# INSTRUCTION MANUAL

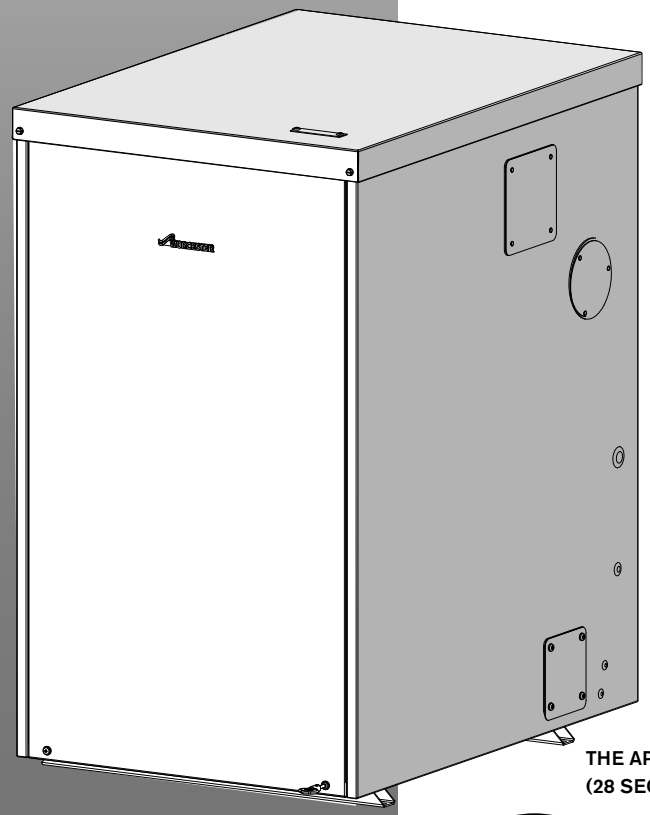
INSTALLATION, COMMISSIONING & SERVICING

**FLOOR STANDING OIL FIRED CONDENSING COMBINATION BOILER**

**CONVENTIONAL FLUE & ROOM SEALED FLUE**

# GREENSTAR HEATSLAVE II EXTERNAL 12/18, 18/25 & 25/32

FOR SEALED CENTRAL HEATING SYSTEMS WITH MAINS FED DOMESTIC HOT WATER



**THE APPLIANCE IS FOR USE WITH KEROSENE (28 SECOND OIL) ONLY**

**UK**

WORCESTER

Bosch Group

**SYMBOLS USED IN THIS MANUAL:**


Domestic hot water


Central heating


Room thermostat

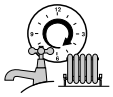

Frost thermostat


Wait time period


Programmer/timer OFF


Programmer ON CH only


Programmer ON DHW only


Programmer ON CH and DHW


Cold water main supply


Electricity supply

IMPORTANT HANDLING INSTRUCTIONS:
It is advised that more than one person is involved in the transfer of the packaged appliance from the van to the point of installation.
It is advised that no attempt should be made to move the packaged appliance without the use of a suitable truck.
At all times the correct method for handling heavy objects should be strictly observed.

GENERAL HANDLING GUIDELINES:

- Lift only a manageable weight, or ask for help.
- When lifting, bend the knees, and keep the back straight and feet apart.
- Do not lift and twist at the same time.
- Lift and carry items close to the body.
- Wear protective clothing and gloves to protect from any sharp edges.

**PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.**

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER APPLIANCE MODEL(S) STATED ON THE FRONT COVER OF THIS MANUAL ONLY AND MUST NOT BE USED WITH ANY OTHER MAKE OR MODEL OF APPLIANCE.

THE INSTRUCTIONS APPLY IN THE UK AND EIRE ONLY AND MUST BE FOLLOWED EXCEPT FOR ANY STATUTORY OBLIGATION.

THIS APPLIANCE MUST BE INSTALLED BY A COMPETENT PERSON. FAILURE TO INSTALL CORRECTLY COULD LEAD TO PROSECUTION.

**COMPLYING WITH THE BUILDING REGULATIONS:**
This heating appliance forms part of the controlled services for the building. It is law that all controlled services for buildings must comply with building regulations. You must be able to satisfy your Local Authority Building Control Body (LABC) that the work carried out concerning the installation and commissioning of this heating appliance has been carried out to a satisfactory standard.

OFTEC operate a competent persons scheme and registered installers are able to certify that their work complies with building regulations. Under the scheme;

- OFTEC must be informed about every installation.
- OFTEC will issue a building regulations compliance certificate to the householder and will notify the LABC.

OFTEC provide controlled document forms CD10 and CD11 for use during installation and commissioning respectively.

Other organisations operate self-certification schemes e.g. NAPIT and BESCA Ltd. and it may be possible for installers who are members of these organisations to self certify their work.

Alternatively you must submit a building control notice to the LABC before installing any boiler. The LABC will then arrange regular inspection visits during the work to ensure that the installation complies with the regulations.

IF YOU ARE IN **ANY DOUBT** CONTACT THE WORCESTER TECHNICAL HELPLINE ON: **0844 892 3366**.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER.

**PLEASE LEAVE THESE INSTRUCTIONS WITH THE COMPLETED COMMISSIONING FORM AND THE USER MANUAL WITH THE OWNER OR WITH THE APPLIANCE AFTER INSTALLATION OR SERVICING. THE SERVICE INTERVAL RECORD CAN BE FOUND ON THE BACK PAGE OF THIS MANUAL.**

ABBREVIATIONS USED IN THIS MANUAL:

| | |
|---|---|
| Ø | Diameter |
| CH | Central Heating |
| DHW | Domestic Hot Water |
| DCW | Domestic Cold Water |
| TRV | Thermostatic Radiator Valve |
| IP | Ingress Protection |
| CF | Conventional flue |
| BF | Balanced flue |
| N/A | Not allowed |
| SEDBUK | Seasonal Efficiency of Domestic Boilers in the United Kingdom |
| OFTEC | Oil Firing Technical Association for the Petroleum Industry |
| IEE | Institute of Electrical Engineers |
| LABC | Local Authority Building Control Body |

**STORE THE APPLIANCE IN A DRY AREA PRIOR TO INSTALLATION.**

**WATER TREATMENT:**

| | |
|---|---|
| FERNOX | 01799 550811 |
| | fernox.com |
| SENTINEL | 0800 389 4670 |
| | sentinel-solutions.net |

CONTENTS

## SAFETY PRECAUTIONS

**OIL FUMES OR LEAKS FROM THE APPLIANCE:**

- ✔ Extinguish any naked flames.
- ✔ Isolate the electrical supply.
- ✔ Isolate the fuel supply to the boiler.
- ✔ Rectify fault.

**HEALTH & SAFETY:**
The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988). Where applicable, the CE mark indicates compliance with relative EU Directives.

**COMBUSTIBLE AND CORROSIVE MATERIALS:**
**Do not** store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.
The combustion air must be kept clear of chemically aggressive substances which can corrode the appliance and invalidate any warranty.

**FITTING & MODIFICATIONS:**
Fitting the appliance and any controls to the appliance may only be carried out by a competent engineer in accordance with these instructions and the relevant Installation Regulations.
Flue systems must not be modified in any way other than as described in the fitting instructions. Any misuse or unauthorised modifications to the appliance, flue or associated components and systems could invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

### SERVICING:
Advise the user to have the system regularly serviced by a competent, qualified engineer (such as OFTEC registered personnel) using approved spares, to help maintain the economy, safety and reliability of the appliance.

### IMPORTANT:
This boiler must only be operated by a responsible adult who has been instructed in, understands and is aware of the boiler's operating conditions and effects.

## INSTALLATION REGULATIONS

Failure to install appliances correctly could lead to prosecution.

The appliance must be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble free operation the appliance must be commissioned by a qualified OFTEC engineer.

The compliance with a British Standard does not, in itself, confer immunity from legal obligations. In particular the installation of this appliance must be in accordance with the relevant requirements of the following British Standards and regulations in respect of the safe installation of equipment:
BS 5410: part 1: Code of practice for Oil Fired Boilers.
BS 799: part 5: Specification for Oil Storage Tanks.
BS 7593: Code of Practice for treatment of water in domestic hot water central heating systems.
BS 5449: part 1: Specification for forced circulation hot water central heating for domestic premises.
BS 5955: part 8: Specification for the installation of thermoplastic pipes and associated fittings for use in domestic hot and cold water services and heating systems.
BS 7291: Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings.
BS 7074: part 1: Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.
BS 1254-2: Copper and copper alloys plumbing fittings part 2: Fittings with compression ends for use with copper tubes.
BS 7671: IEE Wiring Regulations, current edition.
BS 1362: Specification for general purpose fuse links for domestic and similar purposes.
The Building Regulations Part G, Part J and L1 England and Wales; Part F, Part G and Part J Section III Scotland; Part L and Part F Northern Ireland.
Local water company bye-laws.
The Control of Pollution (Oil) Regulations.
OFTEC Standards.
Where no specific instruction is given, reference should be made to the relevant codes of practice.

**Installations in Eire (Republic of Ireland)**
The Installation must be performed by a competent and suitably trained person in accordance with the following Eire regulations.

Current Building Regulations - Republic of Ireland

ETCI rules for electrical installation

**For further guidance see:**

OFTEC Technical book three - Regional requirements: Republic of Ireland

STANDARD PACKAGE:

A - Floor standing oil fired condensing combination boiler for sealed central heating and mains fed domestic hot water.

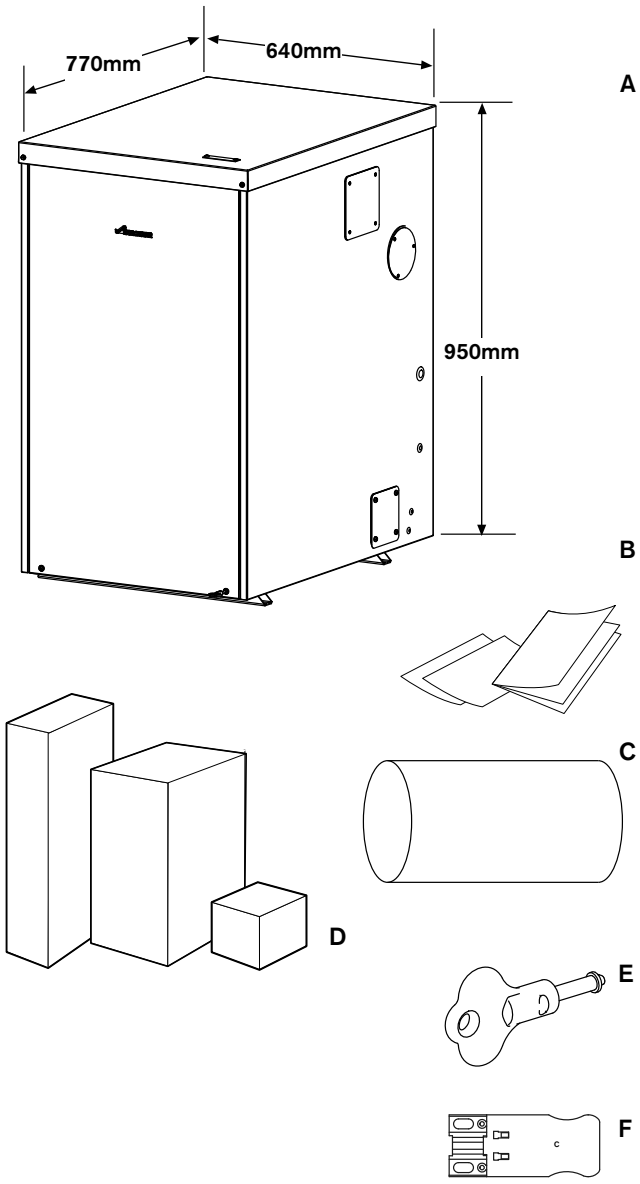
B - Literature pack.

C -100mmØ services duct.

D - Balanced flue kit

E - Cabinet key

F - Mains supply socket

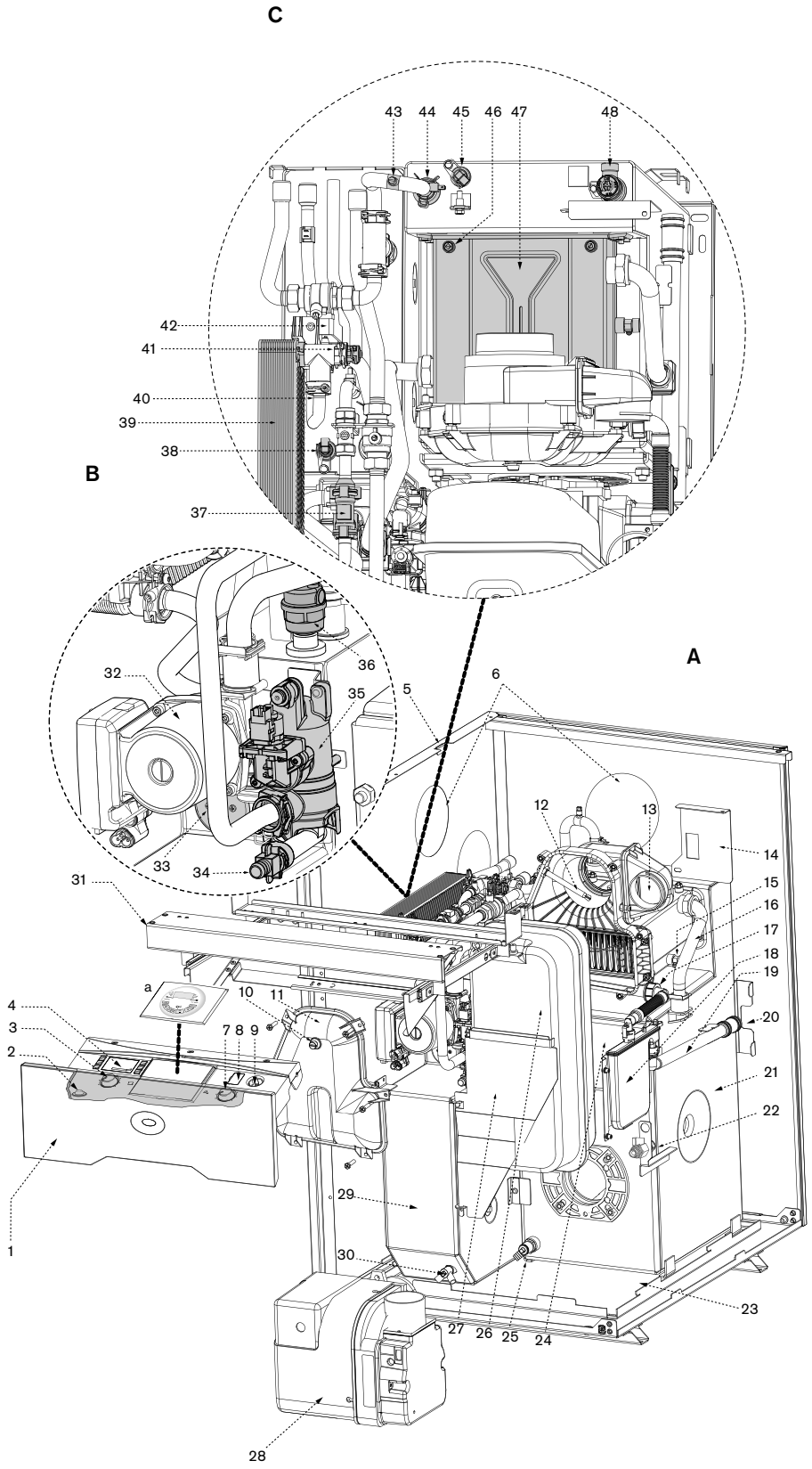



# Check List

| Item | Qty |
|---|---|
| Greenstar Heatslave II External Installation/Servicing Instructions | 1 |
| Users Instructions | 1 |
| Hardware Pack | 1 |
| 100mm Ø Services Duct | 1 |
| Balanced Flue Kit | 1 |
| Cabinet Key | 1 |
| Mains supply socket | 1 |

| DESCRIPTION | UNITS | 12/18 | 18/25 | 25/32 |
|---|---|---|---|---|
| **Central Heating** | | | | |
| Primary water capacity (total) | litres | 62 | 63 | 64 |
| Available pump head (20°C difference) at max. output | metres water | 4.7 | 4.0 | 4.2 |
| Max. permissible system operating pressure in accordance with WRAS guidelines | bar | 2.5 | 2.5 | 2.5 |
| Flow restrictor | colour | Lime | Beige | Grey |
| **Domestic Hot Water** | | | | |
| Maximum flow rate (±15%) | litres/min | 15 | 18 | 22 |
| Minimum inlet pressure (dynamic) for maximum flow rate | bar | 1.5 | 1.2 | 1.6 |
| Maximum hot water temperature rise for 90 litres draw off (@max flow rate) | °C | 40 | 40 | 40 |
| **Flue** | | | | |
| Exit flue gas mass flow | kg/hr | 29 | 40 | 51 |
| **Pipework connections** | | | | |
| Fuel line (compression) | mm | 10 | 10 | 10 |
| CH flow | mm | 22 | 22 | 28 |
| CH return | mm | 22 | 22 | 28 |
| Water main inlet | mm | 15 | 15 | 15 |
| DHW outlet | mm | 22 | 22 | 22 |
| CH drain | hose connection | | | |
| Condensate (polypropylene) | mm | 21.5 | 21.5 | 21.5 |
| **Electrical** | | | | |
| Electrical power supply voltage | AC...V | 230 | 230 | 230 |
| Frequency | Hz | 50 | 50 | 50 |
| Max. power consumption (running) | W | 230 | 230 | 260 |
| **Sensors & Thermostats** | | | | |
| CH control range | °C | 50/82 | 50/82 | 50/82 |
| Slave tank control range | °C | 55/84 | 55/86 | 55/88 |
| Boiler manual reset overheat set point | °C | 105 | 105 | 105 |
| Flue manual reset overheat thermostat set point | °C | 110 | 110 | 110 |
| Tank manual reset overheat thermostat set point | °C | 95 | 95 | 95 |
| **General Data** | | | | |
| Maximum hearth temperature | °C | <100 | <100 | <100 |
| SEDBUK 2009 | % | 89.4 | 89.2 | 89.0 |
| Appliance protection rating | IP | 44 | 44 | 44 |
| Weight (excluding packaging) | kg | 151 | 154 | 158 |

18/25 APPLIANCE SHOWN




## LAYOUT & COMPONENTS

The diagram opposite excludes the top, front and RH side casing panels.

**A**

1 CONTROL BOX ASSEMBLY
2 SERVICE MODE BUTTON
3 CH TEMPERATURE CONTROL KNOB
4 LCD DISPLAY
5 CASING SIDE PANEL
6 FLUE "KNOCK-OUT" SECTION
7 TANK TEMPERATURE CONTROL KNOB
8 DIAGNOSIS PORT - WORCESTER ENGINEER
9 SYSTEM PRESSURE GUAGE
10 FLUE GAS SAMPLING POINT
11 FLUE MANIFOLD COVER
12 FLUE OVERHEAT THERMOSTAT PHIAL
13 AIR INLET CASING FLEXIBLE AIR DUCT (CONNECTING TO AIR INTAKE ON BURNER)
14 CASING SUPPORT BRACKET
15 SECONDARY HEAT EXCHANGER DRAIN
16 HEAT EXCHANGER FLOW PIPE
17 CONDENSATE OUTLET
18 CONDENSATE TRAP
19 CONDENSATE DRAIN PIPE
20 FLEXIBLE CONDENSATE DRAIN PIPE CONNECTION
21 PRIMARY HEAT EXCHANGER
22 OIL ISOLATING VALVE
23 BASE PLATE AND OIL DRIP TRAY
24 COMBUSTION CHAMBER ACCESS DOOR AND ONE PIECE BAFFLE SET LOCATION
25 PRIMARY HEAT EXCHANGER DRAIN
26 EXPANSION VESSEL
27 EXPANSION VESSEL BRACKET/DATA LABEL
28 RIELLO RDB 2.2 BURNER (ALL OUTPUTS)
29 HEATSLAVE TANK
30 HEATSLAVE TANK DRAIN
31 CASING BRACE AND CONTROL BOX SUPPORT
a OPTIONAL FASCIA MOUNTED PROGRAMMERS AVAILABLE (not supplied with the appliance)

**B**

32 CIRCULATING PUMP
33 MANUAL RESET TANK OVERHEAT THERMOSTAT
34 DRAIN POINT
35 DIVERTER VALVE ASSEMBLY
36 AUTOMATIC AIR VENT

**C**

37 DHW FLOW TURBINE
38 TANK TEMPERATURE SENSOR (NTC)
39 DHW HEAT EXCHANGER
40 DHW TEMPERATURE SENSOR (NTC)
41 DHW PRESSURE RELIEF VALVE
42 MAINS INLET TEMPERATURE SENSOR (NTC)
43 PRIMARY MANUAL AIR VENT
44 FLOW TEMPERATURE SENSOR (NTC)
45 PRIMARY HEAT EXCHANGER SAFETY SENSOR (NTC)
46 SECONDARY HEAT EXCHANGER MANUAL AIR VENT
47 SECONDARY HEAT EXCHANGER
48 PRESSURE RELIEF VALVE

**IMPORTANT: All the following Pre-Installation sections must be read and requirements met before starting boiler or flue installation.**

CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.



## CLEANING PRIMARY SYSTEMS

**IMPORTANT: Debris from the system can damage the boiler and reduce efficiency. Failure to comply with the guidelines for the use of water treatment with the appliance will invalidate the appliance warranty.**

BEFORE CLEANING THE SYSTEM:

ENSURE THE SYSTEM AND PIPEWORK IS IN GOOD WORKING ORDER.

FLUSH THE EXISTING SYSTEM WITH A POWER FLUSHING MACHINE OR WITH A CHEMICAL CLEANER BEFORE INSTALLING NEW COMPONENTS.

WE RECOMEND THE USE OF A MAGNETIC SYSTEM FILTER SUCH AS THE WORCESTER GREENSTAR SYSTEM FILTER OR FILTERS FROM FERNOX AND SENTINEL.

CLEANING THE PRIMARY SYSTEM:

- Cleanse the system in accordance with BS 7593.
- Fill the system with cold mains water to the recommended pressure and check for leaks.
- Open all drain cocks and drain the system.
- Close drain cocks and add a suitable flushing agent at the correct strength for the system condition in accordance with the manufacturer's instructions.
- Circulate the flushing agent before the boiler is fired up.
- Run the boiler and system at normal operating temperature in accordance with the manufacturer's instructions.
- Drain and thoroughly flush the system to remove the flushing agent and any debris.

**IMPORTANT: The appliance provides a permanent external electrical supply for servicing and must therefore be fed via a circuit breaker incorporating earth leakage protection.**

## MAINS SUPPLY

**ELECTRIC SUPPLY:**

- Supply: 230V - 50Hz.
- Cable: PVC insulated 0.75mm$^2$ (24 x 0.2mm) temperature rated to 90°C.
- Protection IP44.
- External 5A fuse to BS1362.
- The appliance must be earthed.
- Refer to IEE regulations for cross bonding requirements.
- It must be possible to isolate the appliance from the electrical supply with at least a 3mm contact separation in both poles supplying the appliance.
- Wiring between the appliance and the electrical supply must comply with IEE wiring regulations and any local regulations which may apply for fixed wiring to a stationary appliance.
- Any system connected to the boiler must not have a separate electrical supply.

**WATER SUPPLY:**

*The following are general requirements and if necessary the advice of the local water company should be sought before fitting the appliance.*

- The appliance cold water supply should be the first connection off the water main where possible.
- The appliance will accept pre-heated hot water to a maximum of 60°C

**Water Mains Pressure:**

Minimum dynamic mains water pressure for maximum performance.

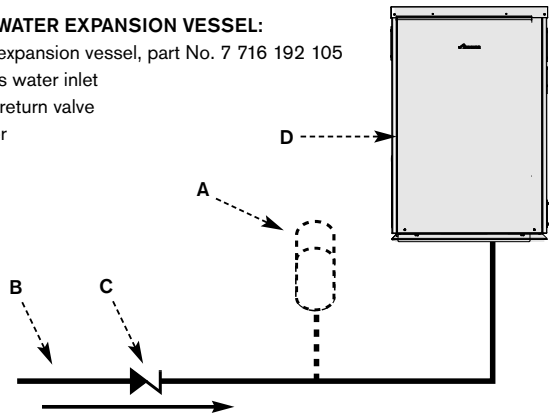
| 12/18kW | 18/25kW | 25/32kW |
|---|---|---|
| 1.5 bar | 1.2 bar | 1.6 bar |

- Maximum mains fed water pressure 10 bar. If necessary, fit a pressure reducing valve.

**IMPORTANT: Non-return, back flow prevention devices (including those associated with water meters) fitted to the mains water supply can cause a pressure build up which could damage the boiler and other household appliances.**

- Where the water main supply has a non-return, back flow prevention valve fitted, a mini expansion vessel (A) must be connected to the mains water inlet pipe (B) between the non-return valve (C) and the boiler (D) as shown opposite.

**MAINS WATER EXPANSION VESSEL:**
A - Mini expansion vessel, part No. 7 716 192 105
B - Mains water inlet
C - Non-return valve
D - Boiler




**Use in hard water areas:**

Normally there is no need for water treatment to prevent scale formation as the maximum temperature of the heat exchanger is limited by the electronic control circuit.
In areas where the temporary water hardness exceeds 200ppm, consideration may need to be given to the fitting of a scale prevention device. In such circumstances, the advice of the local water authority should be sought.

A - Oil storage tank.
B - Isolating valve.
C - Oil strainer & water separator.
D - Fire valve to BS 5410.
E - External wall.
F - Fire valve sensor.
G - Oil burner.
H - Oil supply pipe.
J - Oil pump.
K - Full base (plastic tanks).
L - Non-return valve.
M - De-aerator.
N - Oil filter (70µm max filtration size)

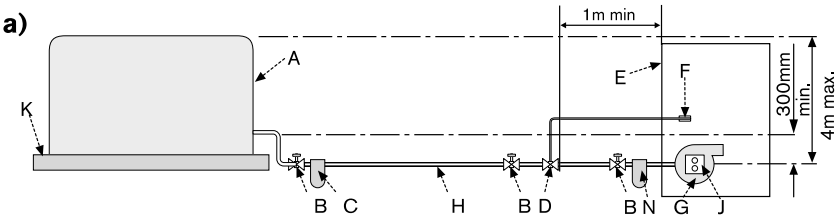
*NOTE: All dimensions are in metres unless stated otherwise.*
*The maximum pipe run figures are based on using copper pipe with an inside diameter of 2mm less than the Ø.*

**OIL SUPPLY :**

- **This appliance is suitable for kerosene (28 second oil) only, no other fuel must be used.**
- Plastic or steel tanks should be installed to BS 5410. A steel tank should conform to BS 799: part 5 and have a slope of 1 in 24 away from the outlet valve with a sludge cock at its lower end.
- **Do not use galvanised steel tanks or pipework for the oil supply system.**
- **Do not use soldered joints on the oil supply pipework.**



**a)**



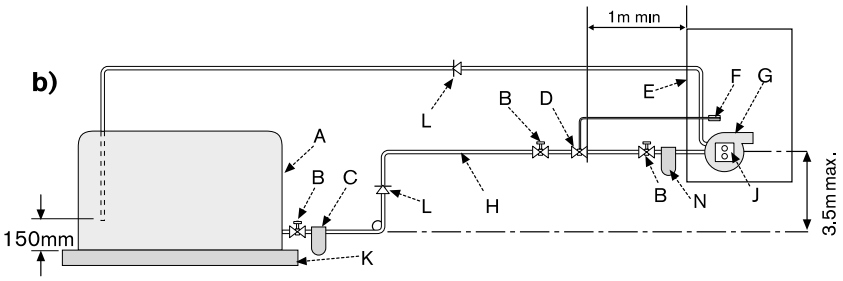

**a) Single pipe gravity feed system:**
The oil storage tank (A) must be positioned so that the oil level does not exceed 4 metres above the level of the burner oil pump (J) and in addition the oil level must be at least 300mm above the oil pump (J). Where the maximum oil level in the oil storage tank exceeds 4 metres, a head breaking device must be installed between the tank (A) and the burner oil pump (J).

**MAXIMUM PIPE RUN FOR SINGLE PIPE GRAVITY FEED SYSTEM**

| HEAD | 10mmØ | 12mmØ |
|---|---|---|
| 0.5 | 12 | 30 |
| 1.0 | 25 | 69 |
| 1.5 | 37 | 91 |
| 2.0 | 49 | 100 |

| HEAD | 10mmØ | 12mmØ |
|---|---|---|
| 2.5 | 62 | 100 |
| 3.0 | 74 | 100 |
| 3.5 | 87 | 100 |
| 4.0 | 99 | 100 |

**b)**



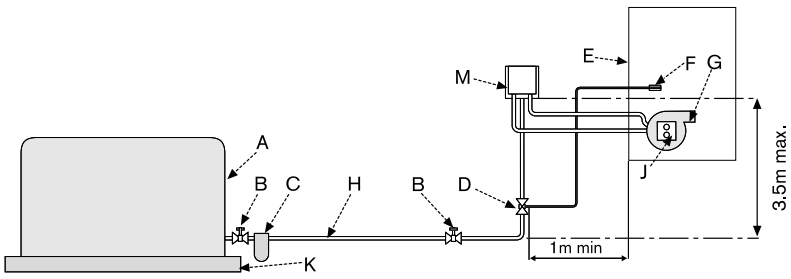

**b) Double pipe sub-gravity feed system:**
Maximum suction height 3.5 metres. Non-return valves must be fitted to the inlet and return oil line between the oil pump (J) and oil storage tank (A).

**MAXIMUM PIPE RUN FOR DOUBLE PIPE SUB-GRAVITY FEED SYSTEM**

| HEAD | 10mmØ | 12mmØ |
|---|---|---|
| 0 | 50 | 100 |
| 0.5 | 44 | 100 |
| 1.0 | 38 | 95 |
| 1.5 | 32 | 80 |

| HEAD | 10mmØ | 12mmØ |
|---|---|---|
| 2.0 | 26 | 66 |
| 2.5 | 20 | 50 |
| 3.0 | 14 | 37 |
| 3.5 | 8 | 22 |

c)




**c) Single pipe suction lift with de-aerator**
Maximum suction height 3.5 metres. The oil tank (A) must be positioned below the oil pump (J). Create an inlet and return loop between the de-aerator (M) and oil pump (J).

A non-return valve must be incorporated within the de-aerator or fitted to the oil line between the oil storage tank (A) and the de-aerator (M).

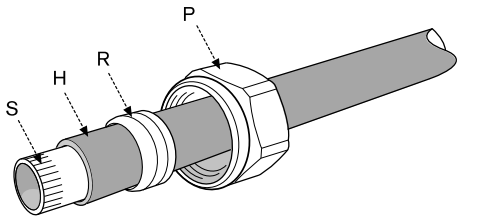
*A top feed oil tank fitted with a de-aerator using an internal non-return valve should have any non-return valves fitted in the base of the tank to the suction line removed to assist purging air from the oil line.*

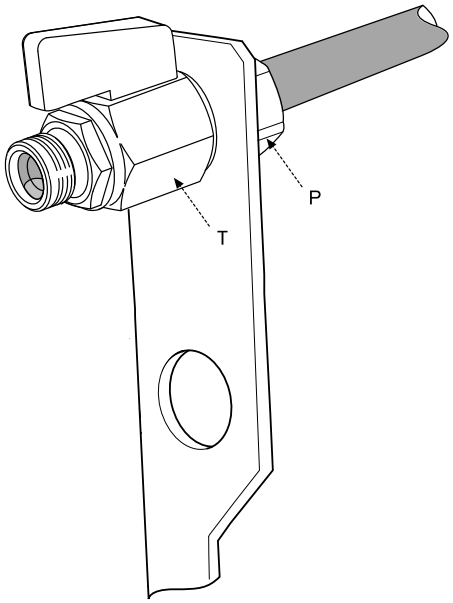
**MAXIMUM PIPE RUN FOR SINGLE PIPE SUCTION LIFT WITH DE-AERATOR**

| HEAD | FUEL FLOW RATE | | | |
|---|---|---|---|---|
| | 2.5kg/h | 5kg/h | 10kg/h | 10kg/h |
| | 8mmØ | 8mmØ | 8mmØ | 10mmØ |
| 0 | 100 | 55 | 26 | 100 |
| 0.5 | 95 | 45 | 23 | 100 |
| 1.0 | 80 | 40 | 20 | 90 |
| 1.5 | 70 | 35 | 17 | 75 |

| HEAD | FUEL FLOW RATE | | | |
|---|---|---|---|---|
| | 2.5kg/h | 5kg/h | 10kg/h | 10kg/h |
| | 8mmØ | 8mmØ | 8mmØ | 10mmØ |
| 2.0 | 60 | 30 | 14 | 65 |
| 2.5 | 45 | 25 | 11 | 50 |
| 3.0 | 35 | 15 | 8 | 35 |
| 3.5 | 25 | 10 | 5 | 20 |

*The table and illustration above is a guide only and does not in any way override the de-aerator manufacturers instructions.*




**Pipework**

- Use copper pipe of the correct diameter according to the information shown opposite.
- If using soft copper pipe (R220) with a compression fitting, an insert must be used to prevent the pipe from collapsing or distorting when the fitting is tightened.
- Slide nut (P) and olive (R) onto the oil supply pipe (H).
- Slide insert (S) into the pipe.
- Offer the pipe to the fitting (T) and tighten the nut (P).
- Use flexible hoses to connect to the oil pump (J).
- Lay the oil supply pipe (H) as straight and level as possible to avoid air pockets and unnecessary friction losses. Route away from the boiler access door or other hot surfaces.
- Install a manual isolating valve (B) to the oil supply pipe (H), as close to the oil storage tank (A) as possible.
- Fit an oil strainer and water separator (C) to the oil supply pipe, near the oil storage tank. Fit an additional oil filter (N, 70μm max filtration size with the filter element to be of the disposable media (paper) type) close to the boiler, but not inside the boiler casing.
- Fit a fire valve in accordance with BS 5410. The fire valve (D) should be fitted externally to the building with the fire valve sensor (F) located within the appliance case using the clip located under the right hand side of the cross brace at the top of the boiler.

  *A fire valve with a shut off temperature of 85°C or higher must be fitted to avoid the possibility of nuisance shut offs.*

  *A capillary type valve provides a neat and simple installation. Alternatively, a fusible link or electrical system may be used.*

**Under no circumstances should a combination isolating/fire valve be used as the sole fire protection device.**

**IMPORTANT: The boiler should not be allowed to operate with a return temperature of less than 30°C when the system is up to operating temperature.**

**PRIMARY SYSTEM PLASTIC PIPEWORK:**

- Any plastic pipework used for the CH system must have a polymeric barrier, complying with BS 7921 and installed to BS 5955 with 1000mm (minimum) length of copper or steel pipe connected to the boiler.
- Plastic pipework used for underfloor heating must be correctly controlled with a thermostatic blending valve limiting the temperature of the circuits to approx. 50°C with 1000mm (minimum) length of copper or steel pipe connected to the boiler, and a 20k differential must be maintained at the appliance.

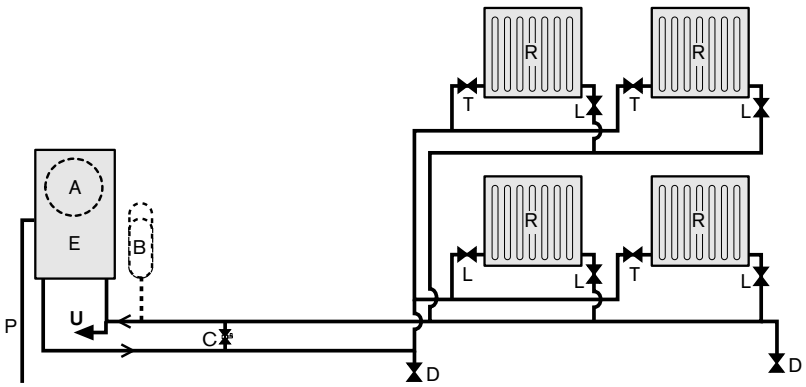
**PRIMARY SYSTEM/CONNECTIONS/VALVES:**

- Do not use galvanised pipes or radiators.
- All system connections, taps and mixing valves must be capable of sustaining a pressure of 3 bar.
- Radiator valves should conform to BS 2767:10.
- All other valves should conform to BS 1010.
- An automatic bypass valve must be connected between the heating flow and return pipes if TRVs are used on radiators or motorised zone valves are present that cut off CH circulation. This must be fitted to give at least a 3m circuit when activated.
- Drain cocks are required at all the lowest points on the system.
- Air vents are required at all high points on the system.

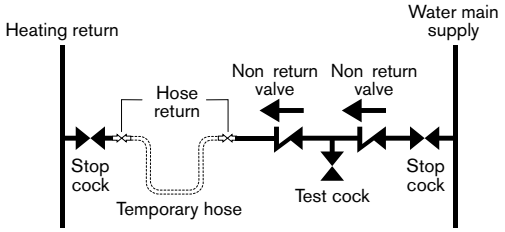
**SEALED PRIMARY SYSTEM:**

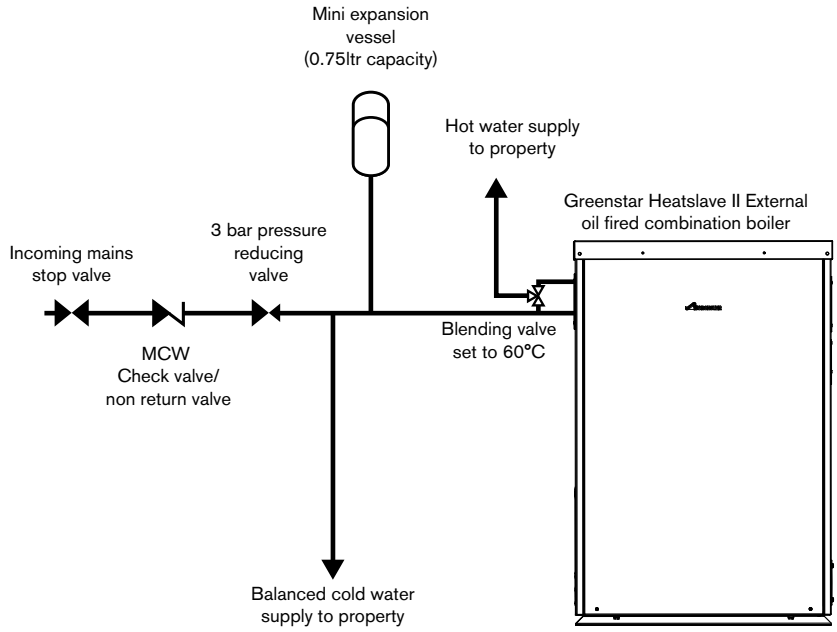
- Where the system volume is more than 180 litres at 0.5 bar or exceeds 2.65 bar at maximum heating temperature an extra expansion vessel (B) must be fitted as close as possible to the appliance in the central heating return.
- Pressurise the extra expansion vessel (B) to the same figure as the expansion vessel (A) built into the appliance.

**TYPICAL SEALED SYSTEM**




A - Appliance expansion vessel
B - Extra expansion vessel
C - Automatic bypass valve
D - Drain cock
E - Appliance
L - Lockshield valve
P - Pressure relief discharge
R - Radiators
T - TRV




**FILLING PRIMARY SEALED SYSTEMS:**

- Filling the system must comply with one of the methods shown opposite.
- The filling point must be at low level and must never be a permanent direct fixing to the mains water supply.
- Filling links must be WRAS approved.

**SHOWERS/BIDETS:**

- If a shower head can be immersed in water or comes closer than 25mm from the top edge of a bath or shower tray spill over level then an anti-siphon device must be fitted to the shower hose.
  Only thermostatically controlled showers are suitable for use with this appliance.
- Bidets with direct hot & cold mains water can be used (with the approval of the local water authority) and must be the over rim flushing type with shrouded outlets to prevent the fitting of hand held sprays.

**DOMESTIC HOT WATER:**

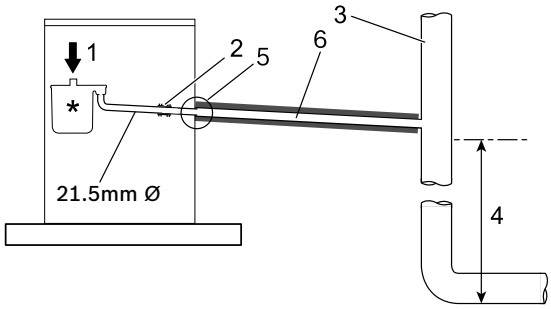
**Plastic pipework**

- Any plastic pipework used for the DHW system must have a polymeric barrier, complying with BS 7921 and installed to BS 5955 with 1000mm (minimum) length of copper or stainless steel pipe connected to the boiler.
- Before installing plastic pipework, the pipe manufacturer's literature should be consulted.
- To prevent the temperature & pressure exceeding the limits advised by the pipe manufacturer, a pressure reducing valve must be used to prevent the incoming water pressure exceeding 3 bar (maximum). Also a mini expansion vessel must be fitted to absorb the expanding water and a blending valve set to 60°C must be fitted before the DHW plastic pipework.
- When selecting plastic pipework for use with domestic water supply, it should be ensured that it is compliant with all current local & national legislation & regulations, including building regulations part G, BS 7291 - 1,2 & 3: 2006, BS 8000 - 15-15: 1990 and information.

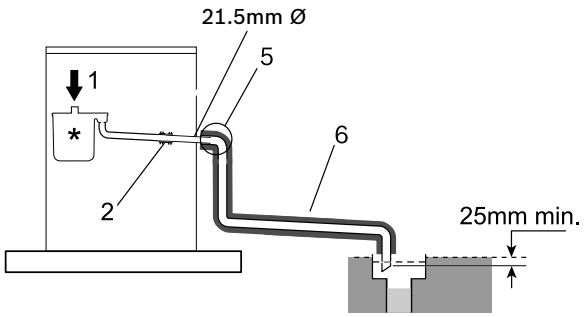
**GENERAL:**

- Taps and mixing valves must be capable of sustaining a pressure up to 10 bar in accordance with the Water Regulations as they will be operating at mains water pressure.
- Hot water temperature and flow rate are affected by the size and insulation of pipework making up the distribution system and are controlled by the hot water tap and the water main inlet pressure. A mixing valve can be fitted if a more permanent setting is required.
- If using more than one outlet at once causes water flow starvation, fit flow balancing valves or Ball-O-Fix valves to the appropriate outlets.

Disposal to soil vent stack




External Disposal




**Key to diagrams:**

1. Condensate discharge from boiler
2. Universal connector
3. Soil and vent stack
4. Minimum 450mm and up to three storeys
5. Pipe work transition
6. Insulate and increase pipe size
7. External rain water pipe into foul water
8. External air brake
9. Air gap
10. PVCu starp on fitting
11. 43mm 90° male/female bend

**CONDENSATE PIPEWORK:**

- The condensate pipe must be a minimum of 21.5mm Ø plastic pipe.
- The condensate pipe work must fall at least 52mm per metre towards the outlet and should take the shortest practicable route.
- Ensure there are no blockages in the pipe run.

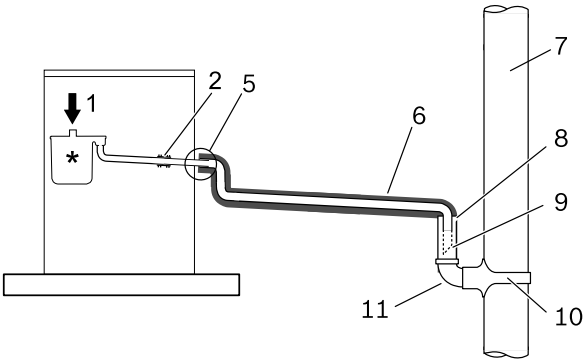
**CONDENSATE PIPEWORK RUN EXTERNALLY:**

- Pipe work length should be kept to a minimum and the route as vertical as possible.
- Weather proof insulation must be used.
- Care should be taken when siting a soakaway to avoid obstructing existing services.
- The condensate pipe work must fall at least 52mm per metre towards the outlet and should take the shortest practicable route.
- Ensure there are no blockages in the pipe run.

- The external run be kept as short as possible and not exceed three metres.
- The pipe diameter should be increased to 32mm.
- The pipe should be insulated using suitable waterproof and weather resistant insulation.
- The external pipe should take the shortest and least exposed route to the discharge point, and should "fall" as steeply as possible away from the boiler, with no horizontal runs in which condensate might stand.
- The use of fittings, elbows etc. should be kept to a minimum and any internal “burrs” on cut pipe work should be removed so that the internal pipe section is as smooth as possible.

## CONDENSATE PIPEWORK

Disposal into a rainwater down pipe




**Fitting an external air brake:**

- When a rain water down pipe is used to dispose of condensate, an air break must be installed in the 43mm pipe work, between the boiler condensate outlet and the drainpipe, outside the property, to avoid flooding during adverse weather conditions.

***NOTE:*** *Condensate drainage pipe can be run above or below ground.*

- Where the pipe terminates over an open drain or gully, the pipe should terminate below the grating level, but above water level, in order to minimise "wind chill" at the open end.
- The use of a drain cover (such as those used to prevent blockage by leaves) may offer further protection from wind chill.
- Pipe drainage will be improved if the end is cut at 45° as opposed to a straight cut.

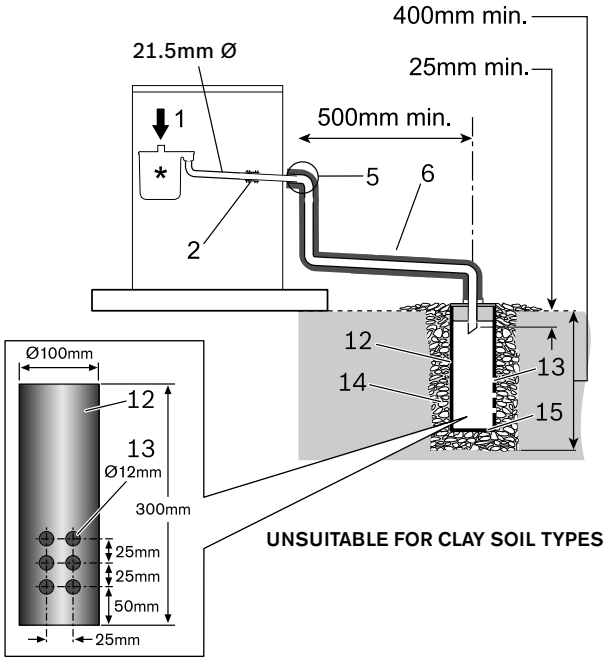
**CONDENSATE SOAK AWAY:**

**Key to diagrams:**

12. 100mm Ø minimum plastic pipe
13. Drainage holes
14. Limestone chippings
15. Bottom of sealed tube

## CONDENSATE TO SOAK AWAY

Soak away




**UNSUITABLE FOR CLAY SOIL TYPES**

- All national and, where appropriate, local regulations for the discharge and neutralisation of condensate should be followed.
- The condensate drainage pipe may be run above or below the ground to the soak away. The examples shown on this page run above ground.
- The soak away must use a 100mm Ø plastic tube with two rows of three 12mm holes on 25mm centres and 50mm from the bottom of the tube. The holes must face away from the house.
- The tube must be surrounded by at least 100mm of limestone chippings to a depth of 400mm.

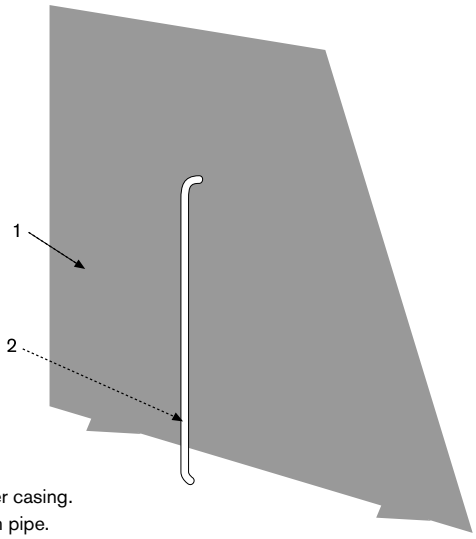
***NOTE:*** *Minimum hole size for the condensate soak away must be 400mm deep by 300mmØ.*

- In situations where there are likely to be extremes of temperature or exposure, the use of a proprietary trace heating system for external pipe work, incorporating an external frost thermostat, should be considered. If such a system is used, the requirement to use 32mm pipe does not apply. However, all other guidance above and the instructions for the trace heating system, should be closely followed.

**Making it safe:**

- Condensate pipework must not leak, freeze or block up.
- Condensate traps must be filled before starting up the boiler to prevent potentially harmful flue products escaping via the condensate route.
- Do not dispose of condensate into water recovery systems.

## PRESSURE RELIEF PIPEWORK

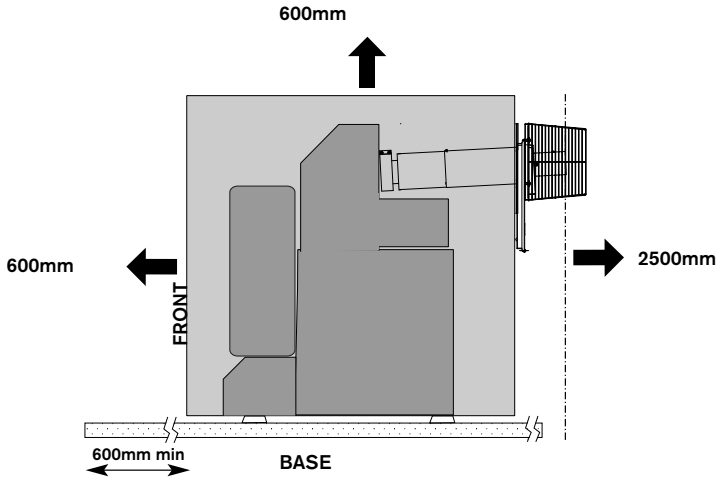



1 - Boiler casing.
2 - Drain pipe.

**PRESSURE RELIEF PIPEWORK:**

IMPORTANT: The pressure relief valve is a safety device for the boiler and if activated may discharge boiling water or steam through the relief valve drain pipe.
Care should be taken when siting the outlet pipe so that it does not cause an obstruction or discharge into a public area where it could cause a hazard.

- The pressure relief drain pipe (2) should be at least 15mm diameter copper pipe and run downwards away from the boiler and discharge away from any electrics or other hazard, preferably to an external drain or soakaway.
- Pipe (2) should be finished with a partial bend, near the outlet to face the external wall (as shown) to help prevent freezing.




**WARNING:**

**This appliance should not be installed where there is a potential for excessive ground water coverage.**

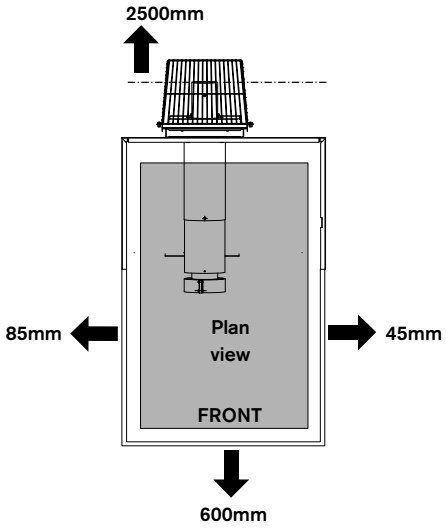
**This boiler is only suitable for installing externally at a suitable location onto a fixed permanent rigid surface capable of supporting the boiler weight.**

**There must be a sufficient hard standing around the appliance to allow for servicing.**

**The boiler must be installed on a flat level surface to ensure that condensate does not enter the primary heat exchanger.**

**Tarmac and wood hardstandings are not recommended.**





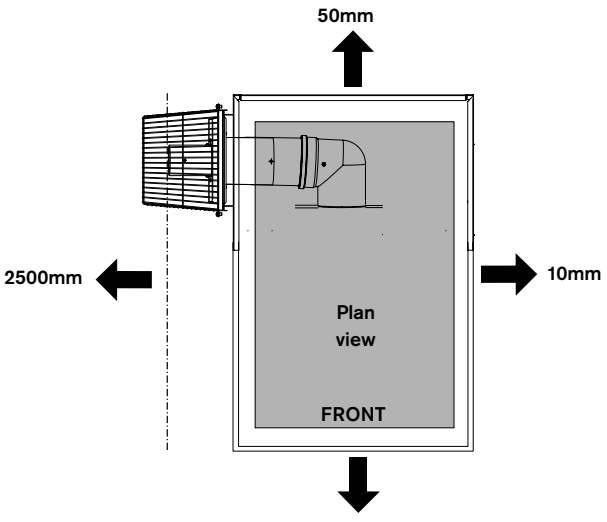

**CLEARANCES: Min service & flue clearances**

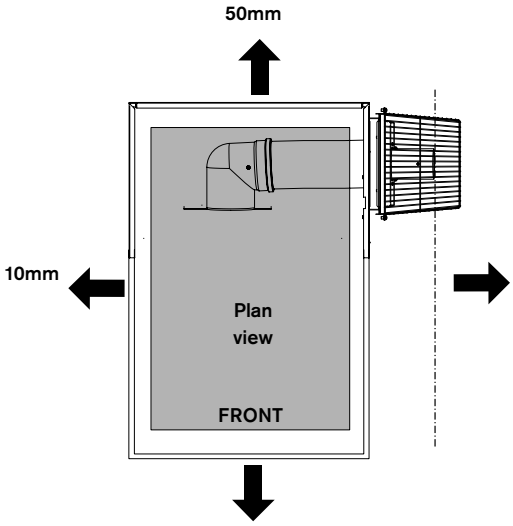
| | |
|---|---|
| Above | 600mm |
| Front | 600mm |

| | |
|---|---|
| RH/LH clearance flue outlet on opposite side: | 10mm |
| RH clearance flue outlet on rear: | 45mm |
| LH clearance flue outlet on rear: | 85mm |

| | |
|---|---|
| Rear clearance flue outlet on side: | 50mm |
| Rear clearance flue outlet on rear: | 2500mm |

It is strongly recommended that the flue terminal faces away from walls to reduce the possibility of wetting occuring.



**Minimum dimensions of flue terminal positions for oil-fired appliances:**

| TERMINAL POSITION | | B(H) |
|---|---|---|
| A [1] | Directly below an opening, air brick, opening windows, etc | 600mm |
| B [1] | Horizontally to an opening, air brick, opening window, etc | 600mm |
| C | Below a plastic/painted gutter, drainage pipe or eaves if combustible material protected | 75mm |
| D [2] | Below a plastic/painted gutter, drainage pipe or eaves without protection to combustible material | 600mm |
| E | From vertical sanitary pipework | 300mm |
| F | From an external or internal corner or from a surface or boundry alongside the terminal | 300mm |
| G | Above ground or balcony level | 300mm* |
| H | From a surface or boundary facing the terminal | 2500mm** |
| I | From a terminal facing the terminal | 2500mm** |
| K | Horizontally from a terminal on the same wall | 750mm |

*B(H) Balanced Horizontal flue*

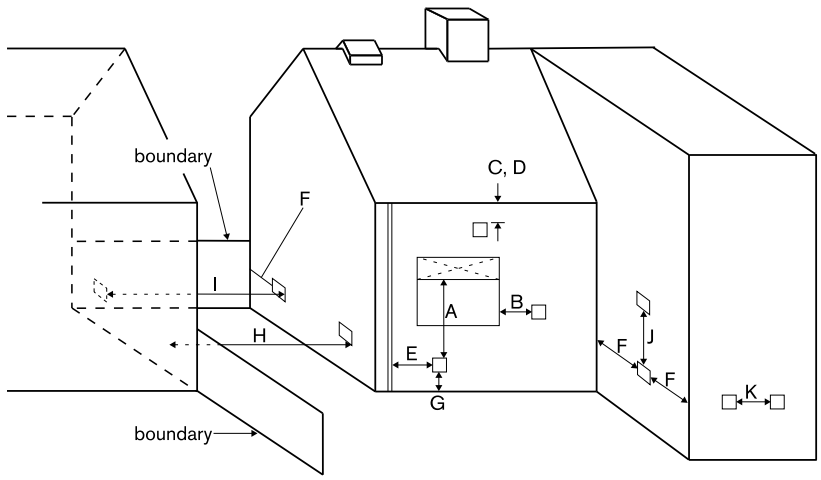
*1 An opening means an openable element, such as an openable window, or a permanent opening such as a permanently open air vent.*

*Notwithstanding the dimensions above, a terminal should be at least 300mm from combustible material, e.g. a window frame.*

*2 A way of providing protection of combustible material would be to fit a heat shield at least 750mm wide.*

## FLUE TERMINAL POSITIONS

- Flue terminals must be positioned to avoid combustion products entering into buildings.
- The flue must be fitted and terminated in accordance with the recommendations of BS5410.
- The flue must not cause an obstruction.
- Discharge from the flue outlet must not be a nuisance.
- Flue gases have a tendency to plume and in certain weather conditions a white plume of condensation will be discharged from the flue outlet which could be regarded as a nuisance, for example, near security lighting.
- There should be no restriction preventing the clearance of combustion products from the terminal.
- The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5410:1
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface where people have access.
  The guard must be spaced equally (minimum 50mm) around the flue and fixed with plated screws.




- The following additional guidelines (from part L Exceptions Guidance Document) are recommended when determining the flue outlet position:
- Avoid discharging flue gases into car ports or narrow passageways.
- *Minimum distance of the flue terminal from above ground is 2100mm where directed to a public footpath, private access route or a frequently used area and 2500mm from a car parking area.
- **Minimum distance of the flue terminal to a facing wall, fence, building or property boundary is 2500mm.

**Minimum dimensions of flue terminal positions for oil fired appliances:**

| | TERMINAL POSITION | CF | RS(H) | RS |
|---|---|---|---|---|
| A[1 2] | Directly below an opening, air brick, opening window, etc | N/A | 600mm | N/A |
| B[1 2] | Horizontally to an opening, air brick, opening window, etc | N/A | 600mm | N/A |
| C | Below a plastic/painted gutter, drainage pipe or eaves if combustible material protected | N/A | 75mm | N/A |
| D[3] | Below a plastic/painted gutter, drainage pipe or eaves without protection to combustible material | N/A | 600mm | N/A |
| E | From vertical sanitary pipework | N/A | 300mm | N/A |
| F | From an external or internal corner or from a surface or boundary alongside the terminal | N/A | 300mm | N/A |
| G | Above ground or balcony level | N/A | 300mm* | N/A |
| H | From a surface or boundary facing the terminal | N/A | 600mm** | N/A |
| J | From a terminal facing the terminal | – | 1200**mm | – |
| K | Vertically from a terminal on the same wall | N/A | 1500mm | N/A |
| L | Horizontally from a terminal on the same wall | – | 750mm | – |
| M | Above the point of highest intersection with the roof | 600mm | – | 600mm |
| N | From a vertical structure on the side of the terminal | 750mm | – | 750mm |
| O | Above a vertical structure less than 750mm from the side of the terminal | 600mm | – | 600mm |
| P | From a ridge terminal to a vertical structure on the roof | 1500mm | – | N/A |
| Q | Above or to the side of any opening on a flat or sloping roof | 300mm | – | 300mm |
| R | Below any opening on a sloping roof | 1000mm | – | 1000mm |

*Key: – Not applicable, N/A Not allowed, CF Conventional flue, RS(H) Room Sealed Horizontal flue, RS(V) Room Sealed Vertical flue.*

*Notes:*

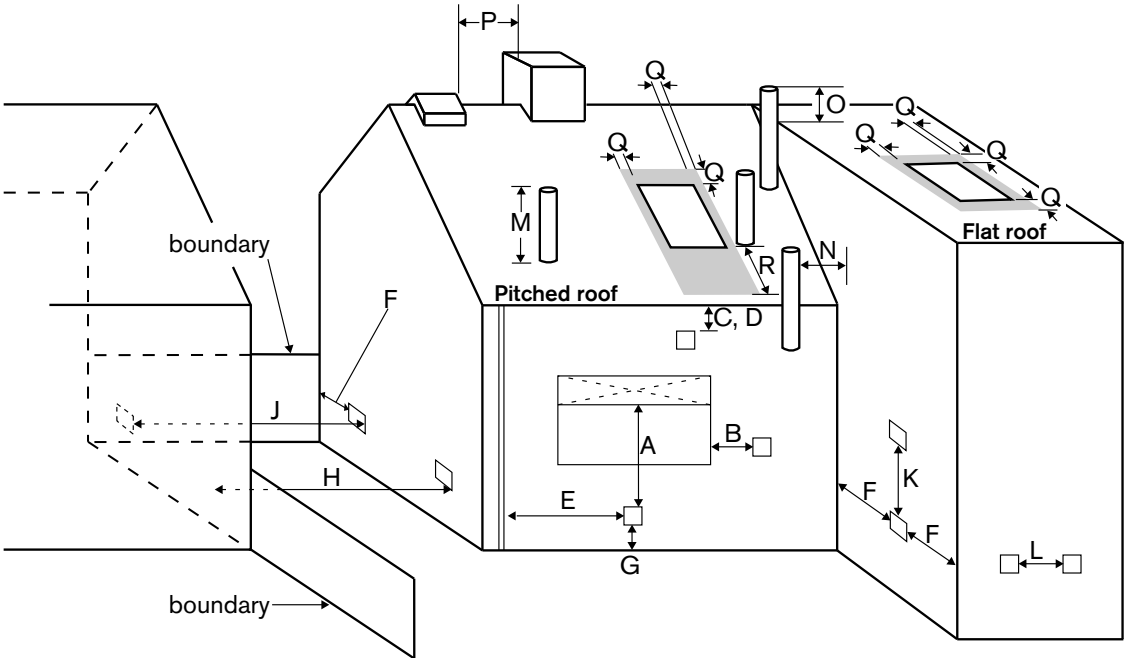
1. *Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.*
2. *Vertical structure in N, O and P includes tank or lift rooms, parapets, dormers etc.*
3. *Terminating positions should be at least 1.8m from an oil storage tank unless a wall with at least 30 min fire resistance and extending 300mm higher and wider than the tank is provided between the tank and the terminating position.*
4. *Where a flue is terminated less than 600mm away from a projection above it and the projection consists of plastics or has a combustible or painted surface, then a heat shield of at least 750mm wide should be fitted.*
5. *If the lowest part of the terminal is less than 2m above the ground, balcony, flat roof or other place to which any person has access, the terminal should be protected by a guard.*
6. *Notwithstanding the dimensions given above, a terminal should not be sited closer than 300mm to combustible material. In the case of a thatched roof, double this separation distance should be provided. It is also advisable to treat the thatch with a fire retardant material and close wire in the vicinity of the flue.*
7. *It is essential that a flue or chimney does not pass through the roof within the shaded area delineated by dimensions Q and R.*
8. *Where protection is provided for plastic components, such as guttering, it is essential that this is to the standard specified by the manufacturer of the plastic components.*

## FLUE TERMINAL POSITIONS

- Flue terminals must be positioned to avoid combustion products entering into buildings.
- The flue must be fitted and terminated in accordance with the recommendations of BS5410.
- The flue must not cause an obstruction.
- Discharge from the flue outlet must not be a nuisance.
- Flue gases have a tendency to plume and in certain weather conditions a white plume of condensation will be discharged from the flue outlet which could be regarded as a nuisance, for example, near security lighting.
- There should be no restriction preventing the clearance of combustion products from the terminal.
- The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5410:1
- A protective stainless steel terminal guard, Part No: 7 716 190 050, must be fitted if the terminal is 2m or less above a surface where people have access.

*See 'Contact Information' on the back cover for flue guard information.*

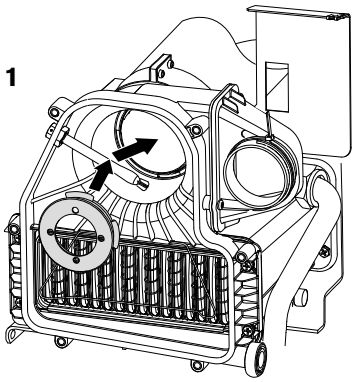
- The following additional guidelines (from part L Exceptions Guidance Document) are recommended when determining the flue outlet position:
- Avoid discharging flue gases into car ports or narrow passageways.
- *Minimum distance of the flue terminal from above ground is 2100mm where directed to a public footpath, private access route or a frequently used area and 2500mm from a car parking area.
- **Minimum distance of the flue terminal to a facing wall, fence, building or property boundary is 2500mm.



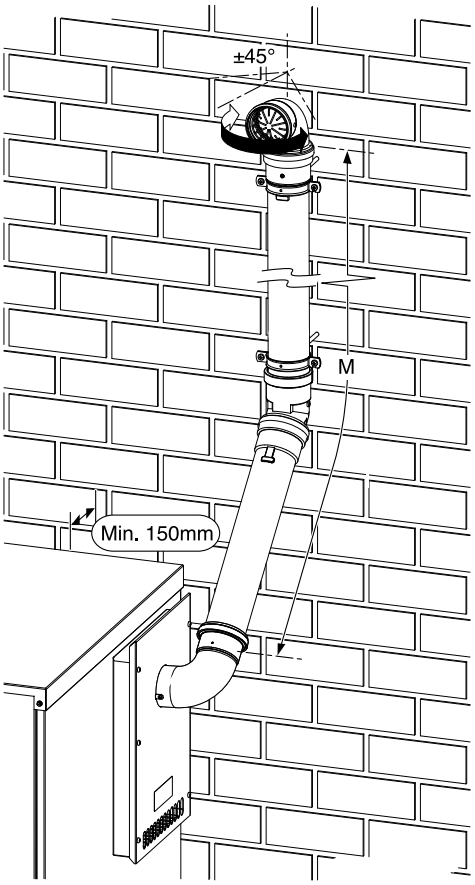
## PLUME MANAGEMENT

**IMPORTANT: All horizontal sections must rise away from the boiler by 52mm per metre (3°) to allow the condensate to drain back to the boiler.**

**1**



**2**




**Plume Management:**

1. The flue damper can be fitted into the flue system, however, if the system has already been fitted the manifold access cover can be removed and the damper inserted into the flue inner tube. Take care not to damage the Flue Overheat Thermostat Phial.

**Plume lengths:**

**Greenstar Heatslave External II 12/18 & 18/25:**

Maximum length of plume management system
M = 5000mm

**Greenstar Heatslave External II 25/32:**

Maximum length of plume management system
M = 4000mm

**Additional bends:**

The plume management system always employs 2 bends, a maximum of 2 further bends can be used in addition to the first bend exiting the flue system and the terminal bend.

Adding bends to the plume management system reduces the actual plume management length. Each bend has an equivalent straight lenght and must be factored into the overall effective length:

90° bend is equivalent to 1000mm.
45° bend is equivalent to 500mm.

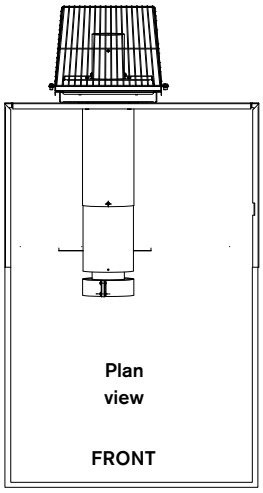
2.The system can exit the boiler from the left and right and rear of the appliance but must be supported by brackets to an adjacent wall or permanent structure.

## HORIZONTAL FLUE OPTIONS



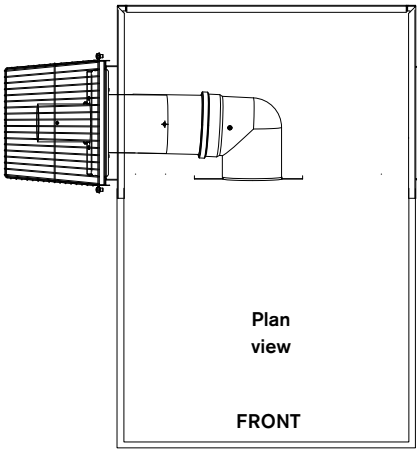
**REAR FLUE OUTLET**

**A + C**



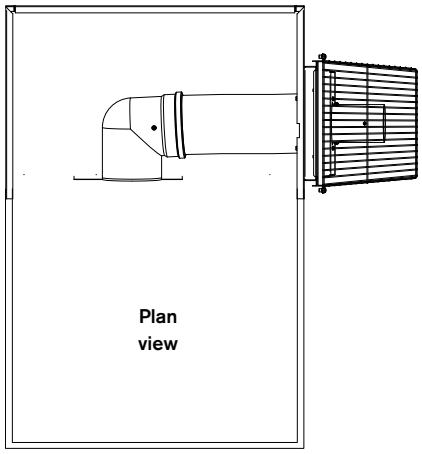

**LEFT HAND FLUE OUTLET**

**A + B + C**



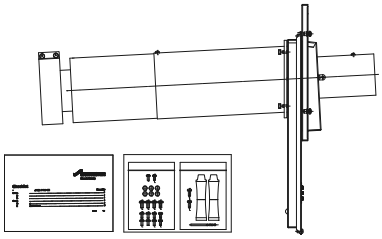

**RIGHT HAND FLUE OUTLET**

**A + B + C**

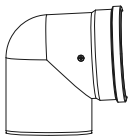



- The horizontal flue is fitted to the rear or either side of the cabinet.

**IMPORTANT:**
**It is strongly recommended that the flue terminal faces away from walls to minimise the occurance of wetting.**



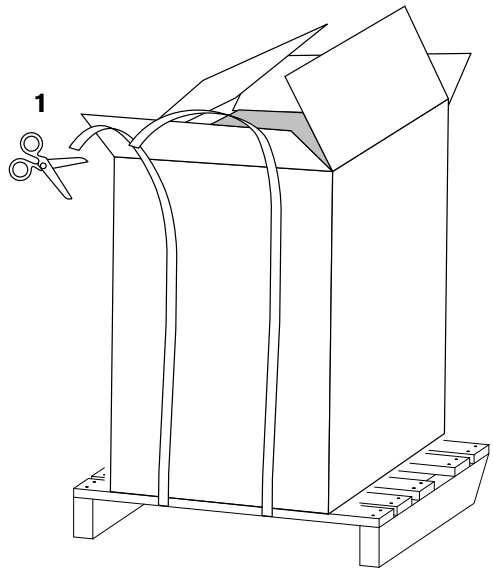
A - External horizontal flue kit (included)

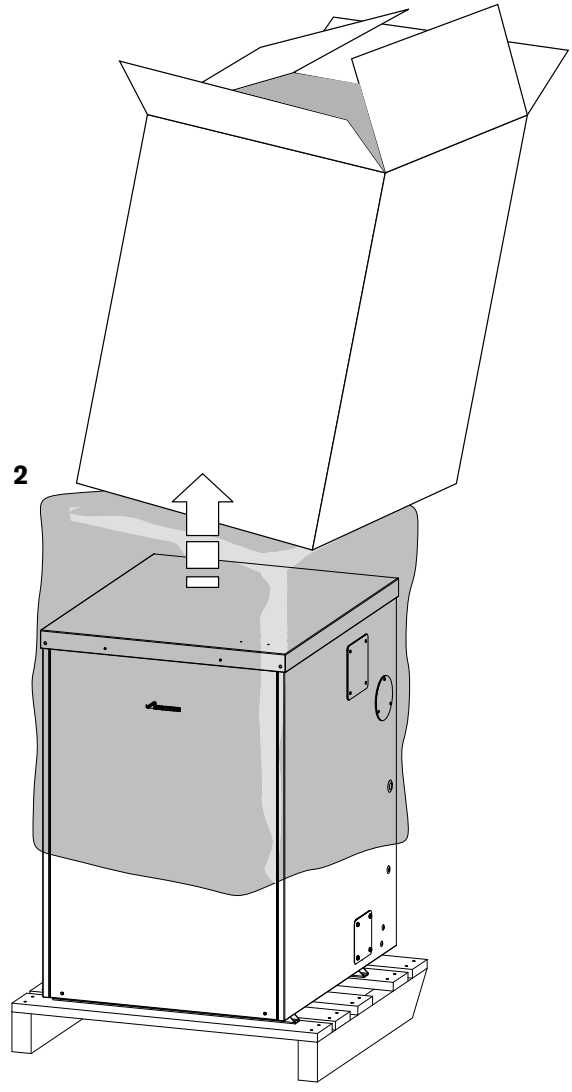


B - 90° inline elbow 80/125mm
Part No. 7 716 190 034

C - Stainless steel terminal guard
Part No. 7 716 190 050

**IMPORTANT: All the previous Pre-Installation sections must be read and requirements met before starting boiler or flue installation.**




## UNPACKING THE BOILER

LIFTING AND CARRYING PRECAUTIONS:

- Lift only a manageable weight, or ask for help.
- When lifting or putting things down, bend the knees, and keep the back straight and feet apart.
- Do not lift and twist at the same time.
- Lift and carry objects close to the body.
- Wear protective clothing and gloves to protect from any sharp edges.

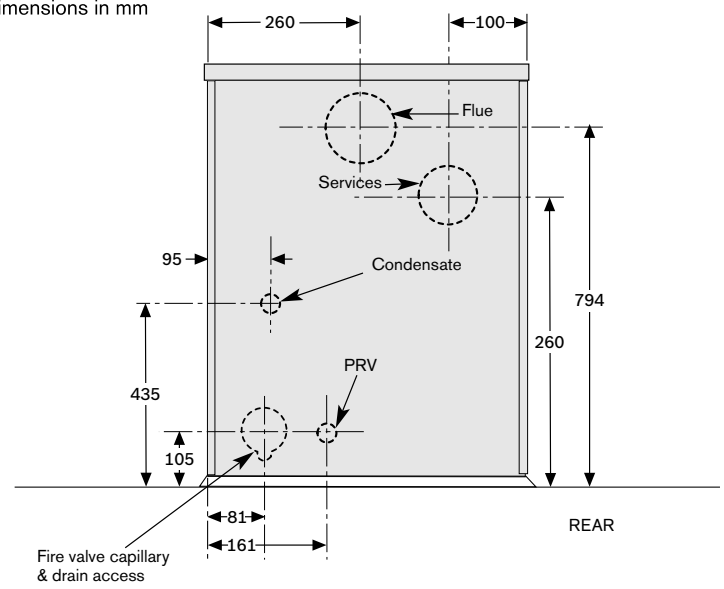
**Unpacking:**
It is advised that two or more persons are involved in the transfer of the packaged boiler from the van to the point of delivery.

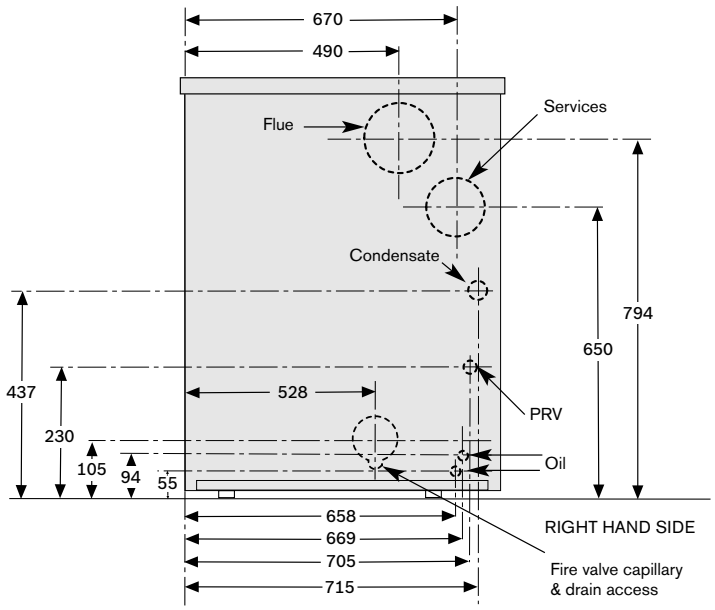
1 ▸ Once the packaged boiler has been delivered, the outer carton is removed first. Care should be taken when releasing the straps. If a sharp implement is used make sure the outer carton is not pierced and that the implement is used in such a way so that it may not cause personal injury. All sharp objects must be covered or the blade retracted after use and put away in a safe place.

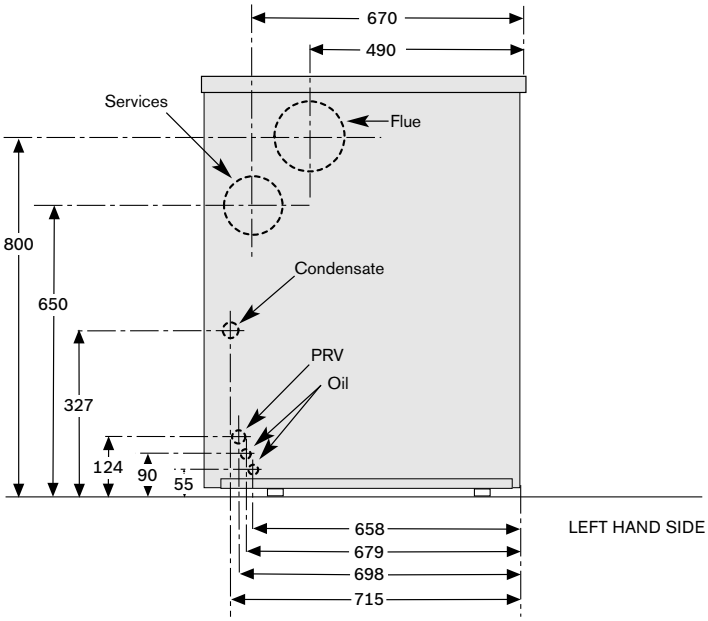
2 ▸ Lift carton up and away from the boiler.

▸ Remove the plastic bag from the boiler and place safely aside.

All dimensions in mm




## PIPEWORK & FLUE POSITIONS

CAUTION: Ensure there are no pipes, electric cables, damp proof courses or other hazards before drilling.

**SAFETY:**
All relevant safety precautions must be undertaken. Protective clothing, footwear, gloves and safety goggles must be worn as appropriate.

**PIPEWORK CONNECTIONS:**

Flow 1" BSP

Return 22mm Ø copper 12/18, 18/25.

28mm Ø copper on 25/32 model.

Services duct 100mm Ø.

Condensate outlet 21.5mm Ø.

Primary drain - hose connection.

*NOTE: For servicing purposes, keep the condensate and pressure relief discharge pipes away from components and pipework connections.*

**WARNING: THIS APPLIANCE IS SERVICED AND REPAIRED EXTERNALLY.**

**EXTERNAL EQUIPMENT OPERATED AT 230V SHOULD NOT BE INSTALLED, SERVICED OR REPAIRED UNDER ADVERSE WEATHER CONDITIONS.**

**THIS APPLIANCE IS INSTALLED AND SERVICED EXTERNALLY TO THE PROPERTY, BUT THE ENGINEER MUST HAVE ACCESS TO THE INSIDE OF THE PROPERTY WHEN INSTALLING OR SERVICING THE APPLIANCE.**



## BOILER INSTALLATION

**Note: The cabinet is not load bearing it only provides weather protection for the boiler inside.**

1 ▸ Mark position of the 100mm services duct on the exterior wall and make a hole through.

2 ▸ Remove the screws securing the base panel to the transit pallet and lift the boiler off the pallet and into its installation position taking care not to scrape the base panel across the hard standing. **Do not attempt to lift and position the boiler on your own. Do not use the copper pipes to move the boiler**.

▸ Fasten the base to the hard standing using the holes provided. Care should be taken to ensure that the base is level.

3 ▸ Remove the screws (D) from each corner of the top panel (E) and lift up to remove, store safely away from the installation point.

4 ▸ Remove the key (A) for the door fasteners from the literature pack. Undo the screws at the bottom of the front panel (B) using the key provided and remove the screws from the rear panel (C) - (optional) pulling both panels down and out to remove. Store safely away from the installation point.

5 ▸ Pull control box drawer (G) forward.

▸ Depess the two levers (H), one on either side beneath the slide rail, to release the control box and pull fully forward.

▸ Swivel the complete control box assembly upwards.

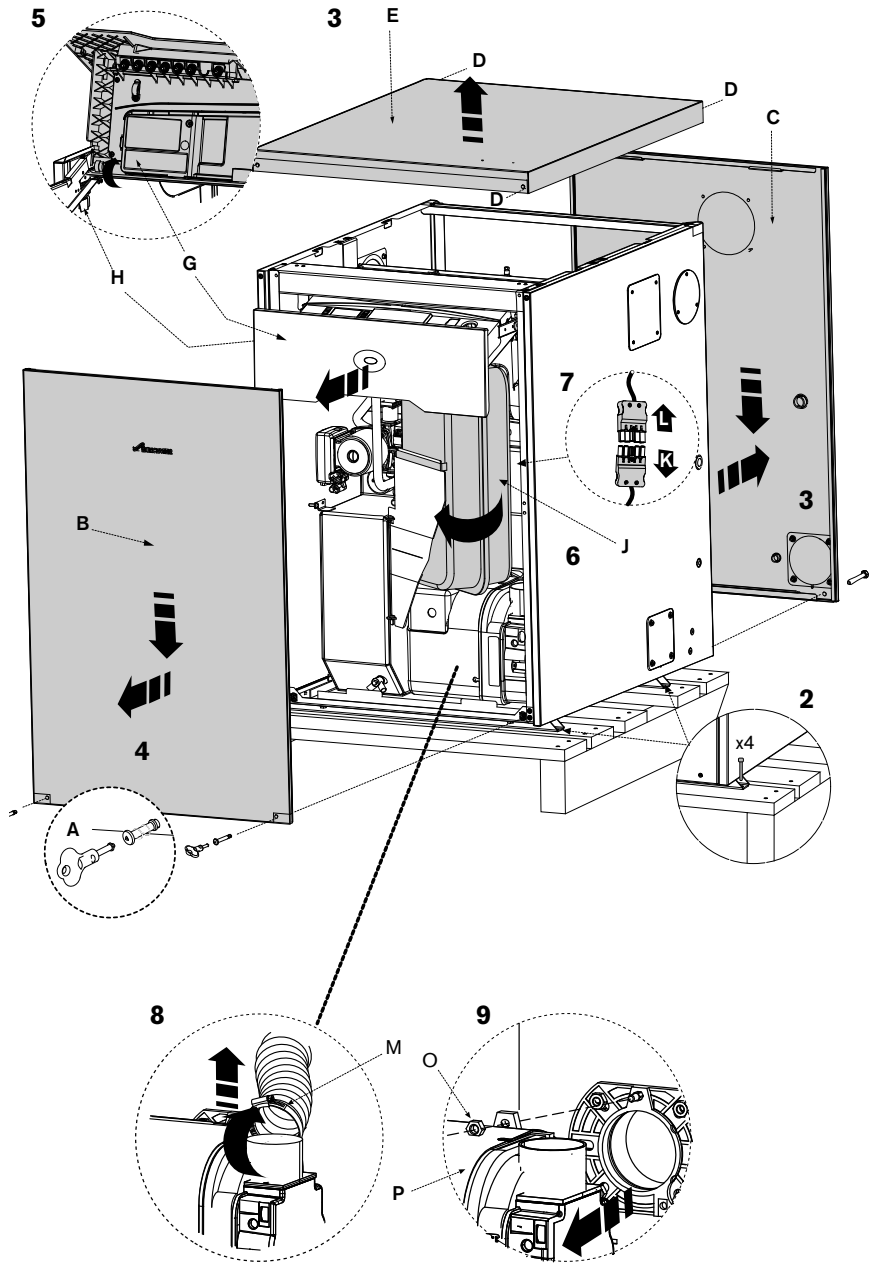
6 ▸ Swivel the expansion vessel ( J ) on its support bracket out of the boiler taking care not to snag any electrical cables or kink the flexible hose.

7 ▸ Unplug the burner lead ( K ) from the control box lead ( L ).

8 ▸ Loosen the flexable air duct clamp (M) and remove the air duct from the burner.

9 ▸ Undo and remove the retainer (O) on top of the burner. The burner (P) can now be removed from the heat exchanger. Store the burner and retainer nut safely away from the boiler.

▸ Measure the 100mm Ø services duct to give at least 10mm inside the casing and to finish flush with the interior wall surface, cut to size and fit the duct. Fit the 100mm sealing ring where the duct enters the casing and seal the joint to the exterior wall and inside the cabinet with a suitable sealant.



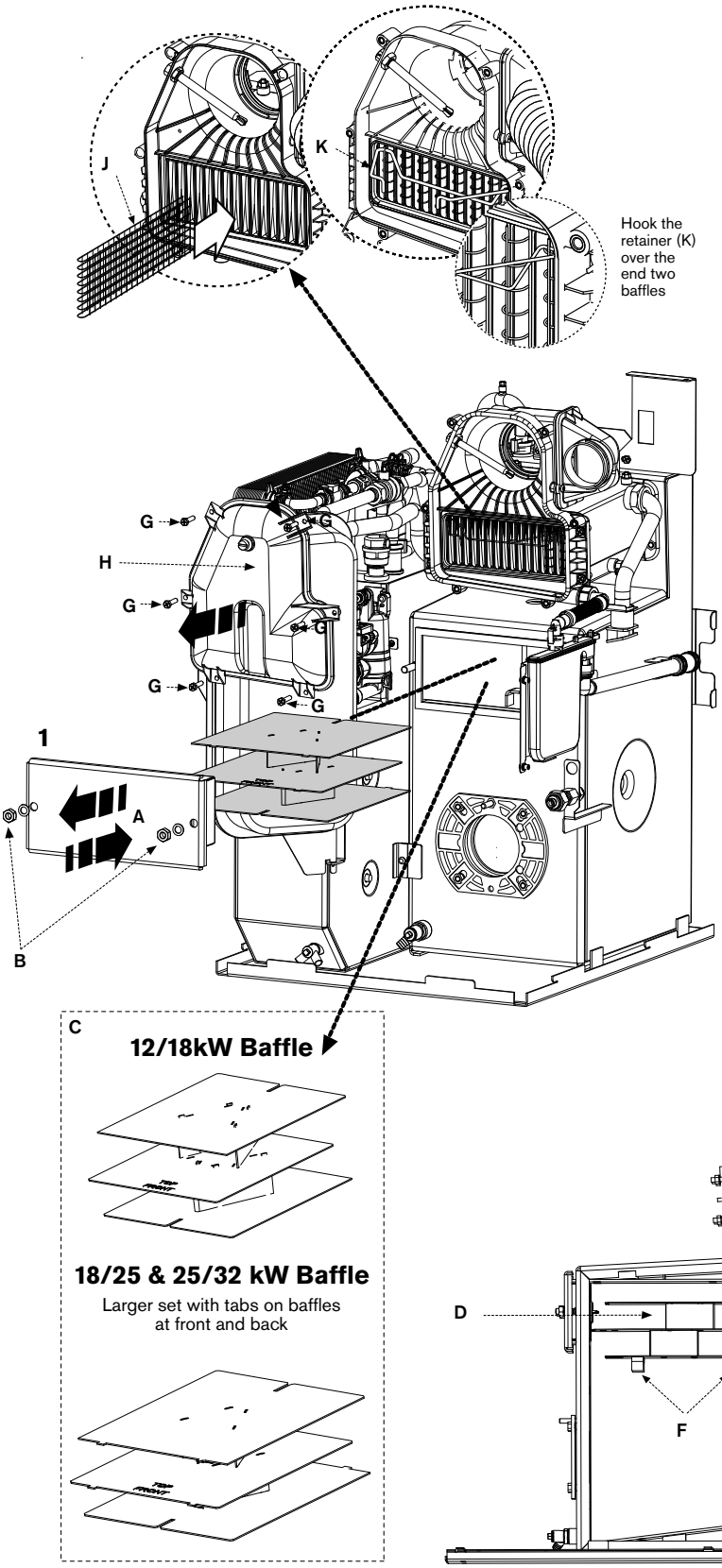
**INSTALLATION NOTES:**

- Ensure all the seals are in good condition and seated properly.
- To ease assembly of flue components, grease seals lightly with the solvent free grease supplied.
- A terminal guard must be fitted if the terminal is 2m or less above a surface where people have access.

**All flue options:**

1 ▸ Lightly grease the flue cowl seal with the solvent free grease supplied.
2 ▸ Carefully remove the blanking plate from the appropriate flue aperture (if necessary) and refit the blanking plate in the unused aperture.
3 ▸ Carefully remove the insulation from the flue aperture in the cabinet that the flue is to pass through, and fit to the unused aperture (if necessary).
4 ▸ Refer to the flue manual supplied with the flue kit for flue installation.

## COMBUSTION CHAMBER




**Combustion chamber:**

1 ▸ Remove the retaining nuts and washers (B).

▸ Remove combustion chamber/baffle access door (A).

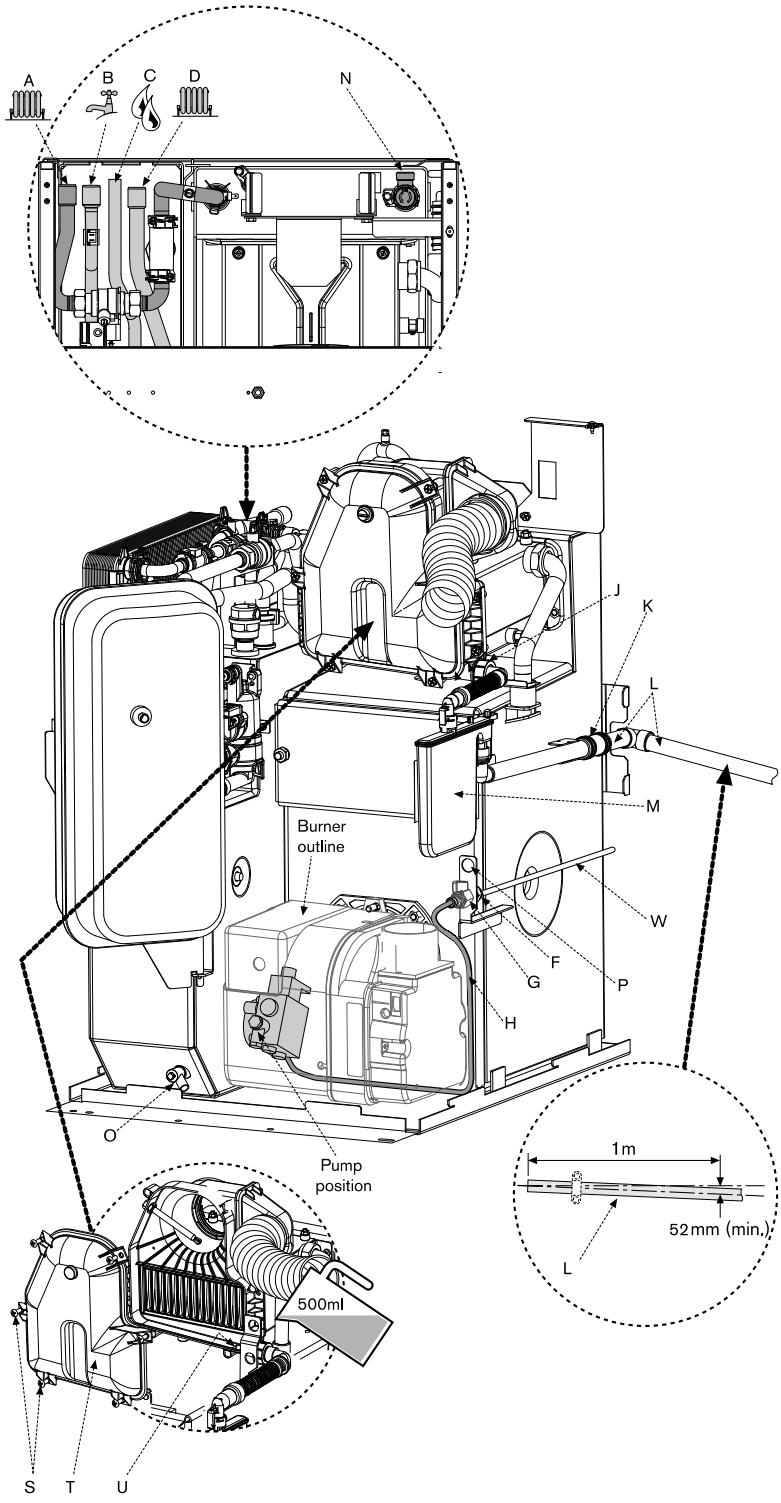
2 ▸ Ensure one piece baffle set (C) is in the right location (D), correctly resting on the baffle rests (F) on either side of the combustion chamber and pushed securely into place.

3 ▸ Refit combustion chamber door (A).
**IMPORTANT:** Secure with nuts and washers (B) and tighten until the chamber door is firmly secured, do not over tighten the nuts.

4 ▸ Unscrew screws (G) and remove flue manifold access cover (H).

5 ▸ Check that all the baffles ( J ) and baffle retainer (K) are correctly fitted to the secondary heat exchanger.

**CAUTION: ISOLATE THE OIL & WATER MAINS SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**




## PIPEWORK CONNECTIONS

A - CH flow 22mmØ copper (28mmØ on 25/32 models)
B - DHW flow 22mmØ
C - DHW water main inlet 15mmØ
D - CH return 22mmØ copper (28mmØ on 25/32 models)
F - 10mmØ oil supply connection
G - Oil isolating valve (10mmØ)
H - Flexible oil hose*
J - Flue manifold condensate outlet
K - Condensate outlet and flexible push fit connect (21.5mmØ) - supplied
L - Condensate pipe - not supplied
M - Condensate trap - supplied
N - Pressure relief (15mmØ)
O - Drain
P - Fixing point for optional return oil pipe

**WATER CONNECTIONS:**

- Ensure all pipework is clean.

  ***NOTE:*** *That surplus water may be present due to factory testing.*

- Align water pipework and connect.
- Check that all unused sockets have been capped.

**OIL SUPPLY CONNECTIONS:**

- Route the oil supply pipe (W) along either side of the boiler as required and connect to the isolating valve (G) and ensure the valve is closed.

  ****NOTE:*** *Replace flexible hose at annual service to prevent possible oil leakage.*

- Connect the flexible oil hose (H) to the isolating valve (G).

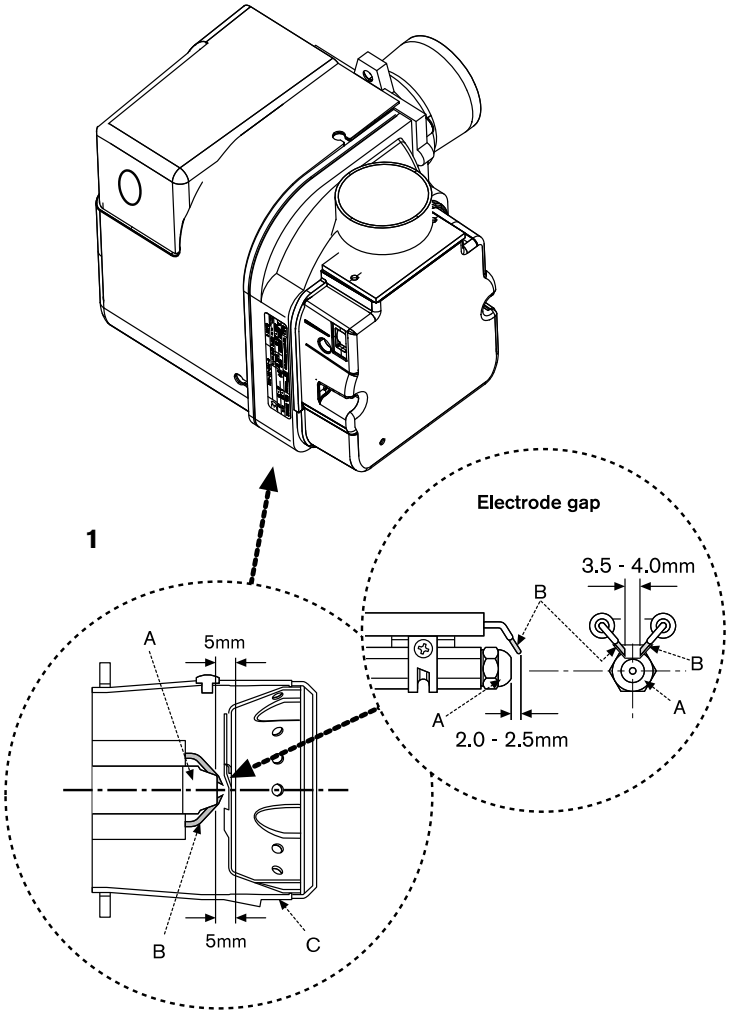
**CONDENSATE CONNECTION:**

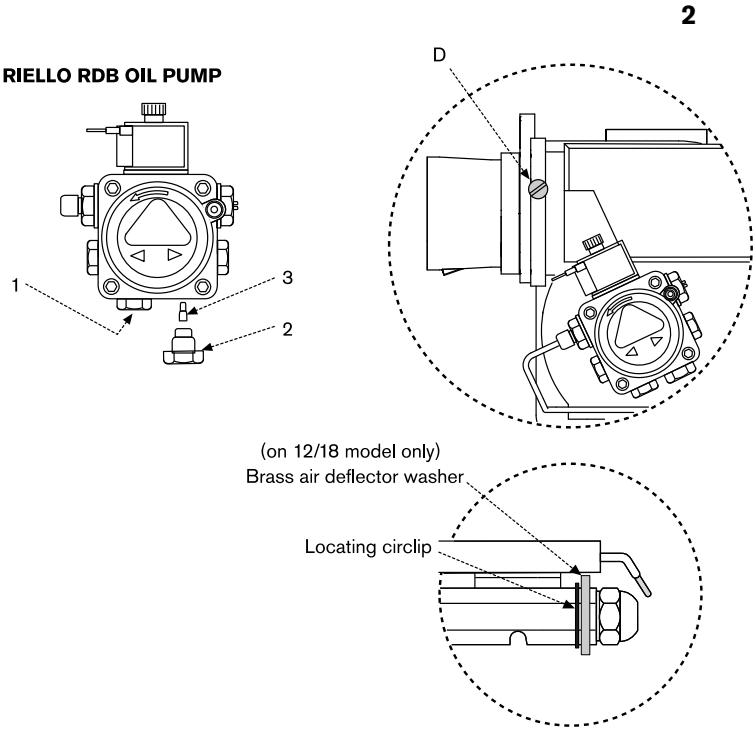
- Connect 21.5mm polypropylene pipe (L) (not supplied) to the condensate waste pipe flexible push fit connector (K) and terminate to waste.
- Do not use any solvents, adhesives or lubricants when pushing the pipe into the rubber connector (K).
- Ensure that the condensate pipe runs away from the boiler at a constant fall of 52mm (min.) for every metre.
- Seal all condensate pipe joints.
- Carefully pour 500ml of water into the condensate collection (U) to fill condensate trap.
- Check the water is running away and the condensate pipework joints are water tight.
- Check the flue manifold seal is undamaged and seated correctly.
- Refit flue manifold access cover (T) and secure with screws (S).

**IMPORTANT: The condensate trap must be correctly filled to prevent the possibility of potentially harmful flue products escaping via the condensate pipework.**

**PRESSURE RELIEF CONNECTION:**

- Connect the pressure relief pipe (N) to a copper discharge pipe (15mmØ min.).







## OIL BURNER & PUMP

**CAUTION: ISOLATE THE OIL & WATER MAINS SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**

**OIL BURNER:**

1 ▸ Check the nozzle (A) and electrode (B) settings are correct as shown opposite.

▸ Ensure nozzle (A) is aligned centrally within the combustion head (C).

▸ Inspect for any visible defects.

2 **IMPORTANT: Before removing or fitting a nozzle (A), loosen screw (D) and move the electrodes (B) forward.**

**After refitting check that the electrode gaps are correct, as shown opposite.**

***NOTE:*** *the 12/18 model has a brass deflection washer and locating circlip behind the nozzle. These must be in place for the correct operation of the burner.*

**IMPORTANT: Whenever replacing the combustion head, ensure that the photocell is lined up with the sight hole.**

**OIL PUMP:**

**Connecting the oil pump for a single pipe system:**

▸ The pump is factory set for single pipe operation with the flexible oil pipe fitted.

▸ Check connections before use.

**Converting the oil pump for a double pipe system:**

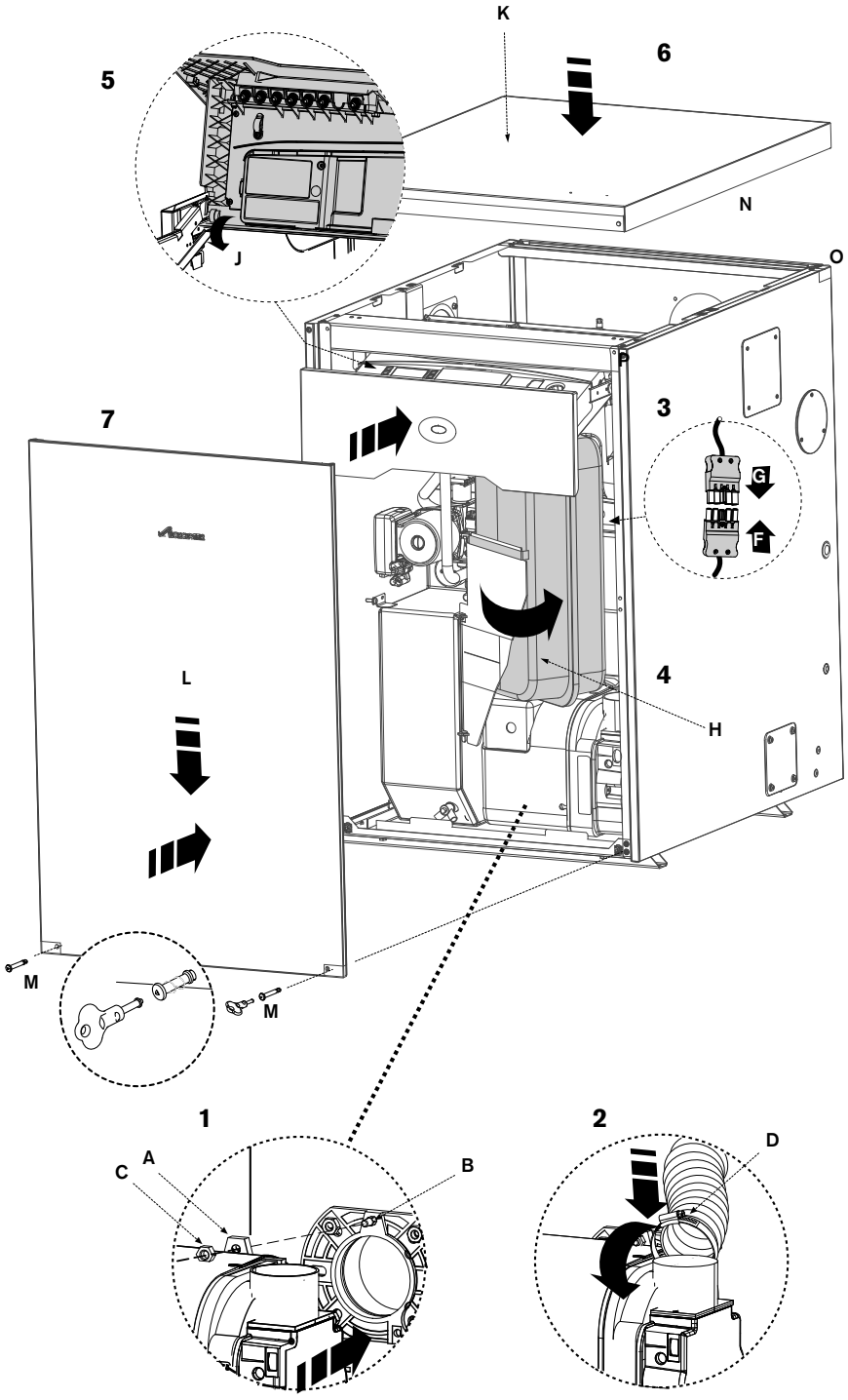
1 ▸ Check the inlet pipe connection (1).

▸ Unscrew return plug (2).

▸ Screw in by-pass screw (3).

2 ▸ Connect the flexible oil pipe **return** hose (not supplied) to the oil pump and return pipe fixing (D on page 24) and tighten to secure.

## REFITTING COMPONENTS




1 ▸ Align burner combustion head into the boiler collar.

- ▸ Locate the burner retainer (A) over the threaded lug on the collar (B), push the burner firmly into the flange and secure in place with the retaining nut (C). Tighten sufficiently but do not over tighten.
- ▸ Check that the burner is seated correctly on its mounting flange and that the oil hose/s are routed correctly as shown on page 27.

**IMPORTANT: Ensure the o-ring seal between the burner collar and mounting flange is in good condition to prevent flue gases escaping from the combustion chamber into the cabinet.**

2 ▸ Refit the flexible air duct and secure with clip (D).

3 ▸ Plug burner lead (F) into connector (G).

4 ▸ Swivel the expansion vessel (H) back into position taking care not to kink the flexible hose or snag electric cables.

5 ▸ Refit control box.

- ▸ Rotate the box towards you ( J ).
- ▸ Slide control box drawer back into position.

Refit panels.

6 ▸ Refit the top panel and press down to compress the seal when fitting the securing screws (K).

7 ▸ Push the front panel ( L ) up behind the top panel and push in at the base to secure with the screws (M) using the tool povided.
Always apply pressure at the edges of the boiler panels when securing to avoid accidental damage

## ELECTRICS

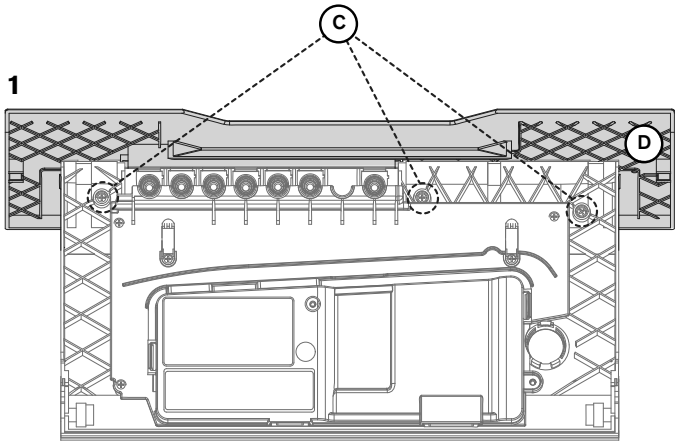
**DANGER - 230V:**
**ISOLATE THE MAINS ELECTRICITY SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**

**IMPORTANT: THIS APPLIANCE PROVIDES A PERMENANT EXTERNAL ELECTRICAL SUPPLY FOR SERVICING AND MUST THEREFORE BE FED VIA A CIRCUIT BREAKER INCORPORATING EARTH LEAKAGE PROTECTION.**

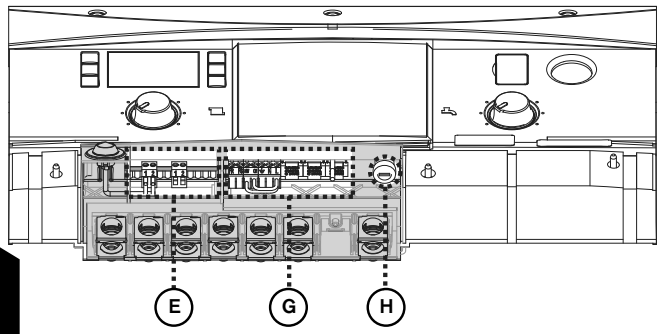
**IMPORTANT: OBSERVE ELECTRO-STATIC DISCHARGE PRECAUTIONS.**
**DO NOT TOUCH THE PCB CIRCUITS.**

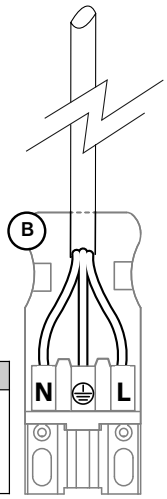
**WARNING: EXTERNAL EQUIPMENT OPERATED AT 230 VOLTS SHOULD NOT BE SERVICED OR REPAIRED UNDER ADVERSE WEATHER CONDITIONS.**

1

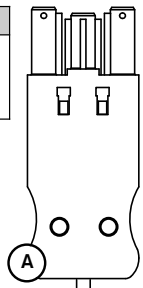



2




| Mains voltage socket (provided) | |
|---|---|
| **B** | Shown here from top view, wiring access is from other side. NOTE: on both plug & socket Earth is wired centrally. |




| Mains supply plug (pre-wired) | |
|---|---|
| **A** | Mains supply plug & lead is pre-wired to the boiler control box, see diagram & table below. |

- **The boiler is pre-fitted with a mains supply cable and plug (A).**
- **The 230V supply to the boiler must be wired to the socket provided (B).**
- **The mains electrical supply to the boiler must be through a fused double pole isolator and must have earth leakage protection.**
- **The isolator must have a contact separation of 3mm minimum in both poles.**
- **Any additional equipment connected to the boiler must not have a separate electrical supply.**
- **External fuse rating 5A.**

**IMPORTANT: When wiring mains and control cables ensure that the cable has sufficient length for the control box to be slid forward and tilted over.**

**Access to electrical connections:**

Access to wiring connections is via the Installer access cover at the bottom front of the control board.

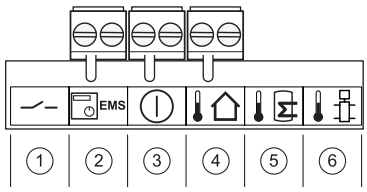
1 ▸ Release the 3 captive screws (C) and remove the Installer access cover (D).

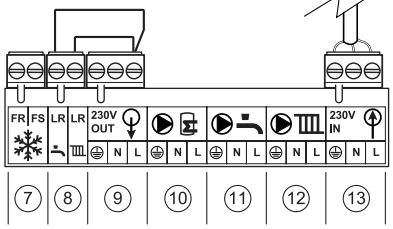
**Electrical connections:**

2 E. Low voltage connections.
G. Mains voltage connections.
H. Fuse carrier.

***NOTE:*** *DHW LR switched live:*
*This input provides the live feed in from a connection for a proprietary twin channel control to time the tank reheat function on the DHW. All Worcester twin channel digital controls provide this functionality, but the link is required for them to function.*

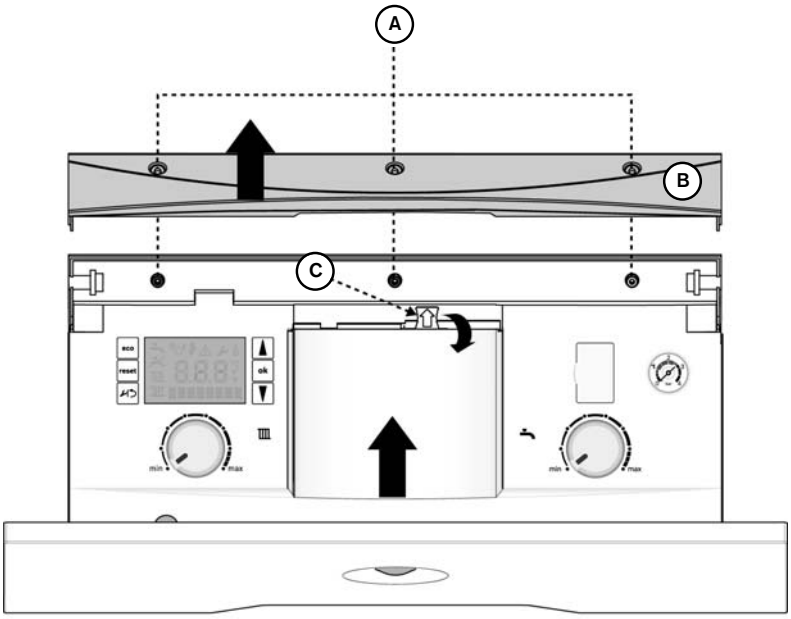
Pre wired links

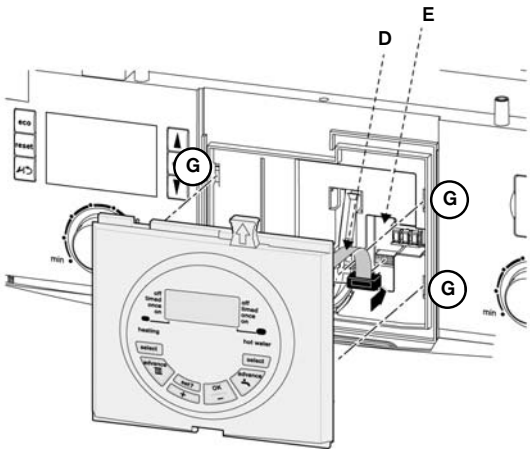



| Low voltage terminal strip | |
|---|---|
| **1** | NOT USED |
| **2** | EMS bus connections |
| **3** | Service mode switch |
| **4** | Outdoor compensation sensor |
| **5** | NOT USED |
| **6** | NOT USED |

| Mains voltage terminal strip | |
|---|---|
| **7** | External 230V AC frost thermostat |
| **8** | 230 VA.C. switched live inputs |
| **9** | 230 VA.C. mains output to wiring centre |
| **10** | NOT USED |
| **11** | NOT USED |
| **12** | NOT USED |
| **13** | Boiler 230 VA.C. mains supply pre-wired to plug |




**DANGER - 230V:**
**ISOLATE THE MAINS ELECTRICITY SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**

**MOUNTING OPTIONAL PLUG-IN CONTROLS:**

**Removing the blanking plate:**

The control panel must be pulled fully forward to gain access to the top cover panel (refer to page. 24 for access to the control panel).

1 ▸ Release the 3 captive screws (A) and remove the access cover (B).

▸ Use the tab (C) to lift and also press down on the bottom edge of the blanking plate and at the same time push the blanking plate upwards to release it from the clips on the control panel.

▸ Pull the blanking plate forwards to remove.

**Fitting the programmer/timer:**

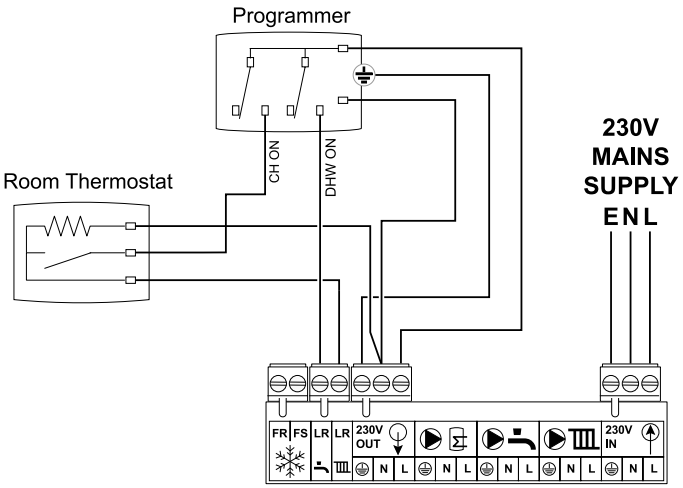
2 ▸ Connect the ribbon cable to the socket (D) in the control panel, ensuring the cable will fit into the recess (E) in the control panel.

▸ Align the clips on the back of the programmer/timer with the slots (G) in the control panel and push in to engage the clips into the 4 slots.

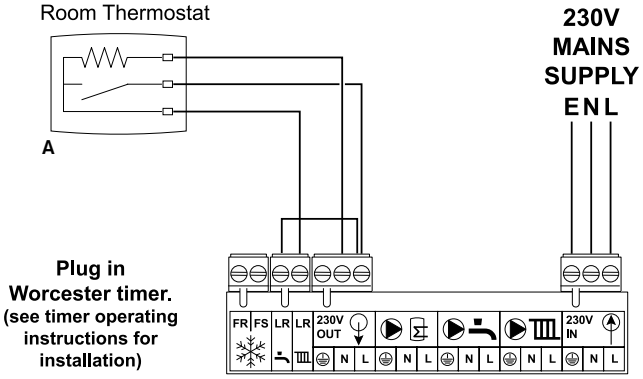
▸ Pull the programmer/timer downwards to secure into place.

▸ Replace the top access cover (B) securing in position with the 3 screws (A).

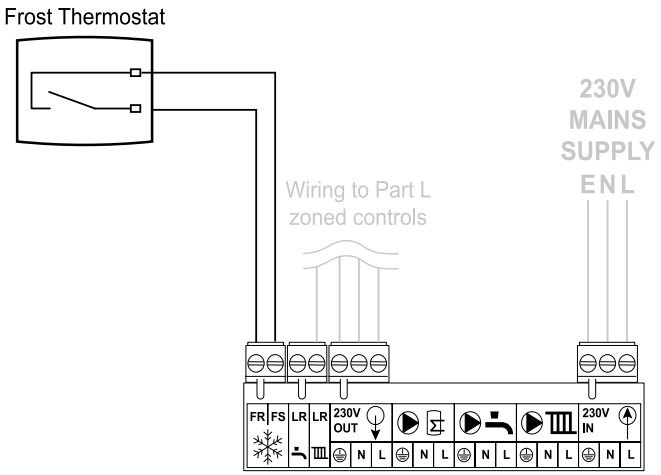
***NOTE:*** *Weather Compensation:*
*For information about Weather Compensation see page 34.*




**External 230V Twin Channel Programmer and Room Thermostat**




**Room Thermostat and Plug In Twin Channel Programmer**

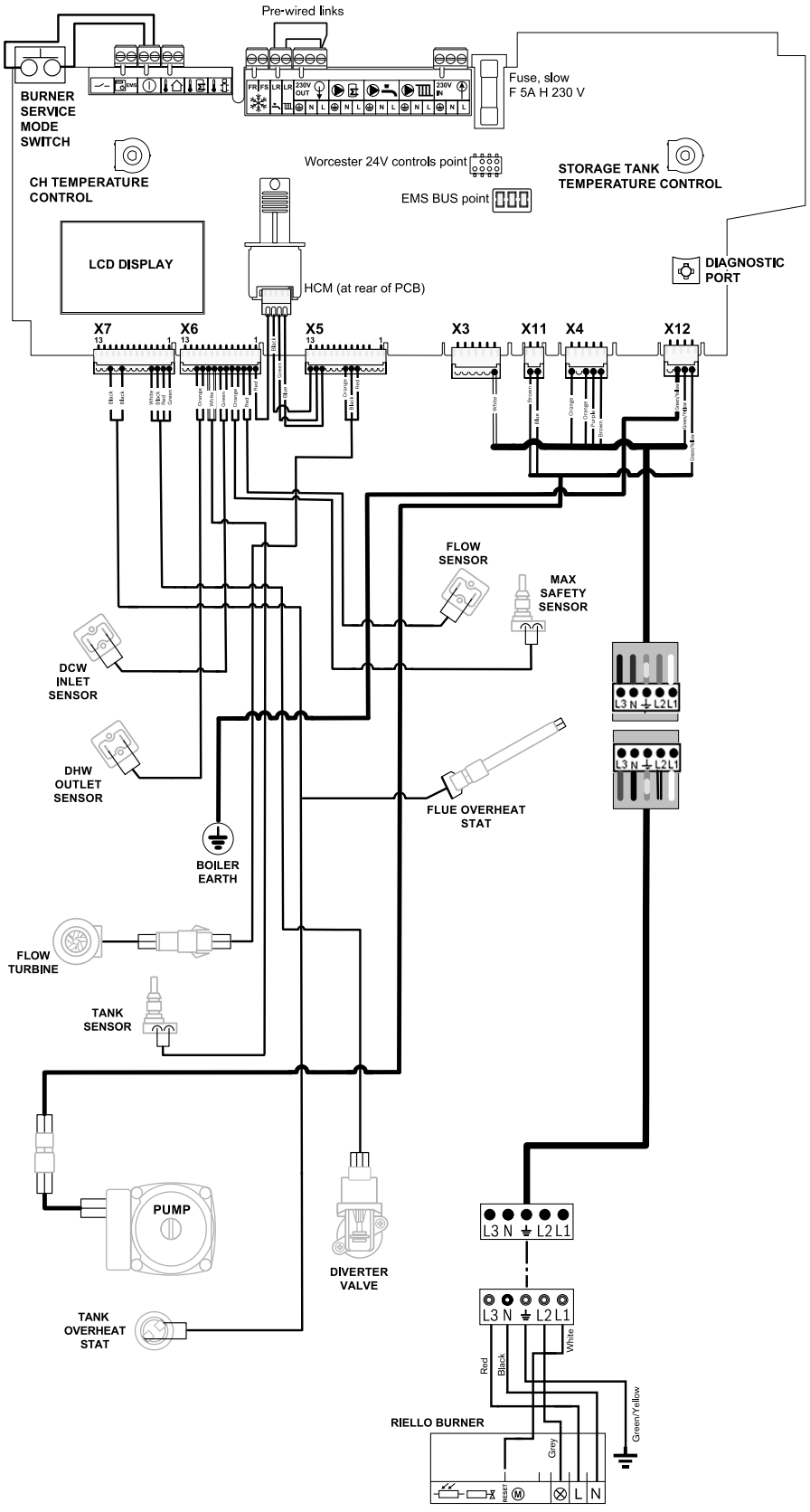


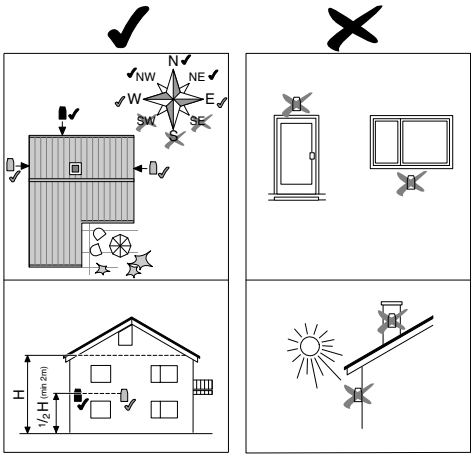

**Optional External 230V AC Frost Stat Connection for protection of system pipework in unheated air space**

| | |
|---|---|
| ▸ | Connect frost thermostat cables to terminals Fs & Fr. |
| ● | These connections are not polarity sensitive. |
| ● | The Boiler internal frost protection will bring on the burner if required. |

**Frost protection:**

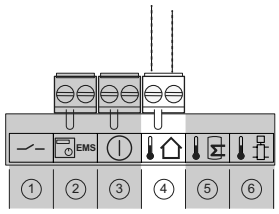
The boiler has built in frost protection to protect the appliance and the system within the heated building.


Pre-wired links
BURNER SERVICE MODE SWITCH
Fuse, slow F 5A H 230 V
CH TEMPERATURE CONTROL
Worcester 24V controls point
EMS BUS point
STORAGE TANK TEMPERATURE CONTROL
LCD DISPLAY
HCM (at rear of PCB)
DIAGNOSTIC PORT
X7
X6
X5
X3
X11
X4
X12
FLOW SENSOR
MAX SAFETY SENSOR
DCW INLET SENSOR
DHW OUTLET SENSOR
FLUE OVERHEAT STAT
BOILER EARTH
FLOW TURBINE
TANK SENSOR
PUMP
DIVERTER VALVE
TANK OVERHEAT STAT
L3 N L2 L1
RIELLO BURNER
Red
Black
White
Grey
Green/Yellow
L
N

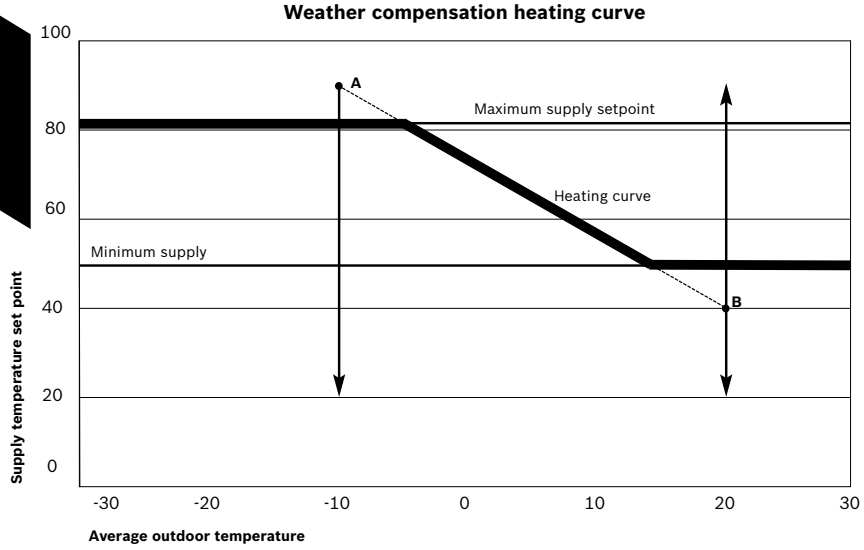



Weather compensation sensor optimum siting indicated by black tick.

The sensor is wired directly into the control box via terminal 4 in the low voltage terminal strip (see page.30).




**Weather compensation heating curve**




| Adjusting the heating curve | |
|---|---|
| ● | The weather compensation curve can be adjusted via the text display by adjusting the projected flow temperature at -10°C (point A), Menu 1 W2 (pA), and 20°C (point B), W4 (pB), enabling the slope as well as the position of the curve to be adjusted to suit the installation. |
| ● | Point A and B can be set between 90 and 20°C but point A must always be greater than point B. |

| Outdoor sensor error | |
|---|---|
| ● | If during weather compensation the outdoor sensor is open circuit or closed circuit the CH flow temperature modulation is deactivated and the CH flow temperature set to the CH control knob setting, a warning triangle and H03 are displayed on the LCD. |
| ● | The appliance will monitor the outdoor sensor input and if the sensor returns to normal then the flow temperature modulation will be reactivated and the LCD warning triangle and H03 are turned Off, (there may be a 10 second delay). |

| Average outdoor temperature | |
|---|---|
| ● | To stop rapid fluctuations the outdoor temperature used for CH flow temperature modulation is an average value taken over a ten minute period. |
| ● | When an outdoor sensor is first detected the sensor value is taken to be the outdoor temperature, subsequent to this the outdoor temperature will be adjusted every 10 minutes using an average outdoor temperature value from the previous 10 minute period. |

## WEATHER COMPENSATION

The appliance will modulate the CH flow temperature based on the outside temperature when an outdoor sensor is connected to the outdoor sensor connection on the control board and the weather compensation is active.

This is designed for use with a system that has thermostatic radiator valves and a room thermostat.

The appliance will operate at lower temperatures when there is a lower heat load because the building is losing less heat due to higher external temperatures. This means that the appliance is running more efficiently as it is operating for longer at condensing temperatures.

The weather compensation curve can be adjusted to tune the flow temperature to suit the particular installation.

The appliance is supplied with the weather compensation deactivated.

**Weather compensation activation:**

The weather compensation is activated via menu 1 of the text display.

- Select Menu 1 via ▲ ▼ scroll buttons.
- Press OK button.
- Select W1 via ▲ ▼ scroll buttons.
- Press OK button.
- Set W1 to 1 via ▲ scroll button.
- Press OK button.

The weather compensation is now active and the appliance will check for the presence of an outdoor sensor and deactivate the CH flow temperature modulation if a sensor is not detected. When weather compensation is activated but an outdoor sensor is not fitted/detected, the warning triangle and H03 will be displayed on the LCD display.

**The heating curve:**

The CH flow temperature has an upper limit of 82°C (this can be capped via the CH control knob setting) and a lower limit of 50°C, (it is recommended that the CH knob is set to 82°C for the weather compensation to operate most effectively).

The default settings for the curve are point A = 90°C and point B = 40°C, this gives a 80°C flow at -4°C outdoor temperature and a 50 °C flow at 14°C outdoor temperature which should be suitable for typical systems.

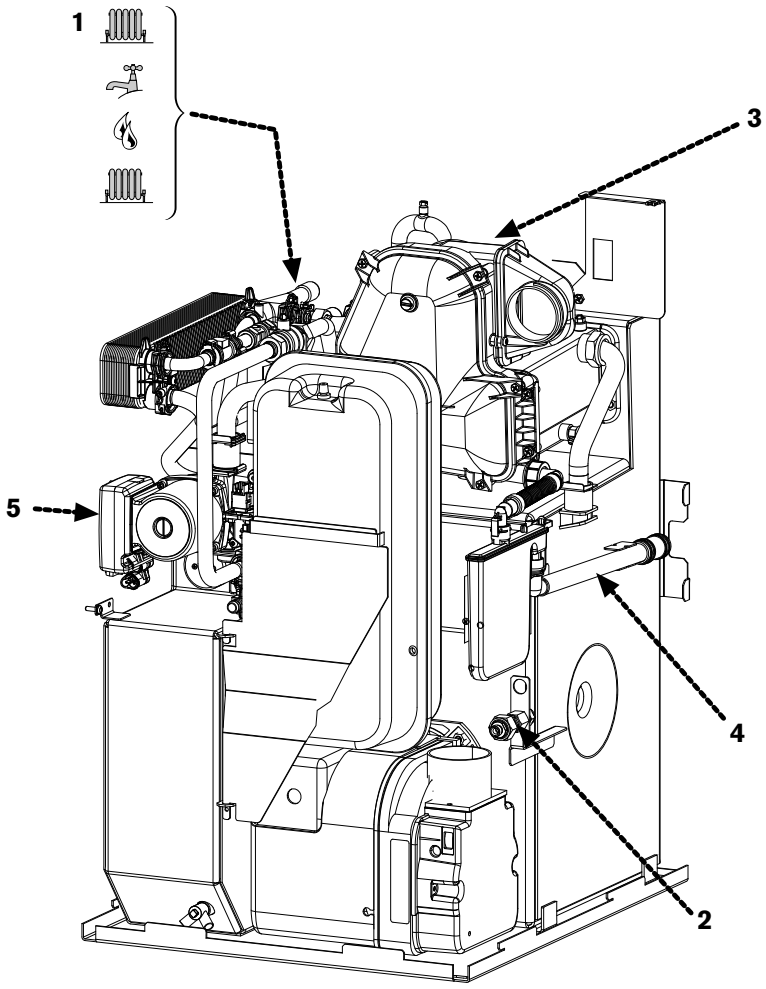
Point A is the projected value for the flow temperature at -10°C outdoor temperature and point B is the projected value for the flow temperature at +20°C outdoor temperature, (these values dictate the angle of the slope only they are not CH flow temperature limits).

**Frost protection:**

The normal condition for the appliance is that the weather compensation frost protection is turned Off.

If required the frost protection is activated via Menu 1 W5 of the text display, 0 = OFF, 1 = ON.

On Activation of the weather compensation frost protection if the outdoor temperature is less than 5°C the system frost protection is activated the same as if an external frost thermostat was activated.




## PRE-COMMISSIONING CHECKS - APPLIANCE

**CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**

1 ▸ Check that the service and water pipes are connected correctly.

2 ▸ Check that the oil supply is kerosene and that the pipework is connected correctly to the oil pump via the supplied flexible oil hose (see correct routing for flexible hose on page 27).

▸ Turn on the main oil supply valve at the tank, check the oil supply pipework and connections. Rectify any leaks.

***NOTE:*** *Replace flexible hose at annual service to prevent possible oil leakage.*

3 ▸ Check the flue is correctly fitted and the connections are secure.

4 ▸ Check the condensate pipework is correctly fitted and connected.

▸ Check the condensate trap is filled with water.

5 ▸ Check the CH circulating pump is set to 3.

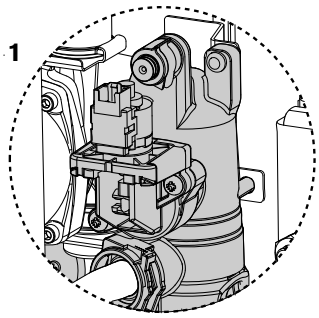
***NOTE:*** *The CH circulating pump is preset to number 3 and should not be altered.*

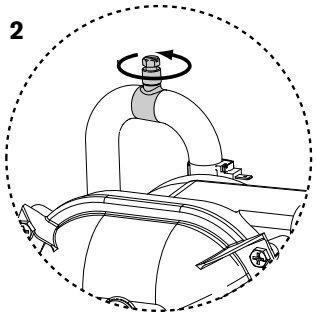
COMMISSIONING

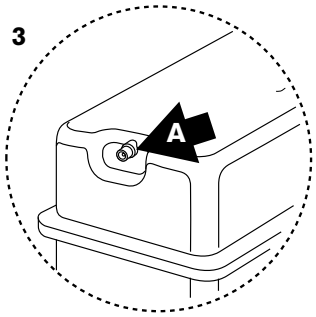
**IMPORTANT: If the boiler is not to be commissioned immediately then:**

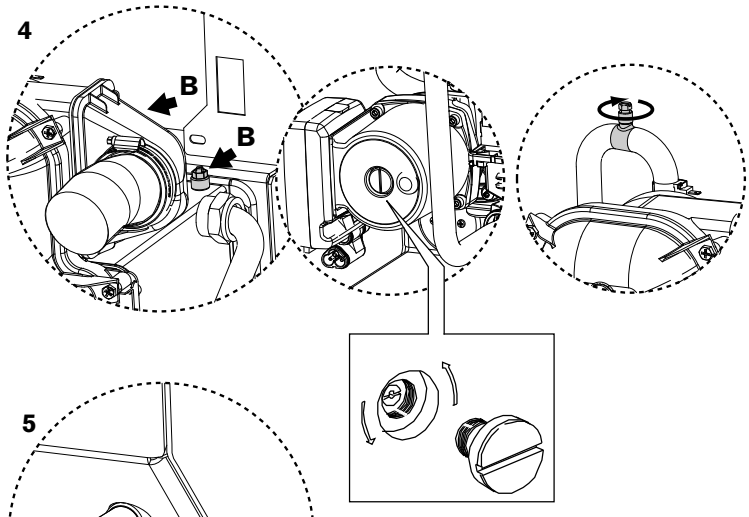
**After successfully completing all of the checks and any rectification work, close the water valves, shut off the oil supply and electrically isolate the boiler.**

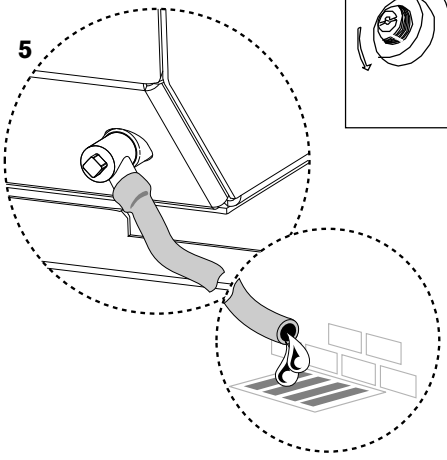
**Complete the installation part of the Guarantee Registration Card, and complete a CD10 or equivalent to inform the LABC of the installation.**




## FILLING THE SYSTEM

1 ▸ The diverter valve will sit in mid-position when the boiler has no demand and is powered up.

2 ▸ Loosen the flow pipe manual air vent screw.

3 ▸ Check and if required, adjust the expansion vessel pressure using the Schraeder type valve (A).

*The charge pressure of the built-in 12 litre expansion vessel is 0.5 bar as dispatched, which is equivalent to a static head of five metres. At 1 bar pressure the vessel will provide 107 litres expansion capacity, the boiler has a primary water capacity of between 62 and 64 litres and therefore additional system expansion capacity may be required.*

| Total system volume (litres) | Initial system pressure (bar) | Initial charge pressure (bar) |
|---|---|---|
| 180 | 0.5 | 0.5 |
| 107 | 1.0 | 0.5 |
| 138 | 1.0 | 1.0 |

*If an extra expansion vessel is fitted to the central heating return, adjust this to the same pressure as the appliance internal expansion vessel, refer to separate instructions supplied with the extra expansion vessel.*

4 ▸ Open all system and radiator valves.

- ▸ Turn on the water main stop cock.
- ▸ Close the flow pipe manual air vent when water is vented.
- ▸ Fill the system to between 1 and 2 bar pressure via a WRAS approved filling link. Monitor the pressure gauge during venting and repressurise if required.
- ▸ Check air is being discharged from the automatic air vents.
- ▸ Vent all radiators, retighten when completed, check the system and correct any leaks.
- ▸ Bleed air from both of the secondary heat exchanger air vents (B) and flow pipe air vent.
- ▸ Bleed air from the pump using the pump bleed screw.

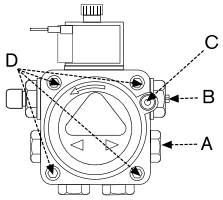
5 ▸ Connect a suitable hose to the Heatslave tank drain.
Open the drain valve to reduce the system to the correct pressure, then close the drain valve. Ensure safe disposal of the discharge.

6 ▸ Check system and rectify any leaks.

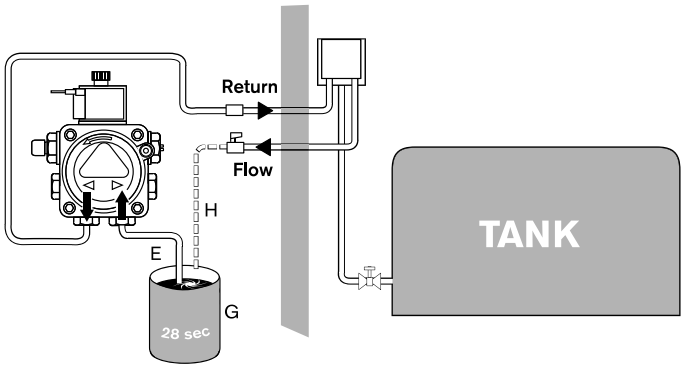
**IMPORTANT: Never run the appliance when the appliance/system is unpressurised or empty.**

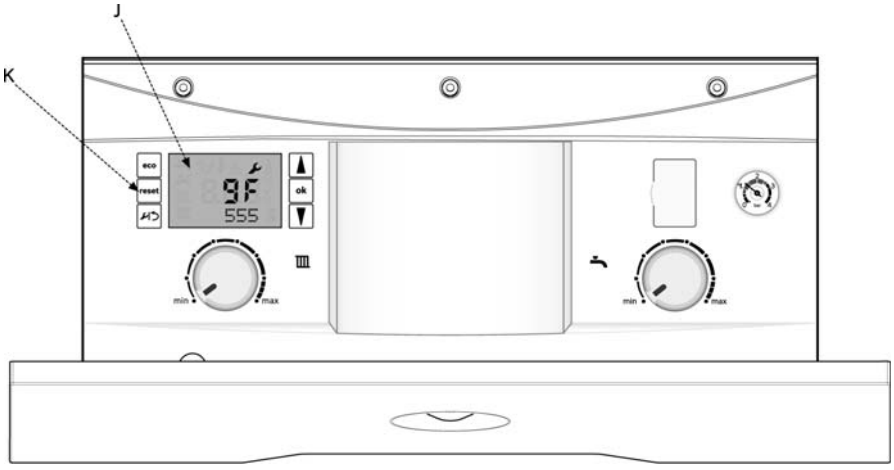
**1**

**RIELLO**
**RDB OIL PUMP**




A - Bleed & pressure gauge port
B - Pressure adjustment
C - Vacuum gauge port
D - Retaining screws - cover




1 ▸ Check the oil supply is correctly fitted and in good working order before turning on the oil supply valves to the boiler.

▸ Turn on the main oil supply valve at the tank and draw off at least 2½ litres of oil until a steady flow of clear uncontaminated oil can be seen as follows:

- **The oil supply to the boiler should be primed before the burner is operated to avoid unnecessary pump wear.**
- **The use of an oil suction pump will prime and flush through any oil supply set up simply and easily, alternatively the following procedures can be used.**

▸ **Single pipe gravity feed systems:**

▸ Disconnect the flexible oil hose and open the isolating valve to discharge the oil into a suitable container.

***NOTE:*** *Replace flexible hose at annual service to prevent possible oil leakage.*

▸ If a top entry tank has been used the pipework will need to be primed before the oil will discharge under gravity.

▸ When completed, close the isolating valve, reconnect the flexible oil hose.

▸ **Double pipe sub-gravity feed systems and single pipe suction lift with de-aerator:**

▸ To prime a de-aerator, disconnect the flexible oil inlet hose (E) from the isolation valve and place in a container of kerosene (G). Connect a spare flexible oil hose (H), to discharge into container (G). Open the isolating valve, turn on the power to the boiler and set the programmer to ON. Prime the de-aerator until there is a steady flow of oil into container (G). Turn off the boiler then reconnect the flexible oil inlet hose (E).

▸ Turn on the boiler, the oil level in the de-aerator will drop as the oil is used until the oil is drawn from the tank. If the de-aerator empties and the burner locks out before the oil is drawn from the tank, prime the de-aerator again.

**When the oil reaches the pump, bleed the air from the pump as follows:**

▸ Open the isolating valve and the oil pump bleed port (A) to discharge into a suitable container once the boiler is started up.

▸ Switch on the electricity supply to the boiler.

▸ Set the programmer to ON for CH and DHW.

▸ Turn on the boiler CH control thermostat.

▸ Allow the burner to run through to lockout indicated by the control panel LCD display ( J ) showing code **9F 555**.

**If no oil comes out of the port valve A, then re-prime the oil line as detailed above.**

▸ Wait 2 minutes then press the lockout reset button (K).

▸ Repeat the procedure until a steady stream of oil without air, runs from the bleed port, then relock bleed port (A).

▸ Switch off the boiler.

▸ Remove the oil pump filter, clean with kerosene and refit.

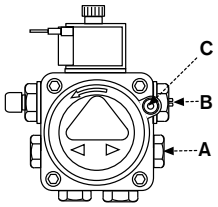
The internal filter is accessed by removing the oil pump cover.

▸ Safely dispose of the container/discharge.

**2**

**RIELLO**

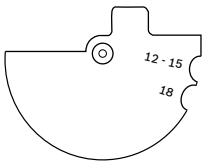
**RDB OIL PUMP**



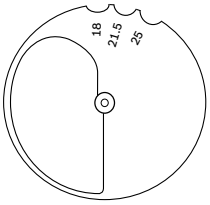

A - Bleed & pressure gauge port

B - Pressure adjustment

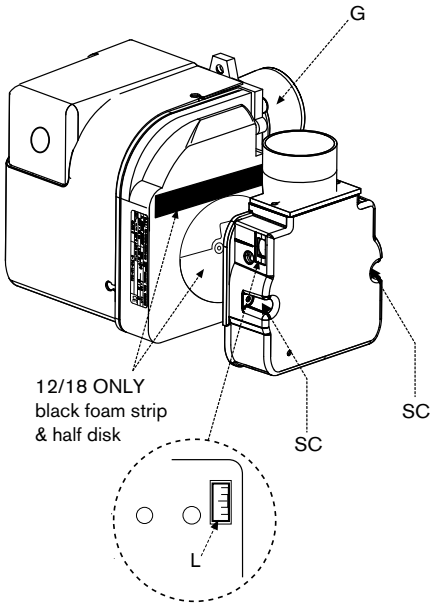
C - Vacuum gauge port

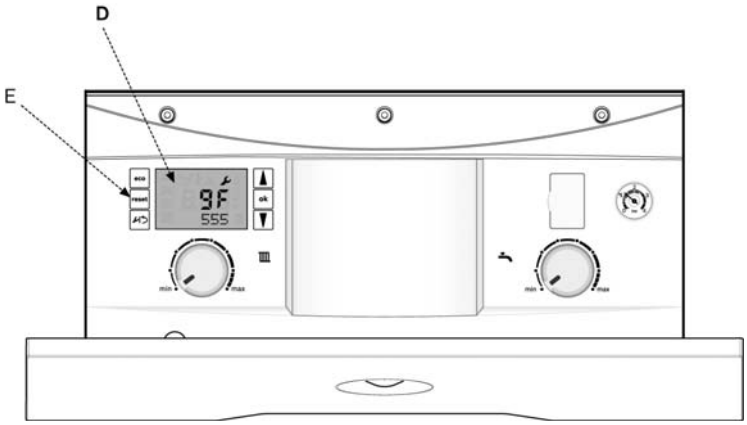


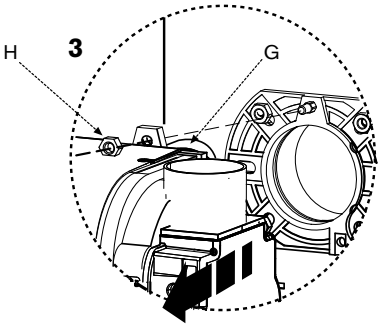

**12/18kW**

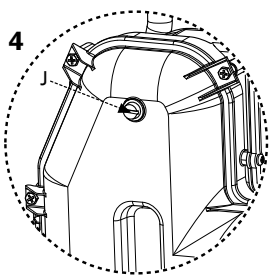



**18/25kW**




2 ▸ Fit a suitable pressure gauge to port (A) on the oil pump.

**IMPORTANT:**
If changing the burner output, ensure the position of the air damper disk is correct for the desired output. Refer to the table on the following page.

▸ **12/18 & 18/25 - RIELLO RDB 2.2**
Adjust position of the air damper disc to suit the burner output (see chart on page 44), located as shown in the diagram opposite. Access is by loosening the two star screws (SC) to release the air inlet manifold.

• **25/32 - RIELLO RDB 2.2**
No damper disk is fitted to the 25/32kW burner.

▸ Adjust the air shutter (L) and pump pressure (B) as shown opposite. The burner should ignite following a pre-ignition period of approximately 15 seconds.

***NOTE:*** *The MO535 MRF control box has an 3.5 second delay before the start of the pre-ignition.*

**Boiler lockout:**

*If the burner fails to establish a normal firing pattern or flame failure occurs the flame monitoring photocell mounted in the burner body will alert the burner control box to shut the burner down and provide a safe lockout state indicated on the control panel LCD display (D) by code 9F 555.*

▸ Wait two minutes then press the lockout reset button (E) to initiate another start sequence.

▸ Repeat procedure until a flame is established.

3 ▸ Start and run for 3 minutes then switch off.

▸ Check for after-spurting from the nozzle, indicated by oil saturation on the combustion head (G).

*If after-spurting occurs:*

▸ Release the burner retainer nut (H).

▸ Remove the burner, combustion head (G). and electrodes, hold the burner vertical to unscrew the nozzle and fill the nozzle holder with oil.

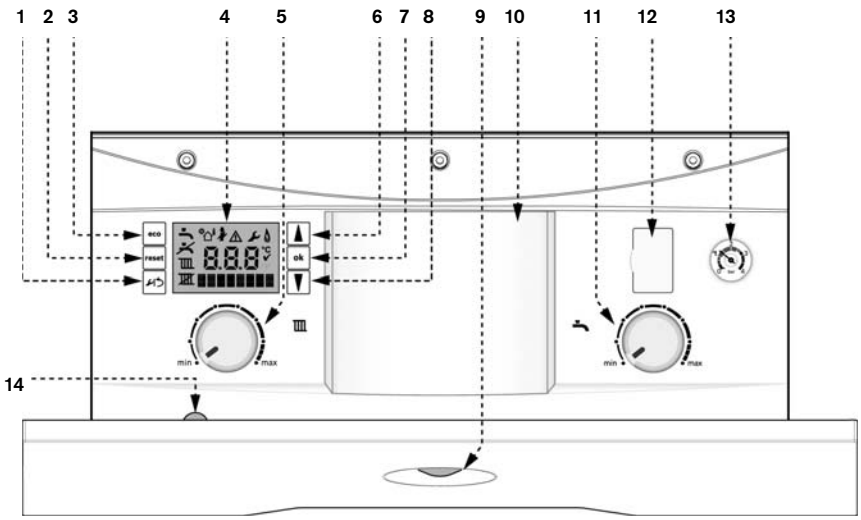
▸ Refit nozzle, electrodes, combustion head (G) and the burner.

▸ Restart and run for 3 minute intervals until after-spurting stops.

4 ▸ Start and run for 20 minutes.

▸ Remove sampling point plug ( J ) to check the smoke reading is between 0-1. If the smoke level is above 1, check the combustion settings are correct and the oil nozzle is in good condition.

***NOTE:*** *Smoke readings may be inaccurate until the smoke from burning organic binder in the access door insulation has ceased.*




**Control board:**

1 Spanner/return button
2 Reset button
3 ECO button
4 Boiler LCD display
5 Central heating temperature control
6 Scroll up button
7 OK - Select/confirmation button
8 Scroll down button
9 Operation and fault indicator (blue)
10 Position for optional programmer
11 Hot water temperature control
12 Diagnostic port
13 System pressure guage
14 Burner service mode button

**Switching the appliance on/off:**

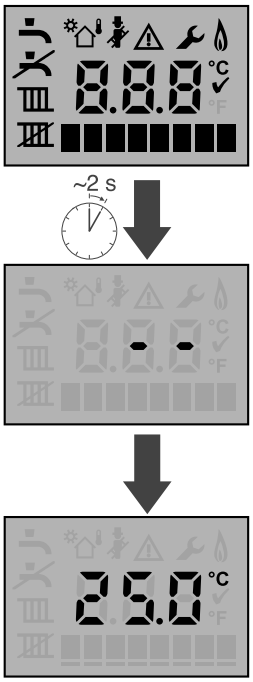
- Turn on the mains power supply, initially the 'Boiler start up screens' will be displayed (refer diagram opposite:)
- Turn on any external controls.
- Set the thermostatic radiator controls to maximum.
- Set the clock/programmer to continuously ON and the room thermostat to maximum temperature

  **The blue operation/fault indicator light will be illuminated when there is a demand for heat and hot water.**
- Turn the boiler CH temperature control (5) to maximum.

  **If the boiler fails to light, a flashing fault code will be displayed.**

***NOTE:*** *Do not press the blue operation/fault indicator (9) to reset the boiler.*

- To reset the boiler, press the reset button (2), the 'tick' symbol will be displayed briefly for a successful reset.




**Boiler start up screens:**

**1.** All the symbols are displayed for approximately 2 seconds.

**2.** Internal test screen.

**3.** Primary temperature from the heat exchanger displayed.

**Boiler start up screens:**

On initial start up, the following screens are displayed:

1 ▸ All the symbols are displayed for approximately 2 seconds.

2 ▸ The control will run an internal test.

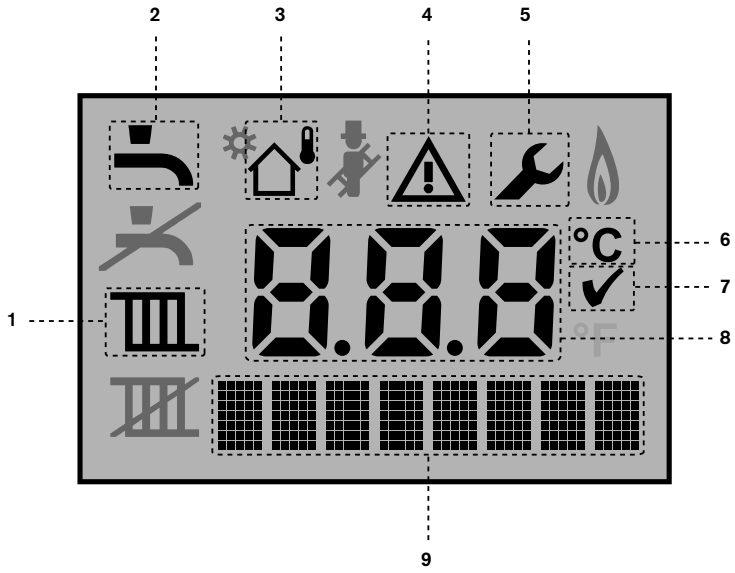
3 ▸ When the internal test has been successfully performed, this screen is displayed:

- The boiler is in stand-by.
- The flow temperature sensor indicates the primary temperature from the heat exchanger (not the target set point).

4 ▸ If no adjustments are made for 30 seconds, the back light is turned off.

▸ As soon as an adjustment is made, the screen will light up and the relevant information will be displayed

## STARTING THE APPLIANCE




**Screen display:**
All possible screen symbols are displayed briefly during start up. Extended diagnostic features have rendered the greyed out symbols not required for the operation of this appliance.

1 **Central heating symbol**
Displays this symbol during CH demand.

2 **Hot water symbol**
Displays this symbol during DHW demand (DHW flow rate > 2ltr per minute) and tank reheat.

3 **Weather Compensation active symbol**
Displays this symbol only if a Weather Compensation sensor has been fitted to the appliance and is active.

4 **Alert symbol**
Displays with the boiler status code and diagnostic code during a fault condition.

5 **Service mode symbol**
Displays when in the service menu.

6 **Centigrade symbol**
Displays next to the temperature reading.

7 **Confirmation symbol**
This symbol confirms a manual change.

8 **Alpha/Numerical display**
Displays a temperature or boiler status code.

9 **Text display**
Displays ECO or diagnostic code.

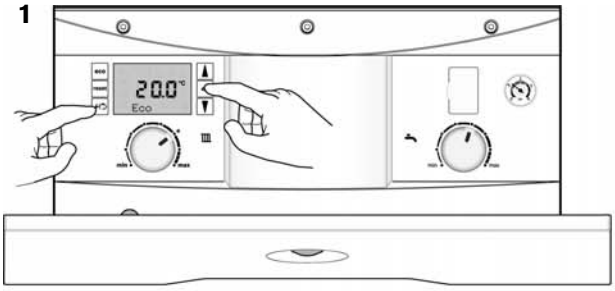
| Status Code | | |
|---|---|---|
| **200** | CH active | The Central Heating system is being heated. |
| **201** | DHW active | The Domestic Hot Water is being heated/tank is being heated. |
| **202** | CH Anti rapid-cycle mode | Time delay to prevent rapid-cycling of the boiler on the room thermostat. |
| **203** | System stand-by | The boiler has no demands. |
| **204** | System waiting | Primary flow temperature is above set point. |
| **270** | Power up mode | The boiler is ON, warming up and running self check routines. This lasts approximately 35 seconds. |
| **358** | Three way valve anti-seize | Anti-seize operation. If the diverter valve has not moved in 24 hours, the valve is operated to prevent seizing, duration approximately 10 seconds. |

**Status codes:**
During normal operation various status codes can be displayed by pressing the service button.

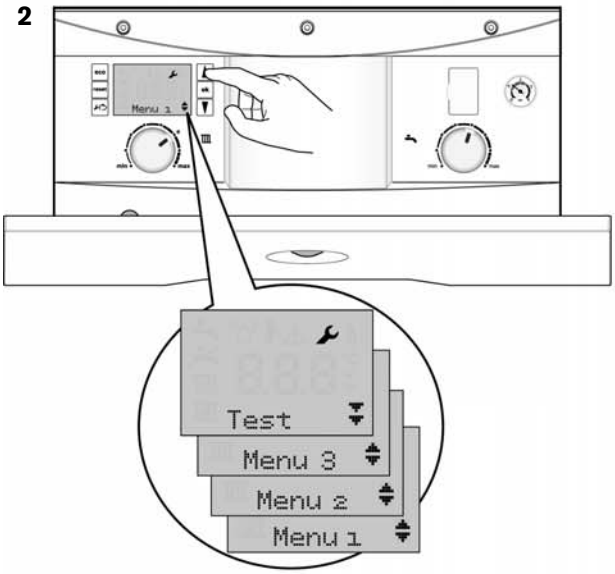
The first screen of the information menu displays the current status code, this will change as the boiler runs through the various modes and sequences.

These are not faults, but provide information concerning the current status.

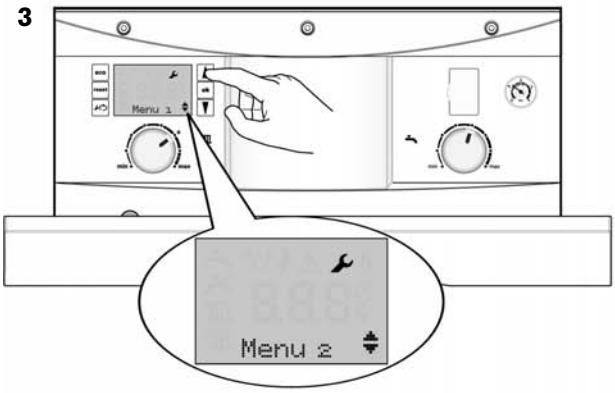
1



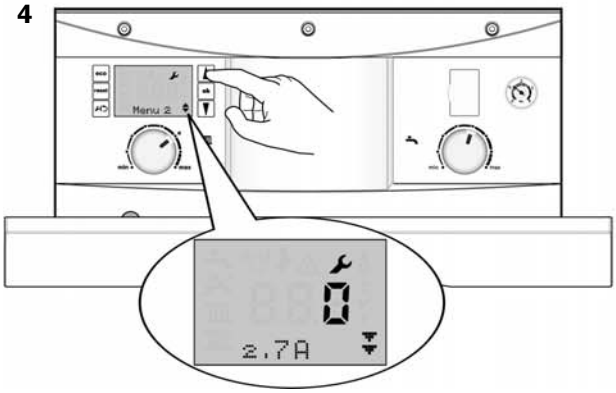

2




3




4




**Selecting Service Menus:**

1 ▸ Press and hold [↩] and [ok] buttons together for 1 second, the display will show Menu 1.

Double up or down arrows indicate that the menu can only be scrolled up or down.

An up and down arrow indicates position in the menu where options can be scrolled either up or down.

2 ▸ Scroll up and down through the menus with the arrow buttons. [▲] [▼]

**Menu 2 - Boiler parameters:**

3 ▸ Select Menu 2 via the [▲] and [▼] arrow buttons.

▸ Press and hold the [ok] OK button, for 1 second to enter Menu 2.

The menu lists the boiler parameters, which can be adjusted in this menu.

**To modify setting:**

4 ▸ Select the desired menu option using the arrow buttons (refer to the table below) and press the OK button, the option will flash.

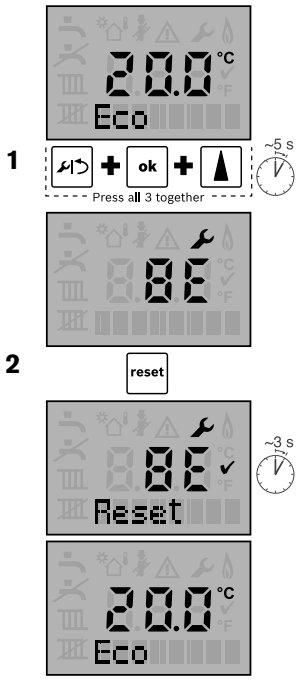
▸ Adjust the parameter using the up and down arrow buttons and press the OK button to confirm.

A [✔] tick will appear on the display for 3 seconds to confirm the update of the new value.

The same process is used for adjusting Menus 1 & 2.

**Menu 2 parameter.**

| | | |
|---|---|---|
| **2.7A** | Demand /fault indicator (blue light) activation | 0 = The blue light will only operate as a flashing fault alert.<br><br>1 = The blue light will operate as a boiler demand light and fault alert.<br><br>This is set to 1 by default. |




**Reset to factory settings:**
To reset any or all changes made in Menu 2 back to the factory default setting:

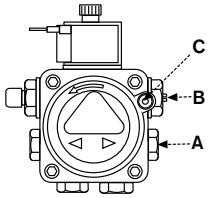
***NOTE:*** *Any changes made to Menu 1 are not reset by these actions.*

1 ▸ Press and hold the [↩] [ok] and [▲] buttons for at least 5 seconds. The screen will then display code BE with the spanner symbol.

2 ▸ Press the [reset] button and 'reset' will be displayed with the tick symbol for 3 seconds. After 3 seconds the display will revert to the normal operation screen.

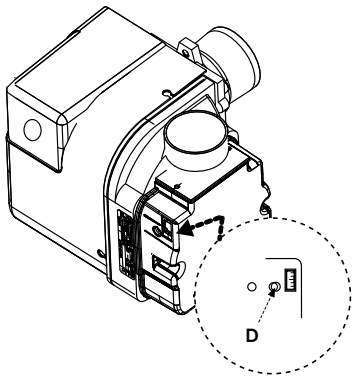


**RIELLO**
**RDB OIL PUMP**




A - Bleed & pressure gauge port
B - Pressure adjustment
C - Vacuum gauge port

3




**Finish pre-commissioning boiler checks:**

- ▸ Check the $CO_2$ levels and adjust the air shutter (L) setting according to the table opposite.
- ▸ Check the flue gas temperature is close to the values shown in the table.

*If the flue gas temperature is too high and the baffles are correctly fitted, then reduce the oil pump pressure (B) 5-10p.s.i. to compensate for nozzle variations.*

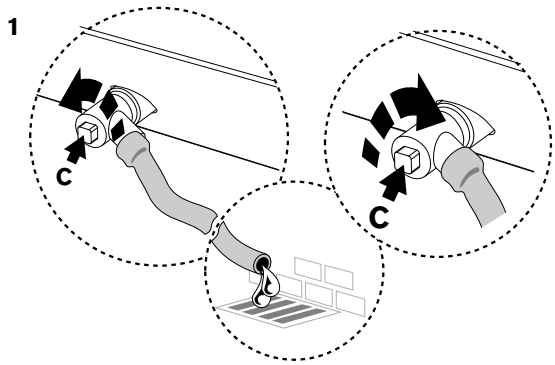
- ▸ Turn off the electrical supply.
- ▸ Isolate the oil supply to the burner.
- ▸ Remove the oil pressure gauge.
- ▸ Refit the blanking plug (A).
- ▸ Check and rectify any oil leaks.

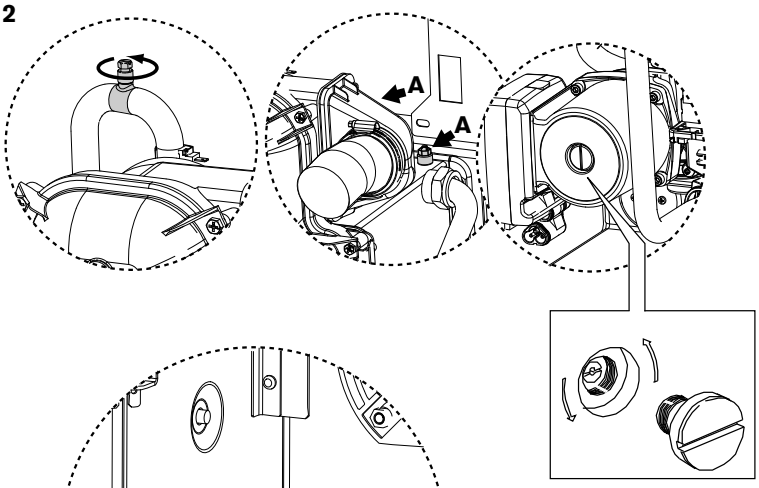
3 ▸ Switch on the oil supply.

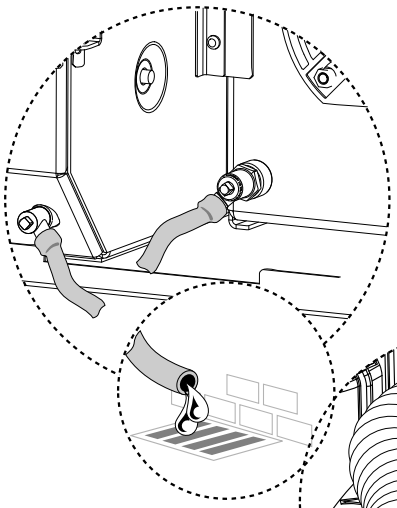
- ▸ Switch on the electrical supply.
- ▸ Restart the boiler and run for 5 minutes.
- ▸ Recheck the $CO_2$ levels and if required, adjust the air shutter setting (D) to obtain the correct $CO_2$ level.
- ▸ Refit the sample point cap (hand tighten only, do not over tighten) and refit the burner cover.

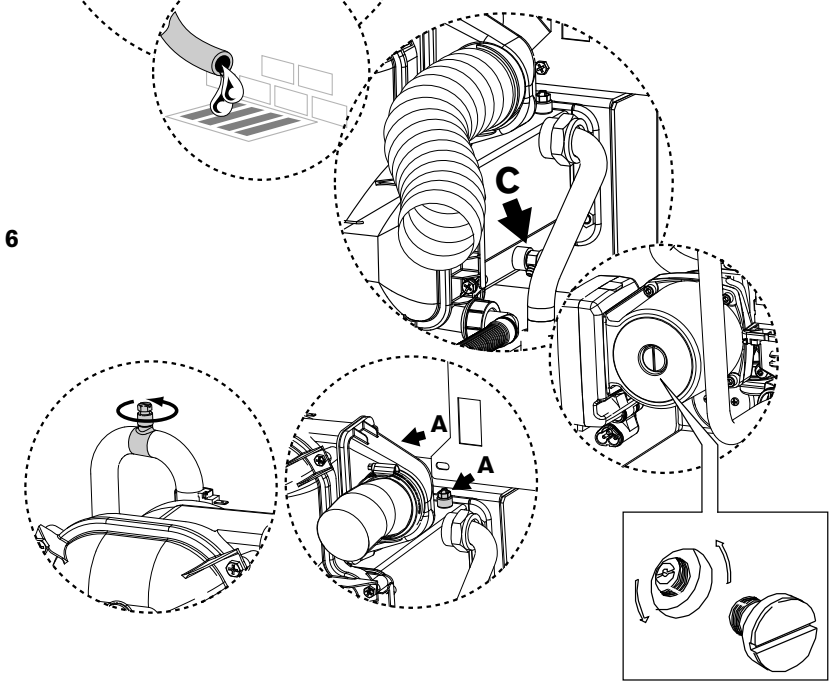
**NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE USING 28sec KEROSENE:**

| NOZZLE | OIL PUMP PRESSURE (Bar/Psi) | FUEL FLOW RATE Kg/h | FUEL FLOW RATE l/h | APPROX. FLUE GAS TEMP °C | %$CO_2$ | APPROX. AIR SETTING | INPUT (APPLIANCE) kW | OUTPUT (APPLIANCE) kW | AIR DAMPER DISC SETTING | BURNER HEAD |
|---|---|---|---|---|---|---|---|---|---|---|
| **Boiler 12/18 RDB 2.2** | | | | | | | | | | |
| 0.35 80°SR | 9/132 | 1.04 | 1.32 | 64 | 11.0 | 3.0 | 12.3 | 12.0 | 12/15 | LD2X Short |
| 0.45 60°ES | 7.5/110 | 1.28 | 1.63 | 73 | 11.5 | 3.5 | 15.4 | 15.0 | 12/15 | LD2X Short |
| 0.55 80°EH | 7.8/115 | 1.54 | 1.96 | 76 | 12.0 | 5.5 | 18.5 | 18.0 | 18 | LD2X Short |
| **Boiler 18/25 RDB 2.2** | | | | | | | | | | |
| 0.50 80°ES | 8.5/125 | 1.58 | 1.96 | 75 | 11.0 | 4.5 | 18.5 | 18.0 | 18 | LD2SX Short |
| 0.60 60°ES | 8.5/125 | 1.84 | 2.33 | 77 | 12.0 | 2.5 | 22.1 | 21.5 | 21.5 | LD2SX Short |
| 0.75 80°ES | 7.5/110 | 2.15 | 2.72 | 82 | 12.0 | 3.75 | 25.7 | 25.0 | 25 | LD2SX Short |
| **Boiler 25/32 RDB 2.2** | | | | | | | | | | |
| 0.75 80°ES | 7.5/110 | 2.15 | 2.72 | 80 | 11.5 | 4.5 | 25.7 | 25.0 | N/A | T2 Short |
| 0.75 80°ES | 10/147 | 2.37 | 3.0 | 81 | 12.0 | 4.0 | 28.3 | 28.5 | N/A | T2 Short |
| 0.85 80°EH | 9.5/140 | 2.58 | 3.27 | 83 | 12.5 | 4.5 | 30.8 | 32.0 | N/A | T2 Short |




**IMPORTANT: Debris from the system can damage the boiler and reduce efficiency. Failure to comply with the guidelines for the use of water treatment with the appliance will invalidate the appliance warranty.**

**FLUSHING (Central Heating):**

1 ▸ Switch off the boiler.
- ▸ Open all radiator valves/drain cocks (C) and drain the system while the appliance is hot.
- ▸ Close drain cocks (C).

2 ▸ Add a suitable flushing agent and refill the system at the correct strength for the system condition in accordance with the manufacturer's instructions.
- ▸ Vent the boiler (there are two vent points (A) at the top of the secondary heat exchanger (only one may be in use, the other may be obscured by side fluing) and one on the flow pipe .
  Always vent (A) and the vent screw (B) on the pump and all radiators.
- ▸ Run the boiler/system at normal operating temperature for the time stated by the flushing agent manufacturer.

3 ▸ Drain and thoroughly flush the system and boiler (C) to remove the flushing agent and debris.

**INHIBITOR (Central Heating):**

4 ▸ Check drain cocks and manual air vents are closed and all radiator valves are open.

5 ▸ Add a suitable inhibitor, (or combined inhibitor/anti-freeze if the system is exposed to freezing conditions) to the heating system in accordance with the manufacturers instructions.

*The inhibitor or combined inhibitor/anti-freeze must not cause damage to the materials within the boiler (mild steel, stainless steel, copper and brass) and any other materials/components within the system.*

- ▸ Fill the system to between 1 and 2 bar via a WRAS approved filling loop. Check the system pressure during venting and repressurise if necessary.

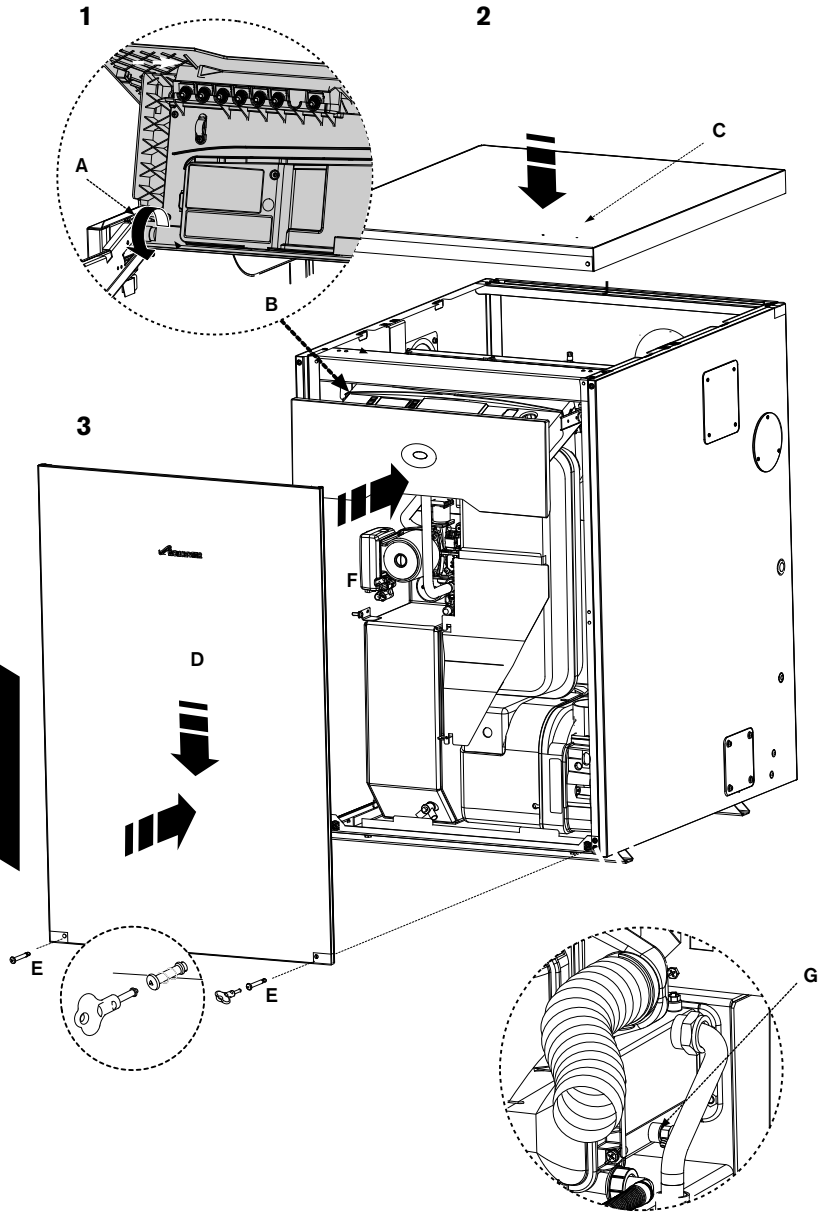
6 ▸ Vent the boiler, there are two vent points (A) at the top of the secondary heat exchanger, and one in the flow pipe.
Always vent (A) and the vent screw (B) on the pump and all radiators; retighten vents when complete.

7 ▸ Record the date when the inhibitor was added to the system on the guarantee card.

**NOTE:** *The concentration level of inhibitor in the system should be checked every 12 months or sooner if system content is lost.*

*The addition of sealing agents to the system water is not advised as this can cause problems with deposits left in the heat exchanger and invalidate the appliance and heat exchanger warranty .*

## FINISHING COMMISSIONING - APPLIANCE




1 ▸ Rotate the control box (A) towards you.
▸ Slide back into position (B).

2 ▸ Refit the top panel (C) and press down to compress the seal when fitting the securing screws at each corner.

3 ▸ Push the front panel (D) up behind the top panel and push in at the base to secure with the screws (E) using the tool povided.

**Always apply pressure at the edges of the boiler panels when securing to avoid accidental damage.**

**Handover:**

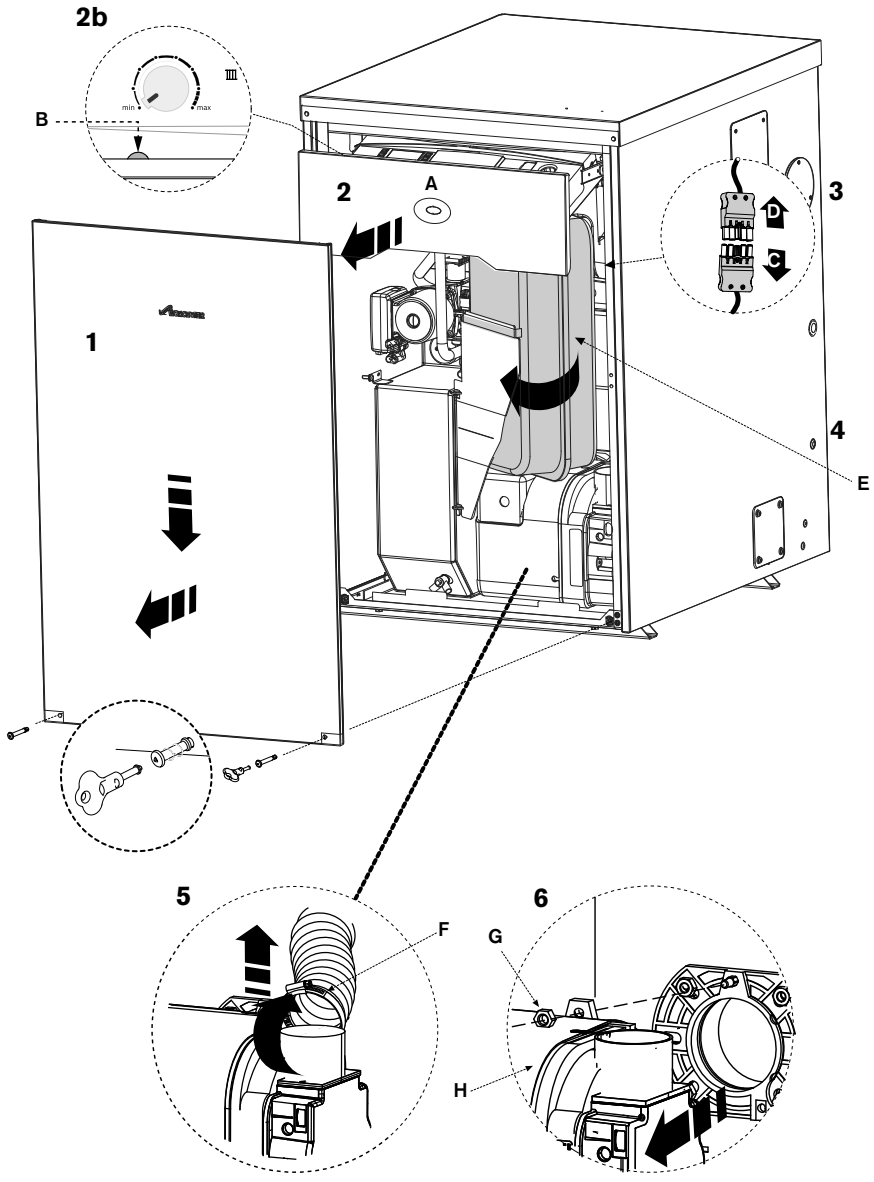
- Complete the Guarantee Registration Card, Combustion Record (at the rear of this manual) and CD11 or an equivalent commissioning form.
- Set up the controls and show the user how to operate all the controls shown in the User Guide and all system controls.
- Where applicable, instruct the customer how to repressurise the system.
- If the appliance is unused and exposed to freezing conditions, shut off all the mains supplies and drain the system and boiler.

***NOTE:*** *Release drain point (G) to drain the secondary heat exchanger.*

**CAUTION: ISOLATE THE WATER, ELECTRICITY AND OIL MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.**

**DO NOT USE PRESSURE WASHERS OR STEAM CLEANERS ON THIS APPLIANCE OR ITS CABINET.**

**WARNING: EXTERNAL EQUIPMENT OPERATED AT 230 VOLTS SHOULD NOT BE SERVICED OR REPAIRED UNDER ADVERSE WEATHER CONDITIONS**




**Routine servicing:**

*To maintain efficient boiler operation, the following should be carried out at least once a year:*

- Carry out a pre-service check and note any operational faults:
- **Pre-Service Check:**

1 ▸ Undo the screws at the base of the front panel using the tool provided and pull the panel out and down to remove.
Store safely away from the working area.

*Operate the appliance and system and note any faults which may need to be corrected during the service.*

2 ▸ Pull the control box (A) all the way forwards.

2b ▸ Switch into service mode at switch (B).

3 ▸ Unplug burner lead (C) from control box lead (D).

- An adapter lead is available to allow mains voltage service aids to be operated from the service connection. (Service lead Part No. 8 716 113 483 0).

4 ▸ Swivel the expansion vessel (E) on its support bracket out of the boiler taking care not to snag any electrical cables or kink the flexible hose.

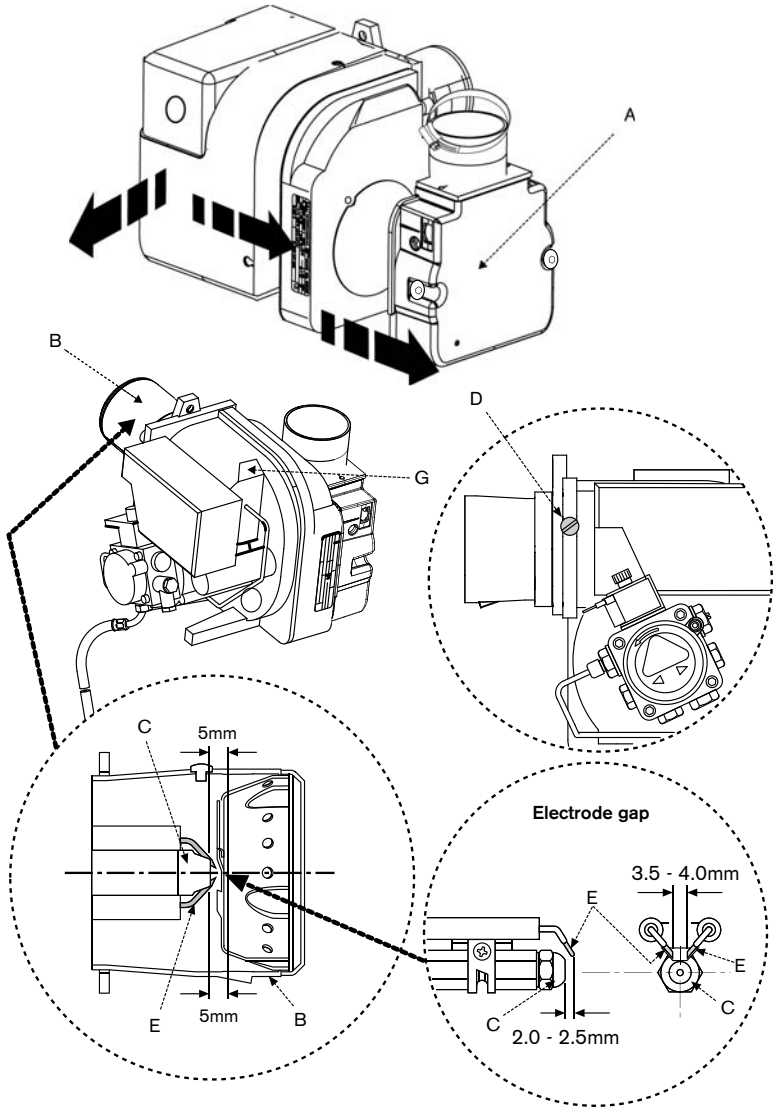
5 ▸ Loosen air duct pipe clip ( F ) and disconnect the air duct pipe.

6 ▸ Unscrew burner retaining nut (G) and remove the burner (L) and store safely away from the boiler.

*See the following instructions for detail of some of the service requirements listed below:*

- Check and clean the burner.
- Replace burner nozzle and flexible oil hose/s.
- Check and clean the baffle retainers.
- Check and clean the baffles.
- Check and clean the heat exchangers surfaces.
- Check the combustion chamber access door insulation board.
- Check that the flue system is unobstructed and clean as necessary.
- Clean or replace all oil filters.
- Check that the condensate system is not obstructed, clean and refill the condensate trap as necessary.
- **Sealed systems**: The PRV is a safety device and must be checked for correct operation.
  The expansion vessel pressure must be checked and adjusted if necesary.

## INSPECTION AND SERVICE




**Clean the Burner:**

- Loosen the 2 hex head screws and remove the air intake cover (A) and clear any debris from the air intake and air damper.
- Disassemble the burner to allow access to the fan impeller.
- Check the condition of the gaskets between these parts and replace if necessary.
- Note the position of the air damper adjustment and check the air damper moves freely.
- Clean both sides of the fan impeller and remove any debris from the burner housing.
- Check that the impeller rotates freely.
- Reassemble the components.
- Remove the combustion head (B) and thoroughly clean any deposits.

**IMPORTANT: Before removing or fitting a nozzle (C), loosen screw (D) and move the electrodes (E) forward.**

**After refitting check that the electrode gaps are correct, as shown opposite.**

- Remove the nozzle (C).
- Check the nozzle holder is clear of any debris and clean if necessary.
- Fit a new oil atomising nozzle (C).

**DO NOT dismantle the nozzle and DO NOT clean the nozzle tip.**

- Check the electrodes (E) and reset if necessary as shown opposite.

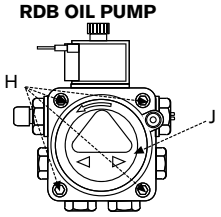
*NOTE: The 12/18 model has a brass air deflection washer and locating circlip behind the nozzle. These must be in place for the correct operation of the burner.*

- Refit the combustion head (B). Check that the nozzle (C) is central in the combustion head (B) and the head settings are as shown. Ensure that the photocell is lined up with the sight hole.
- Withdraw the photocell (G) from its housing and wipe clean.
- Remove the oil pump internal filter, clean in kerosene and reassemble.

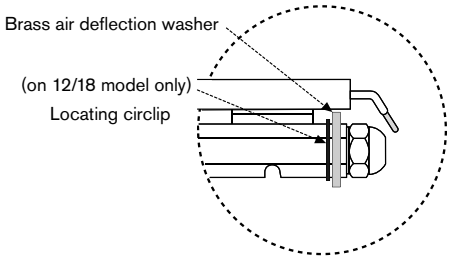
*The internal filter is accessed by removing screws (H) and the oil pump cover ( J ).*

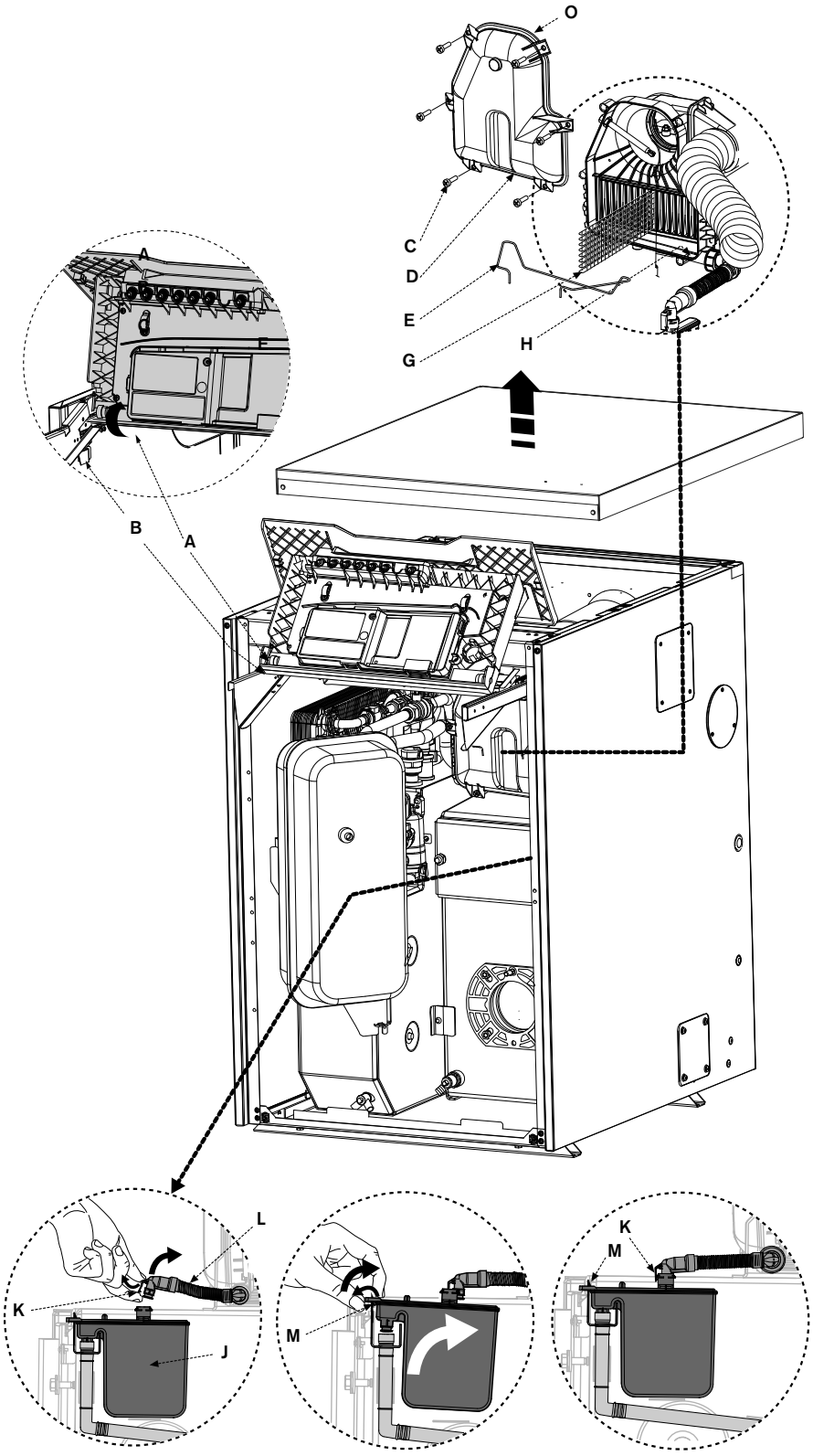
- **Replace the standard flexible oil line/s at every annual service to prevent the possibility of leakage due to ageing.**
- Reassemble the burner components.
- Check the O-ring seal located around the combustion head and replace if necessary. **This seal must be in good condition, seal failure will cause flue gases to escape into the room.**

**RIELLO**
**RDB OIL PUMP**




H - Retaining screws - cover
J - Cover - oil pump






**External oil filter:**

- Remove the paper element from the external oil filter and replace it. If the filter contains a washable element, thoroughly clean in kerosene and reassemble into the filter.

**Clean the boiler:**

**Manifold access:**

- Remove top cover by releasing the screws at each corner and lift free.

1 ▸ Pull the control box (A) all the way forwards.

- Depess the two levers (B), one on either side, to release the control box and pull fully forward and swivel control box upwards.

2 ▸ Release screws (C) to remove the flue manifold access cover (D) and clear any debris.

- Check the flue system and clean if necessary.
- Remove the baffle retainer (E) and baffles ( G ) from the secondary heat exchanger.
- Check and clean the secondary heat exchanger surfaces.

***NOTE:*** *Do not use wire brushes and cleaning agents to clean the stainless steel secondary heat exchanger components.*

- Check the condensate route (H) is clear.
- The condensate trap ( J ) should be removed and checked for debris.
- Release the pipe locking tab (K) and disconnect the flexible pipe ( L ) from the top of the trap and move the flexible pipe up away from the trap.
- Release the trap locking tab (M) and move the trap up and back to remove from its mountings.
- Clean the trap by flushing with water.
- Check the O ring seals and replace if necessary, grease the seals with a solvent free grease.
- Refit the trap making sure that the locking tabs are locked in place.
- Pour 500ml of water into drain (H) to refill the condensate trap and check that the condensate discharge pipe is discharging.
- Clean the secondary heat exchanger baffles (G) if necessary and refit correctly.
- Refit the baffle retainer (E).
- Check the seal on the manifold access cover (O) and replace if necessary.
- Refit the flue manifold access cover (D) and secure with screws (C).

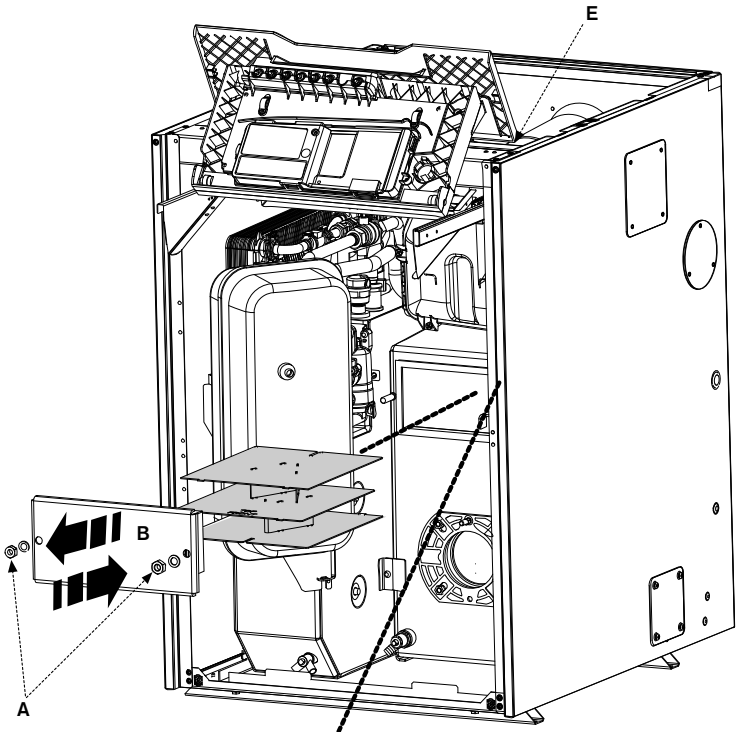
**Combustion chamber:**

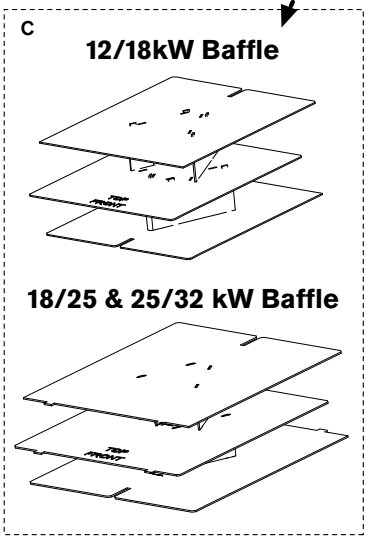
- Remove the retaining nuts and washers (A).
- Remove combustion chamber/baffle access door (B).
- Check the fibreglass rope seal on the combustion chamber/baffle access door (B) and replace if necessary.
- Remove the one piece baffle set (C), clean and check the condition of the baffles. Replace baffle set if considered to be badly corroded/degraded.
- Thoroughly clean all of the heat exchanger surfaces using a suitable brush and clear all loose debris from the combustion chamber.
- Check the condition of the combustion chamber/baffle access door insulation. If the insulation is damaged the door assembly must be replaced.
- Refit the one piece baffle set (C) making sure it is in the right location (D), correctly resting on the baffle rests (F) on either side of the combustion chamber and pushed securely into place.
- Refit combustion chamber door (B).

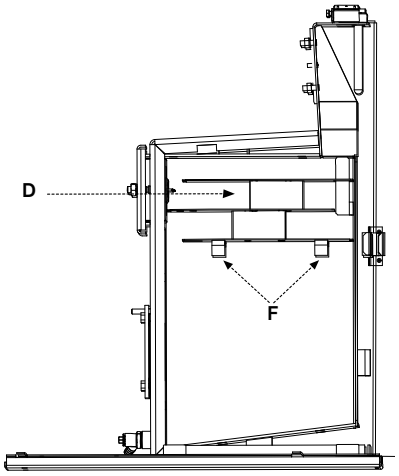
  **IMPORTANT:** Secure with nuts and washers (A) and tighten until the chamber door is firmly secured, do not over tighten the nuts.

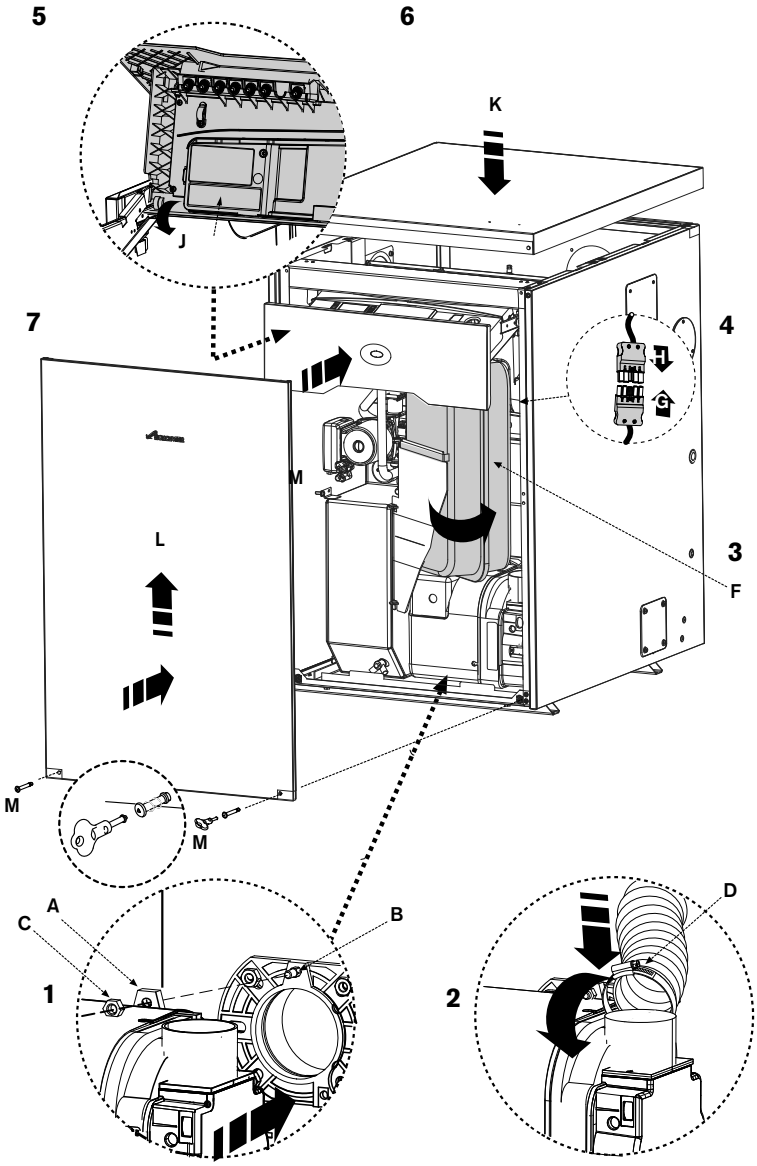
**Fire valve:**

- Check that the oil supply pipe has a fire valve fitted externally to the building with the fire valve sensor located within the appliance case. A fire valve sensor clip (E) is provided for this purpose.






**NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE USING 28sec KEROSENE:**

| NOZZLE | OIL PUMP PRESSURE (Bar/Psi) | FUEL FLOW RATE | | APPROX. FLUE GAS TEMP °C | $\%CO_2$ | APPROX. AIR SETTING | INPUT (APPLIANCE) | OUTPUT (APPLIANCE) | AIR DAMPER DISC SETTING | BURNER HEAD |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Kg/h | l/h | | | | kW | kW | | |
| **Boiler 12/18 RDB 2.2** | | | | | | | | | | |
| 0.35 80°SR | 9/132 | 1.04 | 1.32 | 64 | 11.0 | 3.0 | 12.3 | 12.0 | 12/15 | LD2X Short |
| 0.45 60°ES | 7.5/110 | 1.28 | 1.63 | 73 | 11.5 | 3.5 | 15.4 | 15.0 | 12/15 | LD2X Short |
| 0.55 80°EH | 7.8/115 | 1.54 | 1.96 | 76 | 12.0 | 5.5 | 18.5 | 18.0 | 18 | LD2X Short |
| **Boiler 18/25 RDB 2.2** | | | | | | | | | | |
| 0.50 80°ES | 8.5/125 | 1.58 | 1.96 | 75 | 11.0 | 4.5 | 18.5 | 18.0 | 18 | LD2SX Short |
| 0.60 60°ES | 8.5/125 | 1.84 | 2.33 | 77 | 12.0 | 2.5 | 22.1 | 21.5 | 21.5 | LD2SX Short |
| 0.75 80°ES | 7.5/110 | 2.15 | 2.72 | 82 | 12.0 | 3.75 | 25.7 | 25.0 | 25 | LD2SX Short |
| **Boiler 25/32 RDB 2.2** | | | | | | | | | | |
| 0.75 80°ES | 7.5/110 | 2.15 | 2.72 | 80 | 11.5 | 4.5 | 25.7 | 25.0 | N/A | T2 Short |
| 0.75 80°ES | 10/147 | 2.37 | 3.0 | 81 | 12.0 | 4.0 | 28.3 | 28.5 | N/A | T2 Short |
| 0.85 80°EH | 9.5/140 | 2.58 | 3.27 | 83 | 12.5 | 4.5 | 30.8 | 32.0 | N/A | T2 Short |

**Re-commission the burner:**

1 ▸ Align burner combustion head into the boiler collar.

▸ Locate the burner retainer (A) over the threaded lug on the collar (B), push the burner firmly into the flange and secure in place with the retaining nut (C). Tighten sufficiently but do not over tighten.

▸ Check that the burner is seated correctly on its mounting flange and that the oil hose/s are routed correctly as shown on page 27.

**IMPORTANT: Ensure the o-ring seal between the burner collar and mounting flange is in good condition to prevent flue gases escaping from the combustion chamber into the room.**

2 ▸ Refit the flexible air duct and secure with clip (D).

3 ▸ Swivel the expansion vessel (F) back into position taking care not to kink the flexible hose or snag electric cables.

4 ▸ Plug burner lead (G) into connector (H).

▸ Connect an oil pressure gauge to the oil pump, run the burner and check the oil pressure is correct for the required boiler output. Check that the smoke reading is between 0 and 1, if the smoke reading is above 1 check the air setting. If the air setting is correct check that the burner has been reassembled correctly. Allow the boiler to warm up then check the combustion settings are correct as indicated in the table below, adjust the $CO_2$ if necessary using the air shutter. When the combustion is correct turn off the boiler, remove the pressure gauge and refit the blanking plug and plastic cover.

**Refit control box:**

5 ▸ Rotate the box towards you ( J ).

▸ Slide control box drawer back into position.

**Refit panels:**

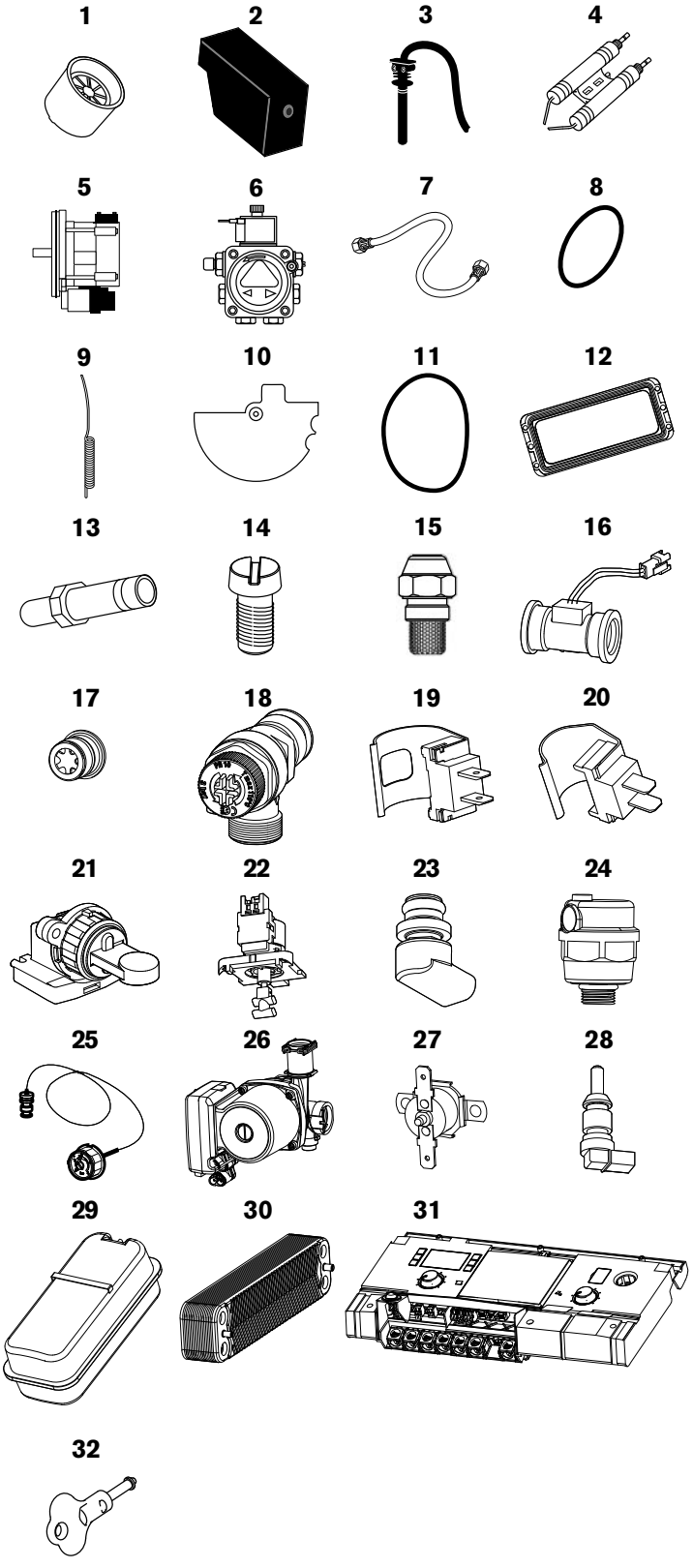
6 ▸ Refit the top panel (K) and press down to compress the seal when fitting the securing screws at each corner.

7 ▸ Push the front panel (L) up behind the top panel and push in at the base to secure with the screws (M) using the tool povided.

**Always apply pressure at the edges of the boiler panels when securing to avoid accidental damage.**

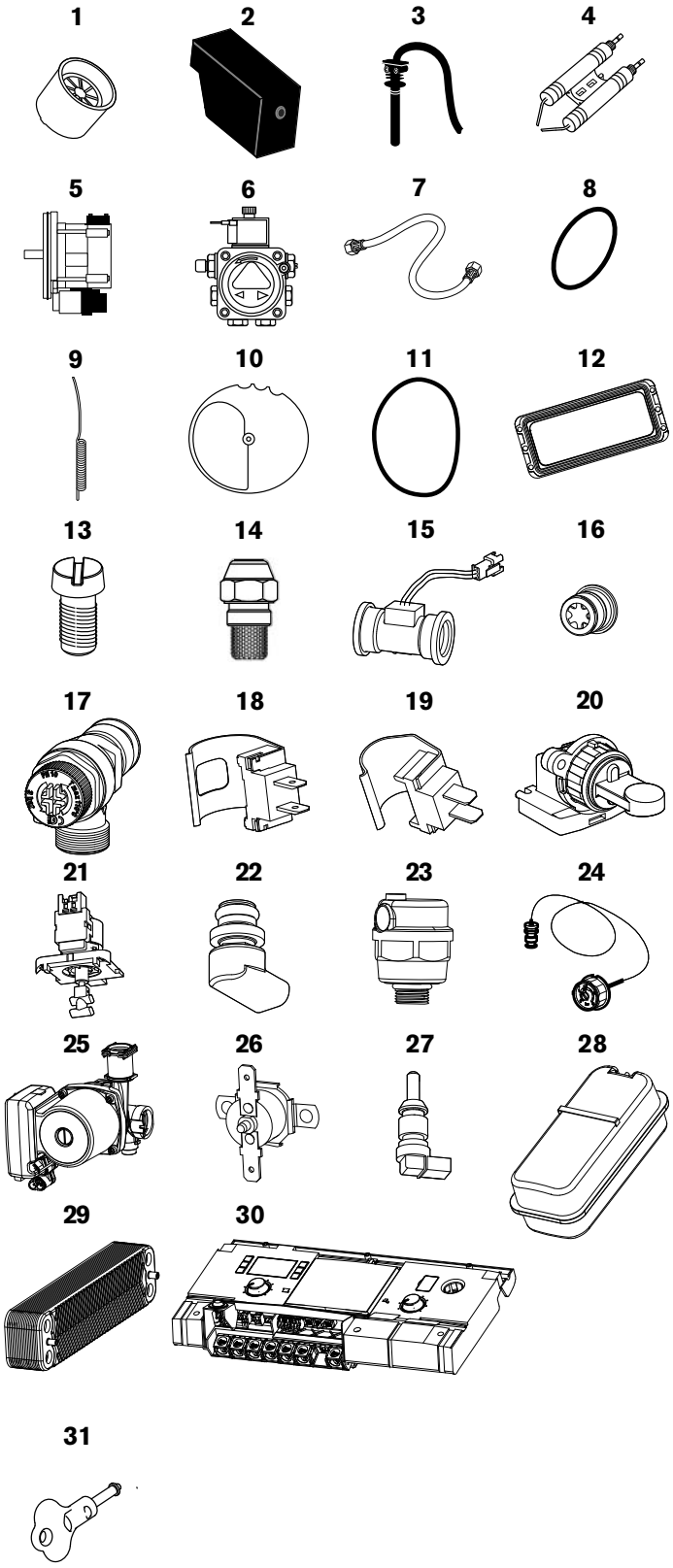
**After service handover:**

▸ Make a note of the date of any water treatment.
▸ Set the controls back to the users requirements.
▸ Complete the service interval record at the back of this manual and a CD11 or an equivalent form.
▸ If the appliance is unused and exposed to freezing conditions; shut off all the mains supplies, isolate the boiler and drain the system and boiler, including the secondary heat exchanger.



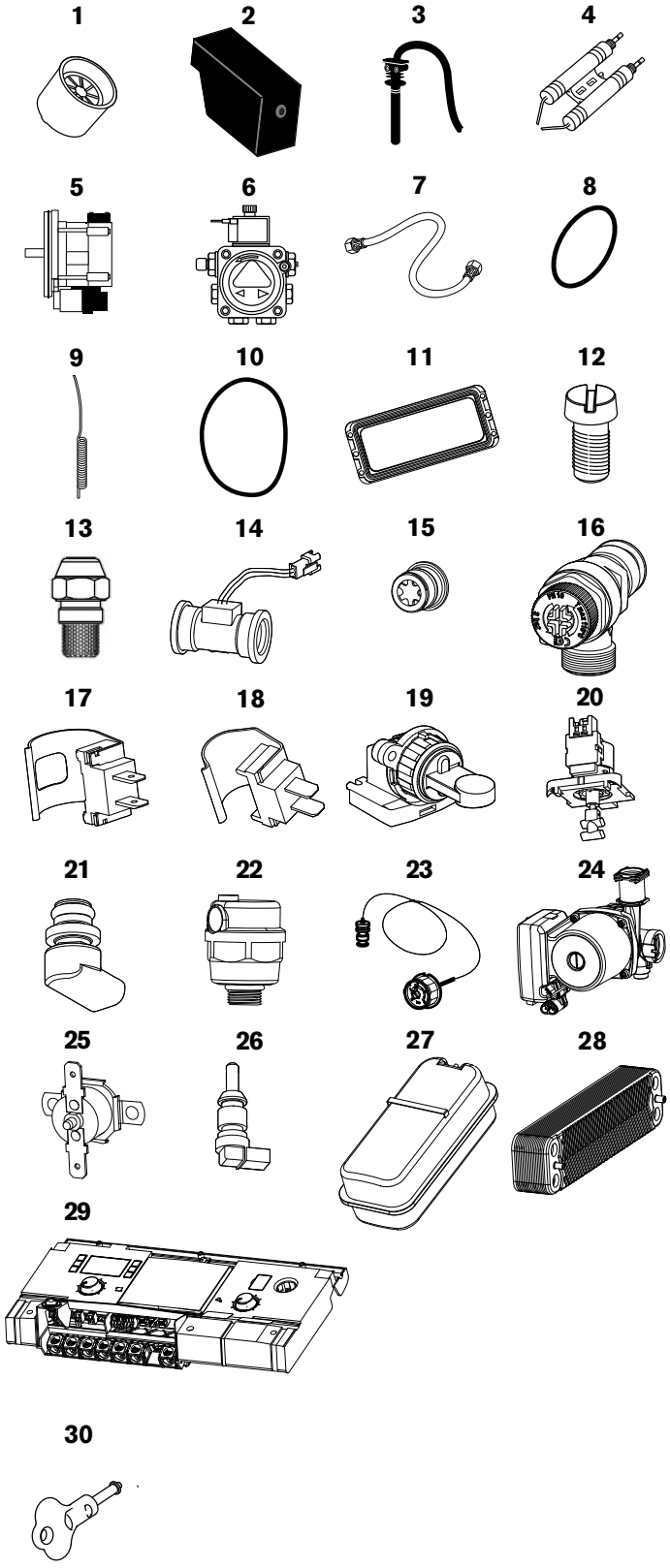

## SHORT PARTS LIST 12/18

| | |
|---|---|
| **1 Combustion head - LD2X SH12/18** | 8 716 112 731 0 |
| **2 Control box MO535 MRF** | 8 718 682 250 0 |
| **3 Photocell** | 8 716 109 193 0 |
| **4 Ignition electrode** | 8 716 109 211 0 |
| **5 Motor** | 8 716 110 522 0 |
| **6 Oil pump - Riello RDB** | 8 718 689 342 0 |
| **7 Flexible oil hose kit** | 8 716 115 310 0 |
| **8 Burner 'O' ring** | 8 716 109 341 0 |
| **9 Manual reset flue thermostat** | 8 716 107 624 0 |
| **10 Air damper disc 12 15-18** | 8 718 690 377 0 |
| **11 Manifold access cover seal** | 8 716 107 536 0 |
| **12** Secondary Heat Exchanger manifold gasket | 8 718 690 792 0 |
| **13 Nozzle holder** | 8 716 116 638 0 |
| **14 Flue sample point screw** | 8 718 682 081 0 |
| **15 Oil nozzle** | |
| 0.35 80° SR (12kW output) | 8 716 156 679 0 |
| 0.45 60° ES (15kW output) | 8 716 114 545 0 |
| 0.55 80° EH (18kW output) | 8 716 156 671 0 |
| **16 Flow turbine** | 8 717 002 132 0 |
| **17 Flow regulator 15 litre (Lime)** | 8 708 500 407 0 |
| **18 Pressure releif valve** | 8 718 681 163 0 |
| **19 18mm Pipe NTC** | 8 718 688 801 0 |
| **20 15mm Pipe NTC** | 8 716 010 809 0 |
| **21 Diverter valve assembly** | 8 716 106 845 0 |
| **22 Diverter valve motor** | 8 718 682 839 0 |
| **23 DHW Pressure relief valve** | 8 717 401 029 0 |
| **24 Auto air vent** | 8 718 684 401 0 |
| **25 Pressure gauge** | 8 718 689 357 0 |
| **26 Pump assembly 12/18 & 18/25** | 8 718 682 790 0 |
| **27 Manual reset tank thermostat** | 8 718 690 548 0 |
| **28 Wet sensor** | 8 718 684 323 0 |
| **29 Expansion vessel** | 8 716 107 660 0 |
| **30 Plate heat exchanger** | 8 716 108 212 0 |
| **31 Control box** | 8 718 689 485 0 |
| **32 1/4 Turn cabinet key** | 8 716 114 013 0 |




## SHORT PARTS LIST 18/25

| | |
|---|---|
| **1 Combustion head - LD2SX 18/25** | 8 718 682 170 0 |
| **2 Control box MO535 MRF** | 8 718 682 250 0 |
| **3 Photocell** | 8 716 109 193 0 |
| **4 Ignition electrode** | 8 716 109 211 0 |
| **5 Motor** | 8 716 110 522 0 |
| **6 Oil pump - Riello RDB** | 8 718 689 342 0 |
| **7 Flexible oil hose kit** | 8 716 115 310 0 |
| **8 Burner 'O' ring** | 8 716 109 341 0 |
| **9 Manual reset flue thermostat** | 8 716 107 624 0 |
| **10 Air damper disc 18 21.5-25** | 8 718 690 458 0 |
| **11 Manifold access cover seal** | 8 716 107 536 0 |
| **12 Secondary Heat Exchanger gasket** | 8 747 009 725 0 |
| **13 Flue sample point screw** | 8 718 682 081 0 |
| **14 Oil nozzle** | |
| 0.50 80° ES (18kW output) | 8 716 156 671 0 |
| 0.60 60° ES (21.5kW output) | 8 716 156 680 0 |
| 0.75 80° ES (25kW output) | 8 716 109 387 0 |
| **15 Flow turbine** | 8 717 002 132 0 |
| **16 Flow regulator 20 litre (Beige)** | 8 717 002 135 0 |
| **17 Pressure releif valve** | 8 718 681 163 0 |
| **18 18mm Pipe NTC** | 8 718 688 801 0 |
| **19 15mm Pipe NTC** | 8 716 010 809 0 |
| **20 Diverter valve assembly** | 8 716 106 845 0 |
| **21 Diverter valve motor** | 8 718 682 839 0 |
| **22 DHW Pressure relief valve** | 8 717 401 029 0 |
| **23 Auto air vent** | 8 718 684 401 0 |
| **24 Pressure gauge** | 8 718 689 357 0 |
| **25 Pump assembly 12/18 & 18/25** | 8 718 682 790 0 |
| **26 Manual reset tank thermostat** | 8 718 690 548 0 |
| **27 Wet sensor** | 8 718 684 323 0 |
| **28 Expansion vessel** | 8 716 107 660 0 |
| **29 Plate heat exchanger** | 8 716 108 212 0 |
| **30 Control box** | 8 718 689 485 0 |
| **31 1/4 Turn cabinet key** | 8 716 114 013 0 |




## SHORT PARTS LIST 25/32

| | |
|---|---|
| **1 Combustion head - T2 SH 25/32** | 8 716 112 780 0 |
| **2 Control box MO535 MRF** | 8 718 682 250 0 |
| **3 Photocell** | 8 716 109 193 0 |
| **4 Ignition electrode** | 8 716 109 211 0 |
| **5 Motor** | 8 716 110 522 0 |
| **6 Oil pump - Riello RDB** | 8 718 689 342 0 |
| **7 Flexible oil hose kit** | 8 716 115 310 0 |
| **8 Burner 'O' ring** | 8 716 109 341 0 |
| **9 Manual reset flue thermostat** | 8 716 107 624 0 |
| **10 Manifold access cover seal** | 8 718 682 849 0 |
| **11 Secondary Heat Exchanger gasket** | 8 718 688 799 0 |
| **12 Flue sample point screw** | 8 718 682 081 0 |
| **13 Oil nozzle** | |
| 0.75 80° ES (25 & 28.5kW output) | 8 716 109 387 0 |
| 0.85 80° EH (32kW output) | 8 716 156 644 0 |
| **14 Flow turbine** | 8 717 002 132 0 |
| **15 Flow regulator 25 litre (Grey)** | 8 718 681 198 0 |
| **16 Pressure releif valve** | 8 718 681 163 0 |
| **17 18mm Pipe NTC** | 8 718 688 801 0 |
| **18 15mm Pipe NTC** | 8 716 010 809 0 |
| **19 Diverter valve assembly** | 8 716 106 845 0 |
| **20 Diverter valve motor** | 8 718 682 839 0 |
| **21 DHW Pressure relief valve** | 8 717 401 029 0 |
| **22 Auto air vent** | 8 718 684 401 0 |
| **23 Pressure gauge** | 8 718 689 357 0 |
| **24 Pump assembly 25/32** | 8 718 690 009 0 |
| **25 Manual reset tank thermostat** | 8 718 690 548 0 |
| **26 Wet sensor** | 8 718 684 323 0 |
| **27 Expansion vessel** | 8 716 107 660 0 |
| **28 Plate heat exchanger** | 8 716 108 212 0 |
| **29 Control box** | 8 718 689 485 0 |
| **30 1/4 Turn cabinet key** | 8 716 114 013 0 |

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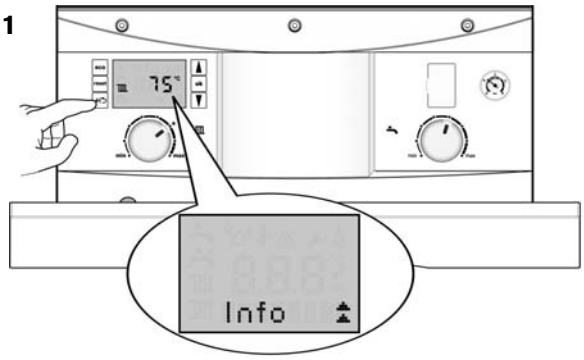


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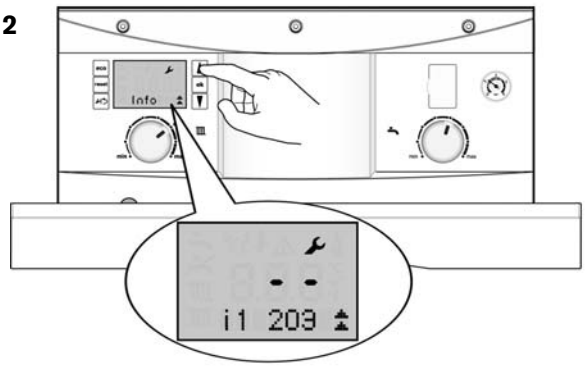



**Information Menu listing:**

| | | |
|---|---|---|
| **i1** | Current status | Every operation and mode of the boiler has a related boiler status code. The boiler status code is displayed on the screen as a 3 figure number. Refer to page 39 or error table for information on the boiler status code. |
| **i2** | Last error | This can be viewed during normal operation. Displays tha last diagnostic code with boiler status code. |
| **i3** | Maximum CH output | The maximum possible CH output is displayed in kW. |
| **i4** | Maximum DHW output | The maximum possible DHW output is displayed in kW. |
| **i6** | DHW flow rate | The screen displays the current DHW flow rate in 0.1l/m units. |
| **i7** | CH flow temperature set point | This is the temperature set point for the primary flow from the main heat exchanger. This will be zero during HW demand. |
| **i9** | Flow temperature | This is the actual temperature from the main heat exchanger displayed in real time (rounded to 0.5°C units). |
| **i10** | Maximal temperature | This is the current temperature from the 'maximal safety sensor' displayed in real time (rounded to 0.5°C units). The sensor is mounted on the top of the primary heat exchanger. |
| **i11** | DHW flow temperature | Current DHW flow temperature displayed in real time (rounded to 0.5°C units). |
| **i12** | DHW temperature setpoint | This is the thermal store temperature, selected via the Hot Water control knob on the fascia, displayed in real time (rounded to 0.5°C units). |
| **i13** | Thermal store current temperature | This is the thermal store current temperature (rounded to 0.5°C units). |
| **i14** | DCW inlet temperature | Current DCW inlet temperature displayed in real time (rounded to 0.5°C units). |
| **i15** | Out door temperature | This is the out door temperature displayed in real time (rounded to 0.5°C units). Only available if a Weather Compensation sensor has been fitted and Weather Compensation is active. |
| **i19** | Time inputs | This indicates the status of the optional fascia mounted controls:<br>***0 = CH off, DHW off***<br>***1 = CH off, DHW on***<br>***2 = CH on, DHW off***<br>***3 = CH on, DHW on*** |
| **i20** | Software version | CBS software version of main PCB. |
| **i21** | Software version | HIS software version of the HIS PCB. |
| **i22** | HCM number | HCM last 3 digits displayed:<br>***391 = 12/18kW***<br>***390 = 18/25kW***<br>***301 = 25/32kW*** |
| **i23** | HCM version number | For example '4' |

## FAULT FINDING & DIAGNOSIS
## INFORMATION MENU

**Selecting the Information Menu:**

The Information Menu is a 'read only' menu. Information about the boiler is displayed here, some of the values are updated in real time to give the current status of the boiler.

All menus time-out after 2 minutes and the display returns to the normal operation display, the display backlight turns off after another 30 seconds and goes into stand-by mode.

Double up or down arrows indicate that the menu can only be scrolled up or down, an up arrow combination indicates osition in the menu where options can be scrolled either up or down.

**To enter the Information Menu:**

1 ▸ Press the ⏎ button to enter the Information Menu.

- A 3 figure boiler status code will be displayed alongside the Information Menu number. Refer to page 39 for a desription of the boiler status codes.

2 ▸ Use the ▲ and ▼ arrow buttons to scroll through the menu items.

3 ▸ Press the ⏎ button again to exit the Information Menu.

## SERVICE MENU S

**Selecting Service Menus:**

1 ▸ Press and hold the [+/-] and [ok] buttons together for 1 second, the display will show Menu 1.

- Double up or down arrows indicate that the menu can only be scrolled up or down, an up and down arrow combination indicates positions in the menu where options can be scrolled either up or down.

2 ▸ Scroll up and down through the menus with the [▲] and [▼] arrow buttons on the right hand side of the display.

**Menu 1 system parameters:**

Initially Menu 1 will be displayed.

| | | |
|---|---|---|
| **1.W1** | Weather Compensation Functionality | Enable. |
| **1.W2** | Weather Compensation Functionality | Point A (@-10°C) |
| **1.W3** | Weather Compensation Functionality | Point B (@+20°C) |
| **1.W4** | Weather Compensation Functionality | System frost protection enable. |

**Menu 2 boiler parameters:**

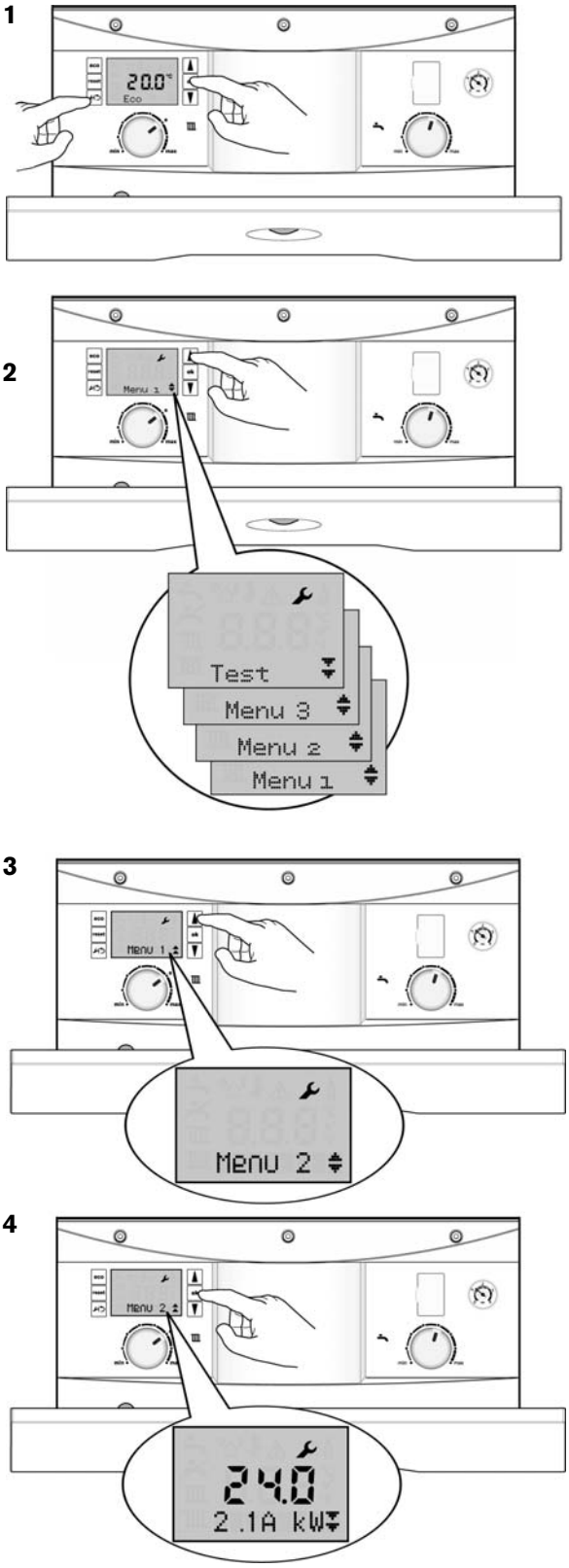
3 ▸ Select Menu 2 via the [▲] [▼] arrow buttons.

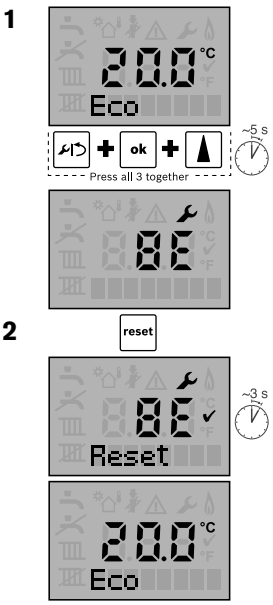
4 ▸ Press and hold the [ok] button for 1 second to enter Menu 2.

- The menu lists the boiler parameters, that can be adjusted in this menu.
- ▸ To modify the setting, select the desired menu option and press the [ok] button, the option will flash.
- ▸ Adjust the parameter using the [▲] [▼] arrow buttonsand press the [ok] button to confirm.
- A [✔] will display for 3 seconds to confirm the update of the new value.

| | | |
|---|---|---|
| **2.7A** | Demand/fault LED (blue light) activation | 0 = The blue light will only operate as a flashing fault alert.<br>1 = The blue light will operate as a boiler operation and fault alert.<br>This is set to 1 by default. |

***NOTE:*** *Menus 3 and Test are empty and are not used on this appliance.*






**Reset to factory settings:**
To reset changes made in Menu 2 back to the factory default setting:

***NOTE:*** *Any changes made to Menu 1 are not reset by these actions.*

1 ▸ Press and hold the [↩] [ok] and [▲] buttons for at least 5 seconds. The screen will then display code BE with the spanner symbol.

2 ▸ Press the [reset] button and 'reset' will be displayed with the tick symbol for 3 seconds. After 3 seconds the display will revert to the normal operation screen.

**Locking Error:**
Should a fault develop with this boiler (or the system), the boiler will enter into a Locking or Blocking condition.

**Locking condition:**

- The boiler display will flash a warning triangle.
- An alpha numeric **fault code** will be displayed indicating the fault group.
- A 3 digit **cause code** will flash on the display during a Locking error.

Manual intervention is required following clearance of the fault.

▸ Press the [reset] reset button on the boiler fascia.

**Fault Codes - Locking error:**

| Fault code | Cause code | Description | Reset type | Possible cause |
|---|---|---|---|---|
| 9U | 233 | BCM (Boiler Control Module) | Reset button | Code plug missing or defective. |
| E2 | 222 | Flow sensor short circuit | Reset button | Flow sensor shorted or damaged. |
| | 223 | Flow sensor open circuit | Reset button | Flow sensor disconnected or damaged. |
| E5 | 218 | Flow temperature too high | Reset button | Primary sensor overheated. |
| | 332 | Primary flow has exceeded 105°C | Reset button | Primary sensor overheated. |
| E9 | 219 | Safety temperature too high | Reset button | The main heat exchanger has overheated. Maximum temperature 105°C. |
| | 220 | Safety sensor short circuit | Reset button | Maximum temperature sensor on the main heat exchanger has failed. |
| | 221 | Safety sensor open circuit | Reset button | Maximum temperature sensor on the main heat exchanger has not been recognised. |
| | 210 | Max temperature thermostat activated | Reset button | Flue gas or tank thermostat overheat. Reset the overheat thermostat before resetting the appliance. |
| F0 | 239<br>241-255<br>259<br>262<br>267<br>279<br>290 | Internal error | | Probable PCB fault. |
| | 278 | Sensor test failed | Reset button | On power up all safety sensors are checked. Check has failed. |

**Blocking Error:**
Should a fault develop with this boiler (or the system), the boiler will enter into a Locking or Blocking condition.

**Blocking condition:**

- The boiler will stop operating and no fault code will be displayed.
- An alpha numeric **fault code** is accessed in the info menu by pressing the spanner/return button.

***NOTE:*** *Unlike a Locking error, during a Blocking error (or normal operating status), a fault code is not automatically displayed.*

- A 3 digit **cause code** is also accessed in the info menu by pressing the spanner/return button.
- The condition will clear automatically when the associated fault clears e.g. waiting for an area to cool.
- In some cases a Blocking error has a defined time durationprior to changing to a Locking condition.

**Fault Codes - Blocking error:**

| Fault code | Cause code | Description | Possible cause |
|---|---|---|---|
| D4 | 271 | Temperature difference between flow and safety sensors exceeds limit | The temperature of the primary flow and the safety sensor on the main heat exchanger should be within 15°C of each other. |
| E9 | 276 | Flow temperature exceeds 95°C | Primary overheat - boiler waits for temperature to reduce; if not it becomes a Locking error. |
| | 277 | Safety temperature exceeds 95°C | Main heat exchanger safety sensor overheat - boiler waits for temperature to reduce; if not it becomes a Locking error 219. |
| No code | 212 | Safety or flow temperature rises too high | Air lock or reduced water content. |
| | 380 | Inlet DCW temperature higher than DHW outlet temperature | The output is blocked until the inlet temperature drops below the output temperature. |
| | 359 | DHW outlet or storage tank exceeds 90°C | Pump and burner are blocked until temperature drops to < 89°C. |
| F0 | 263 | Appliance powered off with Locking fault present | Locking fault present when powered off. |

**Tank offset chart**

| Demand conditions: | Comfort setting | Eco setting |
|---|---|---|
| With no other demands | 8 | 10 |
| With medium DHW flow rate | 4 | 8 |
| With DHW burn | 4 | 8 |
| With CH burn | 6 | 6 |

NB: The demands run in parallel therefore the tank can demand during a DHW demand and will reheat the tank, (e.g. during a low flow rate DHW demand). Likewise a greater than 10 l/min DHW demand during the tank scavenge period will fire the burner to satisfy the demand.

If DHW is OFF on the programmer and/or there is 0 volts on DHW LR then the appliance will still supply DHW using the heat stored in the tank, but it will not reheat the tank, therefore the amount of water available is limited but is adequate for washing up, filling basins etc.

The 3WV rests in DHW position unless there is a current CH demand with no DHW or tank demand.

DHW and tank demands override any CH demand, if the burner is ON for CH and a DHW/tank demand starts that requires a burn, the burner will remain ON whilst the demand transfers over to DHW.

NB: Numbers in square brackets are the cause code of the current appliance operation, visible in the service menu slot 1 (11),

**Key:**

**Tank** Heatslave internal thermal store.

**3WV** 3 way valve (diverter valve).

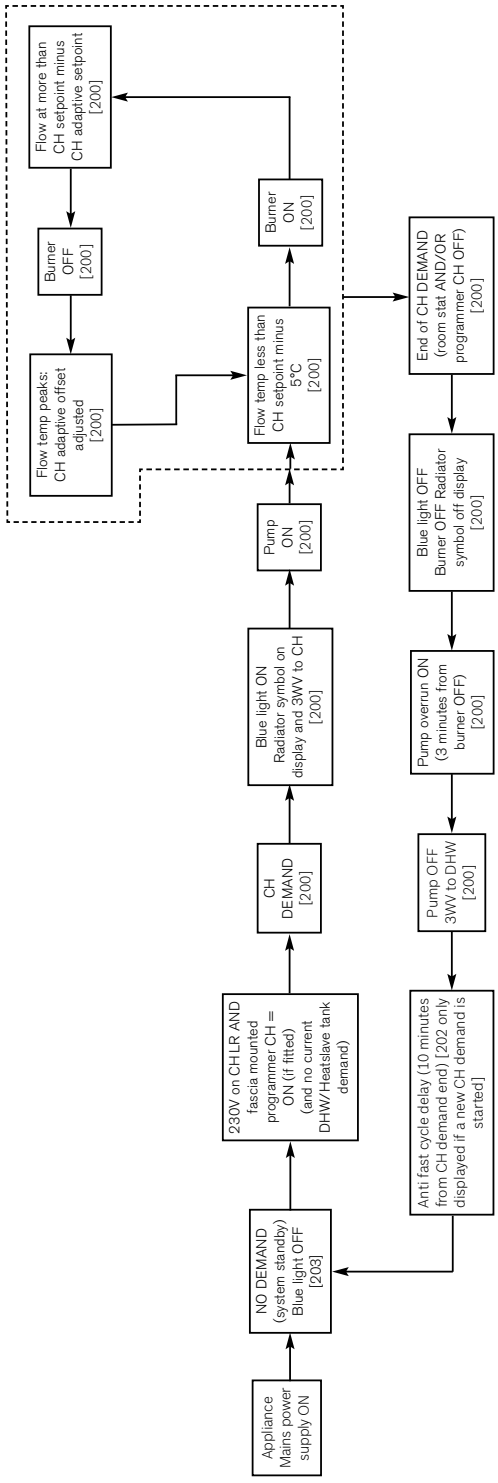
**PHE** Primary heat exchanger.

**Tank setpoint** The target temperature for the tank = the DHW fascia control knob setting.

**Tank offset** The amount the tank can cool before a tank reheat demand is triggered.

**Tank adaptive offset** The learnt value for switching the burner off so that the tank peak temp after scavenging heat from the PHE after burner shut down = tank setpoint.

The appliance will adjust this value during operation so that the tank setpoint is achieved automatically (this will take a few tank reheat cycles), after any burner output changes or if the burner output drops between services.




NB: Numbers in square brackets are the cause code of the current appliance operation, visible in the service menu slot 1 (i1),

**Key:**

**3WV** 3 way valve (diverter valve).

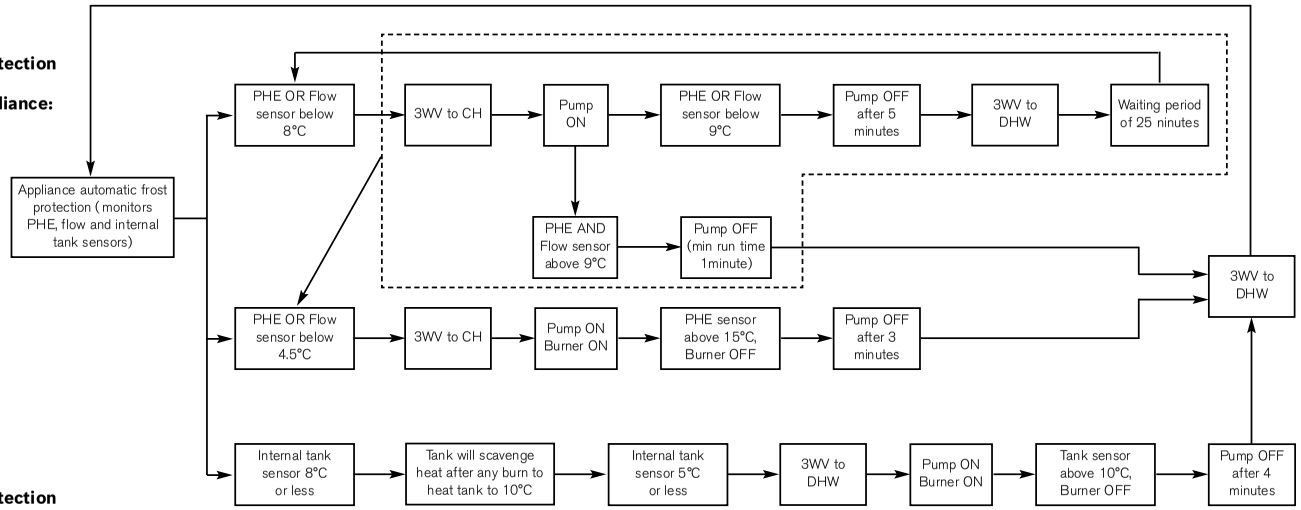
**CH setpoint** The target flow temperature set on the CH fascia control knob.

**CH adaptive offset** The learnt offset temperature applied to the CH flow so that the peak flow temperature after burner OFF = CH setpoint.

**Anti fast cycle delay** To stop the appliance short cycling if a room stat is intermittently calling or is poorly positioned, there is a 10 minute delay for CH demands timed from the last CH demand end.

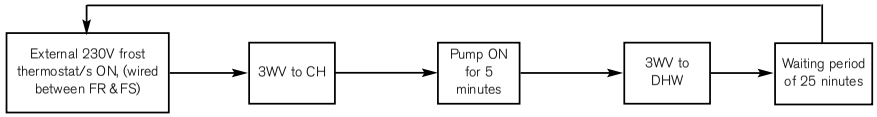
**Frost Protection**

**Appliance:**



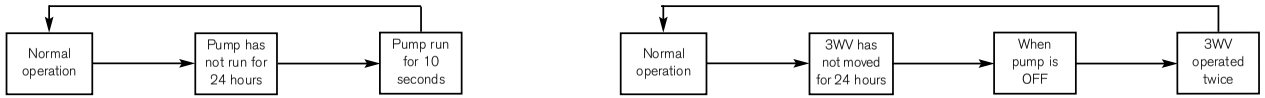

**Frost Protection**

**System:**

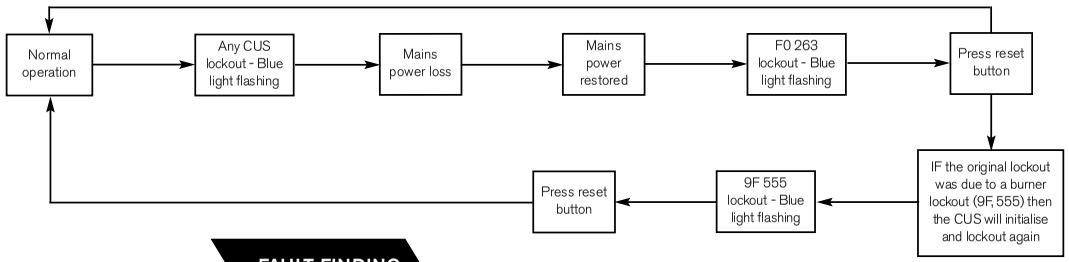



NB: During system frost protection the external frost stat only activates circulation of the water to protect the vulnerable pipework, the burner will be activated if either internal sensor temperature drops below 4.5°C.
The cause code will be 203 and the blue light will be OFF during all frost protection functions.

**Component antiseize functions:**




**Power interruption during lockout**




**Key:**

**PHE** Primary heat exchanger.
**3WV** 3 way valve (diverter valve).
**FS** Appliance connection frost stat supply (230V)
**FR** Appliance connection frost stat return (230V)



FAULT FINDING & DIAGNOSIS
PROTECTION FUNCTIONS

**Solar compatability**

1. Normal operation: the tank will cool more slowly for the same DHW performance if the DCW is above normal DCW temperature, thus saving fuel.
2. Solar tank hot: therefore the burner will not be required at high DHW flow rate and the tank will boost the solar heated water if the temperature drops.
3. Solar tank will satisfy the DHW requirements: therefore the appliance allows the water to pass straight through without taking any action apart from monitoring the temperatures. To utilise the solar panels to their maximum potential, the solar tank thermostat will need to be set high and the Heatslave II DHW setting low.
4. Solar tank overheat: DCW above solar tank limit, appliance will not operate pump or burner and fault code will be displayed within the service menu.

**Burner diagnostic mode:**

Service/installation engineers only.

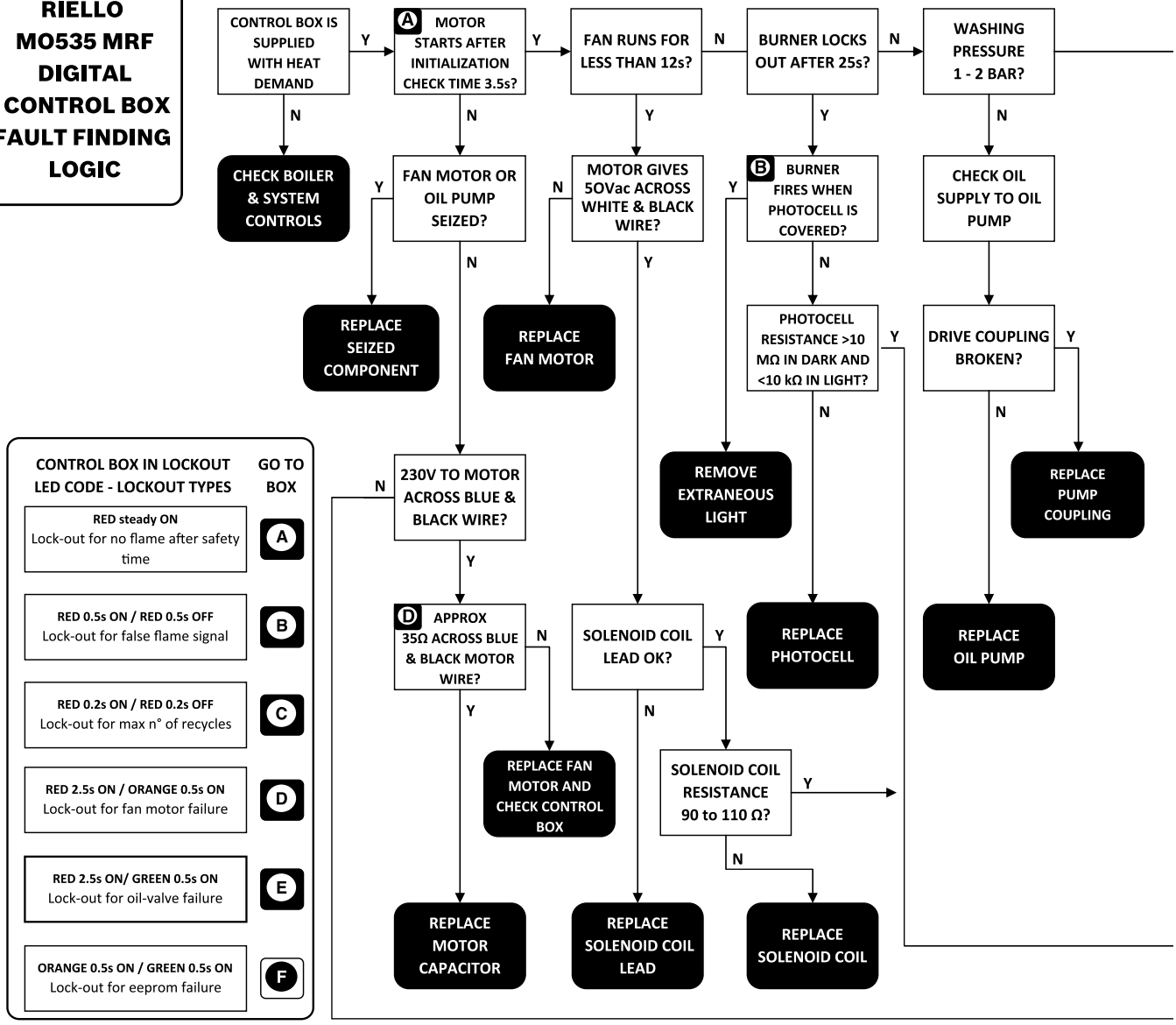
To access the Burner control box diagnostics or to use the burner reset button to reset the burner, the burner diagnostic mode must be activated as follows:




NB: The burner diagnostics mode can be manually exited at any time when the burner is locked out by holding down the service mode button whilst pressing the controls reset button.

**Fault code 9F 556:** If burner lockout is reset 5 times in one demand period using the fascia reset button the controls will lockout with a new code: 9F 556. This is to protect the buner components against over use of the reset and requires a power down of the appliance to reset. The burner control box also has this facility, if the reset button is operated 5 times the conrol box will not reset until the power has been interupted to the burner.

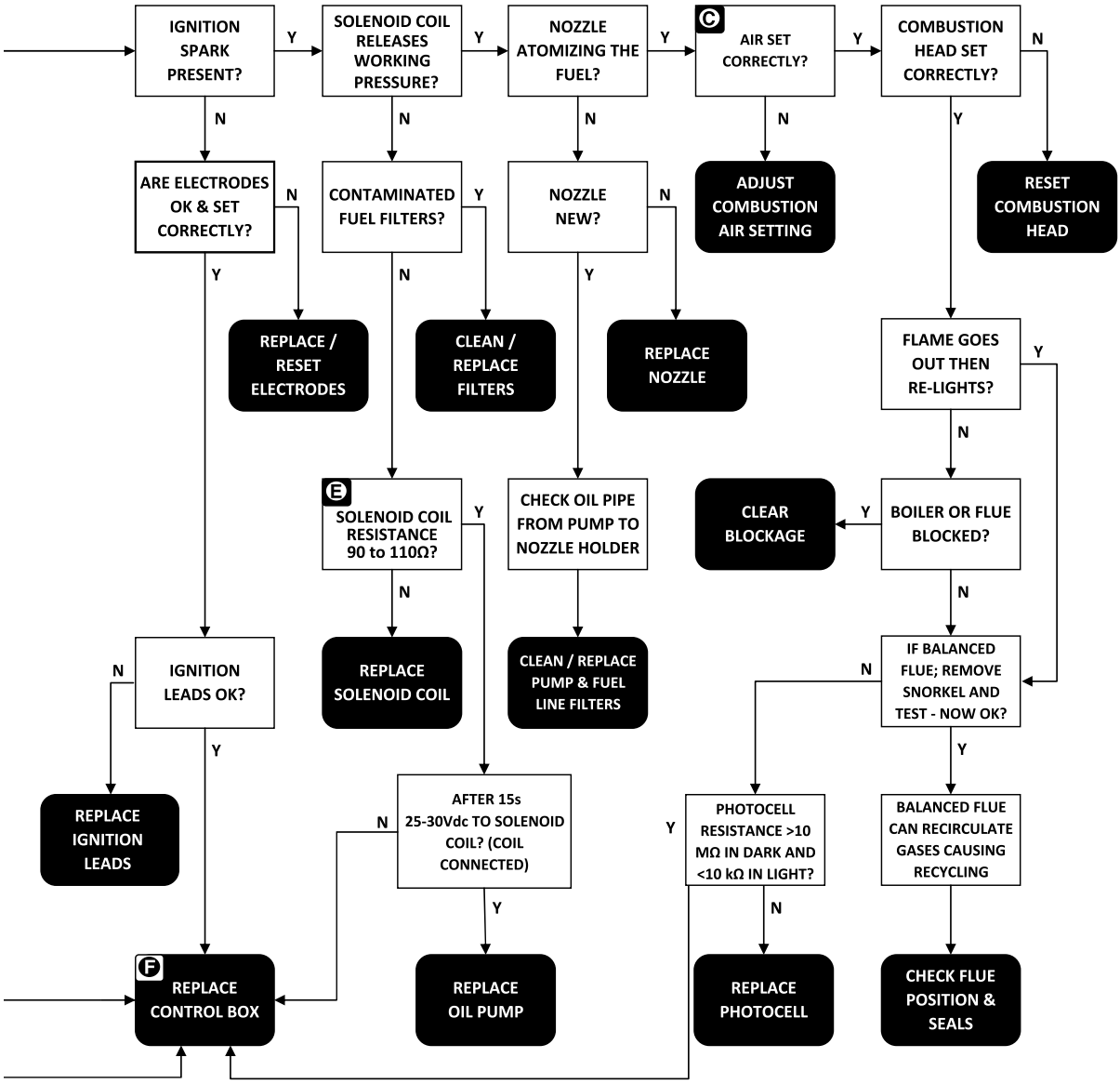
# RIELLO MO535 MRF DIGITAL CONTROL BOX FAULT FINDING LOGIC




These fault finding charts are provided to assist competent and suitably qualified engineers to locate and rectify faults. Whilst every effort has been taken to ensure the information given is correct and complete we cannot guarantee that every eventuality has been covered.
Worcester, Bosch Group cannot be held responsible for costs incurred by persons not deemed to be competent.

**CONTROL BOX IN STANDBY LED CODE - ANOMALY TYPES**

| | |
|---|---|
| GREEN 0.5s ON / GREEN 2.5s OFF Pre-heating time | Fit pre-heater link |
| GREEN 0.5s ON / RED 0.5s ON Anomaly for presence of extraneous light | Lock out after 25s |
| ORANGE steady ON Anomaly for presence of abnormal frequency supply | When anomaly appears during pre-purge, burner remains in pre-purge. When anomaly appears after ignition, burner remains in operation. When anomaly disappears burner restarts. |
| ORANGE 0.2s ON / GREEN 0.2s ON Control box internal error | |
| GREEN 0.2s ON / RED 0.2s ON Anomaly for reset push-button or remote reset failure | Remote reset / push button is activated for more than 60s. When anomaly appears burner doesn't stop |




**LIGHT DIAGNOSIS FEATURE (FLAME STRENGTH INDICATOR)**
**(see instruction manual)**

**Sequence for enable / disable**

**This can only be carried out during operation (burner running)**

- **Press and hold the reset button for 15-20 sec.**
  **LED - GREEN blink 2 times**
- **Release the reset button**
  **LED - GREEN OFF**
- **Press the reset button 1 time for enable or 2 times for disable**
  **LED - GREEN blink ON then OFF with every correct press and release**

**After 10 sec GREEN led blinking for times programmed (0.5s ON / 0.5s OFF)**

**LIGHT DIAGNOSIS - GREEN flashes**
**acceptable - 1 to 2**
**good - 3 to 4**
**very good - 5 to steady on**

# HEATSLAVE II BOILER COMMISSIONING CHECKLIST

***BOILER MODEL*** _____ ***SERIAL No.*** _____

| ***COMMISSIONING ENGINEER*** | ***COMMISSIONING CHECKS*** |
|---|---|
| COMPANY NAME: | PUMP PRESSURE (PSI): |
| ADDRESS: | $CO_2$ %: CO. ppm: |
| | SMOKE READING: |
| ENGINEERS NAME: | F.G.T.°C: |
| SIGNATURE: | FLUE PRESSURE: |
| DATE: | BURNER MODEL: |

***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 CONTROL TO HOT WATER | PROGRAMMER/TIMER ☐ | |
| HEATING ZONE VALVES | FITTED ☐ | NOT REQUIRED ☐ |
| THERMOSTATIC RADIATOR VALVES | FITTED ☐ | |
| AUTOMATIC BYPASS TO SYSTEM | FITTED ☐ | NOT REQUIRED ☐ |

***CONFIRM THE FOLLOWING:***

| | |
|---|---|
| THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE INSTRUCTIONS | YES ☐ |
| OIL TYPE USED IS KEROSENE | YES ☐ |
| THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE INSTRUCTIONS? | YES ☐ |
| THE SYSTEM CLEANER USED: | |
| THE INHIBITOR USED: | |
| 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:***

| | |
|---|---|
| WATER FLOW RATE | ☐ lts/min |

***CONFIRM THE FOLLOWING:***

| | | | |
|---|---|---|---|
| THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS | NO ☐ | YES ☐ | |
| THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS | NO ☐ | YES ☐ | |
| HAVE YOU RECORDED A CO/CO2 RATIO READING? | N/A ☐ | YES ☐ | $CO/CO_2$ RATIO |
| THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER | NO ☐ | YES ☐ | |

**IMPORTANT: LEAVE THIS MANUAL WITH THE HOMEOWNER**

## SERVICE INTERVAL RECORD

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

**Service Provider.**
Before completing the appropriate Service Interval Record overleaf, please ensure you have carried out the service as described in this manual. Always use Worcester, Bosch Group specified spare parts.

**SERVICE 1** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 2** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 3** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 4** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 5** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 6** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 7** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 8** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 9** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

**SERVICE 10** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi | $CO_2$%:

NOZZLE CHANGED? YES ☐ NO ☐

F.G.T. °C | FLUE PRESSURE:

COMMENTS

SIGNATURE

## If the boiler does not give complete satisfaction, before calling for a service engineer, the installer should check the following:

### General checks

1. Is there 230V across the boiler live and neutral terminals?
2. Is the polarity correct? (230V across live and earth, 0V across neutral and earth)
2. Is the air bled from the primary system?
3. Is the air bled from the oil supply?
4. If the flue sized and routed correctly?

### Boiler runs straight to lockout

1. Has the oil line been purged of air.
2. Where an air eliminator is used in conjunction with a top feed oil tank the non-return valve, (if fitted), should be removed from the oil dip pipe.

### Boiler locks out at the start of a demand (Heating off overnight for example)

1. If an air eliminator is being used, check that there are no leaks that allow air to be pulled into the oil supply.
2. If a two pipe oil supply is a being used, has a non-return valve been fitted to the inlet pipe? Refer to the instructions for guidelines.

### No domestic hot water

1. Is the mains water in connected to the 15mm isolation valve?
2. Is there a domestic hot water demand from the programmer and has the tank reached temperature?

### No domestic hot water (external programmer)

1. Is there 230V on 

?

2. Refit link between 

and 

. If the DHW now operates correctly there is a problem with the external programmer and/or its wiring.

### No central heating

1. Are both programmer and room thermostat on demand for central heating?
2. Is the room thermostat wired correctly?

### No central heating (external programmer)

1. s there 230V on 

?

2. Refit link between 

and 

. If the CH now operates correctly there is a problem with the external programmer and/or its wiring.

**UNDER NO CIRCUMSTANCES MUST AN APPLIANCE BE LEFT TO OPERATE WITH ANY CONTROL LINKED OUT OR OVER RIDDEN.**

### CONTACT INFORMATION

**WORCESTER, BOSCH GROUP:**

| | |
|---|---|
| TECHNICAL: | 0844 892 3366 |
| SERVICE: | 0844 892 3000 |
| SERVICE (EIRE): | 01494 0099 |
| SPARES: | 01905 752571 |
| LITERATURE: | 0844 892 9800 |
| TRAINING: | 01905 752526 |
| SALES: | 01905 752640 |
| WEBSITE: | worcester-bosch.co.uk |
| WEBSITE (EIRE): | worcester-bosch.ie- |

**Dedicated to heating comfort**

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