straight – bend using legs - when lifting load from floor level. Do not twist – reposition feet instead. Keep boiler as close as possible to body throughout lift to minimise strain on back. Avoid upper body/top heavy bending - do not lean forward/sideways. Always use assistance if required. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance.

Positioning of Appliance for Final Installation – within compartment etc. restricting installation.

Recommend 2 persons lift appliance to position into place, space permitting. Fit bracket securely onto wall before lifting appliance into position. Obtain firm grip on front and sides of appliance, lift upwards, onto worktop if practicable. Ensure stable balance achieved and lift upwards to drop into place onto bracket. If 2 persons positioning onto bracket obtain firm grip at front and sides/base of boiler. Ensure co-ordinated movements during 2 person lifts to ensure equal spread of weight of load. If 1 person positioning onto bracket recommend obtain firm grip supporting base of boiler. Ensure safe lifting techniques are used – keep back straight – bend using legs - when lifting load from floor level. Do not twist – reposition feet instead. Keep boiler as close as possible to body throughout lift to minimise strain on back. Always use assistance if required. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance.

Positioning of Appliance for Final Installation – in roof space restricting installation.

Recommend 2 persons lift appliance to position into place, space permitting. Fit bracket securely onto wall before lifting appliance into position. Obtain firm grip on front and sides of appliance, lift upwards, ensure stable balance achieved and lift upwards to drop into place onto bracket. If 2 persons positioning onto bracket obtain firm grip at front and sides/base of boiler. Ensure co-ordinated movements during 2 person lifts to ensure equal spread of weight of load. If 1 person positioning onto bracket recommend obtain firm grip supporting base of boiler. Ensure safe lifting techniques are used - keep back straight – bend using legs - when lifting load from floor level. Do not twist – reposition feet instead. Keep boiler as close as possible to body throughout lift to minimise strain on back. Always use assistance if required. Recommend wear suitable cut resistant gloves with good grip to protect against sharp edges and ensure good grip when handling appliance. It is recommended a risk assessment of the roof space area be carried out before moving the appliance into the area to take into account access, stability of flooring, lighting and other factors, and appropriate measures taken.

benchmark™
COLLECTIVE MARK

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

Installation, Commissioning and Service Record

SERVICE INTERVAL RECORD

It is recommended that your heating system is serviced regularly
and that you complete the appropriate Service Interval Record Below.

Service Provider. Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part when replacing all controls

SERVICE 1 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 2 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 3 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 4 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 5 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 6 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 7 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 8 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 9 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

SERVICE 10 DATE
ENGINEER NAME
COMPANY NAME
TEL No.
CORGI ID CARD SERIAL No.
COMMENTS

SIGNATURE

BENCHMARK No. | | | | | | |

GAS BOILER COMMISSIONING CHECKLIST

BOILER SERIAL No. _____ **NOTIFICATION No.** _____

CONTROLS *To comply with the Building Regulations, each section must have a tick in one or other of the boxes*

TIME & TEMPERATURE CONTROL TO HEATING	ROOM T/STAT & PROGRAMMER/TIMER	☐	PROGRAMMABLE ROOMSTAT	☐
TIME & TEMPERATURE CONTROL TO HOT WATER	CYLINDER T/STAT & PROGRAMMER/TIMER	☐	COMBI BOILER	☐
HEATING ZONE VALVES	FITTED	☐	NOT REQUIRED	☐
HOT WATER ZONE VALVES	FITTED	☐	NOT REQUIRED	☐
THERMOSTATIC RADIATOR VALVES	FITTED	☐		
AUTOMATIC BYPASS TO SYSTEM	FITTED	☐	NOT REQUIRED	☐

FOR ALL BOILERS CONFIRM THE FOLLOWING

THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS?	☐
THE SYSTEM CLEANER USED	
THE INHIBITOR USED	

FOR THE CENTRAL HEATING MODE, MEASURE & RECORD

GAS RATE		m^3/hr		ft^3/hr
BURNER OPERATING PRESSURE (IF APPLICABLE)	☐	N/A		mbar
CENTRAL HEATING FLOW TEMPERATURE				°C
CENTRAL HEATING RETURN TEMPERATURE				°C

FOR COMBINATION BOILERS ONLY

HAS A WATER SCALE REDUCER BEEN FITTED?	YES ☐	NO ☐
WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED?		

FOR THE DOMESTIC HOT WATER MODE, MEASURE & RECORD

GAS RATE		m^3/hr		ft^3/hr
MAXIMUM BURNER OPERATING PRESSURE (IF APPLICABLE)	☐	N/A		mbar
COLD WATER INLET TEMPERATURE				°C
HOT WATER OUTLET TEMPERATURE				°C
WATER FLOW RATE				lts/min

FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING

THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS?	YES ☐

FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING

THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS				☐
THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS				☐
IF REQUIRED BY THE MANUFACTURER, HAVE YOU RECORDED A CO/CO_2 RATIO READING?	N/A ☐	YES		CO/CO_2 RATIO
THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER				☐
THE MANUFACTURER'S LITERATURE HAS BEEN LEFT WITH THE CUSTOMER				☐

COMMISSIONING ENG'S NAME PRINT _____ CORGI ID No. _____

SIGN _____ DATE _____

Glow-worm

Glow-worm, Nottingham Road, Belper, Derbyshire. DE56 1JT

www.glow-worm.co.uk

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