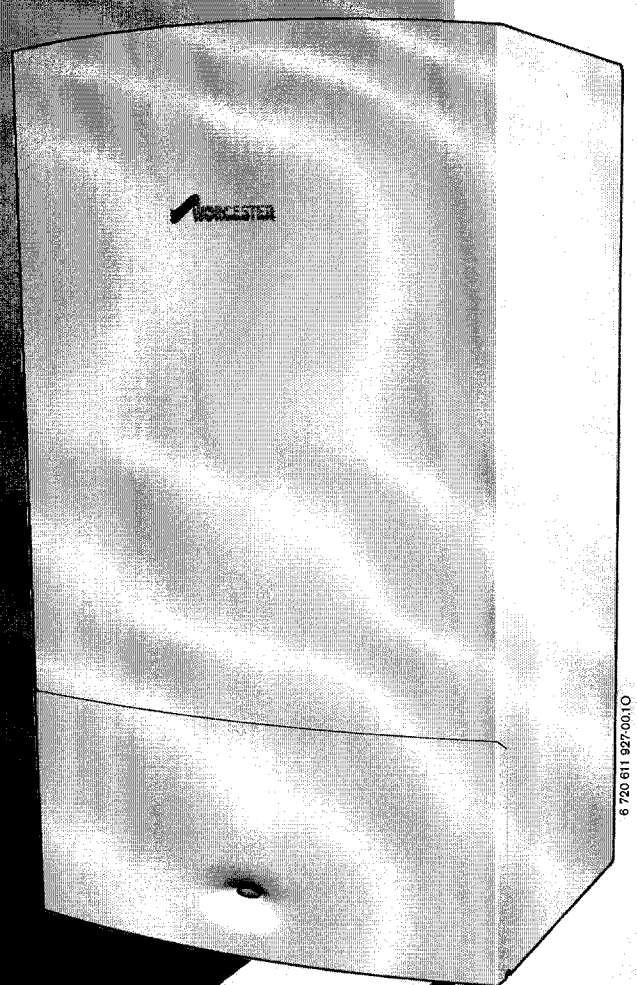
GREENSTAR CDi

WALL HUNG RSF GAS-FIRED CONDENSING COMBINATION BOILER

FOR SEALED CENTRAL HEATING SYSTEMS AND MAINS FED DOMESTIC HOT WATER



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THE APPLIANCE IS FOR USE WITH
NATURAL GAS OR L.P.G. (Cat II 2H3P TYPE C13 & C33)

NATURAL GAS:

WORCESTER GREENSTAR 25CDi GC NUMBER 47-311-92
WORCESTER GREENSTAR 30CDi GC NUMBER 47-311-93
WORCESTER GREENSTAR 35CDi GC NUMBER 47-311-94
WORCESTER GREENSTAR 40CDi GC NUMBER 47-311-95

LIQUID PETROLEUM GAS:

WORCESTER GREENSTAR 25CDi GC NUMBER 47-311-96
WORCESTER GREENSTAR 30CDi GC NUMBER 47-311-97
WORCESTER GREENSTAR 35CDi GC NUMBER 47-311-98
WORCESTER GREENSTAR 40CDi GC NUMBER 47-406-01

GB/IE

INSTRUCTION MANUAL

INSTALLATION, COMMISSIONING & SERVICING

benchmark

WORCESTER
Bosch Group

CONTACT INFORMATION

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WEBSITE:	www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811
www.fernox.com

SENTINEL 0151 420 9595
www.betzdearborn.com/sentinel

FLUE TERMINAL GUARD:

TOWER FLUE COMPONENTS
VALE RISE
TONBRIDGE
TN9 1TB

STORE THE APPLIANCE IN A DRY AREA PRIOR TO INSTALLATION.

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

INSTALLATION & SERVICING INSTRUCTIONS

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER BOSCH 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 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.

IF YOU ARE IN **ANY DOUBT** CONTACT WORCESTER BOSCH TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER BOSCH.

PLEASE LEAVE THESE INSTRUCTIONS, THE USER GUIDE AND THE COMPLETED BENCHMARK LOG BOOK OR A CERTIFICATE CONFIRMING COMPLIANCE WITH IS 813 (EIRE ONLY) WITH THE USER OR AT THE GAS METER AFTER INSTALLATION OR SERVICING.

ABBREVIATIONS USED IN THIS MANUAL:

Ø	Diameter
NG	Natural Gas
LPG	Liquid Petroleum Gas
CH	Central Heating
DHW	Domestic Hot Water
IP	Ingress Protection

SEDBUK Seasonal Efficiency of Domestic Boilers in the United Kingdom

SYMBOLS USED IN THIS MANUAL:


Domestic hot water


Central heating

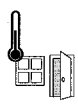

Cold water main supply


Electricity supply


Gas supply


Time clock CH only


Programmer/timer


Room thermostat


Wait time period

CONTENTS

SAFETY PRECAUTIONS

IF YOU SMELL GAS:

✖ **DON'T** SMOKE OR STRIKE MATCHES
✖ **DON'T** TURN ELECTRICAL SWITCHES ON OR OFF

✔ **DO** PUT OUT NAKED FLAMES
✔ **DO** OPEN DOORS AND WINDOWS
✔ **DO** KEEP PEOPLE AWAY FROM THE AREA AFFECTED
✔ **DO** TURN OFF THE CONTROL VALVE AT THE METER

✔ TELEPHONE YOUR GAS COMPANY

benchmark

A Benchmark Log Book is provided by the manufacturer for the installer to complete including their **CORGI** registration number to confirm that the boiler has been installed, commissioned and serviced according to the manufacturer's instructions.

IMPORTANT: The completed Benchmark Checklist will be required in the event of any warranty work and may be required by the local Building Control Inspector.

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).

COMBUSTIBLE AND CORROSIVE MATERIALS

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

Chemically aggressive substances, such as halogenated hydrocarbons containing chlorine or fluorine compounds 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 the Gas Safety (Installation and Use) Regulations 1998.

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 serviced annually by a competent, qualified engineer (such as British Gas or CORGI registered personnel) using approved spares, to help maintain the economy, safety and reliability of the appliance.

IMPORTANT - The service engineer must complete the Service Record in the Benchmark section after each service.

INSTALLATION REGULATIONS

Gas Safety (Installation & Use) Regulations: All gas appliances must be installed by a competent person in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

The appliance must be installed in accordance with, and comply to, the current: Gas Safety Regulations, IEE Regulations, Building Regulations, Building Standards (Scotland) (Consolidation), Building Regulations (Northern Ireland), local water by-laws, Health & Safety Document 635 (The Electricity at Work Regulations 1989) and any other local requirements.

British Standards:
The relevant British Standards should be followed, including:
BS7074:1 : Code of practice for domestic and hot water supply
BS6891 : Installation of low pressure gas pipework up to 28mm (R1)
BS5546 : Installation of gas hot water supplies for domestic purposes
EN:12828 : Central heating for domestic premises
BS5440:1 : Flues and ventilation for gas appliances of rated heating not exceeding 70kW (net) : Flues
BS5440:2 : Flues and ventilation for gas appliances of rated heating not exceeding 70kW (net) : Air Supply
BS7593 : Treatment of water in domestic hot water central heating systems
BS 6798 : Installation of gas fired boilers of rated input up to 70kW (net)
Where no specific instruction is given, reference should be made to the relevant British Standard codes of Practice.

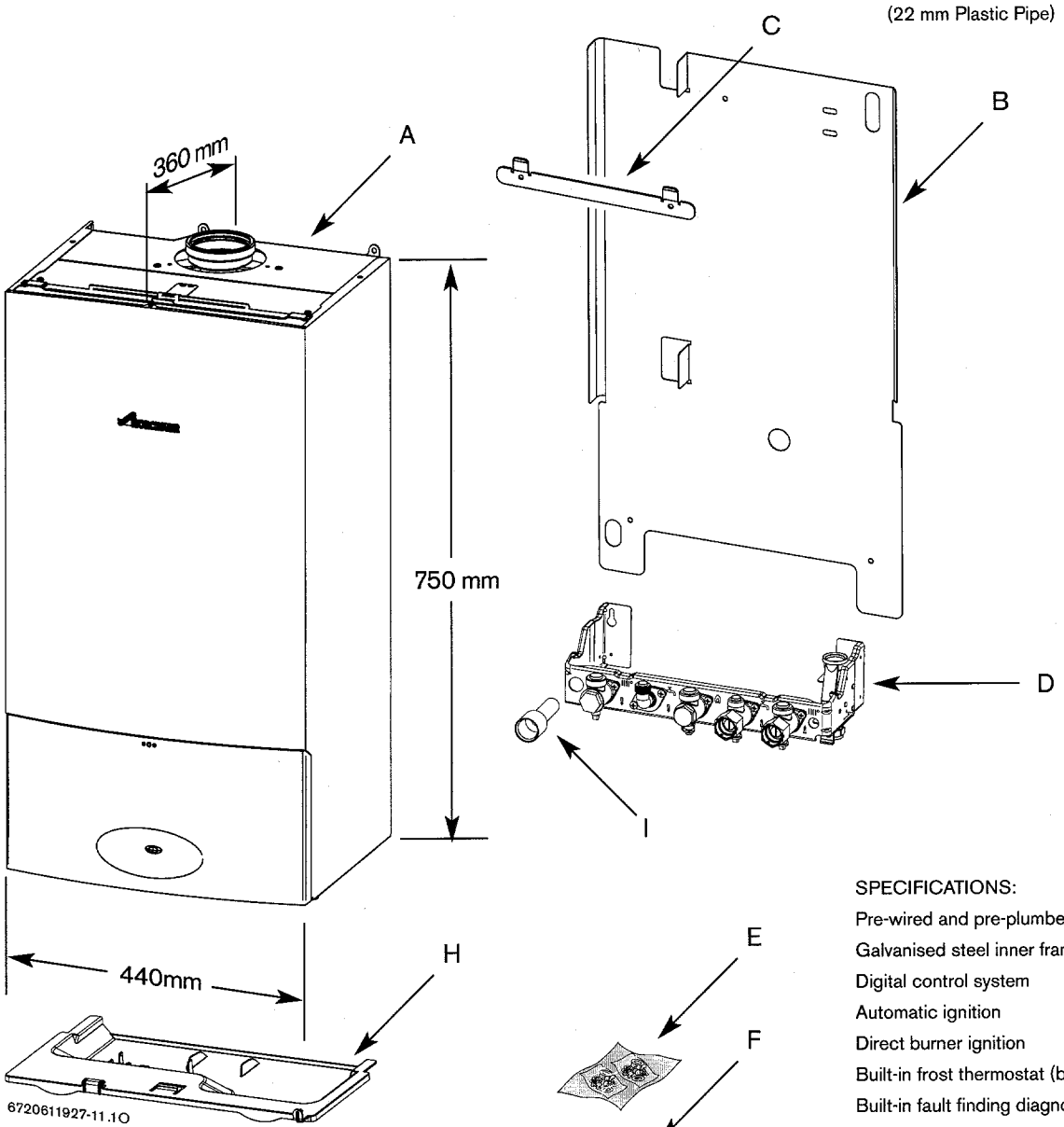
L.P.G. Installation:
An appliance using L.P.G. must not be installed in a room or internal space below ground level unless one side of the building is open to the ground.

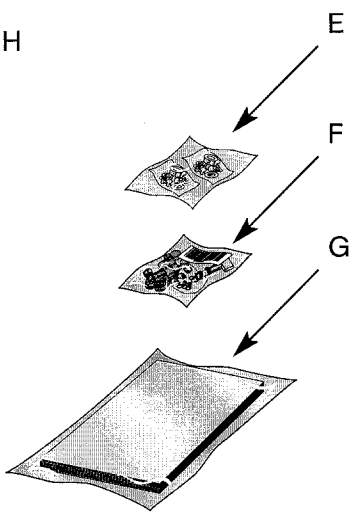
Timber framed buildings:
Where the boiler is to be fitted to a timber framed building the guidelines laid down in BS5440: Part 1 and IGE "Gas Installations in Timber Frame Buildings" should be adhered to.

Potable water:
All seals, joints and compounds (including flux and solder) and components used as part of the secondary domestic water system must be approved by WRAS.

STANDARD PACKAGE:

A - Wall hung gas fired condensing combi boiler for central heating and domestic hot water
B - Wall mounting plate
C - Hanging bracket
D - Pre-plumbing manifold
E - Hardware pack
F - Charging Link Assembly
G - Literature pack
H - Bottom panel
I - Trap / Syphon Outlet Connection (22 mm Plastic Pipe)





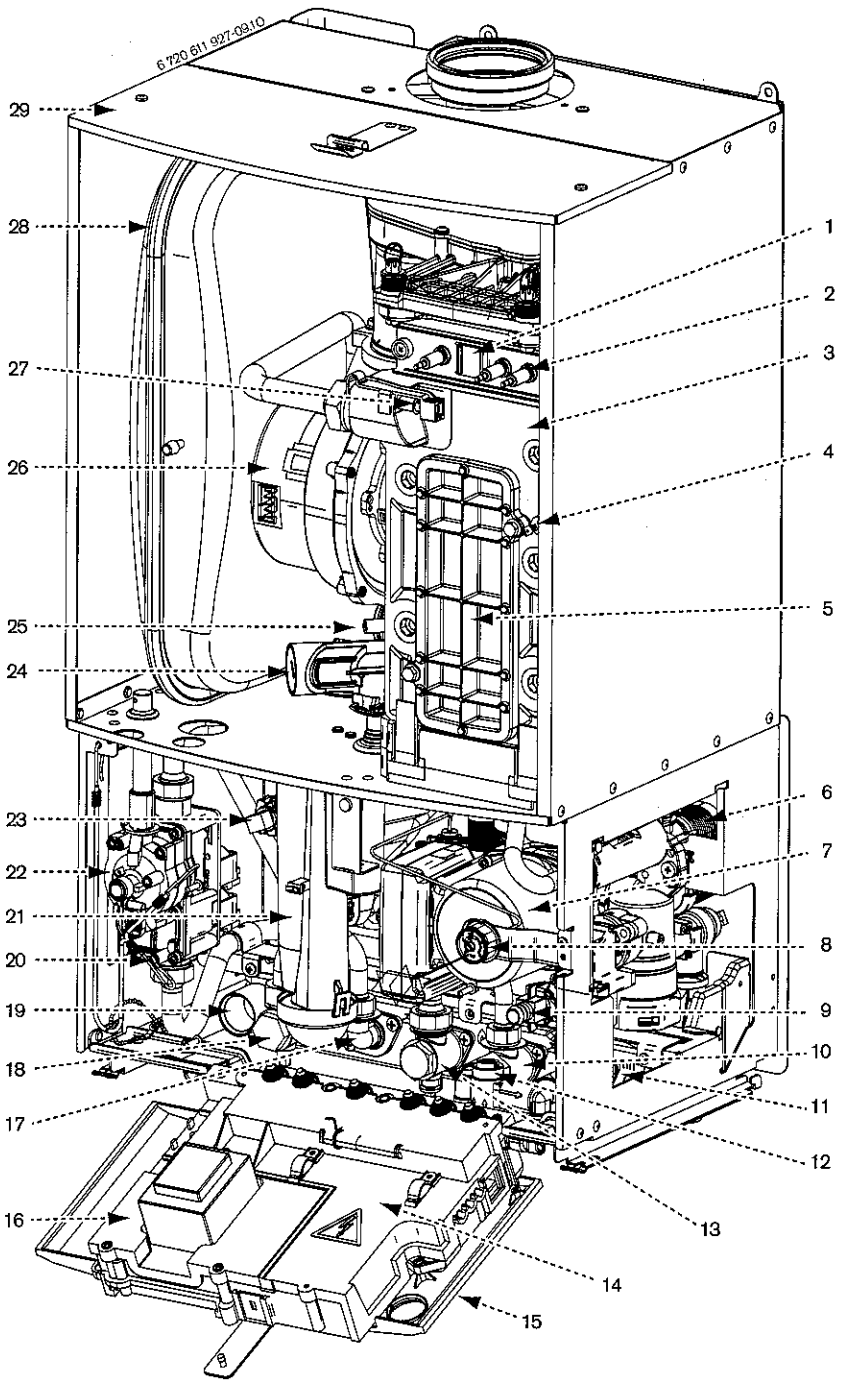
SPECIFICATIONS:

Pre-wired and pre-plumbed
Galvanised steel inner frame
Digital control system
Automatic ignition
Direct burner ignition
Built-in frost thermostat (boiler protection)
Built-in fault finding diagnostics
Modulating automatic gas valve
Combustion air fan with speed regulator
CH temperature sensor & control
Pump anti-seizure protection
Flue gas temperature limiter
Condensate trap & syphon
DHW flow sensor & temperature control
Plate type DHW heat exchanger
Modulating circulating pump

DESCRIPTION	UNITS	NATURAL GAS 25CDi	30CDi	35CDi	40CDi	L.P.G. 25CDi	30CDi	35CDi
Domestic hot water								
Min. heat input	kW	8.0	8.0	8.0	9.8	9.1	9.1	9.1
Max. rated heat output	kW	25.8	30.9	35.0	40.0	25.8	30.9	35.0
Max. rated heat input	kW	25.8	30.9	35.0	40.0	25.8	30.9	35.0
Max. mains inlet pressure	bar	10	10	10	10	10	10	10
Min. mains inlet pressure (working) for max flow	bar	1.2	1.4	1.5	1.7	1.2	1.4	1.5
Min. mains inlet pressure (working) for operation	bar	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Domestic Hot Water temperature range	°C	40-60	40-60	40-60	40-60	40-60	40-60	40-60
Domestic Hot Water specific rate - 30°C rise	l/min	11.0	13.3	16.5	17.3	11.0	13.3	16.5
Max. Domestic Hot Water flow rate - 40°C rise +/– 15%	l/min	9	11	12	14	9	11	12
Central Heating								
Max. rated heat input	kW	25.8	30.9	30.9	30.9	25.8	30.9	30.9
Max. rated heat output net 40/30°C	kW	26.8	32.1	32.1	32.1	26.8	32.1	32.1
Max. rated heat output net 50/30°C	kW	26.6	31.8	31.8	31.8	26.6	31.8	31.8
Max. rated heat output net 80/60°C	kW	25.0	30.0	30.0	30.0	25.0	30.0	30.0
Min. rated heat output net 40/30°C	kW	8.6	8.6	8.6	10.6	9.8	9.8	9.8
Min. rated heat output net 50/30°C	kW	8.6	8.6	8.6	10.5	9.7	9.7	9.7
Min. rated heat output net 80/60°C	kW	7.7	7.7	7.7	9.4	8.7	8.7	8.7
Min. rated heat input net	kW	8.0	8.0	8.0	9.8	9.1	9.1	9.1
Max. flow temperature	°C	nom. 90	nom. 90	nom. 90	nom. 90	nom. 90	nom. 90	nom. 90
Max. permissible operating pressure	bar	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Available pump head at 21°C system temperature rise	m	2	2	2	2	2	2	2
Gas flow rate - Max. 10 minutes from lighting								
Natural Gas G20	m^3/h	2.6	3.2	3.7	4.4	-	-	-
Propane Gas (LPG)	kg/h	-	-	-	-	2.0	2.4	2.7
Flue								
Flue Gas Temp. 80/60°C, rated min. load	°C	70/58	76/58	76/58	86/58	70/58	76/58	76/58
Flue Gas Temp. 40/30°C, rated min. load	°C	51/33	55/33	55/33	58/35	51/33	55/33	55/33
CO_2 level at max. rated heat output	%	9.6	9.6	9.6	9.7	10.8	10.8	10.8
CO_2 level at min. rated heat output	%	9.0	9.0	9.0	9.1	10.5	10.5	10.5
NOx - class		5	5	5	5	5	5	5
Condensate								
Max. condensation rate	l/h	2.3	2.7	2.7	2.7	2.3	2.7	2.7
pH value, approx.		4.8	4.8	4.8	4.8	4.8	4.8	4.8
Electrical								
Electrical power supply voltage	AC...V	230	230	230	230	230	230	230
Frequency	Hz	50	50	50	50	50	50	50
Max. power consumption	W	125	135	160	170	125	135	160
General Data								
SEDBUK	band	A	A	A	A	A	A	A
Appliance protection rating	IP	X4D	X4D	X4D	X4D	X4D	X4D	X4D
Appliance protection rating with mechanical or RF mech. timer fitted	IP	20	20	20	20	20	20	20
Permissible ambient temperatures	°C	0-50	0-50	0-50	0-50	0-50	0-50	0-50
Nominal capacity of appliance	l	3.75	3.75	3.75	3.75	3.75	3.75	3.75
Noise output level	dB(A)	40	44	44	47	40	44	44
Total boiler weight (lift weight)	kg	48.5	48.5	48.5	48.5	48.5	48.5	48.5
Packaged boiler weight	kg	57	57	57	57	57	57	57
SEDBUK	%	90.3	90.3	90.3	90.2	90.3	90.3	90.3

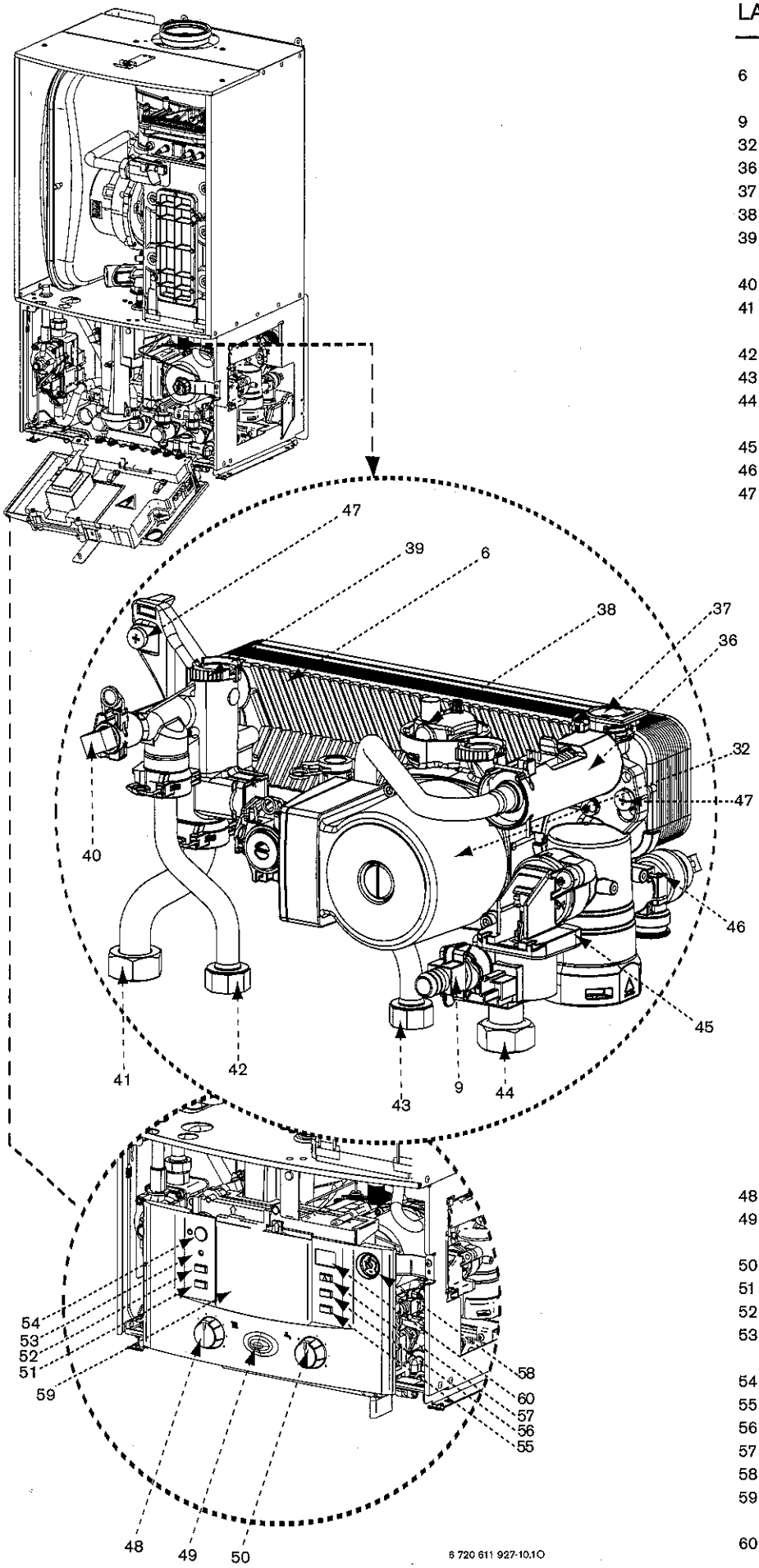
LAYOUT & COMPONENTS

The diagram opposite shows the controls in the servicing position and excludes the outer case.



1 FLAME VIEWING WINDOW
2 IGNITION ELECTRODE AND FLAME SENSE ELECTRODE
3 HEAT EXCHANGER
4 OVERHEAT THERMOSTAT
5 ACCESS POINT FOR CLEANING HEAT EXCHANGER
6 PLATE TO PLATE DHW HEAT EXCHANGER
7 PUMP
8 SYSTEM PRESSURE GAUGE
9 DRAIN POINT
10 MAINS COLD WATER IN
11 CH RETURN
12 CHARGING LINK ASSEMBLY
13 GAS INLET CONNECTION 22 mm COMPRESSION
14 COVER FOR EXTERNAL WIRING CONNECTIONS
15 CONTROL PANEL IN SERVICE POSITION
16 ACCESS COVER FOR TRANSFORMER & PCB
17 DHW OUT
18 CH FLOW
19 TRAP / SYPHON OUTLET CONNECTION (22 mm PLASTIC PIPE)
20 INLET PRESSURE TEST POINT
21 TRAP / SYPHON
22 GAS VALVE
23 DHW TEMPERATURE SENSOR
24 AIR / GAS ADJUSTMENT SCREW
25 TESTING POINT FOR FAN PRESSURE
26 FAN
27 PRIMARY SENSOR
28 EXPANSION VESSEL
29 REMOVABLE TOP CASE PANEL FOR SERVICING

LAYOUT & COMPONENTS

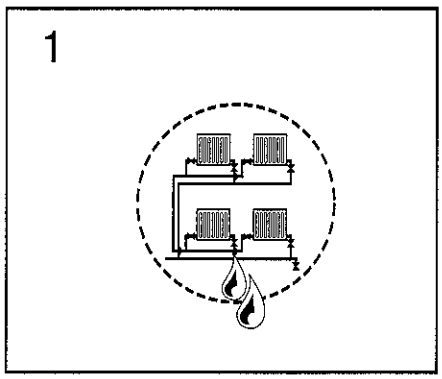


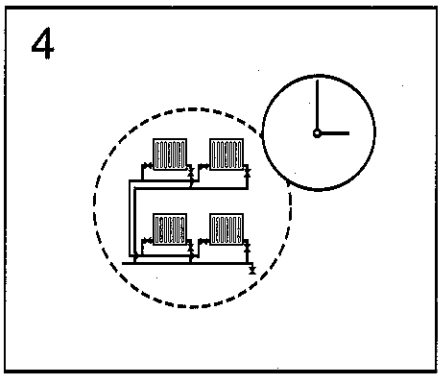
6 PLATE TO PLATE DHW HEAT EXCHANGER
9 DRAIN POINT
32 SYSTEM PUMP
36 FLOW TURBINE
37 UNUSED PORT
38 AUTO AIR VENT
39 FLOW CONNECTION FROM BOILER HEAT EXCHANGER
40 DHW SENSOR
41 CH FLOW CONNECTION TO SERVICE VALVE
42 DHW OUT CONNECTION
43 COLD WATER IN CONNECTION
44 CH RETURN CONNECTION TO SERVICE VALVE
45 DIVERTER VALVE
46 PRESSURE RELIEF VALVE
47 COMPACT HYDRAULIC MOUNTING SCREW (2) TO BOILER

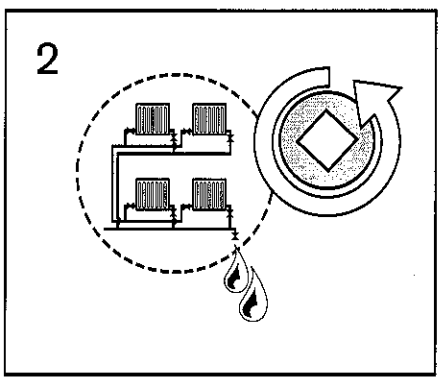
48 CH TEMPERATURE CONTROL
49 MAINS ON/OFF INDICATOR/DIAGNOSTIC LIGHT (BLUE)
50 DHW TEMPERATURE CONTROL
51 CENTRAL HEATING BOOST BUTTON
52 SERVICE BUTTON
53 BURNER ON INDICATOR LIGHT (GREEN)
54 MASTER SWITCH ON/OFF
55 HOLIDAY BUTTON
56 ECO BUTTON
57 FAULT RESET BUTTON
58 SYSTEM PRESSURE GAUGE
59 POSITION FOR OPTIONAL PROGRAMMER
60 DISPLAY

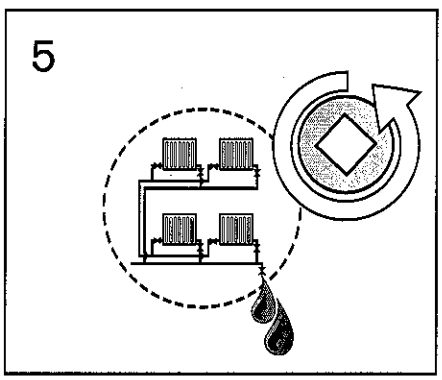
IMPORTANT: All the following Pre-Installation sections must be read and requirements met before starting boiler or flue installation.

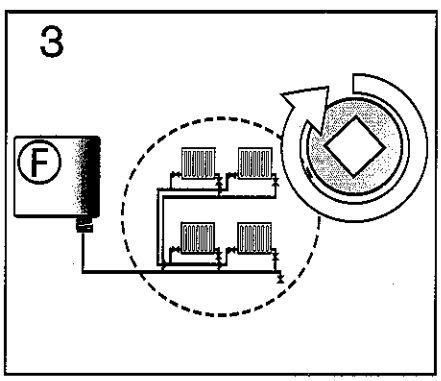
CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.











KEY

Valve

Flushing Agent

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

KEEP THE EXISTING BOILER/ CIRCULATING PUMP WHERE POSSIBLE OR USE A POWER FLUSHING MACHINE TO AID THE CLEANSING PROCEDURE BEFORE INSTALLING A NEW BOILER.

CLEANING THE PRIMARY SYSTEM:

1 Fill the system with cold water and check for leaks.
2 Open all drain cocks and drain the system.
3 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.

4 Run the boiler/system at normal operating temperature as directed by the manufacturer of the flushing agent.
5 Drain and thoroughly flush the system to remove the flushing agent and debris.

MAINS SUPPLIES

ELECTRIC SUPPLY:

- Supply: 230V - 50Hz
  (See Technical Data for IP ratings.)
- Cable: PVC insulated 0.75mm^2
  (24 x 0.2mm) temperature rated to 90°C.
- External 3A fuse to BS1362.
- The appliance must be earthed.
- All pipes to the boiler must be cross-bonded.
- Wiring must comply with IEE wiring regulations and any local regulations which may apply to fixed wiring to a stationary appliance.

GAS SUPPLY:

- Boilers using NG must be connected to a governed meter.
- LPG boilers must be connected to a regulator.
- Installation and connection of the gas supply to the boiler must be in accordance with BS6891.
- Under no circumstances should the size of the gas supply pipe be less than that of the appliance inlet connection.
- The meter or regulator and pipework to the meter must be checked, preferably by the gas supplier, to ensure it is in good working order and can meet the gas flow and pressure requirements in addition to the demand from any other appliance being served. This does not include the pipework from the meter to the boiler.

WATER SUPPLY:

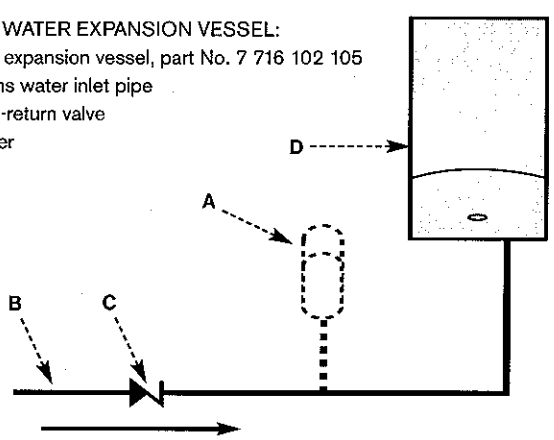
Water Mains Pressure:

- Minimum mains water pressure 1.5 up to 2.5 bar (see technical data on page 6) for maximum performance.
- 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.

MAINS WATER EXPANSION VESSEL:

A - Mini expansion vessel, part No. 7 716 102 105
B - Mains water inlet pipe
C - Non-return valve
D - Boiler



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

Use in hard water areas:

Normally there is no need for water treatment to prevent scale formation as the maximum temperature of the DHW heat exchanger is limited by the electronic control circuit.

In areas where the temporary water hardness exceeds 200 ppm, 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.

PLASTIC PIPEWORK:

- Any plastic pipework must have a polymeric barrier with 600 mm (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.
  The pipework from the boiler to the blending valve must be in copper or steel (protected from corrosion).

CONNECTIONS/VALVES:

- All system connections, taps and mixing valves must be capable of sustaining a pressure up to 3 bar.
- Radiator valves should conform to BS2767:10.
- All other valves should conform to BS1010.
- Thermostatic radiator valves (TRVs) must be used on all radiators within the sleeping accommodation but not the radiator where the room thermostat is sited. This must be fitted with wheelhead and lockshield valves and left open.
- A drain cock is required at the lowest point on the system.
- An air vent is required at the highest point on the system.

SHOWERS/BIDETS

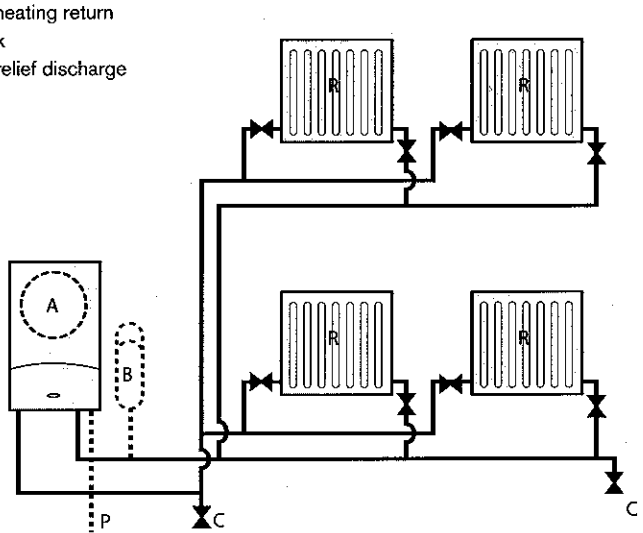
- If a shower head can be immersed in water or comes closer than 25 mm from the top edge of a bath or shower tray spill over level then an anti-siphon device must be fitted to the shower hose.
- Bidets with direct hot & cold mains water can be used (with the approval of the local water authority) and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

SEALED PRIMARY SYSTEM:

- The CH sealed system must be filled using the built-in filling link (see page 23).
- Where the system volume is more than 100 litres 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.
- Pressurize the extra expansion vessel (B) to the same figure as the expansion vessel built into the appliance.
- **Do not use galvanised pipes or radiators.**

TYPICAL SEALED SYSTEM

A - Appliance expansion vessel – central heating
B - Extra expansion vessel – central heating return
C - Drain cock
P - Pressure relief discharge
R - Radiators



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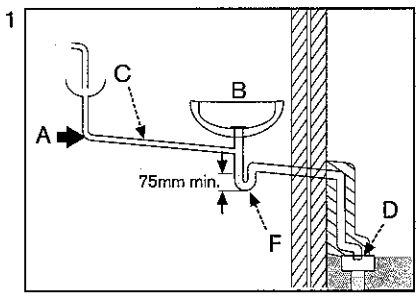
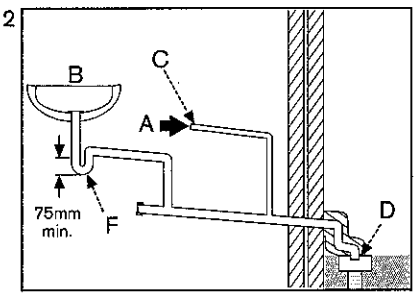
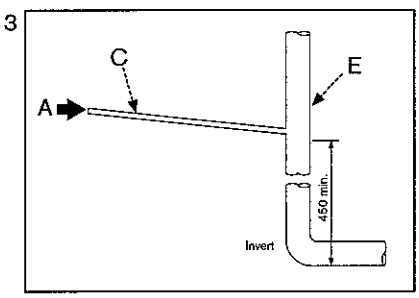
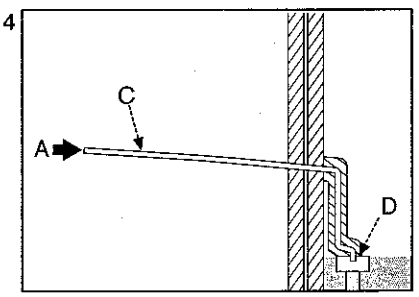
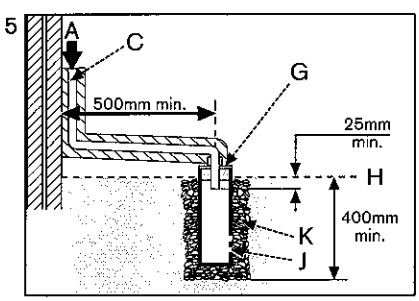
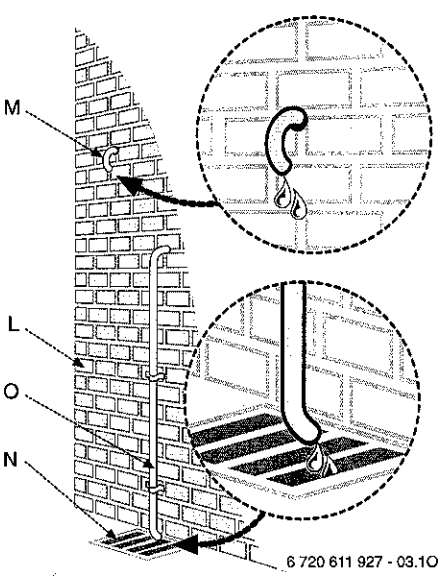












CONDENSATE PIPEWORK

CONDENSATE PIPEWORK:

- The condensate pipe must be a minimum of 22mmØ plastic pipe
- **The condensate pipework must fall at least 50 mm per metre towards the outlet and should take the shortest practicable route.**
- The pipework must follow one of the options shown opposite into an internal serviceable-trap (min. 75 mm) such as a sink/washing machine) and discharge direct into a vent stack (E) min. 450 mm above pipe invert or into a gulley (D) below ground but above the water level.
- **Use waterproof pipe insulation in exposed positions and for excessive runs of external pipework (over 3 metres).**

IMPORTANT: Ensure there are no blockages in the pipe run.

1 Internal sink/washing machine drain
2 Internal waste drainage system
3 Soil/vent stack
4 External drainage system
5 External condensate absorption point

A - Condensate from boiler
B - Sink
C - 22 mm Ø plastic condensate pipe
D - Gulley
E - Internal soil and vent stack
F - Serviceable waste trap (75 mm min)
G - 300 mm x 100 mm Ø sealed plastic tube
H - Ground level
J - Drainage holes 50 mm from base of tube (12 mm Ø at 25 mm centres) facing away from building
K - Limestone chippings

PRESSURE RELIEF PIPEWORK

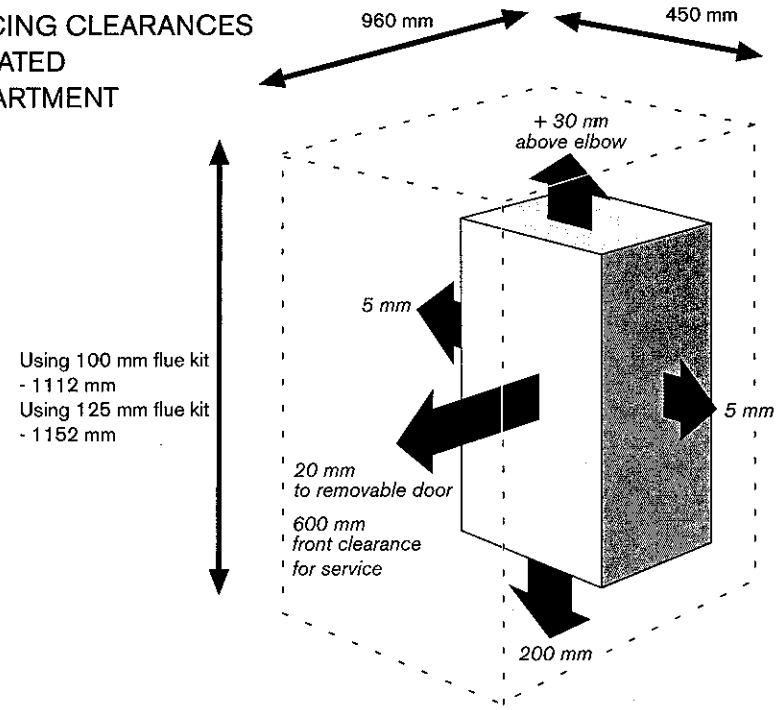
IMPORTANT: The pressure relief valve is a safety device for the boiler and if activated may discharge boiling water or steam through the relief valve drain pipe.

Care should be taken when siting the outlet pipe so that it does not cause an obstruction or discharge above a window, entrance or other public access where it could cause a hazard.

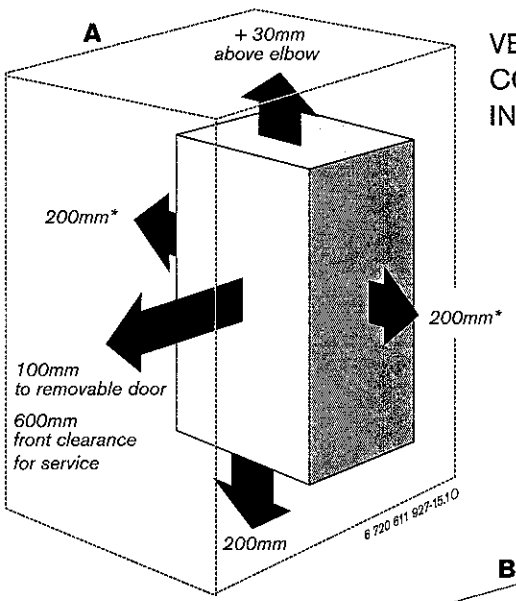
- The pressure relief drain pipe (M,O) from the boiler should be at least 15 mm diameter copper pipe and run downwards away from any electrics or other hazard, preferably to an external drain or soakaway.
- Pipe (M) should be finished with a partial bend, near the outlet to face the external wall (as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

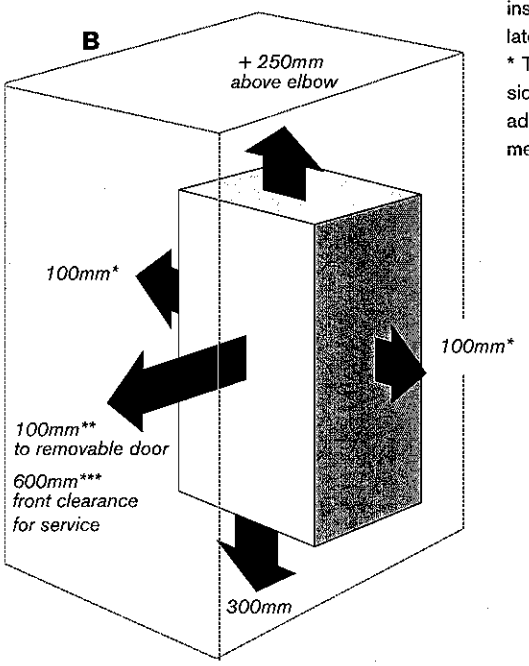
L - Outside wall
M, O - Drain pipe
N - External drain

SERVICING CLEARANCES VENTILATED COMPARTMENT



VENTILATION FREE COMPARTMENTS INSTALLATION CLEARANCES





BOILER LOCATION & CLEARANCES

This boiler is only suitable for installing internally within a property at a suitable location onto a fixed, rigid non-combustible surface at least the same size as the boiler and capable of supporting the boiler weight.

COMPARTMENTS:

Follow the requirements of BS6798 and BS5440 Part 2 and note:

- Minimum clearances must be maintained
- An access door is required to install, service and maintain the boiler and any ancillary equipment.
- If fitting the boiler into an airing cupboard use a non-combustible perforated material (maximum hole sizes of 13mm) to separate the boiler from the airing space.

BOILER CLEARANCES:

The diagram opposite shows the minimum space required to install and service the boiler.

If a boiler is installed in a compartment with clearances less than shown in the diagram below, ventilation is required. Refer to tables below for size.

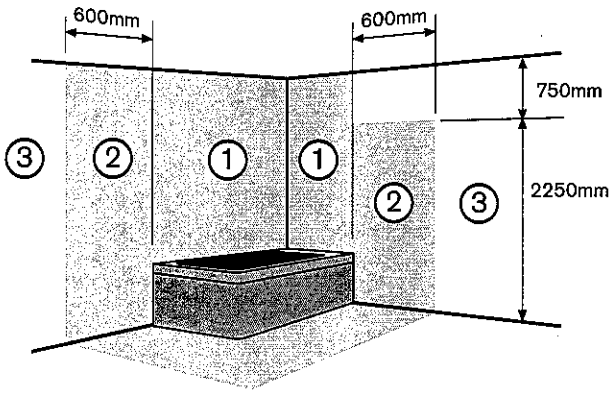
Greenstar CDi		
Vent position	**To room or internal space**	**Direct to outside**
High level	Minimum free area 122 cm^2	Minimum free area 61 cm^2
Low level	Minimum free area 122 cm^2	Minimum free area 61 cm^2

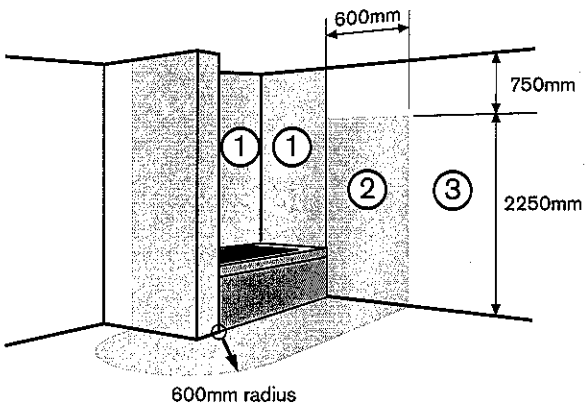
BOILER CLEARANCES - UNVENTILATED COMPARTMENT:

The diagrams (A and B) opposite show two options for the minimum space required to install and service the boiler inside an unventilated compartment.

* This space can be reduced to 50mm for one side only as long as both the side clearances add up to the total of both the side measurements shown or more.

BOILER LOCATION & CLEARANCES



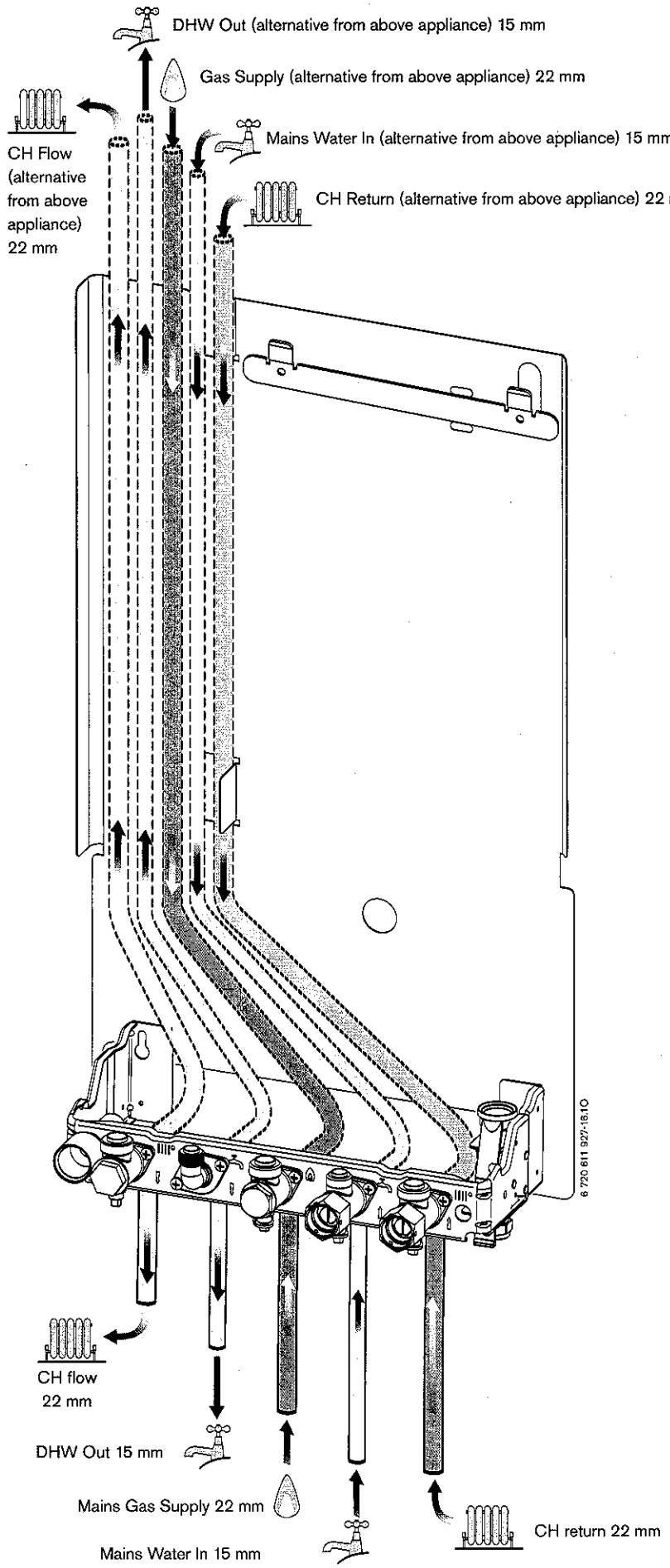


6 720 611 927-13.1O

BATHROOMS:
The boiler can be installed in zones 2 or 3. If a mechanical or RF mechanical timer is fitted the boiler can only be installed in zone 3.
See IEE wiring regulations.
(See Technical Data for IP ratings.)

IMPORTANT: any switch or appliance control using 230 V mains electricity must not be able to be touched by a person using the bath or shower.

Electrical switches, fused spur and socket outlets must not be situated in the bathroom.



PLUMBING MANIFOLD

CONNECTIONS:

Heating System:	22 mm compression fittings
DHW:	15 mm compression fittings
Gas:	22 mm compression fittings

Use the fittings supplied in the Hardware pack.

PREPLUMBING

With the plumbing manifold installed, pipework can be installed to the valves on the manifold.

The system can be filled (without the boiler being connected) using the charging link assembly (see page 23).

The valves can be closed enabling the DHW and CH systems to be tested. The boiler can be installed at later date.

RUNNING PIPES BEHIND THE BOILER

If the boiler pipes are to be run behind the appliance ensure that the pipes pass close to the wall as shown in the diagram opposite, and within the pipe guide.

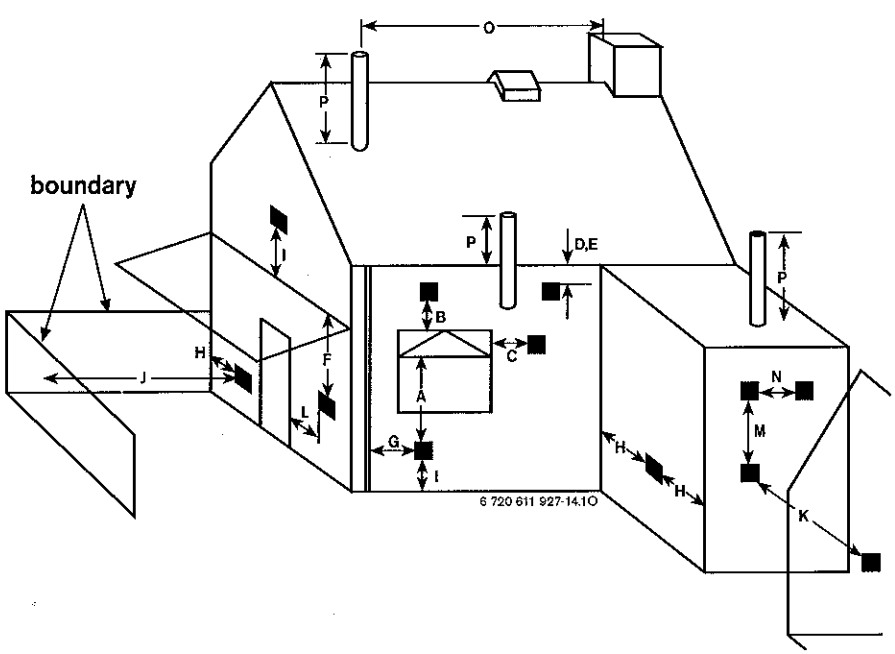
Minimum dimensions of flue terminal positions for balanced room sealed flues with fanned draught:

DRWG. REF:	TERMINAL POSITION	DISTANCE
A[1]	Directly below an opening, air brick, opening windows, etc.	300mm
B[1]	Above an opening, air brick, opening window, etc.	300 mm
C[1]	Horizontally to an opening, air brick, opening window, etc.	300 mm
D	Below gutters, soil pipes or drain pipes	75mm
E	Below eaves	200mm
F[2]	Below balconies or car port roof (lowest point)	200mm
G	From a vertical drain pipe or soil pipe	150mm
H	From an internal or external corner	300mm
I	Above ground, roof or balcony	300mm
J	From a surface facing the terminal	600mm
K	From a terminal facing the terminal	1200mm
L[2]	From an opening in the car port (e.g. door, window) into the dwelling	1200mm
M	Vertically from a terminal on the same wall	1500mm
N	Horizontally from a terminal on the same wall	300mm
O	From a non combustible vertical structure on the roof	*
P	Above intersection with roof	*

1 In addition, the terminal should not be nearer than 150mm (fanned draught) to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame.

2 Not recommended.

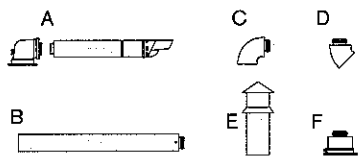
* *See instructions supplied with vertical flue kits.*



- The flue must be fitted and terminated in accordance with the recommendations of BS5440 : Part 1.
- The flue must not cause an obstruction.
- Discharge and any noise from the flue outlet must not cause 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. Where this could be a nuisance, for example, near security lighting, an alternate position should be found.
- 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 5440:1
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface to which people have access.
  The guard must be spaced equally (minimum 50 mm) around the flue and fixed to the wall with plated screws. See Contact Information (inside front cover).

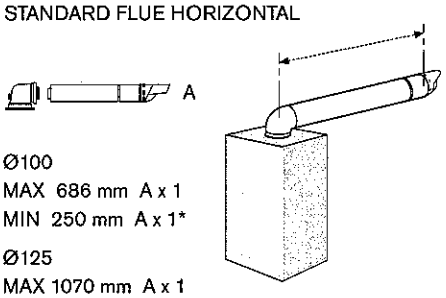
FLUE OPTIONS 25CDi

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

STANDARD FLUE HORIZONTAL

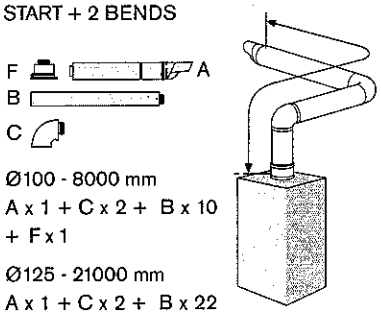


Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*

* Requires cutting

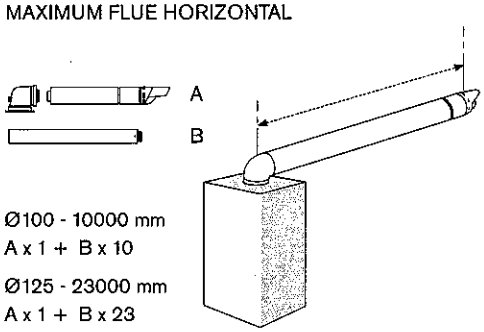
MAXIMUM FLUE VERTICAL START + 2 BENDS



Ø100 - 8000 mm
A x 1 + C x 2 + B x 10 + F x 1

Ø125 - 21000 mm
A x 1 + C x 2 + B x 22 + F x 1

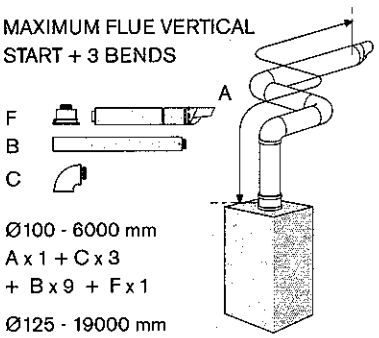
MAXIMUM FLUE HORIZONTAL



Ø100 - 10000 mm
A x 1 + B x 10

Ø125 - 23000 mm
A x 1 + B x 23

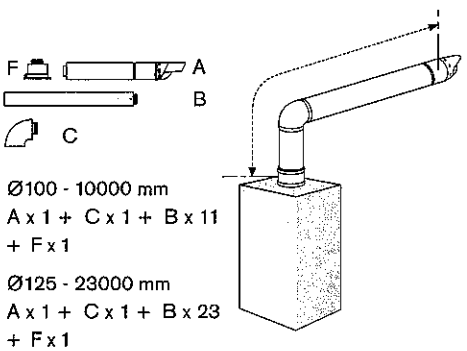
MAXIMUM FLUE VERTICAL START + 3 BENDS



Ø100 - 6000 mm
A x 1 + C x 3 + B x 9 + F x 1

Ø125 - 19000 mm
A x 1 + C x 3 + B x 21 + F x 1

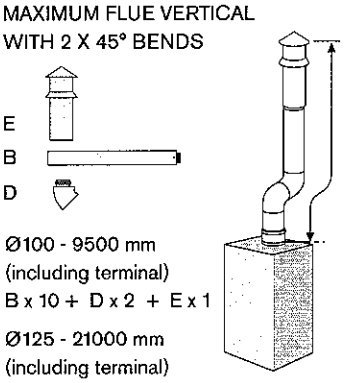
MAXIMUM FLUE VERTICAL START + 1 BEND



Ø100 - 10000 mm
A x 1 + C x 1 + B x 11 + F x 1

Ø125 - 23000 mm
A x 1 + C x 1 + B x 23 + F x 1

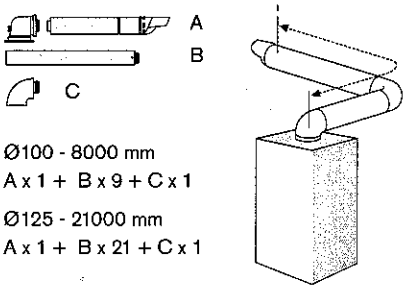
MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS



Ø100 - 9500 mm
(including terminal)
B x 10 + D x 2 + E x 1

Ø125 - 21000 mm
(including terminal)
B x 21 + D x 2 + E x 1

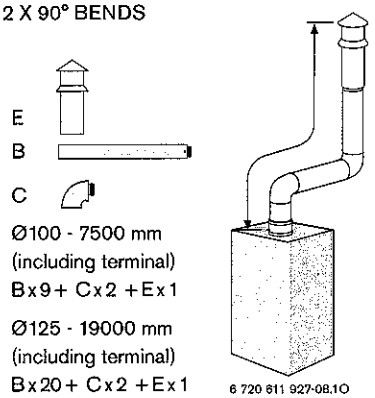
MAXIMUM FLUE HORIZONTAL + 1 BEND



Ø100 - 8000 mm
A x 1 + B x 9 + C x 1

Ø125 - 21000 mm
A x 1 + B x 21 + C x 1

VERTICAL FLUE WITH 2 X 90° BENDS



Ø100 - 7500 mm
(including terminal)
B x 9 + C x 2 + E x 1

Ø125 - 19000 mm
(including terminal)
B x 20 + C x 2 + E x 1

6 720 611 927-08.1O

Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 10000 mm
Horizontal 80/125 mm Ø: 23000 mm
Vertical 60/100 mm Ø: 11500 mm
Vertical 80/125 mm Ø: 23000 mm

Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

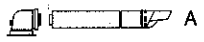
Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

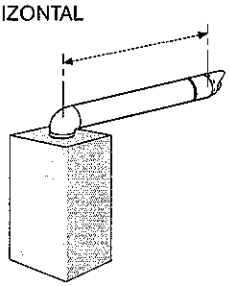
Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

FLUE OPTIONS 30CDi

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.

STANDARD FLUE HORIZONTAL



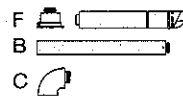


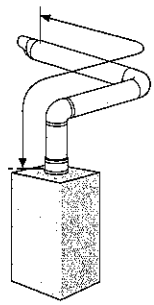
Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*

* Requires cutting

MAXIMUM FLUE VERTICAL START + 2 BENDS

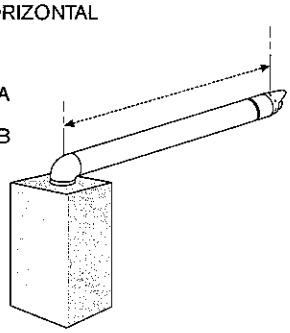




Ø100 - 5900 mm
A x 1 + C x 2 + B x 8 + F x 1

Ø125 - 16500 mm
A x 1 + C x 2 + B x 18 + F x 1

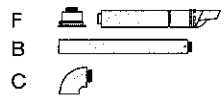
MAXIMUM FLUE HORIZONTAL

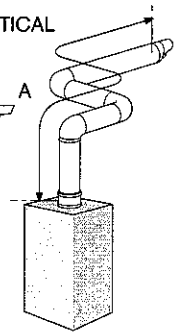


Ø100 - 7900 mm
A x 1 + B x 8

Ø125 - 18500 mm
A x 1 + B x 18

MAXIMUM FLUE VERTICAL START + 3 BENDS

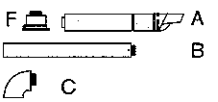


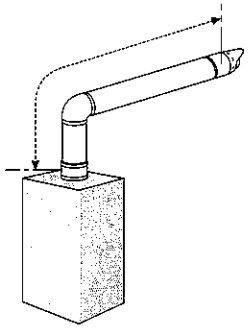


Ø100 - 3900 mm
A x 1 + C x 3 + B x 7 + F x 1

Ø125 - 14500 mm
A x 1 + C x 3 + B x 17 + F x 1

MAXIMUM FLUE VERTICAL START + 1 BEND

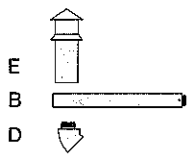


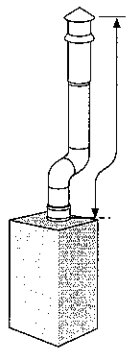


Ø100 - 7900 mm
A x 1 + C x 1 + B x 9 + F x 1

Ø125 - 18500 mm
A x 1 + C x 1 + B x 19 + F x 1

MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS

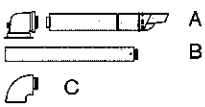


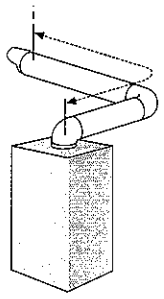


Ø100 - 7400 mm
(including terminal)
B x 8 + D x 2 + E x 1

Ø125 - 16500 mm
(including terminal)
B x 17 + D x 2 + E x 1

MAXIMUM FLUE HORIZONTAL + 1 BEND

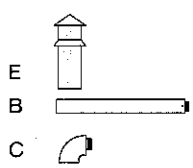


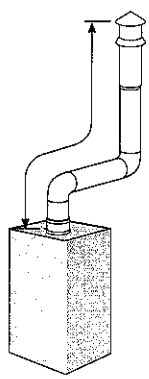


Ø100 - 5900 mm
A x 1 + B x 7 + C x 1

Ø125 - 16500 mm
A x 1 + B x 17 + C x 1

VERTICAL FLUE WITH 2 X 90° BENDS

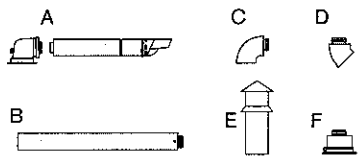




Ø100 - 5400 mm
(including terminal)
B x 7 + C x 2 + E x 1

Ø125 - 14500 mm
(including terminal)
B x 16 + C x 2 + E x 1

6 720 611 927-08.1O



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

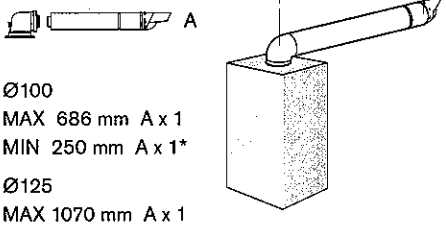
Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 7900 mm
Horizontal 80/125 mm Ø: 18500 mm
Vertical 60/100 mm Ø: 9400 mm
Vertical 80/125 mm Ø: 18500 mm

Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

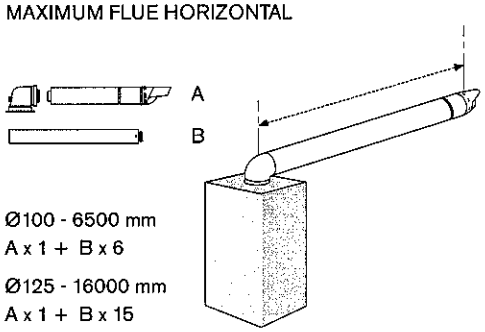
STANDARD FLUE HORIZONTAL



Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*
* Requires cutting

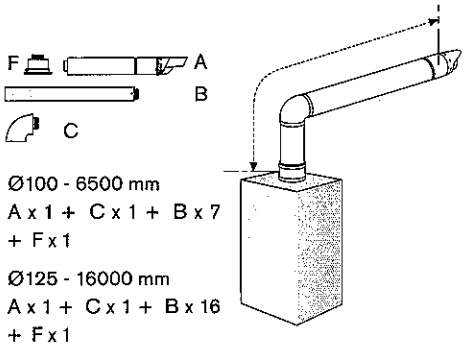
MAXIMUM FLUE HORIZONTAL



Ø100 - 6500 mm
A x 1 + B x 6

Ø125 - 16000 mm
A x 1 + B x 15

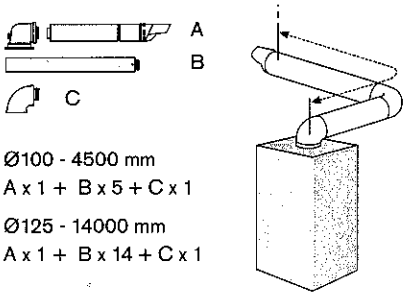
MAXIMUM FLUE VERTICAL START + 1 BEND



Ø100 - 6500 mm
A x 1 + C x 1 + B x 7
+ F x 1

Ø125 - 16000 mm
A x 1 + C x 1 + B x 16
+ F x 1

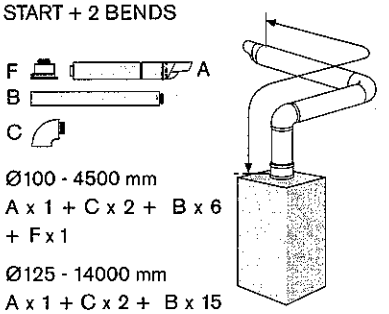
MAXIMUM FLUE HORIZONTAL + 1 BEND



Ø100 - 4500 mm
A x 1 + B x 5 + C x 1

Ø125 - 14000 mm
A x 1 + B x 14 + C x 1

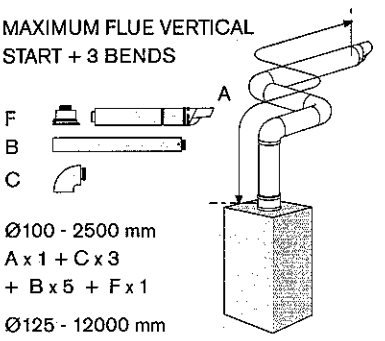
MAXIMUM FLUE VERTICAL START + 2 BENDS



Ø100 - 4500 mm
A x 1 + C x 2 + B x 6
+ F x 1

Ø125 - 14000 mm
A x 1 + C x 2 + B x 15
+ F x 1

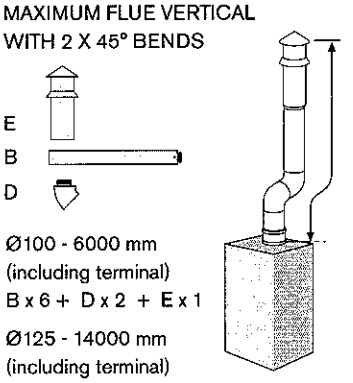
MAXIMUM FLUE VERTICAL START + 3 BENDS



Ø100 - 2500 mm
A x 1 + C x 3
+ B x 5 + F x 1

Ø125 - 12000 mm
A x 1 + C x 3
+ B x 14 + F x 1

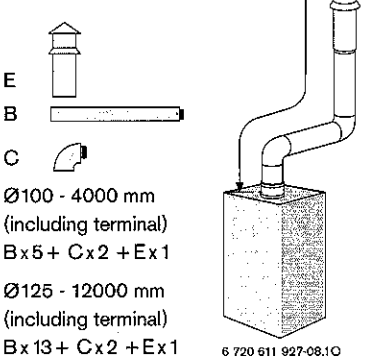
MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS



Ø100 - 6000 mm
(including terminal)
B x 6 + D x 2 + E x 1

Ø125 - 14000 mm
(including terminal)
B x 14 + D x 2 + E x 1

VERTICAL FLUE WITH 2 X 90° BENDS



Ø100 - 4000 mm
(including terminal)
B x 5 + C x 2 + E x 1

Ø125 - 12000 mm
(including terminal)
B x 13 + C x 2 + E x 1

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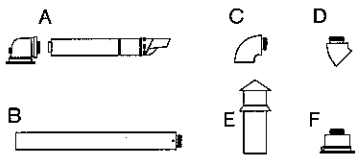
FLUE OPTIONS 35CDi

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

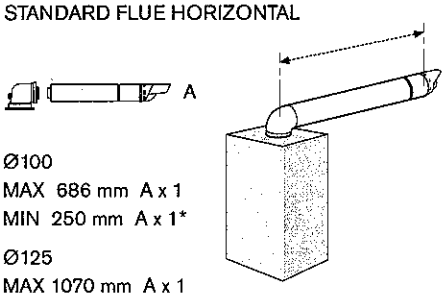
Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 6500 mm
Horizontal 80/125 mm Ø: 16000 mm
Vertical 60/100 mm Ø: 8000 mm
Vertical 80/125 mm Ø: 16000 mm

Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

STANDARD FLUE HORIZONTAL

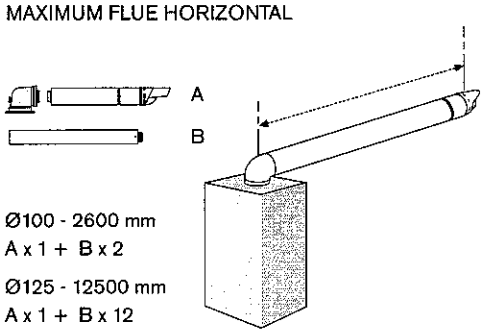


Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*

* Requires cutting

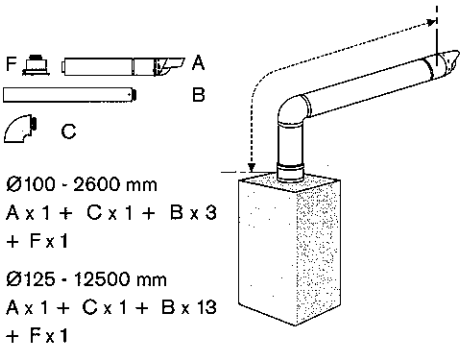
MAXIMUM FLUE HORIZONTAL



Ø100 - 2600 mm
A x 1 + B x 2

Ø125 - 12500 mm
A x 1 + B x 12

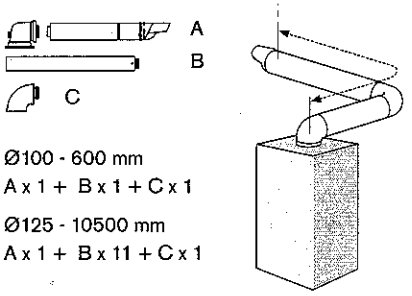
MAXIMUM FLUE VERTICAL START + 1 BEND



Ø100 - 2600 mm
A x 1 + C x 1 + B x 3 + F x 1

Ø125 - 12500 mm
A x 1 + C x 1 + B x 13 + F x 1

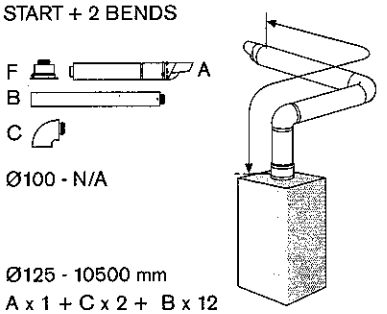
MAXIMUM FLUE HORIZONTAL + 1 BEND



Ø100 - 600 mm
A x 1 + B x 1 + C x 1

Ø125 - 10500 mm
A x 1 + B x 11 + C x 1

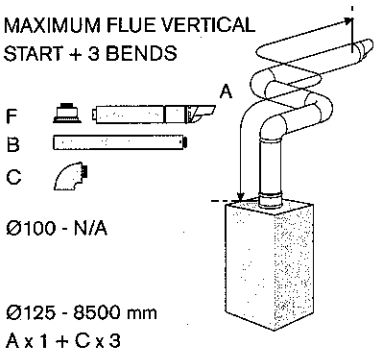
MAXIMUM FLUE VERTICAL START + 2 BENDS



Ø100 - N/A

Ø125 - 10500 mm
A x 1 + C x 2 + B x 12 + F x 1

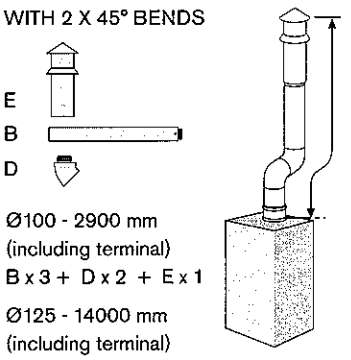
MAXIMUM FLUE VERTICAL START + 3 BENDS



Ø100 - N/A

Ø125 - 8500 mm
A x 1 + C x 3 + B x 11 + F x 1

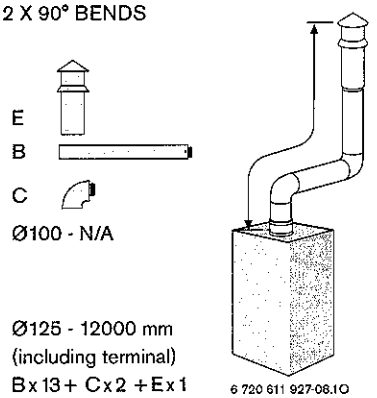
MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS



Ø100 - 2900 mm
(including terminal)
B x 3 + D x 2 + E x 1

Ø125 - 14000 mm
(including terminal)
B x 14 + D x 2 + E x 1

VERTICAL FLUE WITH 2 X 90° BENDS



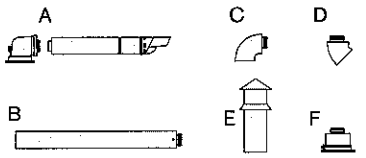
Ø100 - N/A

Ø125 - 12000 mm
(including terminal)
B x 13 + C x 2 + E x 1

6 720 611 927-08.1O

FLUE OPTIONS 40CDi

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 2600 mm
Horizontal 80/125 mm Ø: 12500 mm
Vertical 60/100 mm Ø: 4900 mm
Vertical 80/125 mm Ø: 16000 mm

Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

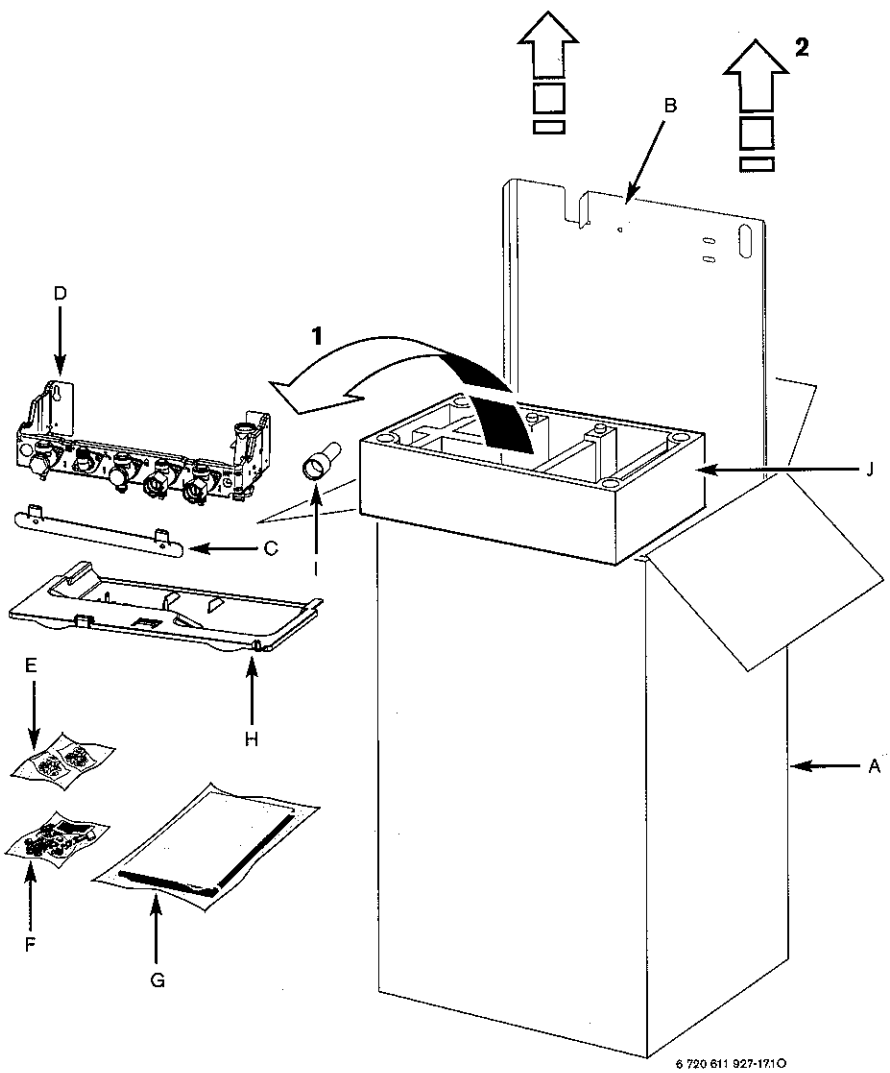
IMPORTANT: All the previous Pre-Installation sections must be read and requirements met before starting boiler or flue installation.

UNPACKING WALL FRAME AND ANCILLARY ITEMS

LIFTING AND CARRYING PRECAUTIONS:

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

A - Carton
B - Wall mounting plate
C - Hanging bracket
D - Pre-plumbing manifold
E - Hardware pack
F - Charging Link Assembly
G - Literature pack
H - Bottom panel
I - Trap / Syphon Outlet Connection (22 mm Plastic Pipe)
J - Upper support (polystyrene)



IMPORTANT HANDLING INSTRUCTIONS

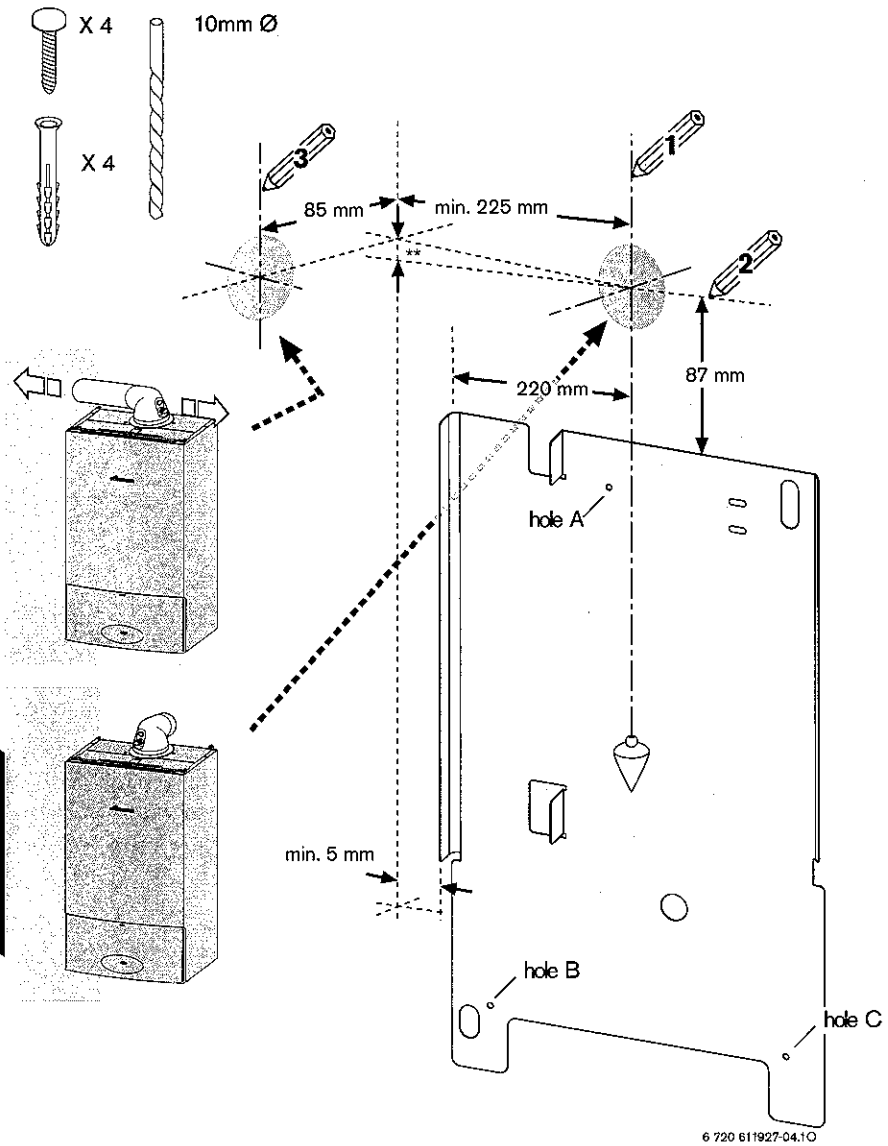
- It is advised that two people are used to carry the carton from the van to the point of delivery.
- Once the carton has been delivered, the top of the carton is opened. If a sharp implement is used make sure the carton is not pierced and that the implement is used in such a way so that it may not cause personal injury. All sharp objects must be covered or the blade retracted after use and put away in a safe place.
- ▶ **1.** The upper support is now removed with the components (bottom panel, pre-plumbing manifold, fixings, documentation set, charging link, hanging bracket).
- ▶ **2.** The boiler wall mounting plate can now be pulled out.

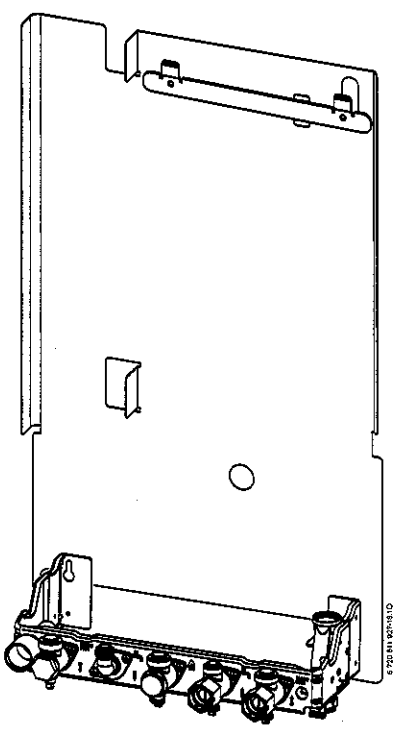
Additional requirements for roof space installation:

- The boiler should be first unpacked before ascending ladder to loft space.
- Two sets of steps should be used.
- Two people should share the lifting of the boiler up to the loft hatch, where the boiler is entered into the loft space tilted and slid on its back into the loft.

Once the appliance is removed from its packaging check the contents against the packing list.

Before installing appliance ensure system has been cleaned as explained on page 9.





WALL MOUNTING PLATE

FLUE OPENING

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.

FIXING THE POSITION OF THE WALL MOUNTING PLATE:

- The diagram opposite shows the relative positions of the flue and the fixing of the wall mounting plate, the mounting plate and pre-plumbing manifold.
- ▸ Place the wall mounting plate against the wall in the desired position.
- ▸ Mark 3 fixing points through the holes (A, B, C) in the wall mounting plate.
- ▸ Drill the 3 holes for wall mounting plate, wall hanging bracket and pre-plumbing manifold.
- ▸ Secure wall mounting plate with hanging bracket with 3 screws (supplied with the boiler). Do not fully fasten the lower 2 screws.
- ▸ Use the horizontal slots in the wall mounting plate to level the hanging bracket, mark the 4th hole and drill.
- ▸ Fix and secure the hanging bracket with both screws.

FLUE OUTLET

- ▸ Follow the diagram opposite to mark the centre of the flue for rear outlet (1, & 2) or for side outlet (2 & 3).
  ** Note: increase this height by 52 mm for every 1000 mm of horizontal length that the flue outlet is away from the boiler.
- ▸ For the 60/100 mm Ø flue make a 125 mm diameter hole through the wall using a core drill or similar.
  For flues using an optional weather collar, fitted from inside the building make a 150 mm Ø hole.
- ▸ Clear away any debris.

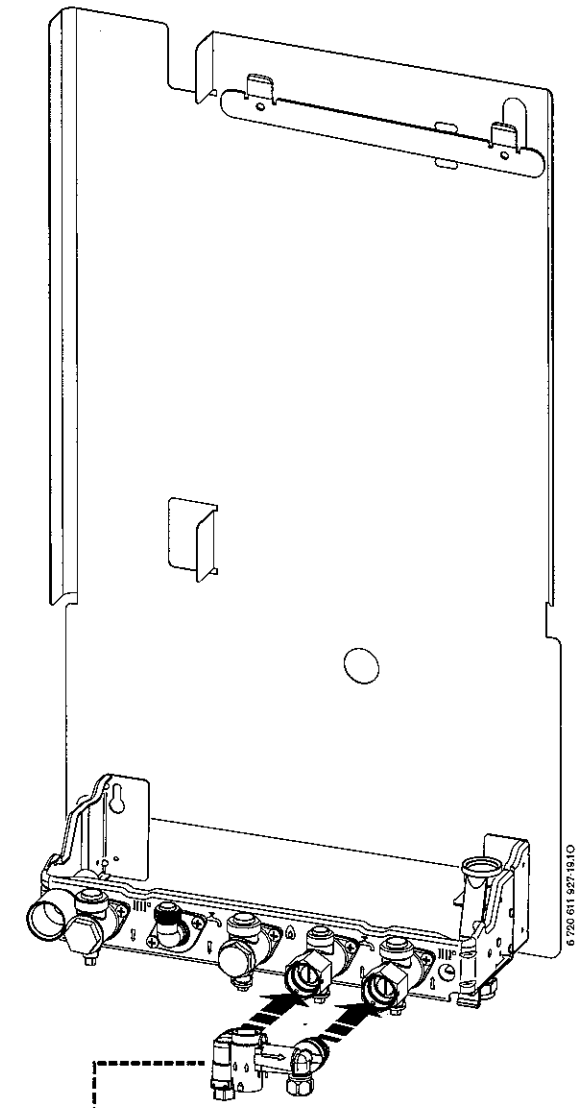
FIXING THE PRE-PLUMBING MANIFOLD:

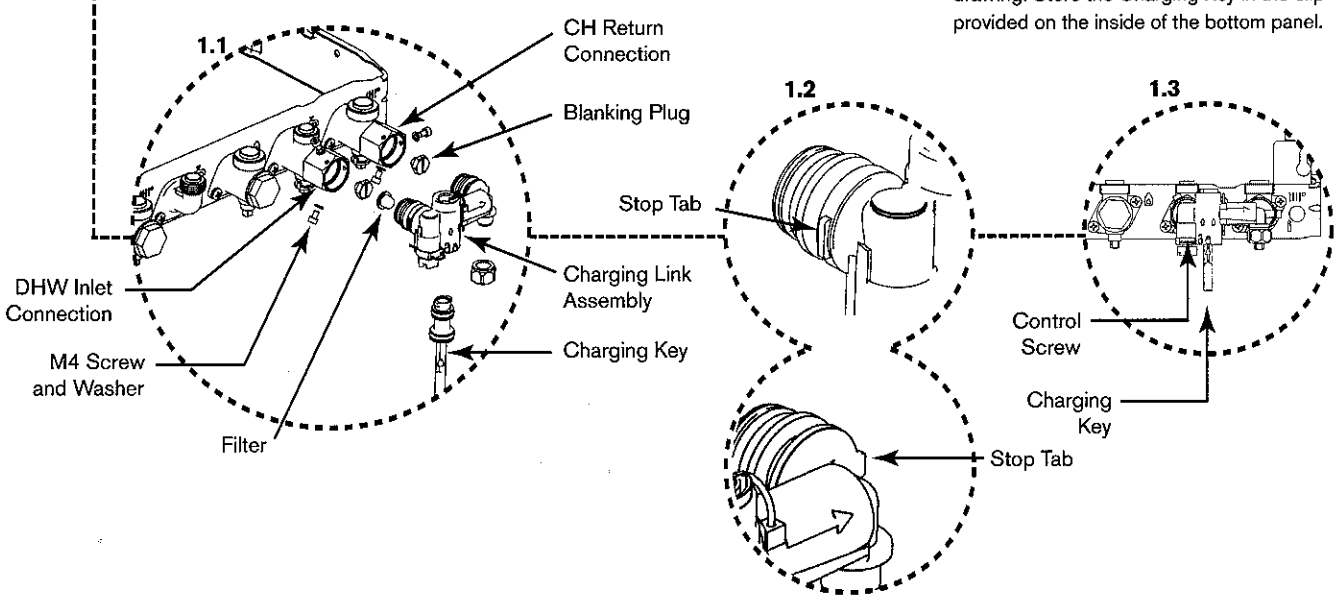
- ▸ Mount the pre-plumbing manifold on the 2 lower screws and secure the screws.

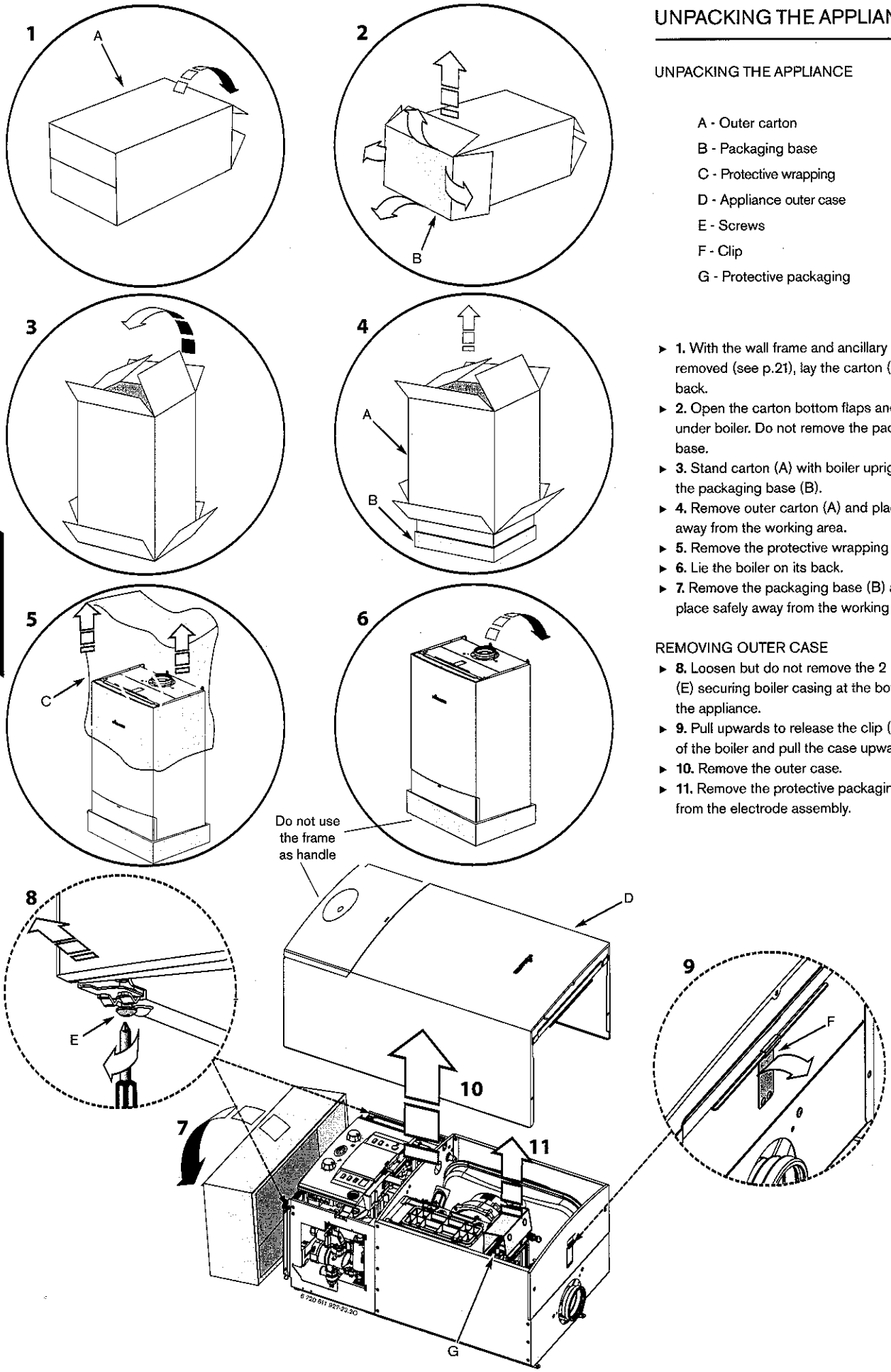
CHARGING LINK

(FILLING LOOP)

- Fully close the isolating valves on both the DHW inlet and CH return connections.
- Check that the gas and water connections are tight.
- **1.1** Unscrew the blanking plugs from both the DHW inlet and CH return connections.
- Place the filter inside the inlet side of the Charging Link ensuring that the filter mesh is inside the inlet.
- Fit the Charging Link assembly onto the DHW inlet and CH return connections.
- Do not insert the Charging Key at this stage.
- **1.2** Ensure that the Charging Link is pushed in fully to the stop tabs on both sides of the Charging Link.
- Fit two M4 screws complete with washers to each of the two connections. NB: It is not possible to access the third screw hole so this can be left.
- Do not attempt to turn the brass hexagon connectors.
- **1.3** Ensure that the white plastic Control Screw on the Charging Link is turned fully into its closed position, see diagram (1.3).
- Open the isolating valves on both the DHW inlet and CH return connections.
- Insert the Charging Key initially aligning the arrow on the key with the "unlock" symbol on the Charging Link body. Ensure that the key is inserted fully and turn to the "lock" position. Check that the key is secure, see diagram (1.3).
- To fill the system from the DHW inlet turn the white plastic Control Screw on the Charging Link to the fully out position.
- Once the system has been filled turn the white Control Screw to its closed position and then remove the Charging Key by turning back to its "unlock" position and withdrawing. Store the Charging Key in the clip provided on the inside of the bottom panel.







UNPACKING THE APPLIANCE

UNPACKING THE APPLIANCE

A - Outer carton
B - Packaging base
C - Protective wrapping
D - Appliance outer case
E - Screws
F - Clip
G - Protective packaging

- **1.** With the wall frame and ancillary items removed (see p.21), lay the carton (A) on its back.
- **2.** Open the carton bottom flaps and fold under boiler. Do not remove the packaging base.
- **3.** Stand carton (A) with boiler upright on the packaging base (B).
- **4.** Remove outer carton (A) and place safely away from the working area.
- **5.** Remove the protective wrapping (C)
- **6.** Lie the boiler on its back.
- **7.** Remove the packaging base (B) and place safely away from the working area.

REMOVING OUTER CASE

- **8.** Loosen but do not remove the 2 screws (E) securing boiler casing at the bottom of the appliance.
- **9.** Pull upwards to release the clip (F) on top of the boiler and pull the case upwards.
- **10.** Remove the outer case.
- **11.** Remove the protective packaging (G) from the electrode assembly.

BOILER CONNECTIONS

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

GAS AND WATER CONNECTIONS:

- System pipes may be run vertically upwards behind the boiler or below it. See Plumbing Manifold Section on page 15.

A - CH flow (22 mm),
B - CH return (22 mm),
C - Gas inlet (22 mm),
D - DHW outlet (15 mm)
E - Mains water inlet (15 mm),

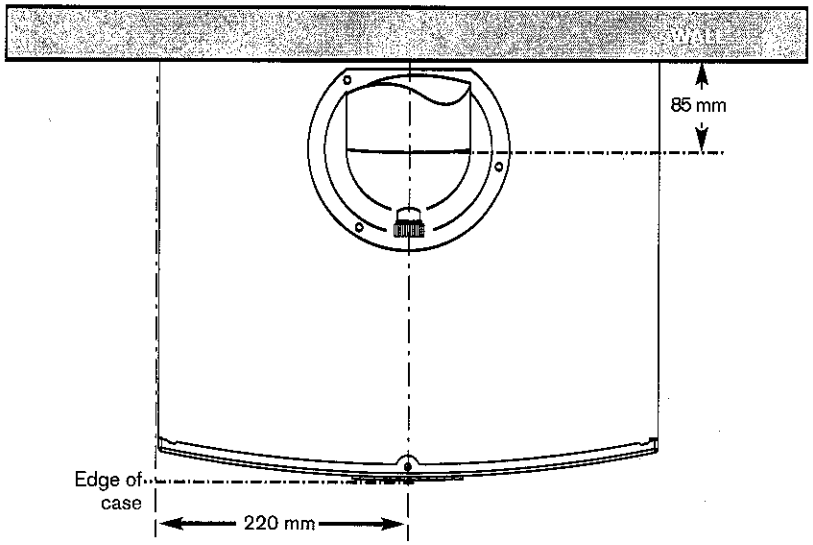
- **1.** Fit sealing washers to service valves before hanging boiler.

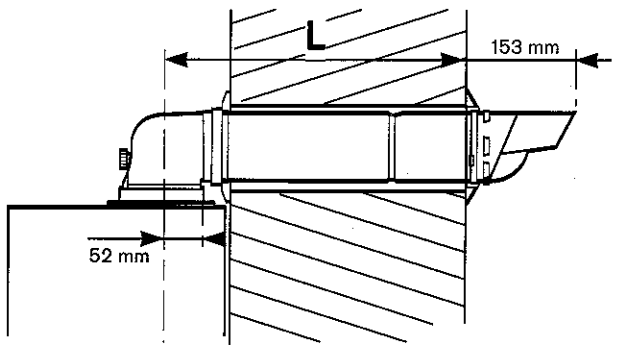
IMPORTANT: Before hanging the boiler onto the wall mounting plate ensure that the pressure relief valve connection is in the DOWN position. This is located on the right hand side of the wall frame at the rear.

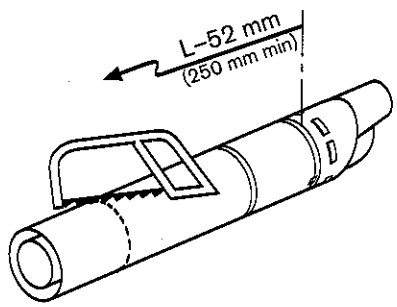
- **2.** Pull the extended tab/lever forward and down until there is no further travel.
- **3.** Hang the boiler on to the hanging bracket. The lugs pass through the rectangular holes in the boiler back panel.
  Take care not to disturb the washers on the connections.
  NOTE: *It is recommended that this lifting operation is carried out by 2 people, observing all precautions for the safe lifting of heavy objects.*
  Do not lift by the top case panel. There are two handling holes incorporated into the inner casing left and right in the lower section of the appliance.
- **4.** Lower the control panel into the service position by removing the screw (X) from the retaining bracket.
- **5.** Make connections to the heating system.
- Connect the gas supply to the boiler gas cock 22 mm compression.
- Connect mains water in and DHW out.

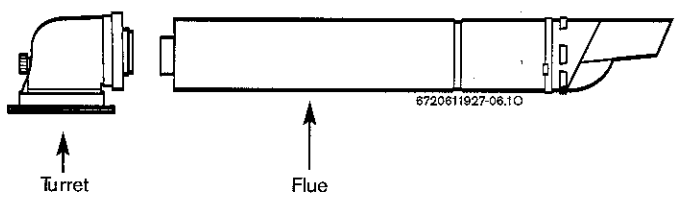
IMPORTANT: The pressure relief connector must be repositioned after the boiler has been correctly mounted to the wall mounting plate.

- **6.** Push the lever on the pressure relief connector UP until the stop on the inside of the handle is over the shoulder of the metal bracket to secure in place.









FLUE INSTALLATION

HORIZONTAL FLUE

(60/100 mm diameter)

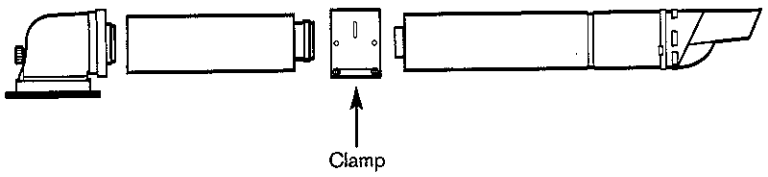
For vertical flues and 80/125 mm horizontal flues, please refer to separate Flue Kit instructions.

NOTE: to ease the assembly of flue components, apply silicone lubricant to sealing surfaces.

The instructions for the 60/100 mm diameter flue are shown below.

MEASURING THE FLUE (Standard Flue):

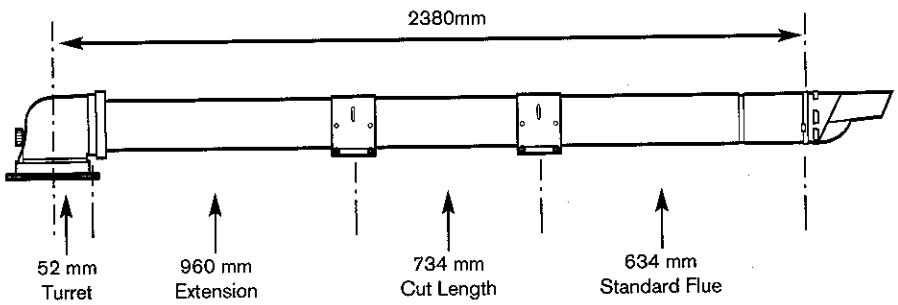
- Measure from the outside wall to the centre line of the flue turret (length L).
- Subtract 52 mm from the length L to give the correct dimension to the flue elbow connection.
- The terminal section should be cut to this dimension, however it must not be shorter than 250 mm.
- After cutting the end must be square and free from burrs to prevent damage to the flue seals.



MEASURING THE FLUE (Extension Flue Kits):

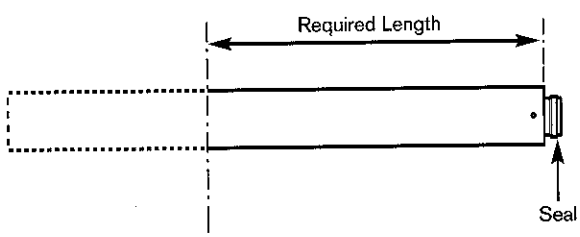
ONLY CUT EXTENDED FLUE LENGTHS

- As with the Standard Flue measure from the outside wall to the centre line of the flue turret (length L).
- Subtract the usable length of the standard flue (634 mm) from length L.
- Subtract the usable length of the turret (52 mm) from length L.
- Subtract 960 mm for each full length extension from the figure.
- Cut one of the extensions to the remainder.
- Cut both tubes square taking care not to distort the tubes.
- Remove any burrs.

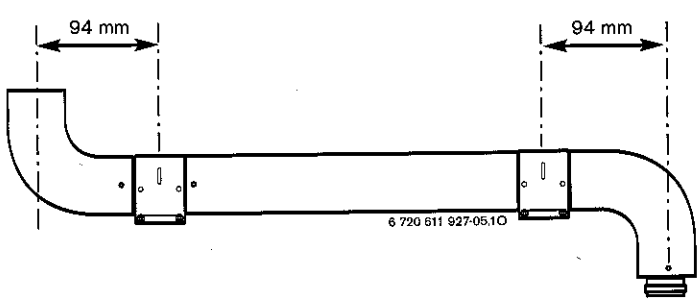


EXAMPLE:

Length L	=	2380 mm
Subtract Standard Flue		− 634 mm
Subtract Turret		− 52 mm
Subtract Full Extension		− 960 mm
Cut Length	=	**734 mm**



NOTE: Where extensions are reduced, cut length which **DOES NOT** contain the seal.



ADDITION OF FLUE BENDS:

When flue bends are being used an allowance of 94 mm per bend must be allowed from the centre line of the bend. In the example shown using a flue extension (960 mm) with 2 bends will achieve a total length of 1148 mm.

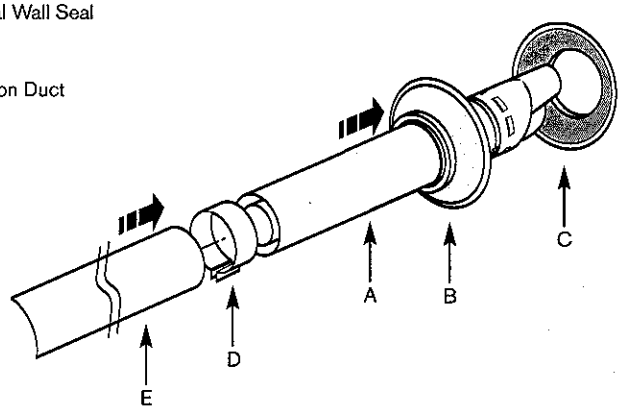
A - Standard Flue

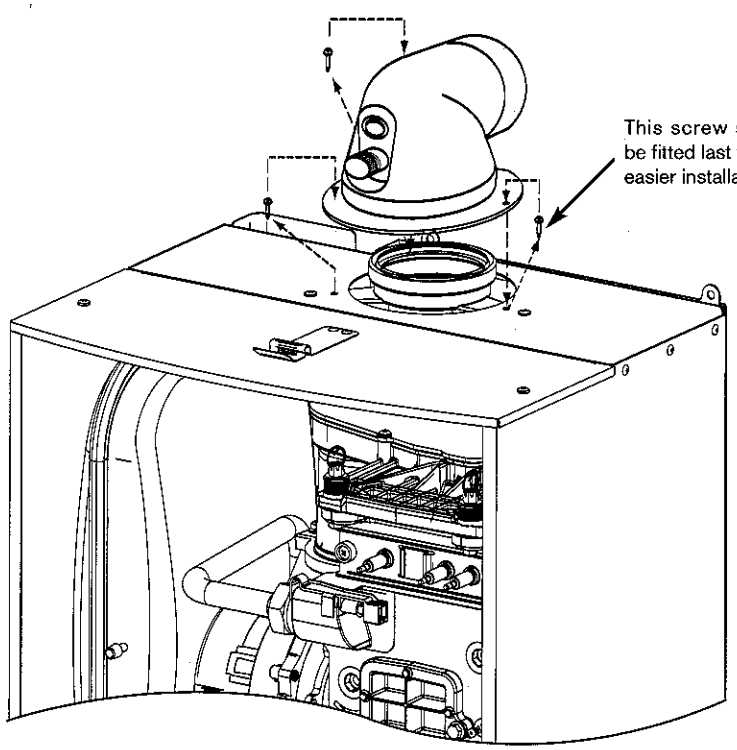
B - Internal Wall Seal

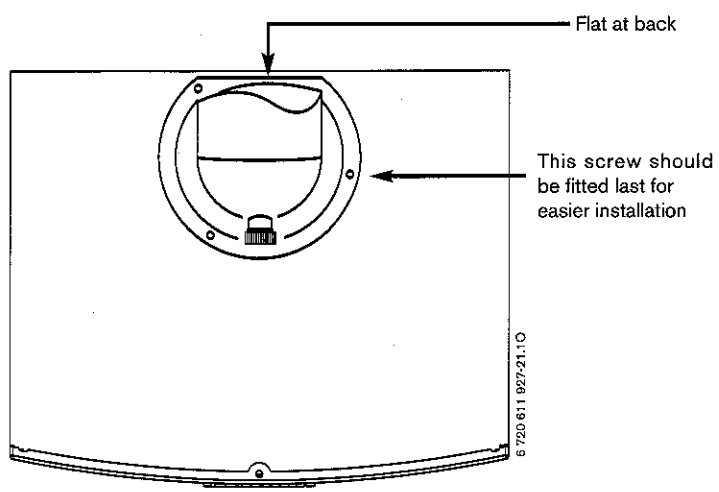
C - External Wall Seal

D - Clamp

E - Extension Duct







FLUE INSTALLATION

ASSEMBLING THE FLUE

1 Slide inner collar (B) onto terminal (A)

2 Additional extensions or bends:
Push fit all extensions/bends/terminal together and secure connections with clamps (D). The slope of the terminal outlet must face downwards.

FITTING THE FLUE

3 Fit the terminal (A) through the flue opening in the wall, exposing the plastic outlet section to the outside and fit the outer flue collar (C) over the notches to secure.

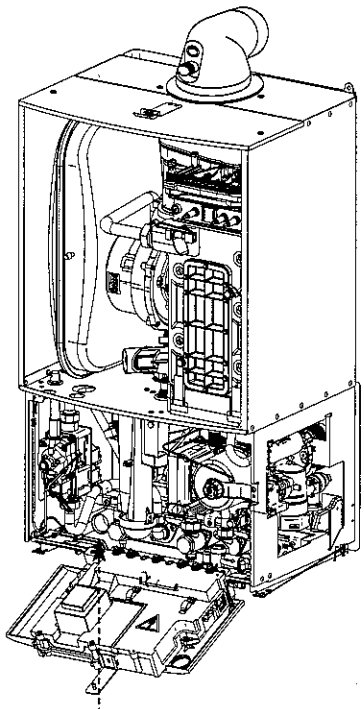
4 Assemble turret to boiler using the three screws (see below).
Note: Screws are in boiler or in flue kit.

FITTING THE TURRET:

- Flue turret should push directly down and not be twisted into correct position.
- ▸ Fit turret onto appliance and retain with three screws.
  NOTE: The clamping plate flat should be at the rear of the appliance.

ADDITIONAL NOTES AND REMINDERS:

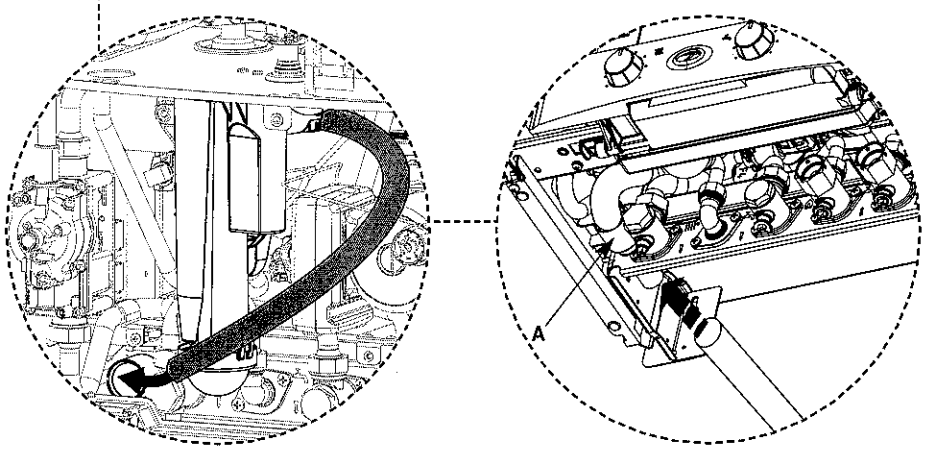
- Ensure that all cut lengths are square and free from burrs.
- The flue, when assembled, is fully sealed and components are pushed home.
- The flue is set at an angle of 3° or 52 mm per additional 1m length of extension used.

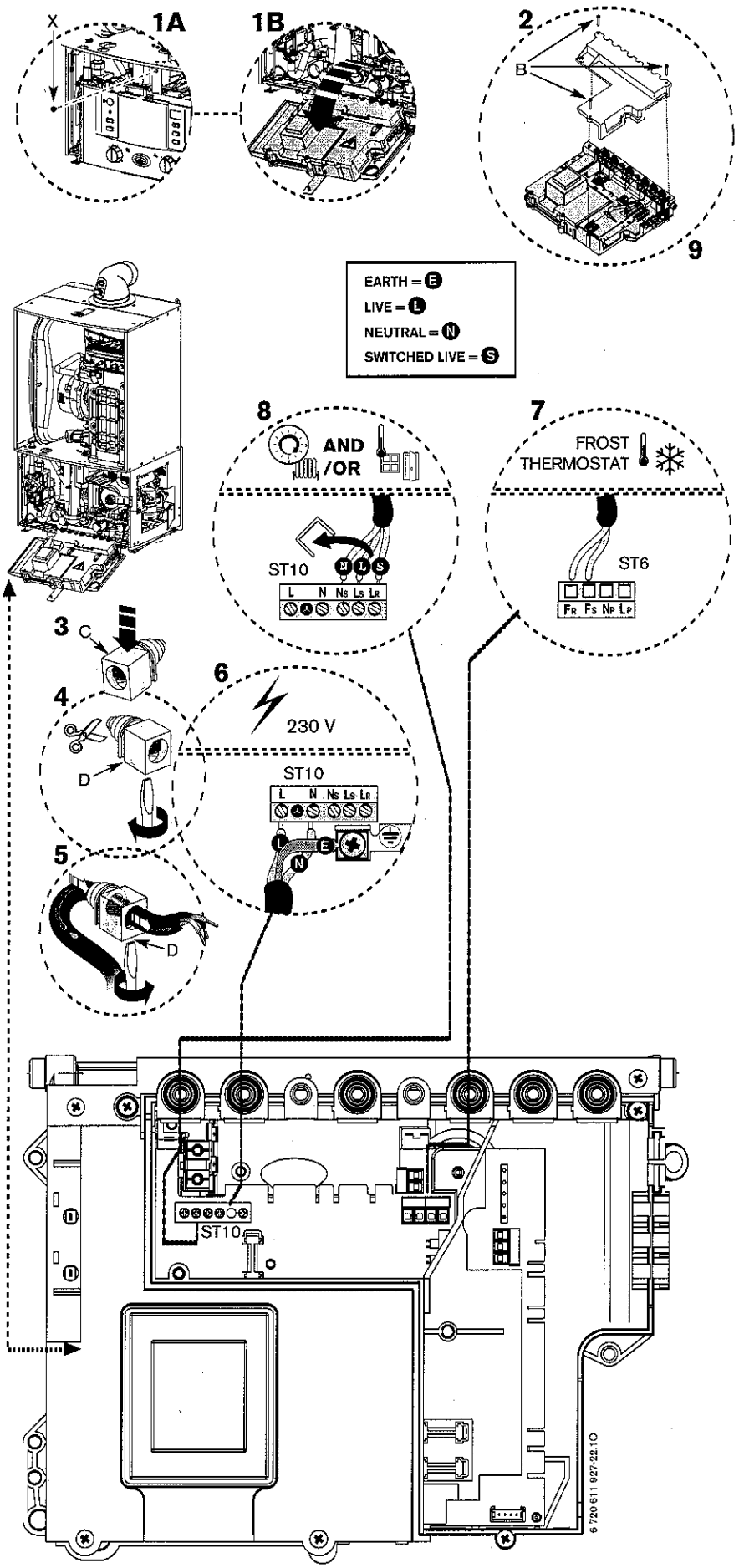


Never terminate or discharge into any open source, including; sink, bath, shower, bidet, toilet etc.

Note: any external condensate pipework of excessive runs should be protected with weather resistant insulation to help prevent freezing.

- Ensure that the condensate drain is 22 mm diameter plastic pipe. It must fall at least 50 mm per metre towards the outlet.
- An adapter (A) in 22 mm pipe is contained in the fitting pack.





ELECTRICAL

CAUTION: ISOLATE THE MAINS ELECTRICITY SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS

Danger of short circuit: When connecting the cables ensure that no cable pieces fall into the Heatronic.

Note: Mains supply to the boiler must be through a fused double pole isolator situated adjacent to the appliance. The isolator must have a contact separation of 3 mm minimum in all poles.

Access to electrical connections:

- ► Remove boiler casing to access control panel.

1. Lower the control panel into the service position by removing the screw (X) from the retaining bracket.
2. Unscrew the three screws (B) on the back of the control panel and pull off the connections cover.
3. Unclip cable clamp (C).
4. Cut off the tapered cable entry to fit cable diameter required.
5. Turn cable retaining screw (D) anti-clockwise. Run cable over the main crossbar and through the cable clamp (C), ensuring there is ample cable to reach the connectors. Turn cable clamping screw (D) clockwise to secure cable and replace clamp (C) into control panel.

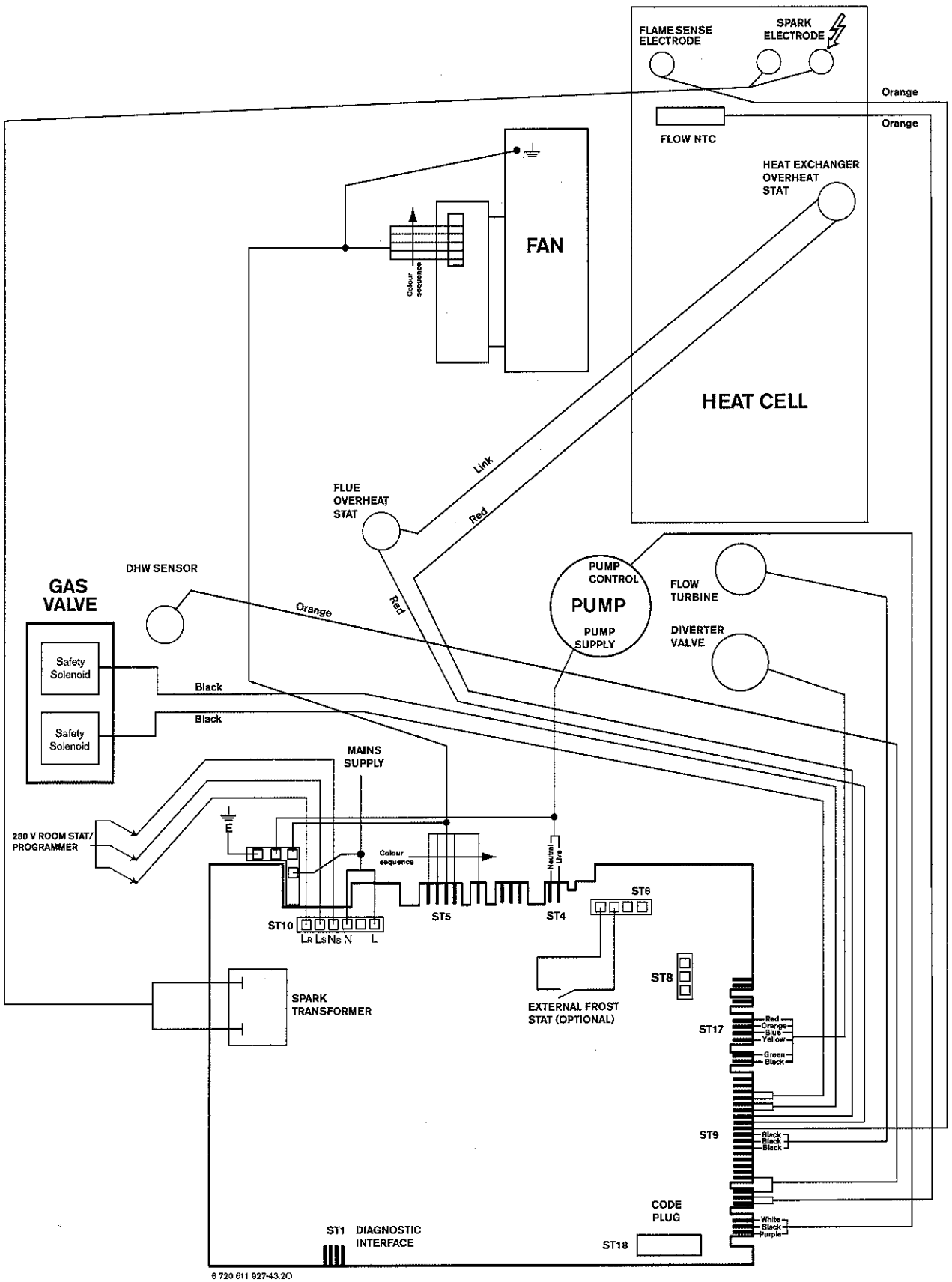
6. Mains power 230 V connection (ST10):
- ► Separate wires from cable end and strip to 6 mm
- ► Connect LIVE wire to terminal (L)
- ► Connect NEUTRAL wire to the terminal (N)
- ► Connect EARTH wire to the earth connector (⏚)

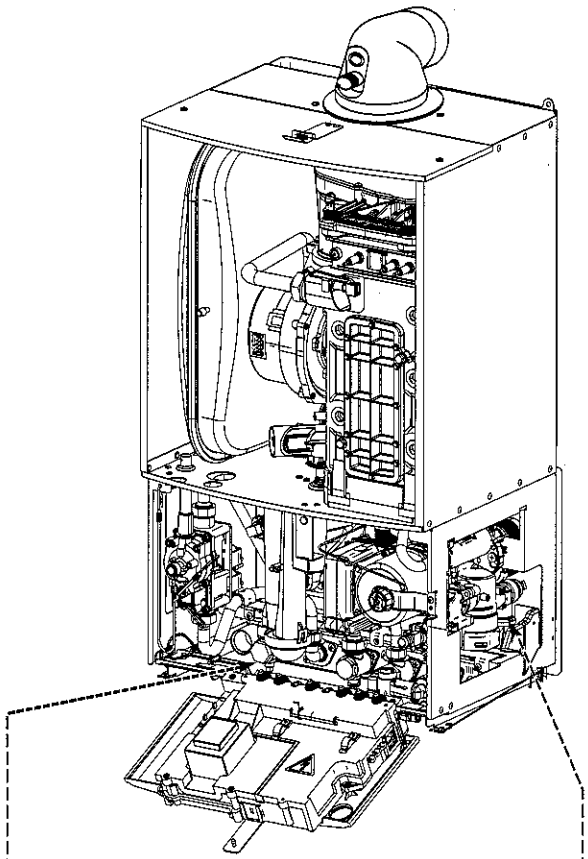
NOTE: Earth cable to be longer so that it pulls out last if mains cable is snagged.

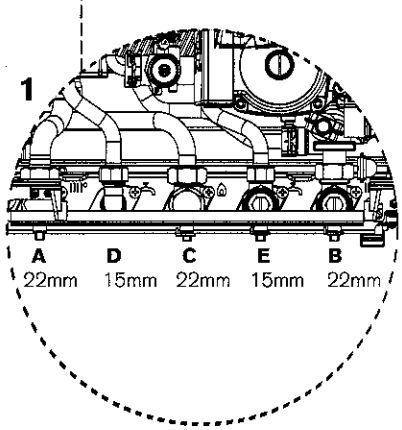
7. Optional external frost thermostat connection (ST6):
- ► Connect frost thermostat supply wire to terminal (Fs)
- ► Connect frost thermostat return wire to terminal (FR)

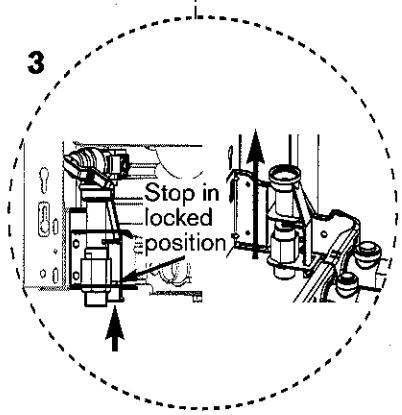
8. 230V room thermostat and/or external timer (ST10):
- ► Remove link
- ► Connect room thermostat LIVE supply to terminal (Ls)
- ► Connect room thermostat LIVE return to terminal (LR)
- ► Connect room thermostat NEUTRAL to terminal (Ns)

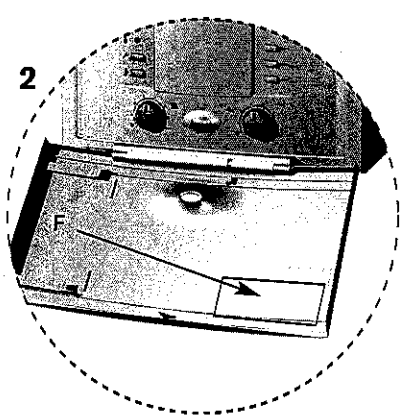
9. Refit control panel cover:
- ► Refit panel and secure with screws (B).
- ► Bring the control panel to its upper position and fix it with screw (A).

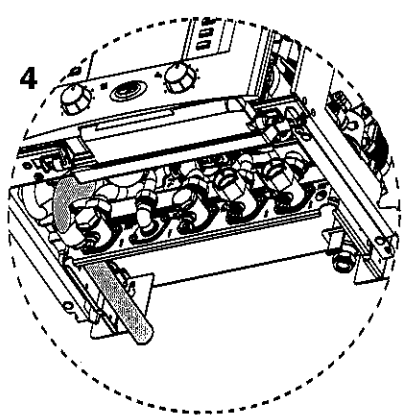

FLAME SENSE ELECTRODE
SPARK ELECTRODE
Orange
Orange
FLOW NTC
HEAT EXCHANGER OVERHEAT STAT
FAN
Colour sequence
HEAT CELL
Link
Red
FLUE OVERHEAT STAT
DHW SENSOR
Orange
Red
PUMP CONTROL
PUMP
PUMP SUPPLY
FLOW TURBINE
DIVERTER VALVE
GAS VALVE
Safety Solenoid
Safety Solenoid
Black
Black
MAINS SUPPLY
230 V ROOM STAT/ PROGRAMMER
Colour sequence
Neutral
Live
ST10
LR LS NS N L
ST5
ST4
ST6
ST8
SPARK TRANSFORMER
EXTERNAL FROST STAT (OPTIONAL)
ST17
Red
Orange
Blue
Yellow
Green
Black
ST9
Black
Black
Black
CODE PLUG
White
Black
Purple
ST1 DIAGNOSTIC INTERFACE
ST18
6 720 611 927-43.2O











PRE-COMMISSIONING

CHECKS

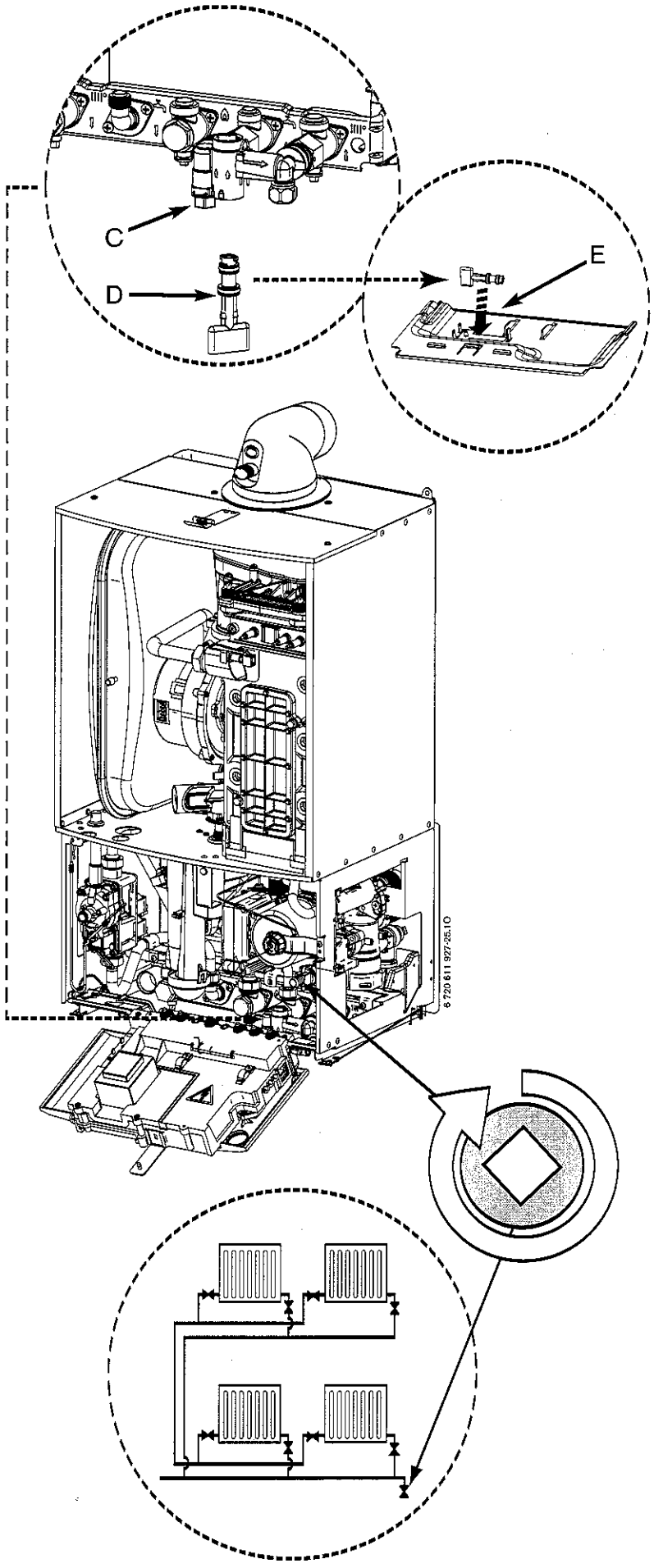
CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS

- **1.** Check that the service and water pipes are connected to the correct position on the manifold.

  A - CH flow (22mm),
  B - CH return (22mm),
  C - Gas inlet (22mm),
  D - DHW outlet (15mm)
  E - Mains water inlet (15mm),

- **2.** Check the gas type specified on the identification plate (F) matches that of the gas supply. Turn on the main gas supply, check the gas pipework, connections and rectify any leaks.
- **3.** Check that the pressure relief connector, located on the right hand side at the bottom of the wall frame, in its up position.
- **4.** Check that the condensate pipe has been connected to the adapter.

IMPORTANT: If the boiler is not to be commissioned immediately then: after sucessfully completing all of the checks and any rectification work, close the gas and water valves, shut off the gas supply and electrically isolate the boiler.



FILLING THE SYSTEM

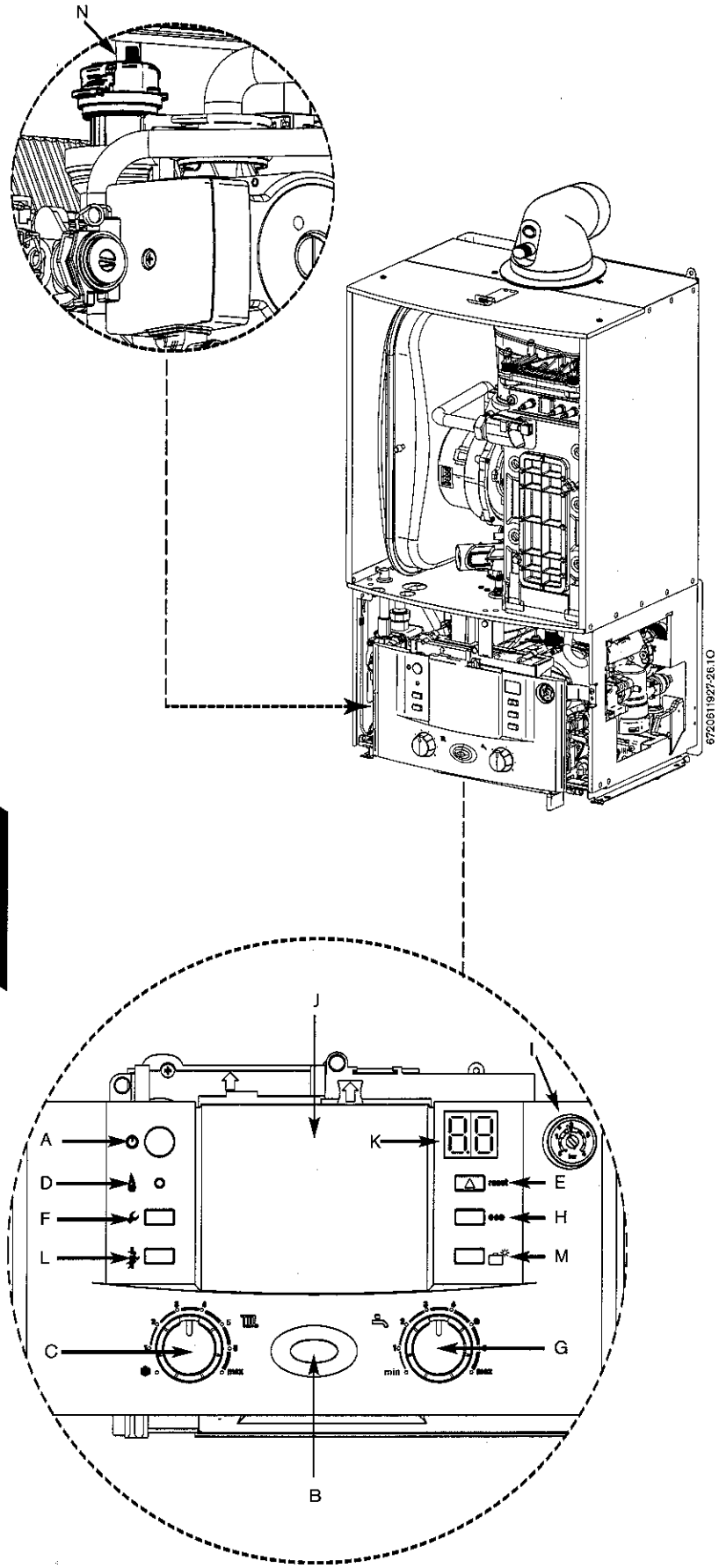
1 Ensure all system and boiler drain points are closed.
2 Remove the bottom panel (if fitted).
3 Ensure that the white plastic control screw (C) on the charging link is turned fully into its closed position.
4 Open the isolating valves on both the DHW inlet and CH return connections.
5 Insert the charging key (D) (situated in its storage position (E) on the bottom cover of the boiler) initially aligning the arrow on the key with the "unlock" symbol on the charging link body. Ensure that the key is inserted fully and turn to the "lock" position. Check that the key is secure.
6 To fill the system from the DHW inlet turn the white plastic control screw (C) on the charging link to the fully out position.
7 Once the system has been filled to a pressure of 1 bar turn the white control screw (C) to its closed position.
8 Vent all radiators, retighten when completed and check the system and correct any leaks.

- The boiler integral expansion vessel is precharged to 0.75 bar (equal to a static head of 7.5 meters [22 ft]). A Schraeder type valve is fitted to the expansion vessel to allow for pressure adjustment if required.
- *If an extra expansion vessel is fitted to the central heating return, adjust to the* ***same pressure*** *as the appliance internal expansion tank, refer to separate instructions with the extra expansion vessel.*

9 Briefly open the pressure relief valve to test its operation.
10 Refill the system up to 1 bar. Turn the white control screw (C) to its closed position and then remove the charging key by turning back to its "unlock" position and withdrawing.
11 Place the charging key (D) in its storage position (E) on the bottom cover of the boiler.

GAS SUPPLY

- ▸ Open gas cock on the boiler and purge the gas supply to the boiler ensuring that the room is well ventilated.
- ▸ Test gas supply for soundness as described in BS 6891.



STARTING THE APPLIANCE

IMPORTANT: Never run the appliance when the appliance/system is empty or partially filled.

SWITCHING THE APPLIANCE ON/OFF:

1 ▸ Turn on mains power supply.
▸ Turn on any external controls.
Set the thermostatic radiator controls to maximum temperature.
Set the clock/programmer to continuously ON and the room thermostat to maximum temperature.

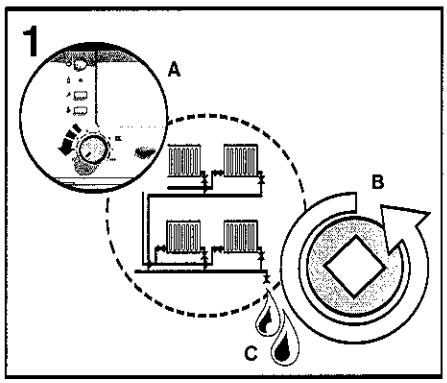
2 A - On/off button
B - On/off and fault indicator (BLUE)
C - Central heating temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - DHW temperature control
H - ECO button
I - System pressure gauge
J - Cover or optional programmer
K - Display
L - Central heating boost button
M - Holiday button
N - Automatic air vent

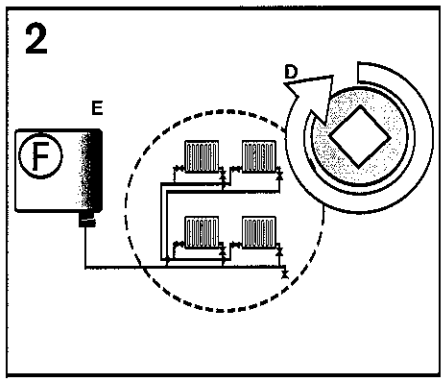
▸ Press button (A) and the power on indicator (B) illuminates BLUE. After a few seconds the display will show the flow temperature.

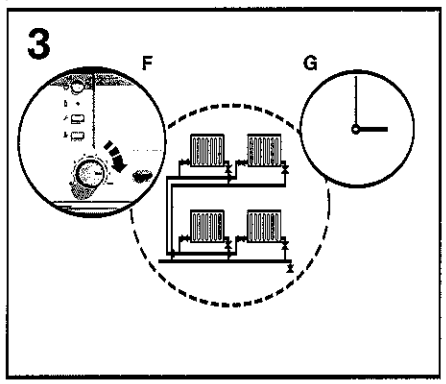
3 ▸ Turn the CH temperature control (C) to maximum. The burner on indicator (D) illuminates GREEN when the burner has lit.
NOTES:
• The first time the appliance is switched on, a once-only venting function is activated. The heating pump then switches on and off at intervals. This sequence lasts about 8 minutes. The display shows shows $_0{}^0$ in alternation with the CH flow temperature. The automatic air vent (N) must be open, please verify.
• The boiler runs for 15 minutes at minimum heating output to fill the condensate trap, the display (K) alternates between "-II-" and the central heating flow temperature. This occurs every time the mains supply has been interrupted.

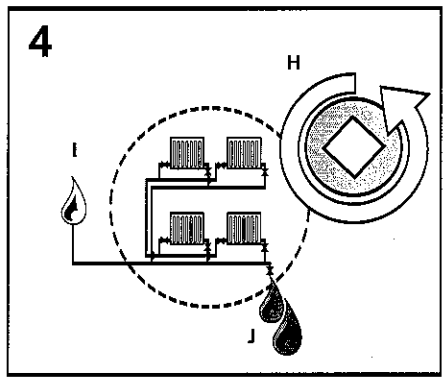
4 ▸ If the boiler fails to light the BLUE power indicator (B) and reset button (E) will flash alternately.
To reset press and hold the reset button (E) for 2 seconds. The boiler will be reset.

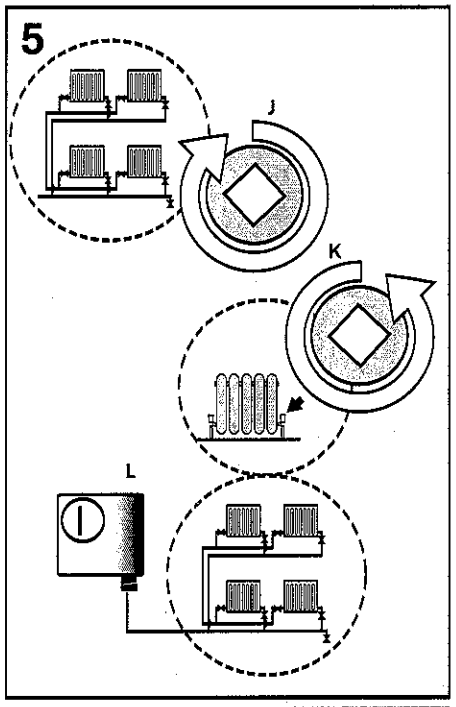
CAUTION: DO NOT PRESS POWER INDICATOR (B) TO RESET BOILER.

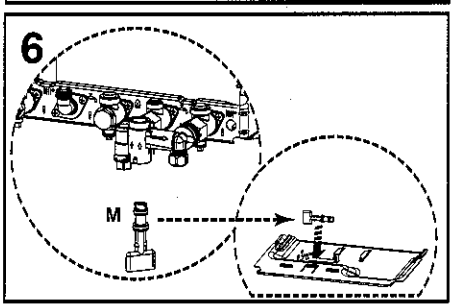


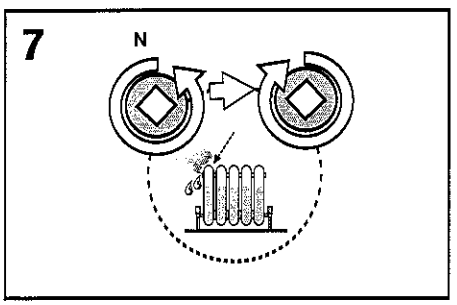


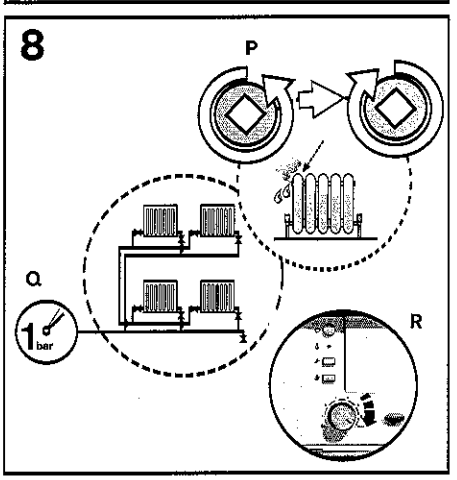












KEY

Valve

Flushing Agent

Inhibitor

6 720 611 927-27.1O

WATER TREATMENT

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.

ENSURE THAT THE SYSTEM HAS BEEN CLEANED AS ON PAGE 9 OF THESE INSTRUCTIONS.

FLUSHING (Central Heating):

1. ▸ Switch off the boiler (A).
   ▸ Open all drain cocks (B) and drain the system (C) while the appliance is hot.
2. ▸ Close drain cocks (D) and add a suitable flushing agent (E) at the correct strength for the system condition in accordance with the manufacturer's instructions.
3. ▸ Run the boiler/system at normal operating temperature (F) for the time stated by the manufacturer of the flushing agent (G).
4. ▸ Drain (H) and thoroughly flush the system to remove the flushing agent and debris (I).

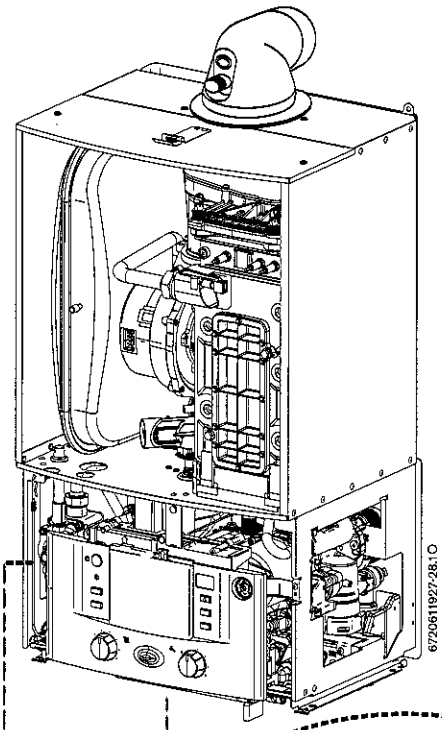
INHIBITOR (Central Heating):

5. ▸ Check drain cocks are closed (J) and all radiator valves are open (K) before adding a suitable* inhibitor (or combined inhibitor/ anti-freeze if the system is exposed to freezing conditions) to the heating system water (L) in accordance with the manufacturers instructions.
6. ▸ Fill via the built-in filling loop to between 1 and 2 bar using the filling key (M).
7. ▸ Vent all radiators; retighten vents when complete (N).
8. ▸ Re-pressurise if necessary to 1 bar (Q).
   ▸ Set all controls to maximum (R).
   ▸ Record the date when the inhibitor was added to the system on the guarantee card.

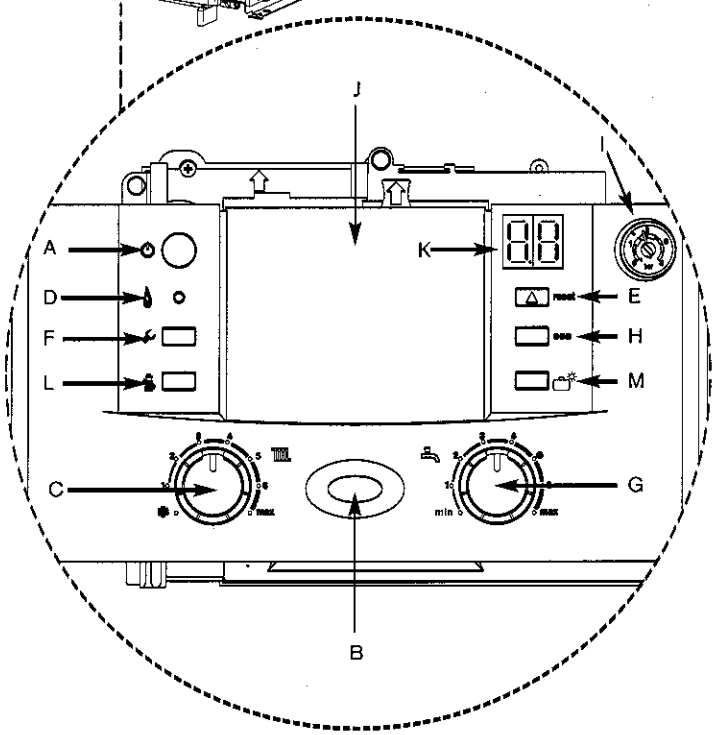
NOTE: The concentration level of inhibitor in the system should be checked every 12 months or sooner if system content is lost.

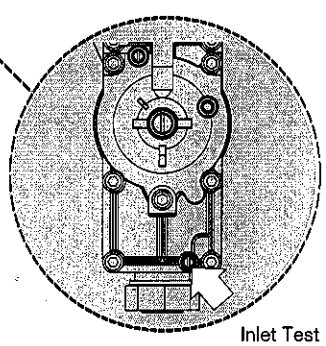
The addition of sealing agents to the system water is not recommended as this can cause problems with deposits left in the heat exchanger.

*** compatible with aluminium. The pH value of the system water must be less than 8 or the appliance guarantee will be invalidated.**



NOTE: When running in the service mode, the boiler will operate both the central heating and the domestic hot water circuits. This is to allow sufficient time for this part of the commissioning procedure. It will be necessary to run water through the domestic hot water circuit to ensure that the boiler will not cycle on low heating demands.





Inlet Test Nipple

A - On/off button
B - On/off and fault indicator (BLUE)
C - Central heating temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - DHW temperature control
H - ECO button
I - System pressure gauge
J - Cover or optional programmer
K - Display
L - Central heating boost button
M - Holiday button

COMMISSIONING

THE COMBUSTION FOR THE APPLIANCE IS FACTORY SET.
NO ADJUSTMENT IS REQUIRED IF THE GAS INLET PRESSURE IS CORRECT.

CHECKING GAS INLET PRESSURE:

The inlet pressure to the appliance must be checked using the following procedure:

SETTING THE BOILER TO MAXIMUM:

1 ▸ Press central heating boost button (L) for ten seconds and set Central Heating temperature to maximum.

• The central heating boost button will illuminate continually.

MEASURING THE INLET PRESSURE:

2 ▸ Slacken the screw in the inlet pressure test point and connect a manometer.

▸ Measure the pressure with the boiler running at maximum.

▸ Check the gas supply working pressure at the gas valve inlet point:

N.G. minimum 18 mbar

L.P.G. 37 mbar

▸ The gas rate should be measured at the gas meter after 10 minutes operation at maximum. See technical data section at the front of this manual.

▸ Ensure inlet pressure is satisfactory with all other gas appliances working.

▸ Replace controls cover. NOTE: This boiler is designed with a differential of 20°C across the heating system.

IMPORTANT: Do not continue commissioning until the correct gas inlet pressure is achieved.

▸ If pressure is satisfactory press the central heating boost button (L) again and the boiler will return to normal operation.

• If left in the service mode the control will return to normal operation after 15 minutes.

▸ Re-seal the screw in the gas inlet pressure test point.

DOMESTIC HOT WATER:

Controlling the hot water temperature

▸ The hot water temperature can be set to between approximately 40°C and 60°C using the temperature control (G).

DOMESTIC HOT WATER PRE-HEAT:

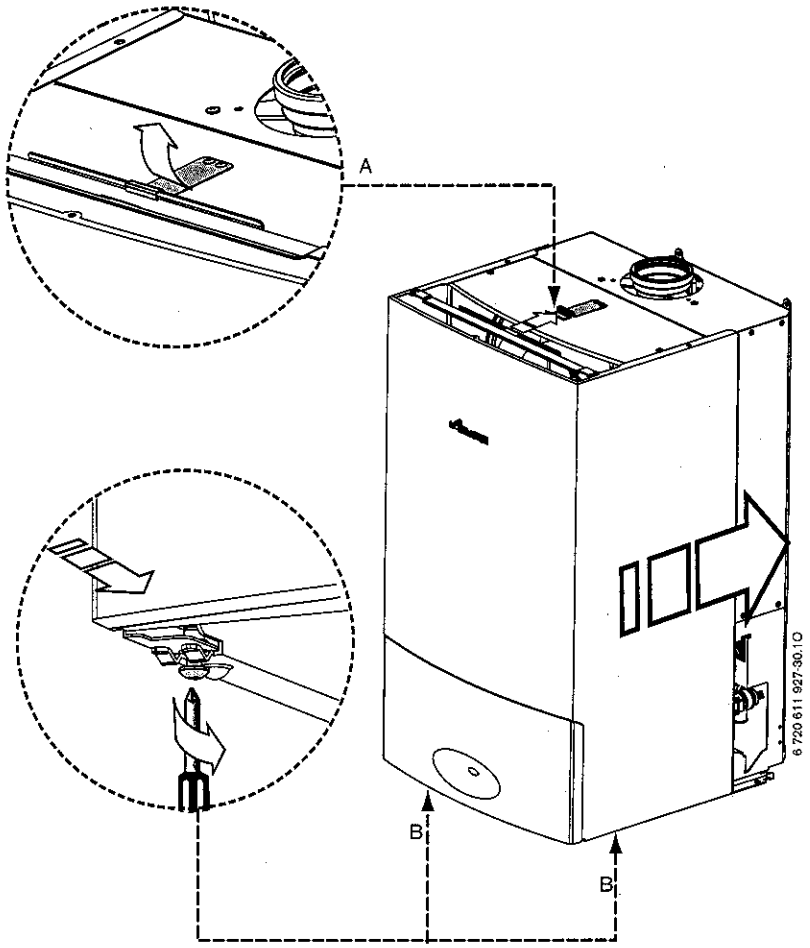
Pre-heat reduces the time taken to produce hot water at the tap and is controlled by the ECO button (H).

▸ Press the ECO button to select either:

When the ECO button is **not illuminated** the boiler will be in pre-heat mode (which will reduce the time taken to produce hot water at the tap).

OR

When the ECO button **is illuminated** the boiler will be in Economy mode with pre-heat no longer active.



FINISHING COMMISSIONING

The boiler has been factory set, so there should be no need to adjust any controls.

REPLACE OUTER CASING:

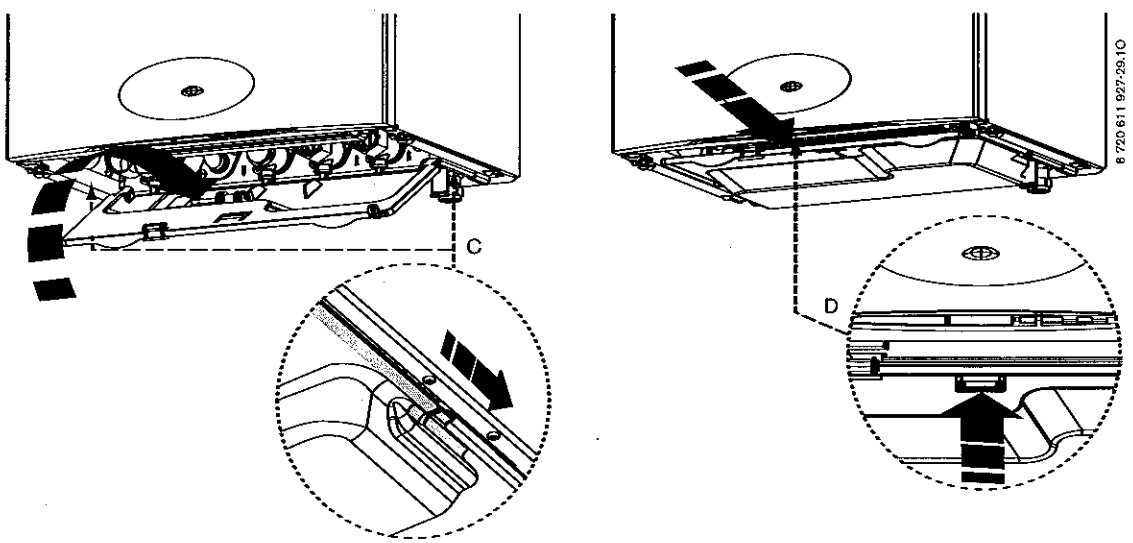
1 Replace outer casing making sure that the securing points are properly located.
   ▸ Press the clip (A) downwards to secure casing on top.
   ▸ Retighten bottom two screws (B).

INSTALLING BOTTOM PANEL:

2 The bottom panel slides onto two ledges (C) either side of the boiler frame.
   ▸ Hold the panel up against the underside of the boiler and slide towards the rear until it is fully engaged.

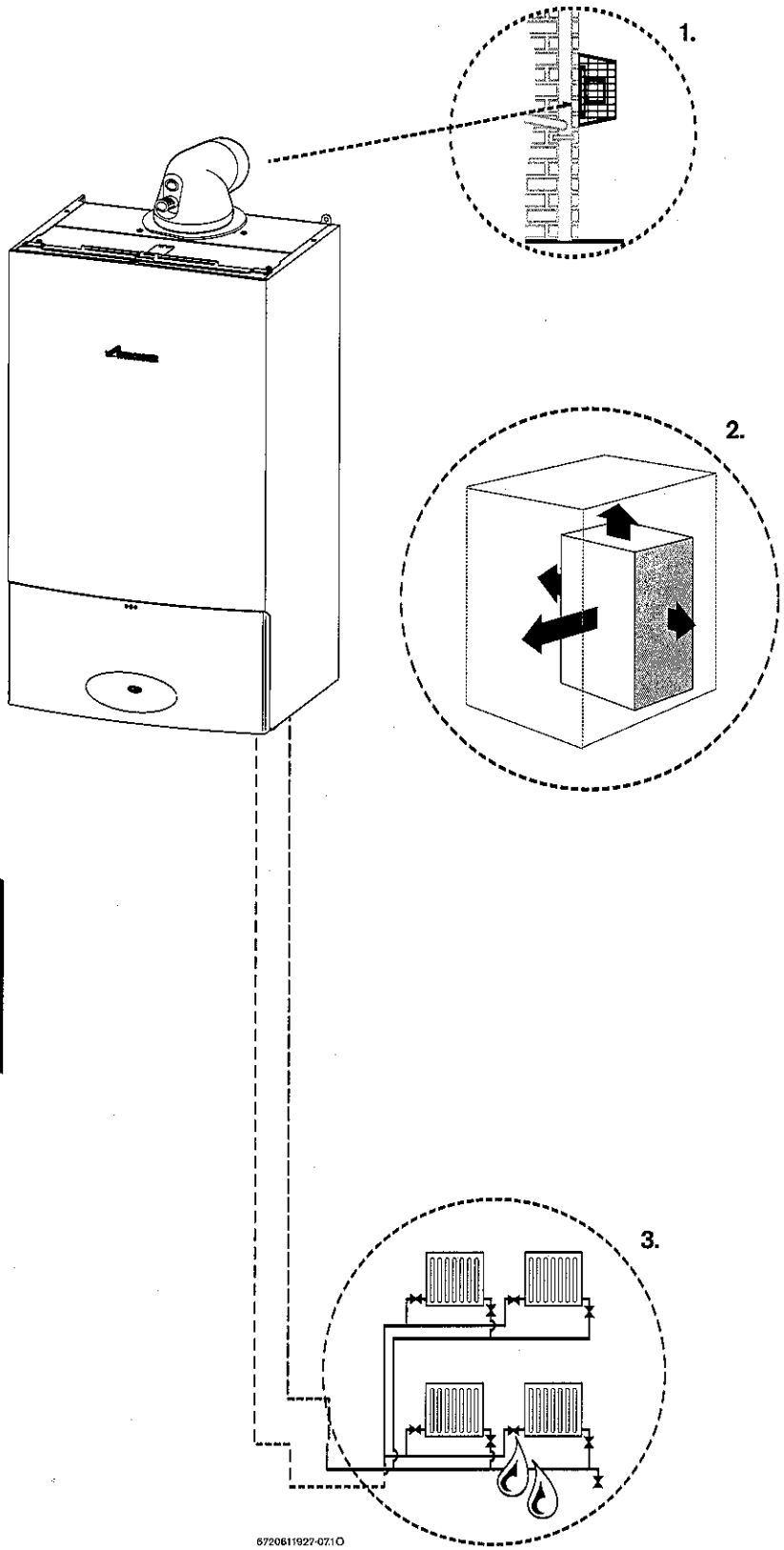
HANDOVER:

- Complete the Benchmark check list.
- Set up the controls and show the user how to operate all the controls shown in the User Guide.
- If the appliance is unused and exposed to freezing conditions; shut off all the mains supplies and drain the system and boiler.



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

IMPORTANT: AFTER REPLACEMENT OF ANY COMPONENTS ALWAYS CHECK FOR GAS SOUNDNESS WHERE RELEVANT AND CARRY OUT FUNCTIONAL CHECKS AS DESCRIBED IN COMMISSIONING.
ANY O-RING OR GASKET THAT APPEARS DAMAGED MUST BE REPLACED.



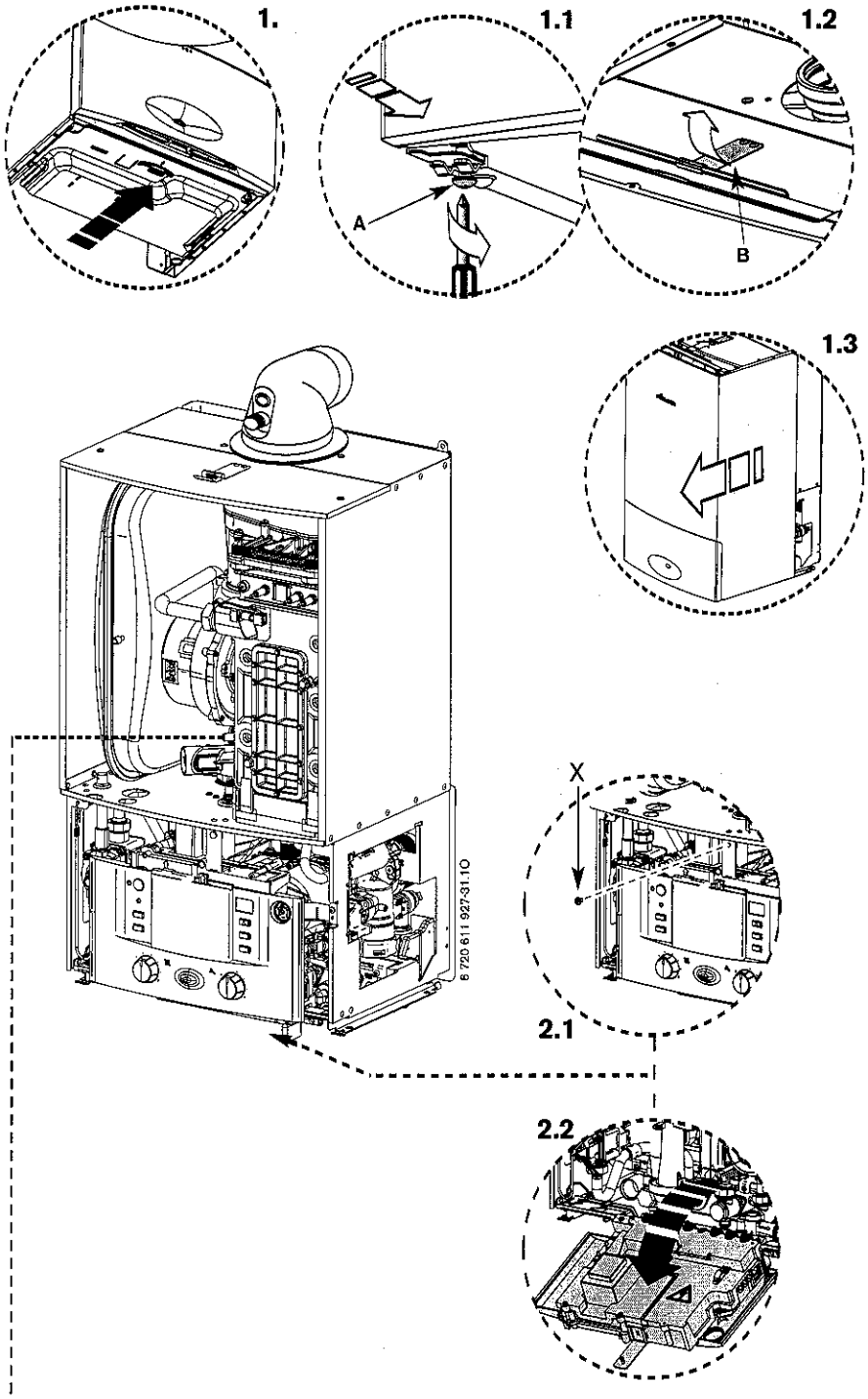
INSPECTION AND SERVICE

IMPORTANT: Any service work must be carried out by competent registered engineers such as British Gas or Corgi registered engineer.

- To ensure the continued efficient operation of the appliance it must be checked at regular intervals.
- The frequency of servicing will depend upon the particular installation conditions and usage. However, an annual service is recommended.
- The extent of the service required by the appliance is determined by the operating condition of the appliance when tested by **fully qualified engineers.**

INSPECTION

1. Check that the terminal and the terminal guard, if fitted, are clear and undamaged.
2. If the appliance is in a compartment or cupboard check that the specified service space around the appliance is clear.
3. Check all the joints and connections in the system and remake any that show signs of leakage. Refill and re-pressurise if applicable as described in Commissioning.
   ▸ Operate the appliance and take note of any irregularities. Call up the last fault stored by the Bosch Heatronic, Service Function **.0.** Refer to Fault Finding for rectification procedures.



COMPONENT ACCESS

1. Removing outer case

1. Remove bottom panel by pulling it forward and off.
1.1 Undo but do not remove the 2 screws (A) securing boiler casing at the bottom of the appliance.
1.2 Pull upwards to release the clip (B) on top of the boiler.
1.3 Pull case forward and remove.

2. Adjusting boiler control to service position

2.1 Remove screw (X) securing control.
2.2 Gently pull forward until it comes to rest in service position.

SERVICING & SPARES

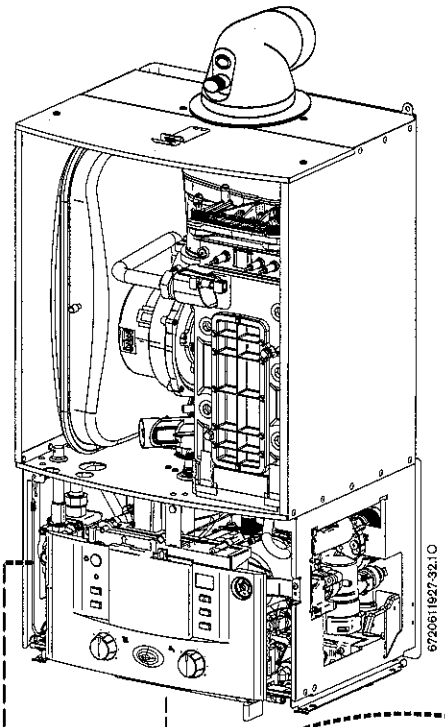
Primary Heat Exchanger

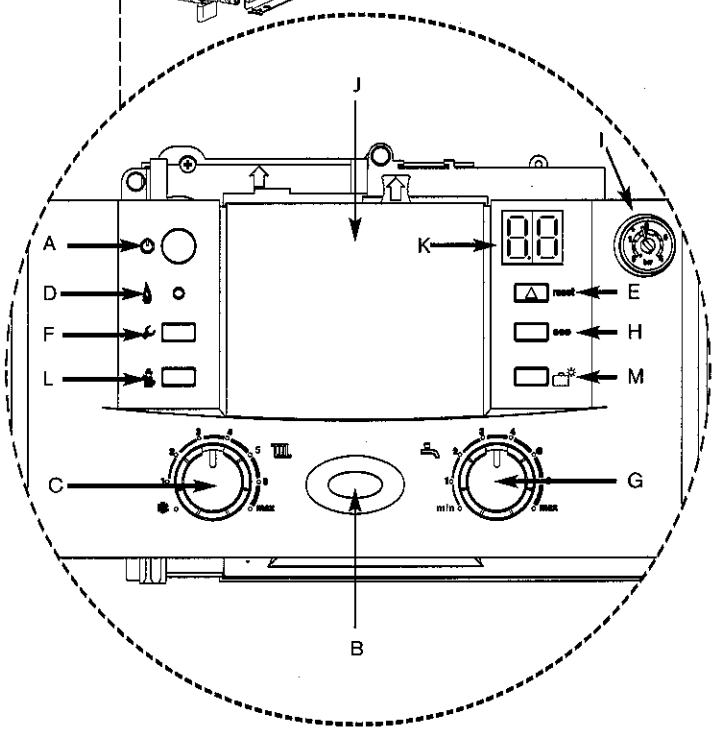
There is a special accessory kit available specifically designed for cleaning the heat exchanger. If required order 7 719 001 996.

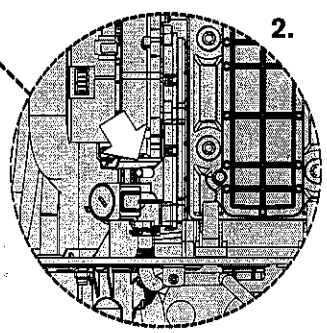
3. ▸ Check fan pressure at the test point next to the fan using an electronic manometer
▸ The boiler must be run at maximum output. Pressure will read negative and be greater than:

25CDi - 2.7 mbar
30CDi - 4.1 mbar
35CDi - 5.1 mbar
40CDi - 5.2 mbar

▸ Pressures measured below these figures will indicate that the heat exchanger will require cleaning.







Setting Boiler to Maximum.

NOTE: When running in the heating boost mode, the boiler will operate both the Central Heating and DHW circuits. This is to allow sufficient time for setting procedure.
It will be necessary to run water through the DHW circuit to ensure that the boiler will not cycle on low heating demands.

A - On/off button
B - On/off and fault indicator (BLUE)
C - Central heating temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - DHW temperature control
H - ECO button
I - System pressure gauge
J - Cover or optional programmer
K - Display
L - Central heating boost button
M - Holiday button

1 ▶ Press and HOLD central heating boost button (L) for 10 seconds and set Central Heating temperature to maximum.
• The central heating boost button will illuminate continually.
• The boiler will stay in this mode for 15 minutes unless the central heating boost button is pressed again.

2 ▶ Pull the cover off and connect a manometer to the fan pressure test point.
▶ After measurement replace test point cover.

Pressure will read negative and be greater than:
25CDi - 2.7 mbar
30CDi - 4.1 mbar
35CDi - 5.1 mbar
40CDi - 5.2 mbar

• Pressures measured below these figures will indicate that the heat exchanger will require cleaning.
• There is a special accessory kit available specifically designed for cleaning the heat exchanger. If required order 7 719 001 996.

COMBUSTION TESTING MUST BE CARRIED OUT BY A COMPETENT PERSON. IT MUST **NOT** BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE COMBUSTION CHECK IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN IT'S USE.

To Clean the Heat Exchanger

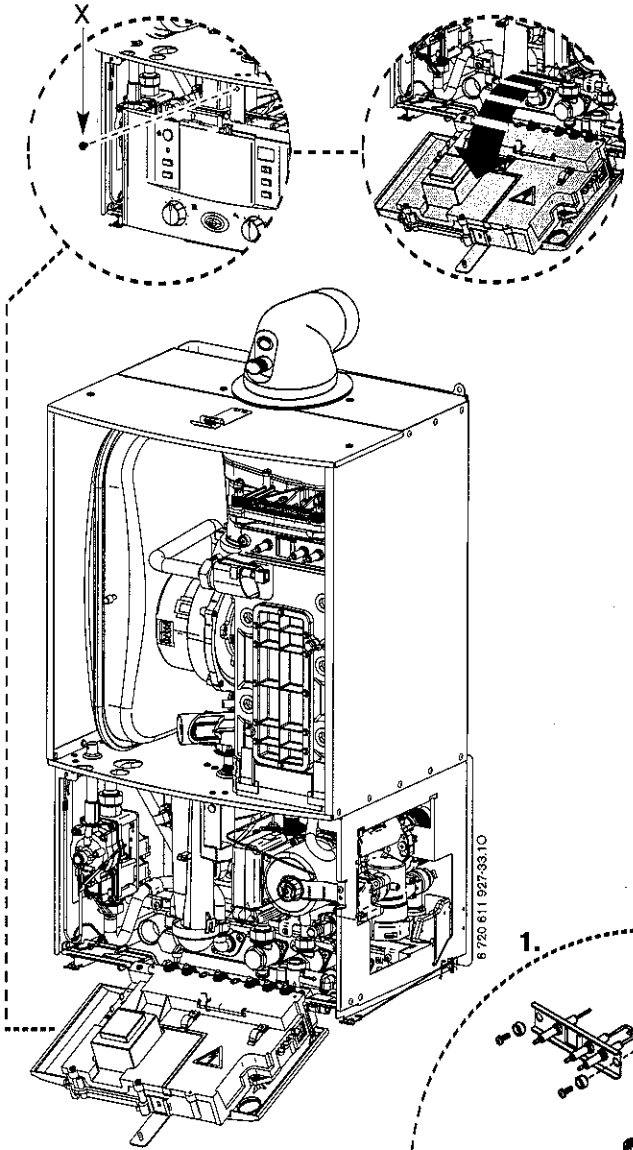
▸ Remove outer case and base panel and isolate the appliance from power.

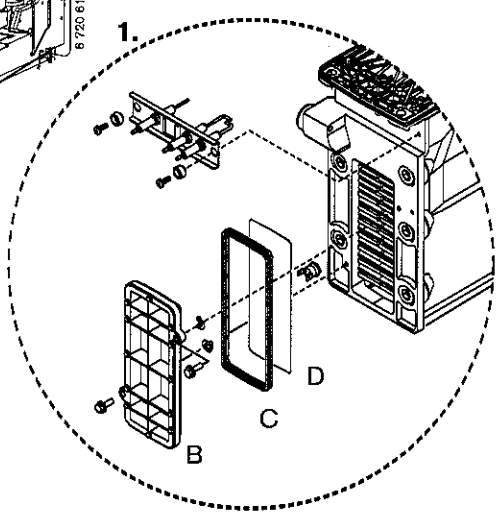
1. ▸ Remove cleaning access cover (B), seal (C) and metal plate (D) securing it, if present.

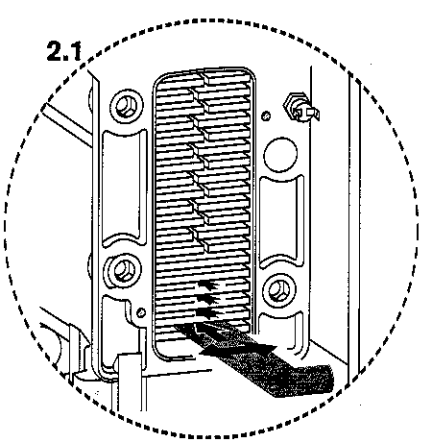
2.1 ▸ Loosen any deposits in the heat exchanger from top to bottom using the cleaning blade.

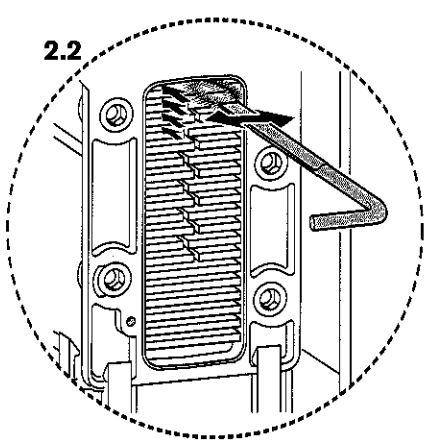
2.2 ▸ Clean the heat exchanger from top to bottom using the brush.

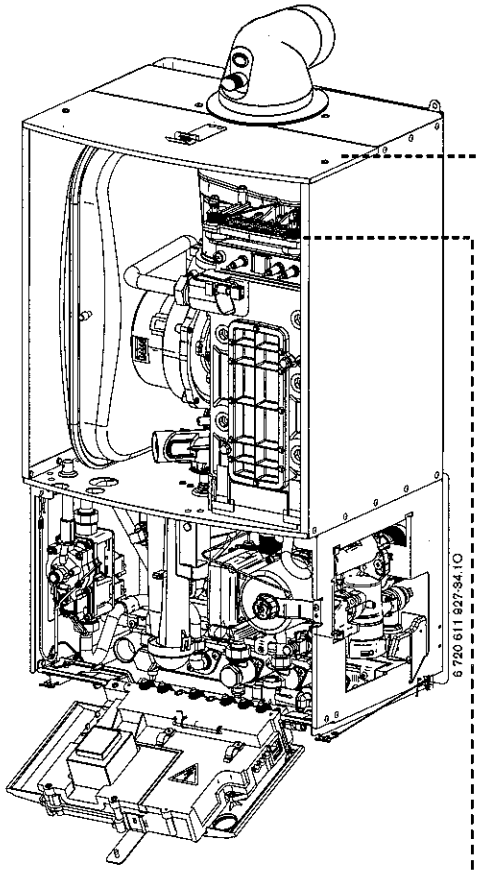
▸ Refit the clean out coverplates in reverse order using a new seal (C) and tighten screws to a torque of approximately 5 Nm.

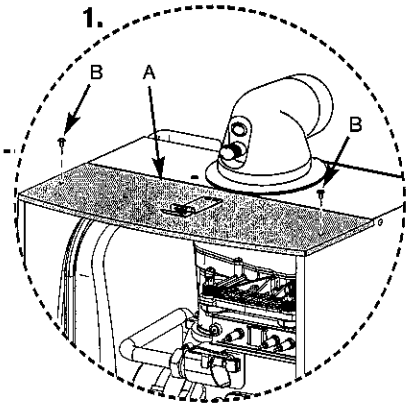


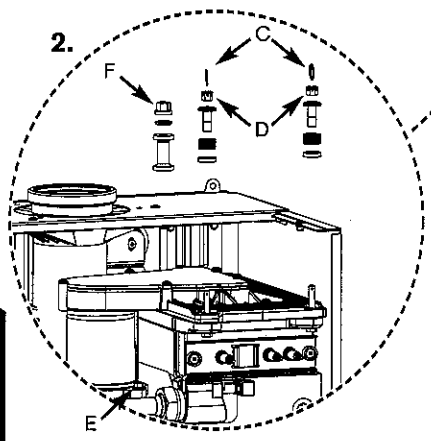


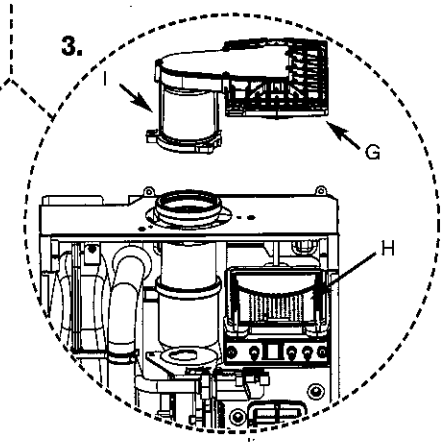


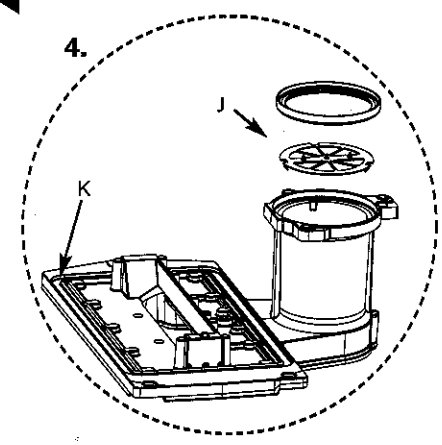


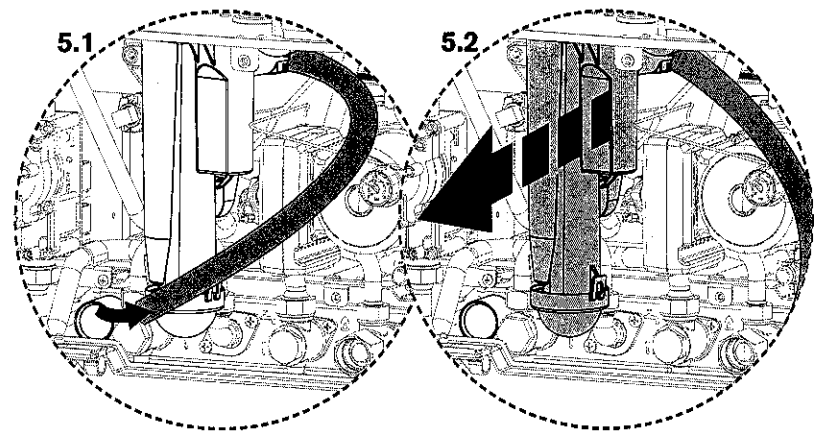












To Clean the Burner

1. ▸ Remove cover panel (A) by removing the screws (B).
   ▸ Check that the boiler is completely isolated from the gas supply.
2. ▸ Remove the clips (C) and unscrew the two bolts (D).
   ▸ Unscrew and remove the two hexagon screws (E) securing the fan.
   ▸ Slacken fully the rear securing bolt (F).
   ▸ Remove the burner cover plate (G).
3. ▸ Remove the burner (H) and clean components. **Do not use a wire brush.**

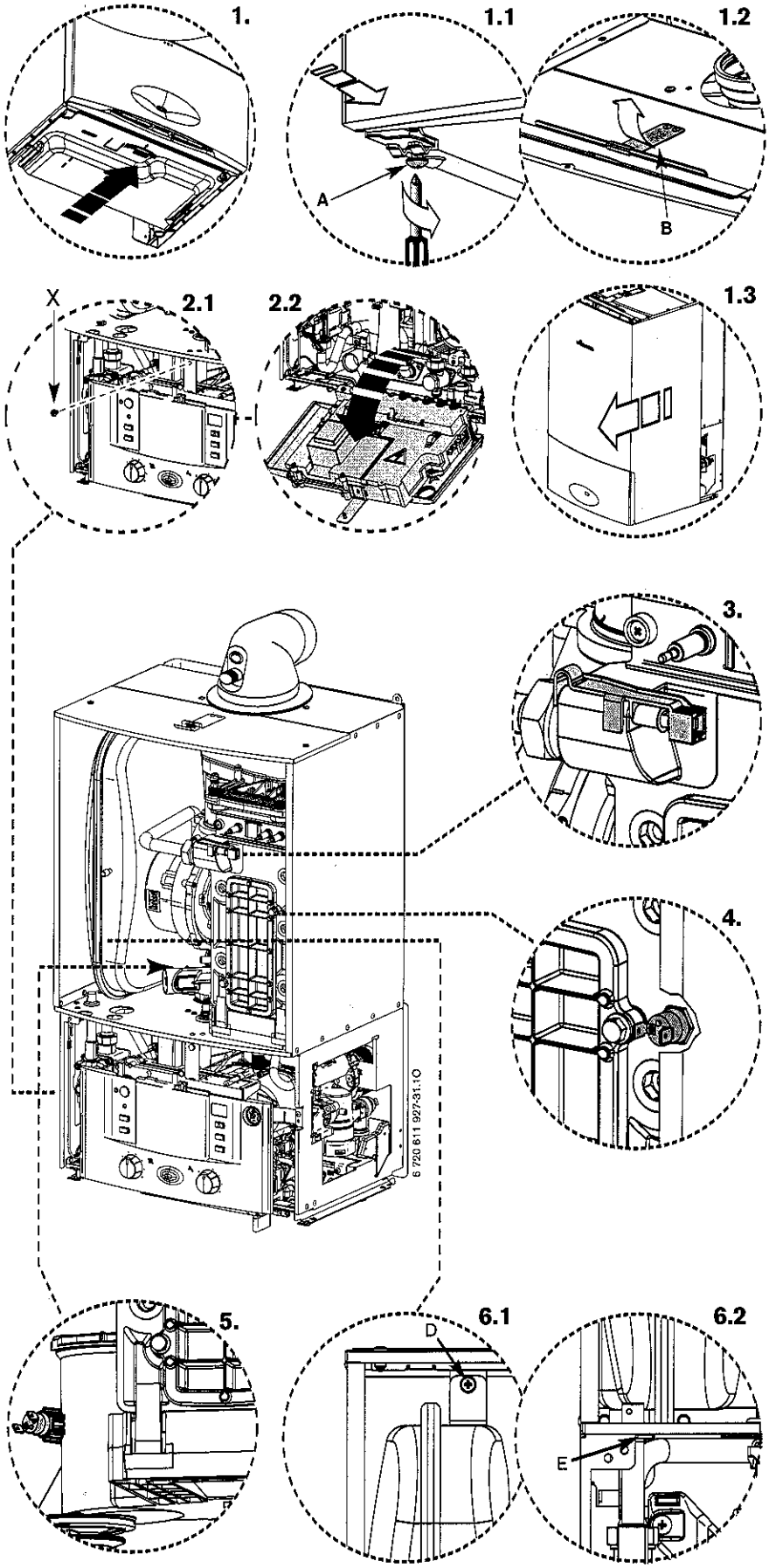
To Check the Diaphragm in Burner Cover

4. ▸ Carefully withdraw diaphragm (J) from fan intake tube and check for soiling and splits.
   ▸ Carefully refit diaphragm (J) the correct way round into the fan intake tube.
   Note: The flaps of the diaphragm (J) must open upwards.
   ▸ Re-assemble burner in reverse order using a new seal (K).
   ▸ Adjust gas/air ratio. Refer to section "Setting the gas/air ratio".

To Clean the Condensate Trap

5.1 ▸ Pull condensate pipe out of the adapter.
5.2 ▸ Remove trap from boiler.
   ▸ Clean trap and check that the connection to the heat exchanger is clear.
   ▸ Fill the condensate trap with approximately 1/4 litre of water and refit in reverse order.

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



IMPORTANT: AFTER REPLACEMENT OF ANY COMPONENTS ALWAYS CHECK FOR GAS SOUNDNESS WHERE RELEVANT AND CARRY OUT FUNCTIONAL CHECKS AS DESCRIBED IN COMMISSIONING. ANY O-RING OR GASKET THAT APPEARS DAMAGED MUST BE REPLACED.

1. Removing outer case

1. ▸ Remove bottom panel by pulling it forward and off.

1.1 ▸ Loosen but do not remove the 2 screws (A) securing boiler casing at the bottom of the appliance.

1.2 ▸ Pull upwards to release the clip (B) on top of the boiler.

1.3 ▸ Pull case forward and remove.

2. Moving boiler control to service position

2.1 ▸ Remove screw (X)securing control.

2.2 ▸ Gently pull forward.

3. Primary sensor

▸ Press retaining clip on plastic moulding and pull upwards until clear of pocket in heat exchanger.

▸ Separate sensor from connector, coat new sensor with heat conductive paste and replace.

4. Overheat thermostat

▸ Remove two electrical connectors from thermostat.

▸ Unscrew the sensor.

5. Flue limit thermostat

▸ Remove electrical connections.

▸ Unscrew thermostat from flue.

6. Expansion Vessel

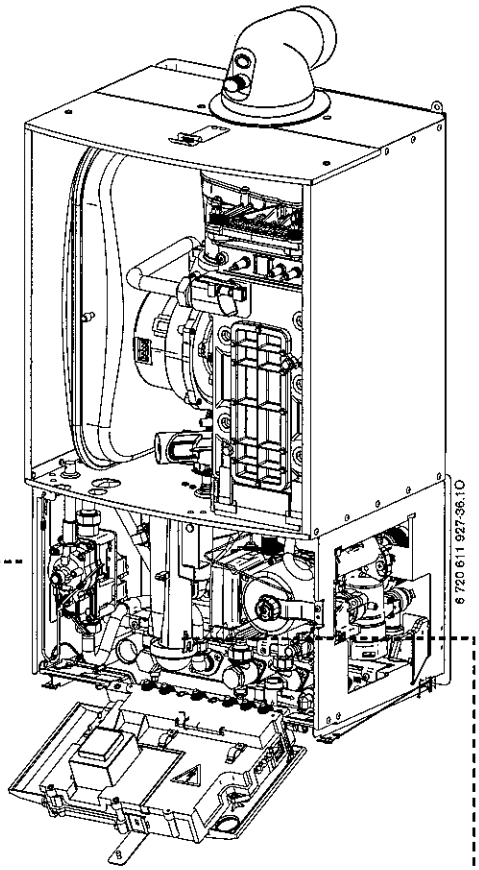
▸ Drain the appliance.

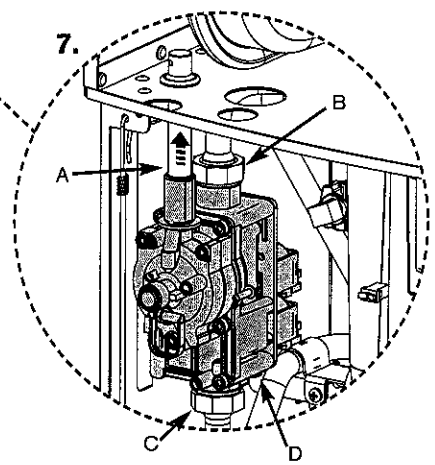
6.1 ▸ Remove locking screw (D).

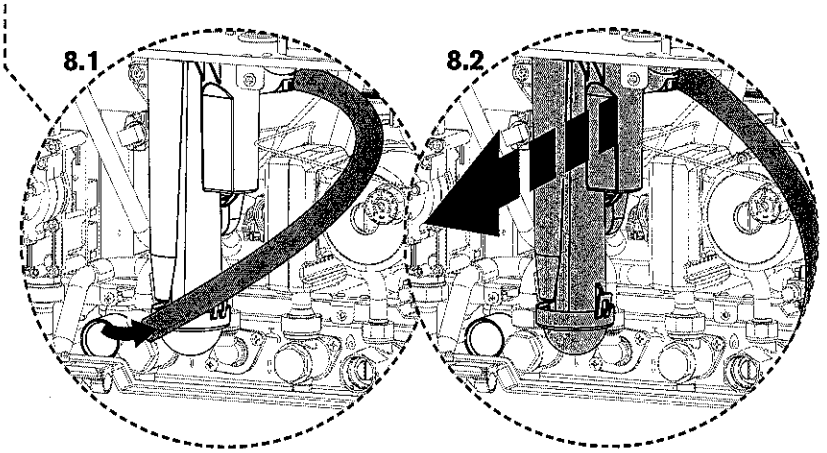
6.2 ▸ Undo the union connection (E) at the bottom of the expansion vessel.

▸ Remove expansion vessel from boiler.

▸ Set the pressure of the new vessel to that required by the system.







7. Gas valve

▸ Isolate gas supply at boiler gas cock.

▸ Push air inlet tube (A) upwards.

7.1 ▸ Undo top gas connection (B) to gas valve.

7.1 ▸ Undo bottom gas connection (C) to gas valve.

7.2 ▸ Undo two securing screws (D) on the underside of casing.

▸ Pull valve up and forward out of boiler.

▸ Disconnect electrical connections.

▸ Replace valve with new seals and check for gas soundness.

Note: *The valve will require setting, follow procedure "Setting the gas/air ratio" in the gas conversion section.*

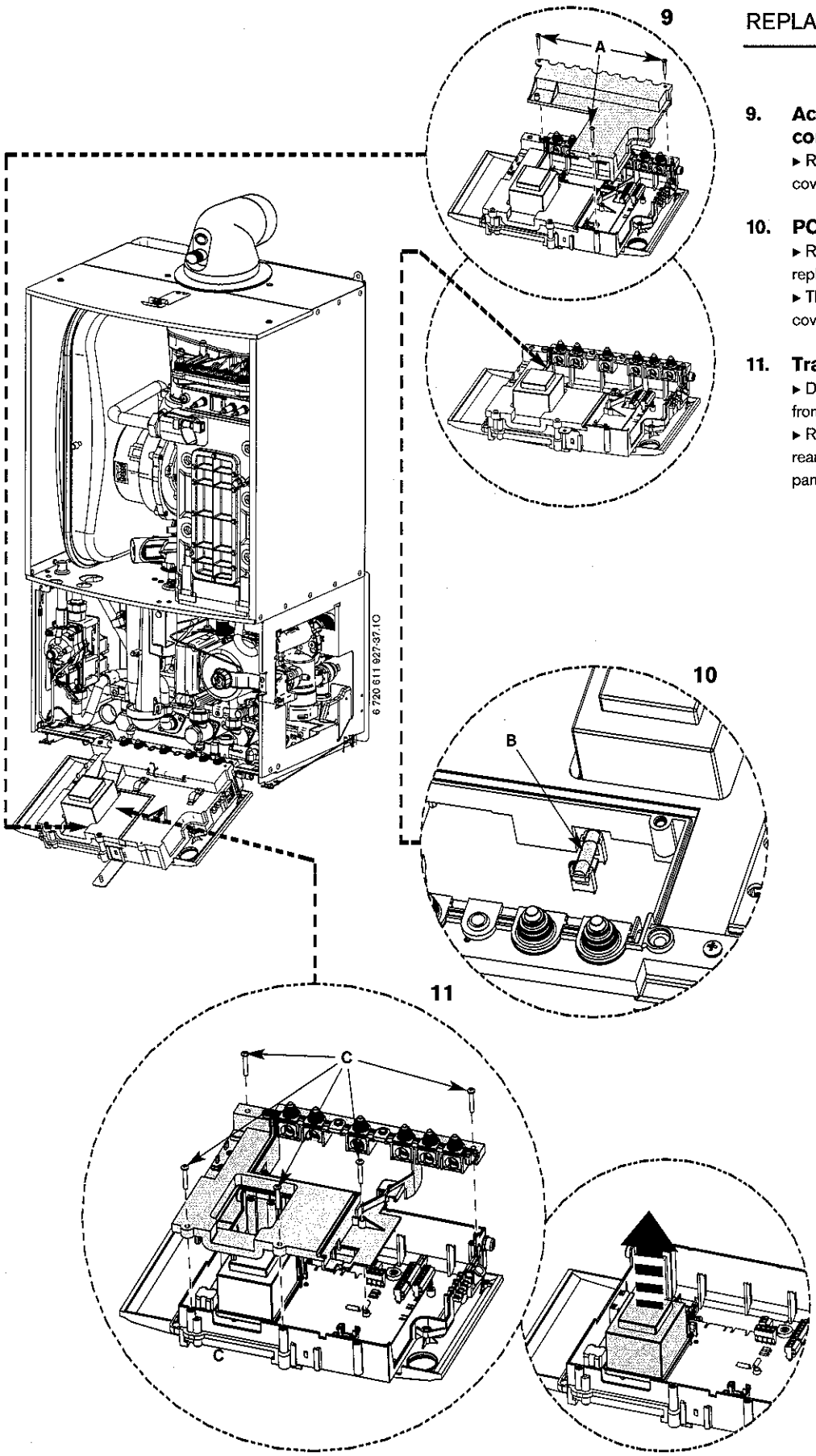
8. Siphon

8.1 ▸ Pull condensate pipe out of the adapter.

8.2 ▸ Remove trap from boiler.

▸ Clean trap and check that the connection to the heat exchanger is clear.

▸ Fill the condensate trap with approximately 1/4 litre of water and refit in reverse order.



9. Access to boiler control components

▸ Remove 3 screws (A) and remove cover from control.

10. PCB fuse

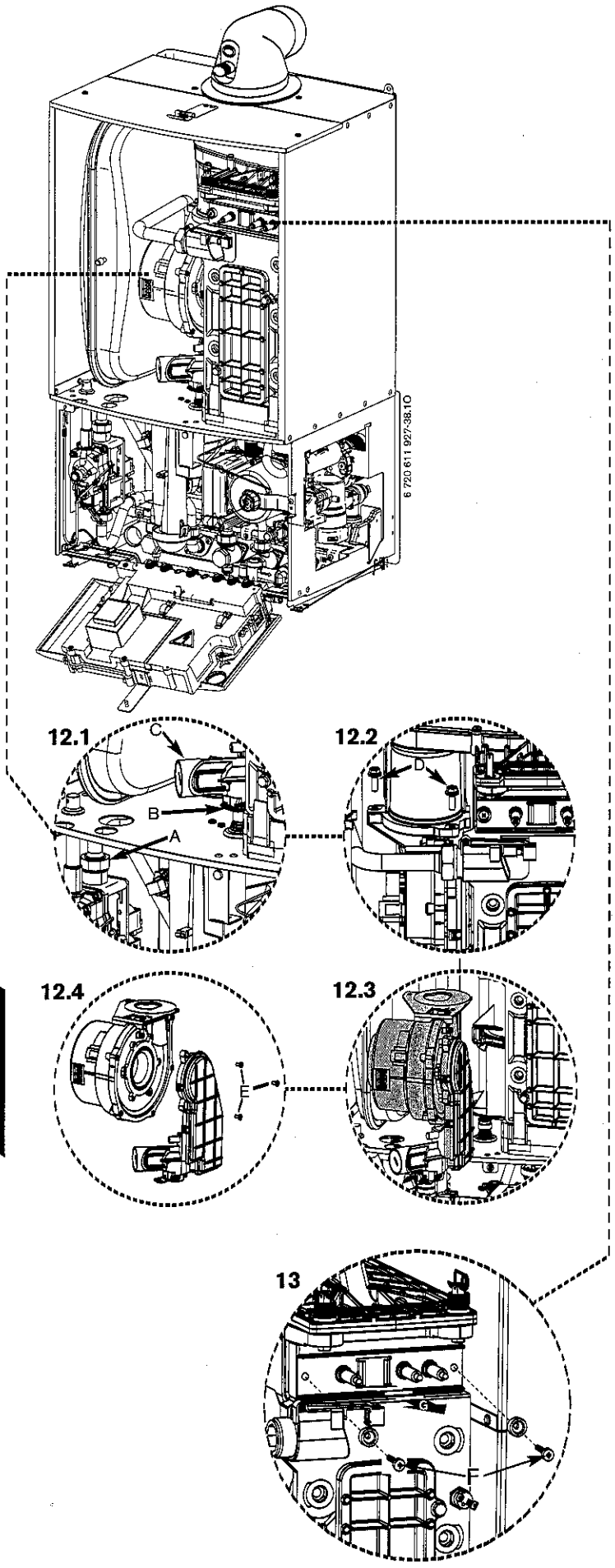
▸ Remove fuse (B) from the PCB and replace.

▸ There is a spare fuse clipped into the cover.

11. Transformer / PCB

▸ Disconnect all electrical connections from the control.

▸ Remove 5 screws (C) retaining the rear panel of the control and remove panel.



IMPORTANT: AFTER REASSEMBLY THE COMBUSTION MUST BE CHECKED USING THE PROCEDURE IN THE SECTION "SETTING THE GAS AIR RATIO". MEASUREMENT AND SETTING (IF NECESSARY) OF THE GAS RATIO MUST NOT BE ATTEMPTED UNLESS THE PERSON IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.

12. Fan assembly

▸ Remove electrical connector from fan.
▸ Remove condensate trap (see page 42).

12.1 ▸ Undo the union connection (A).
▸ Remove wire clip (B) from air/gas adjustment assembly (C) then pull gas pipe down.

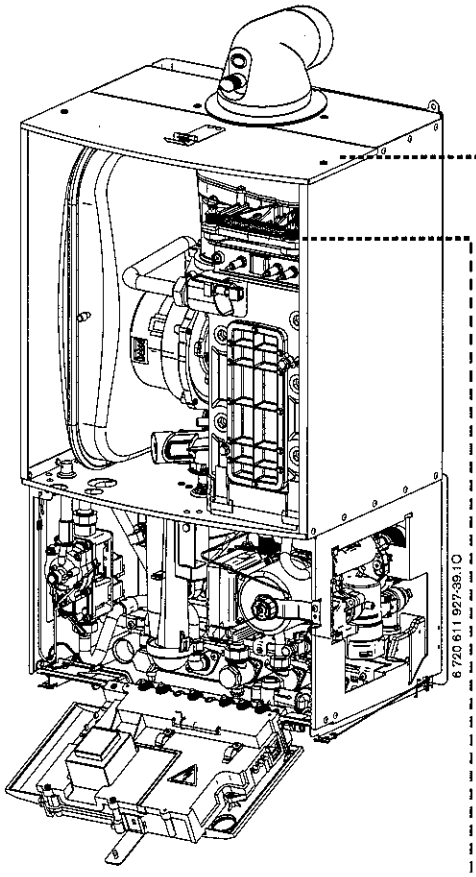
12.2 ▸ Unscrew two screws (D).

12.3 ▸ Remove fan from boiler.

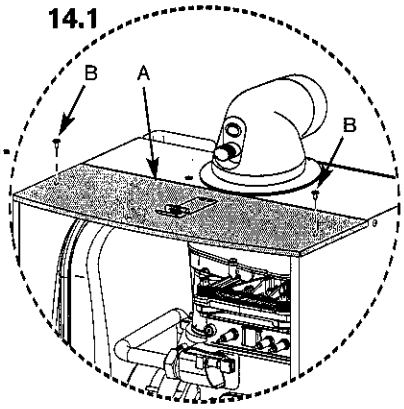
12.4 ▸ Remove three screws retaining the air/gas adjustment assembly (E).
▸ Reassemble with new fan assuring that seals are correctly fitted.

13. Electrode assembly

▸ Disconnect spark electrodes and flame sensor connection.
▸ Remove two screws (F).
▸ Remove spark/flame electrode assembly (G) from heat exchanger.



14.1



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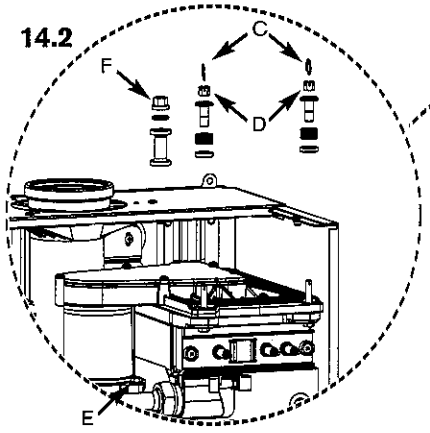

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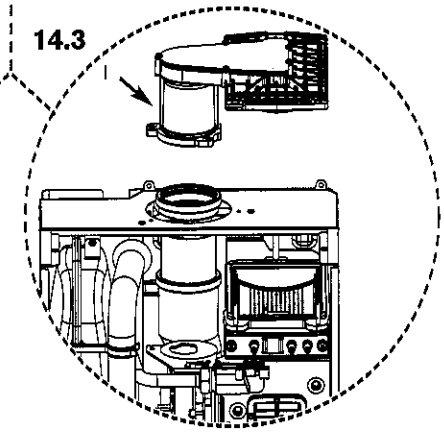

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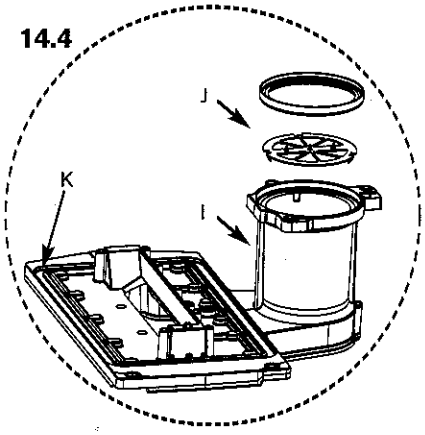

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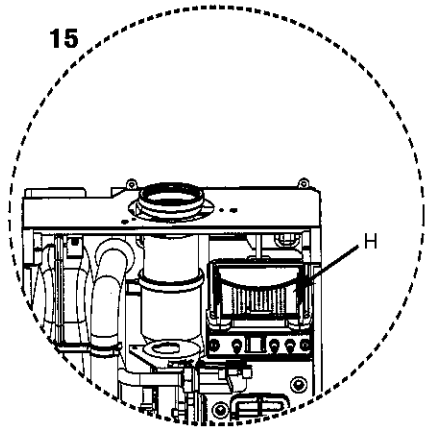


14. Air/gas manifold

14.1 ▸ Remove cover panel (A) by removing the screws (B).

▸ Check that the boiler is completely isolated from the gas supply.

14.2 ▸ Remove the clips (C) and unscrew the two bolts (D).

▸ Unscrew and remove the two hexagon screws (E) securing the fan.

▸ Slacken fully the rear securing bolt (F).

14.3 ▸ Remove air/gas manifold (I)

14.4 ▸ Open air/gas manifold (I).

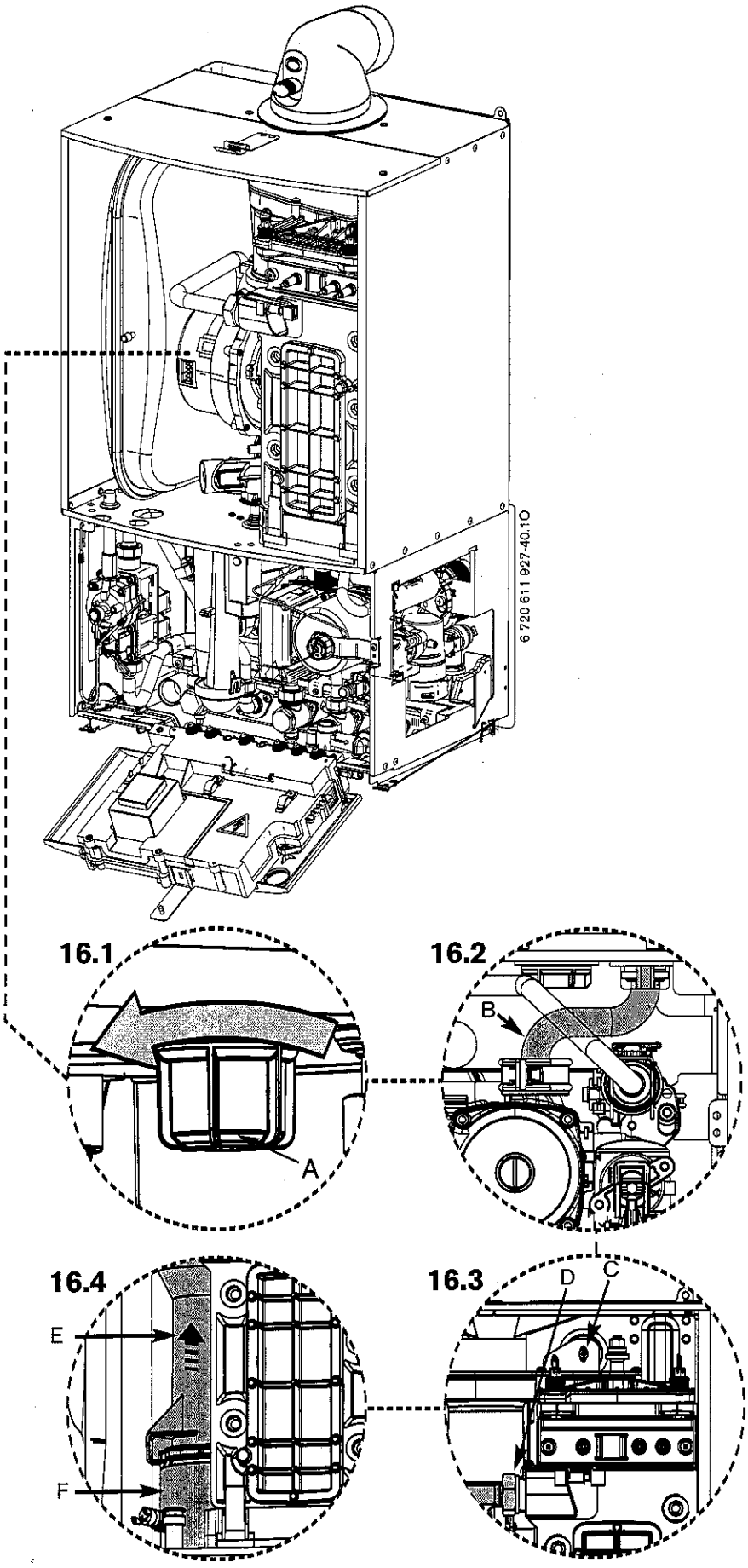
▸ Carefully withdraw diaphragm (J) from fan intake tube and check for soiling and splits.

15. Burner

▸ Remove the burner (H).

▸ Replace new burner in correct position.

▸ Ensure that a new seal (K) is used.



16. Heat exchanger

▸ Isolate flow and return valves and drain the boiler.

▸ Remove condensate trap (see page 42).

▸ Remove fan assembly (see page 46).

16.1 ▸ Remove plastic nut (A) from the base of the inner casing.

16.2 ▸ Remove return pipe at the bottom of heat exchanger.

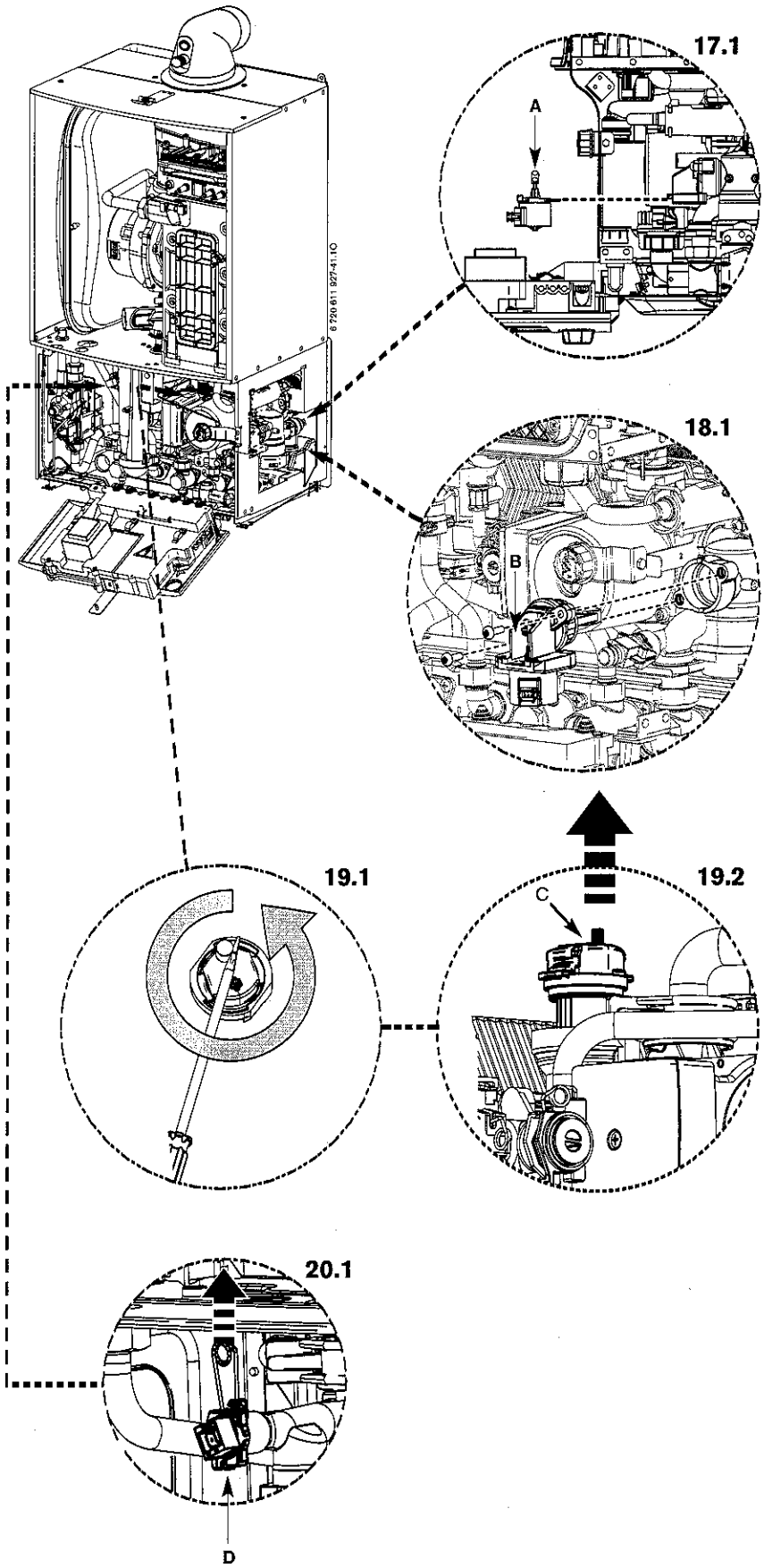
16.3 ▸ Remove screw at the top of the heat exchanger (C).

▸ Unscrew the flow pipe (D).

16.4 ▸ Undo flue connection (E) from sump (F).

▸ Pull flue pipe up.

▸ Remove the heat exchanger.



17. Diverter valve motor

▸ Ensure the appliance is in service mode (there is no need to drain the appliance).

▸ Disconnect the electrical connector from the diverter valve motor.

17.1 ▸ Pull the motor assembly (A) towards you. The assembly will slide free from the valve.

▸ To refit, follow the above in reverse.

Note: *In case of problems when refitting the motor: Connect the electrical connector to the motor and switch the appliance on. Then the motor goes to the middle position and you can refit it without difficulty.*

18. Diverter valve

▸ Ensure the appliance has been fully drained.

▸ Disconnect the electrical connector from the diverter valve motor.

▸ Undo the two screws holding the valve to the plastic housing.

18.1 ▸ Withdraw the valve (B) and clean the valve chamber if necessary.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

19. Auto air vent

▸ Ensure the appliance has been fully drained.

19.1 ▸ Use a screwdriver or similar to rotate the air vent anticlockwise.

19.2 ▸ Lift the air vent (C) out of the housing and remove.

▸ To refit, follow the above in reverse.

20. DHW temperature sensor

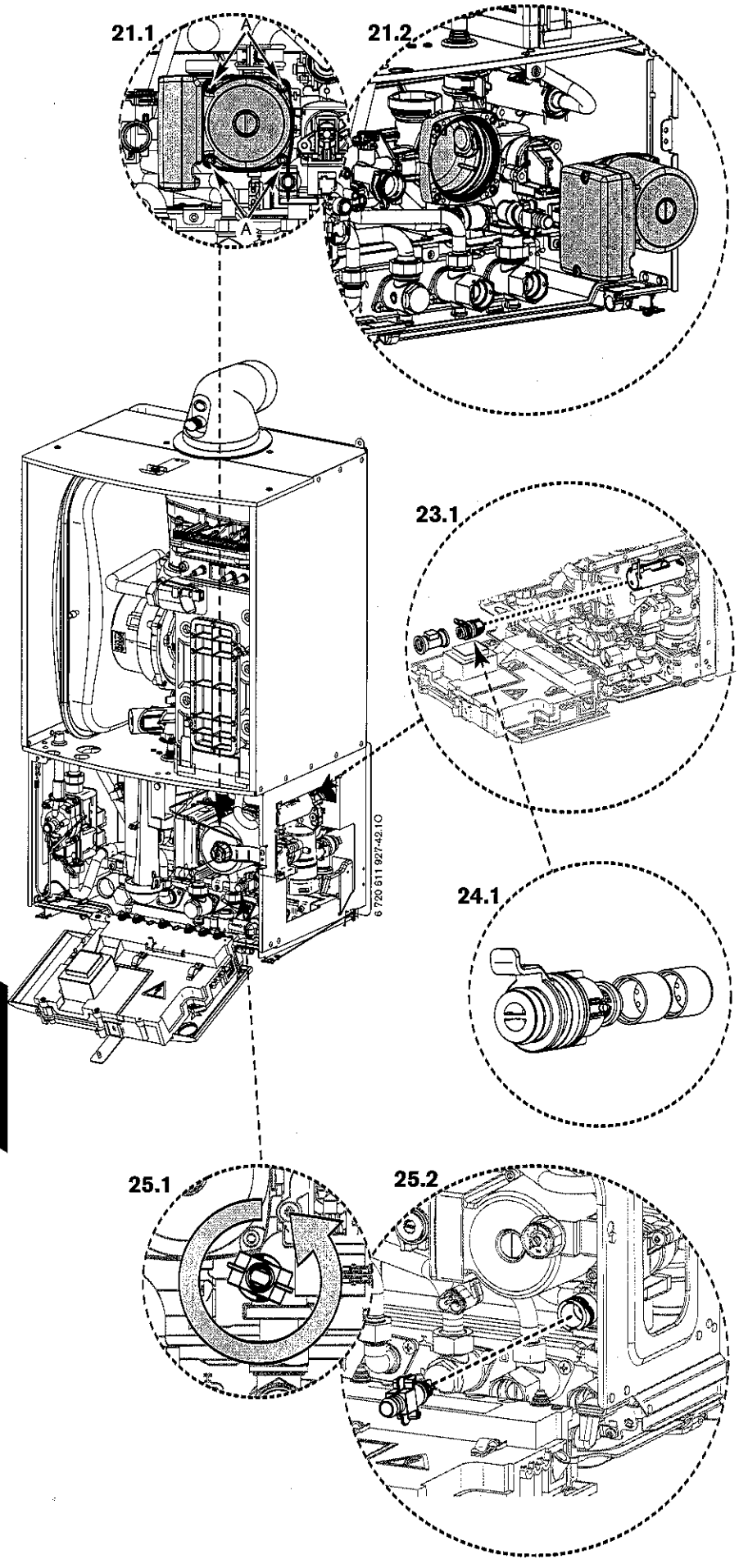
▸ Ensure the domestic hot water circuit is fully drained.

▸ Disconnect the electrical connection from the sensor.

▸ Withdraw the spring clip.

▸ Withdraw the sensor (D) from the housing.

▸ To refit, follow the above in reverse.



21. Pump head

▸ Ensure the appliance has been fully drained.

▸ Disconnect the electrical connection from the bottom of the pump.

21.1 ▸ Remove the four Allen bolts (A) securing the pump at each corner.

21.2 ▸ Gently pull the pump towards you and remove.

▸ To refit, follow the above in reverse.

22. Pressure gauge

▸ Ensure the appliance has been fully drained.

▸ Withdraw the spring clip from the pressure sensing head housing.

▸ Undo the nut on the rear of the pressure gauge.

▸ Remove the pressure sensing head and pressure gauge capillary from the housing.

▸ To refit, follow the above in reverse. DO NOT omit the washer from the capillary when fitting a replacement gauge.

23. Flow sensor, flow restrictor housing and filter

▸ Ensure the domestic hot water circuit is fully drained.

▸ Disconnect the electrical connection to the turbine.

▸ Remove the spring clip from the housing and move the brass pipe to one side.

23.1 ▸ Withdraw the flow sensor and filter from the housing.

▸ Using the cartridge tag, withdraw the flow restrictor housing. If the regulator housing has become stuck, a pair of long nosed pliers may be used to grip the housing.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

24. Flow regulator

▸ Remove the flow restrictor housing (See Removing the flow sensor, flow regulator and filter).

24.1 ▸ Using a small Allen key or similar, push the flow restrictor cartridge out of its housing.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

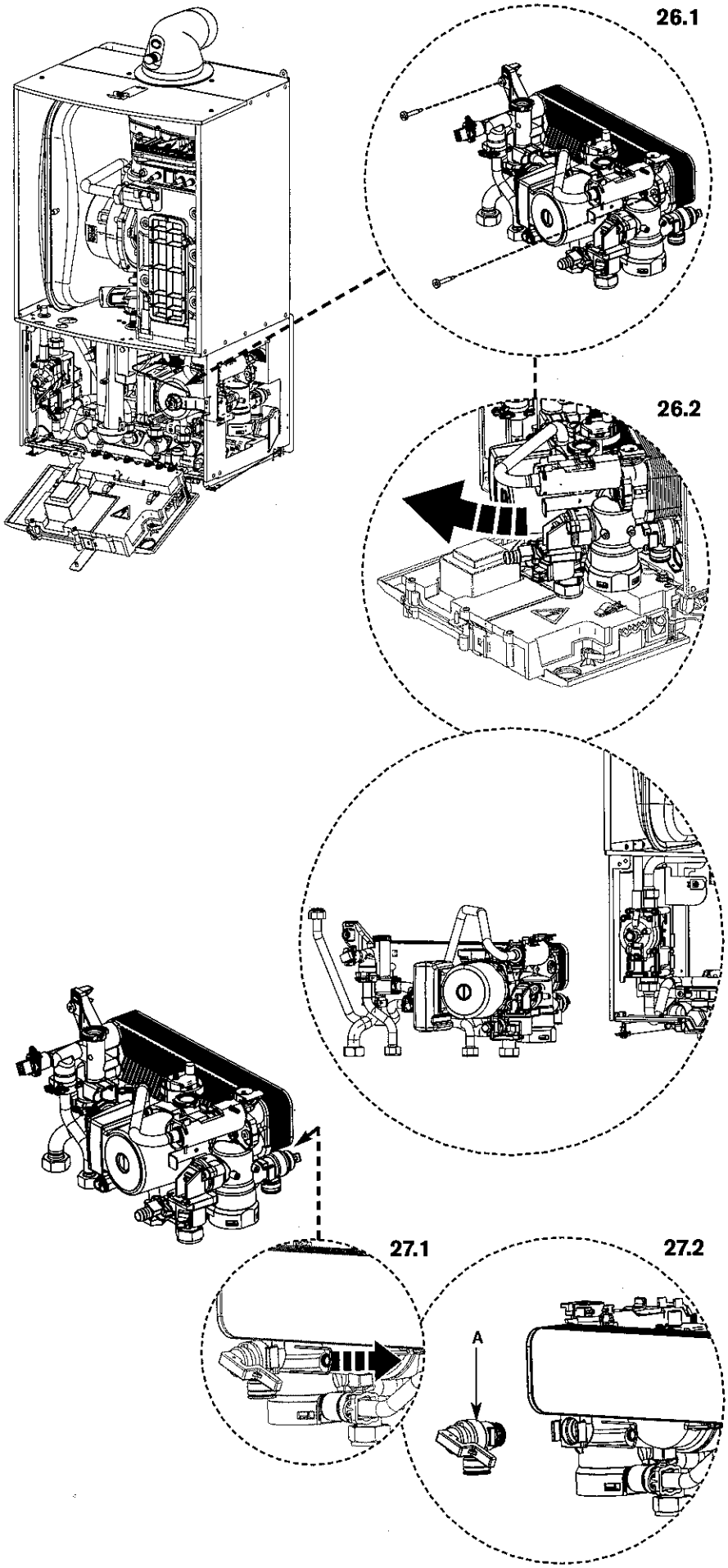
25. Drain tap

▸ Ensure the appliance has been fully drained.

25.1 ▸ Rotate the drain tap fully anticlockwise.

25.2 ▸ Withdraw the drain tap from its housing.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.



26. Hydraulic Block

▸ Ensure the appliance has been fully drained.

▸ Disconnect the electrical connections to the NTC, Turbine and pump.

▸ Undo the nuts securing the copper water pipes to the manifold (there is no need to remove the gas pipe).

▸ Release the spring clips securing these water pipes to the plastic housing and remove the pipes.

▸ Release the spring clip securing the expansion vessel pipe to the plastic housing and remove the pipe.

▸ Undo the nut securing the pressure gauge to its bracket and remove the gauge.

▸ Release the locking devices that secure the two copper water pipes leading to the combustion chamber by squeezing the two tabs together and rotating anticlockwise (viewed from above).

26.1 ▸ Undo the two screws securing the hydraulic block to the chassis (located top left/top right of the housing).

26.2 ▸ Lift the left hand side of the block slightly, then manoeuvre the block out, starting with the right hand side.

▸ Take care not to snag the harness or pressure gauge bracket.

NOTE: the block will still contain a small amount of water, which will spill if the block is tilted.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

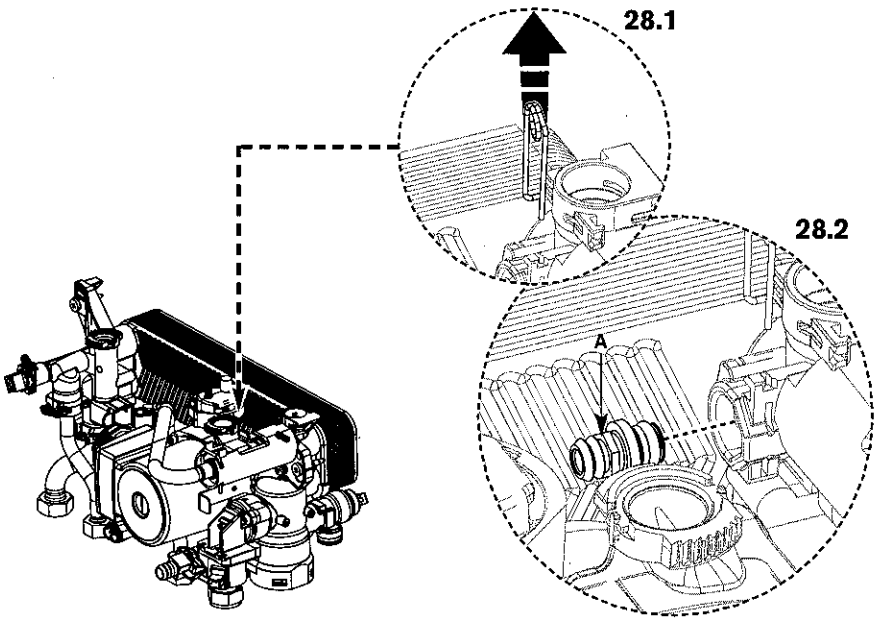
27. CH pressure relief valve

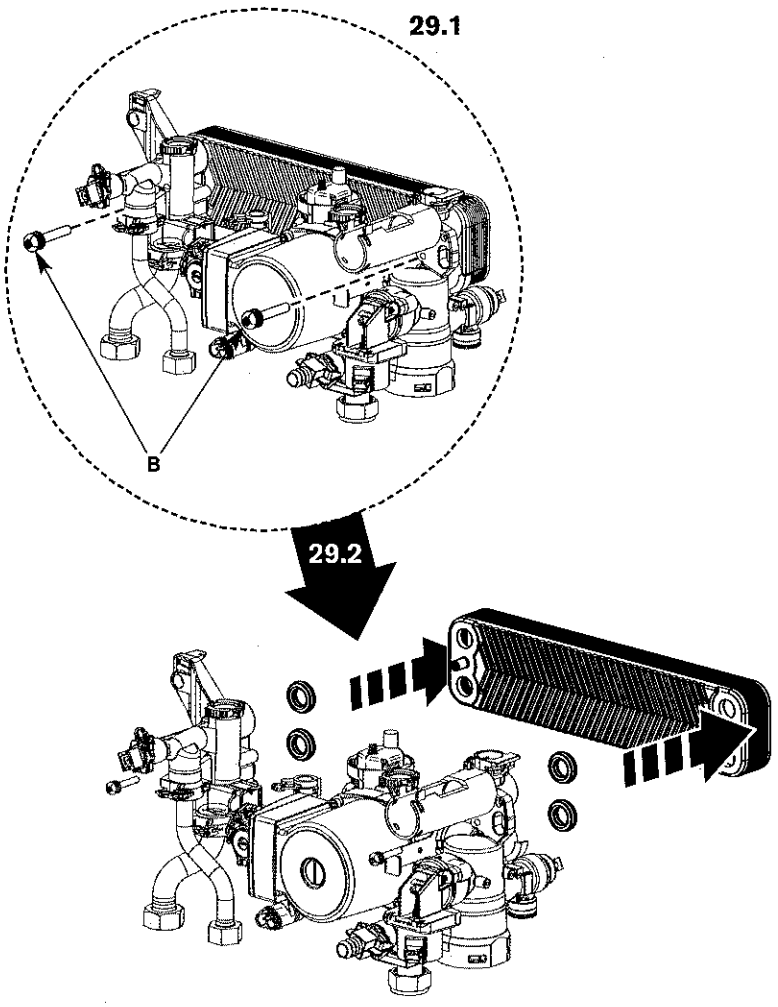
▸ Remove the Hydraulic block from the boiler (See Removing the Hydraulic Block).

27.1 ▸ Remove the spring clip from the Pressure relief valve housing.

27.2 ▸ Withdraw the pressure release valve (A) from its housing.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.





28. Plastic protection device

▸ Ensure the system is fully drained.

▸ Disconnect all pipes connected to the pump housing.

▸ Remove the electrical connection to the pump.

▸ Withdraw the metal clip to the right of the pump head to release the pump housing.

▸ Slide the device to the left and then withdraw it from the appliance.

28.1 ▸ Remove the spring clip from the pressure relief valve housing.

28.2 ▸ Withdraw the pressure relief valve (A).

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

29. DHW Heat exchanger

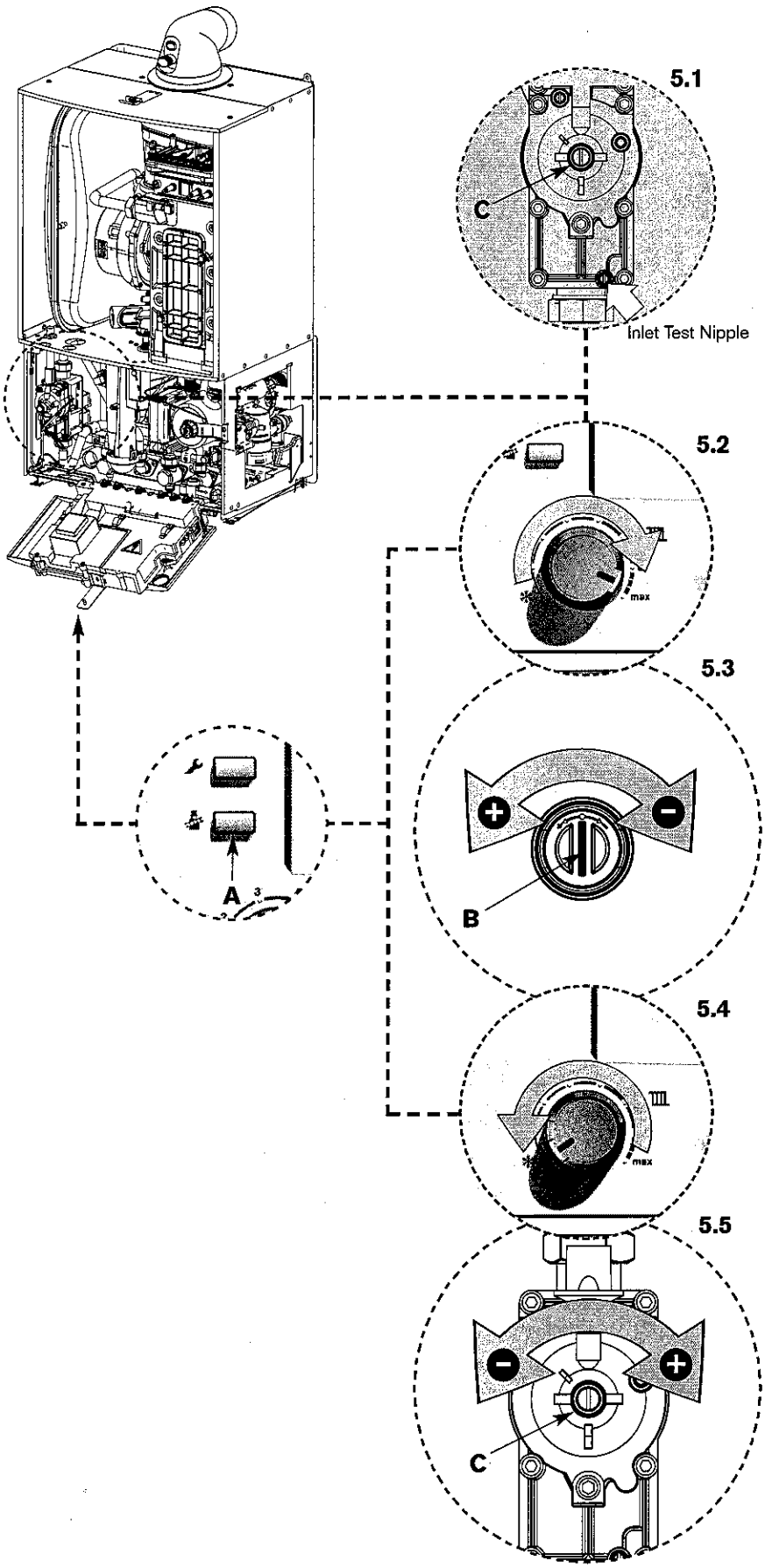
▸ Remove the Hydraulic block from the boiler (See Removing the Hydraulic Block).

29.1 ▸ Undo the two screws (B) securing the plastic housings to the heat exchanger.

29.2 ▸ Remove the heat exchanger.

▸ To refit, follow the above in reverse. Ensure any seals that have been disturbed are renewed.

THE SETTING OF THE GAS RATIO MUST BE CARRIED OUT BY A COMPETENT PERSON. SETTING OF THE GAS RATIO MUST **NOT** BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE CONVERSION IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.



5. Setting the CO_2

Note: When running in the service mode, the boiler will operate both the central heating & DHW circuits. This is to allow sufficient time for the setting procedure. It will be necessary to run water through the DHW circuit to ensure that the boiler will not cycle on low heating demands.

5.1 ▸ Connect manometer to inlet pressure point on the gas valve.

▸ To adjust the CO_2 it will be necessary to first operate the boiler at maximum output.

▸ Press and hold down the central heating boost button (A) for 10 seconds until illuminated.

5.2 ▸ Turn central heating control to maximum; the boiler will then go to maximum output.

Note: The control will resume normal operation after 15 minutes or if the central heating boost button is pressed for over a second.

5.3 ▸ Using a flat blade screwdriver set the CO_2 via adjuster (B) using table below.

Note: CO_2 should be measured 10 minutes after firing the appliance.

Gas type	CO_2 setting maximum	CO_2 setting minimum
Greenstar 25CDi, 30CDi and 35CDi		
Natural gas	9.6 % ±0.2	9.0 % ±0.2
LPG	10.8 % ±0.2	10.5 % ±0.2
Greenstar 40CDi		
Natural gas	9.7 % ±0.2	9.1 % ±0.2

▸ Check CO is less than 200 ppm.

▸ Measure the inlet pressure; it should be a minimum of 18 mbar for natural gas and 37 mbar for LPG.

5.4 ▸ Set the central heating control to minimum. This will make the boiler go to minimum power.

5.5 ▸ Measure the CO_2; it should now be at the figure for minimum output. If not adjust (C) on the gas valve until correct.

▸ Return to maximum and re-check the CO_2. If correct press and hold down the central heating boost button for 2 seconds; the button will cease to be illuminated and the blue power indicator will be permanently illuminated.

▸ Remove manometer and re-seal inlet pressure point on gas valve.

▸ Fit new plastic sealing cover on to outlet adjuster (B).

▸ Fit white cover over valve adjuster (C) and secure with black security tag.

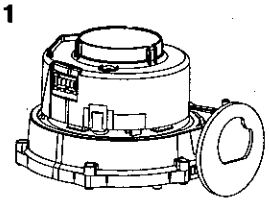
▸ Remove red arrow from data plate and fit new one in correct position for gas type.

▸ Re-assemble and refit boiler case.

▸ Re-connect mains electrical supply and check boiler operation as stated in the commissioning section.

▸ Fit new label from kit over existing label on the appliance bottom panel.

1



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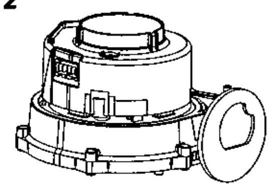

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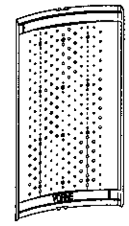

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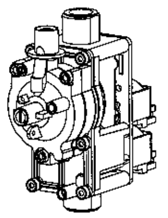

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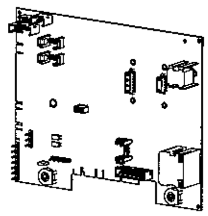

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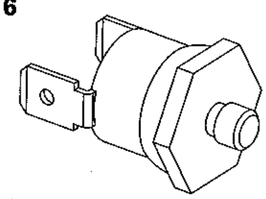

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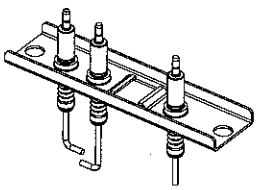

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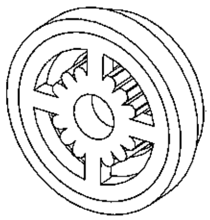

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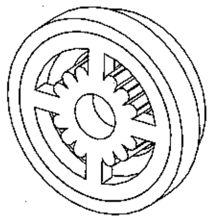

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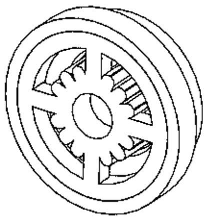

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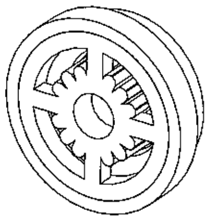

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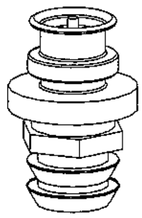

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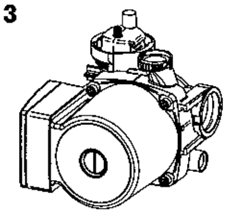

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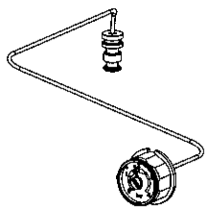

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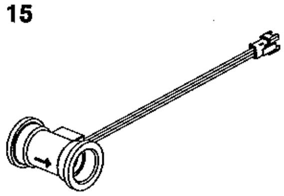

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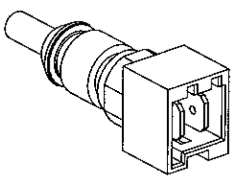

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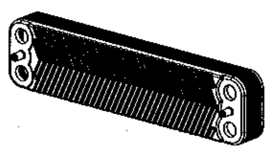

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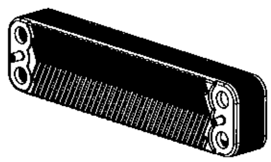

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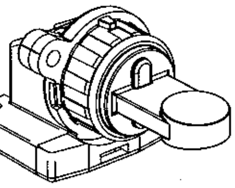

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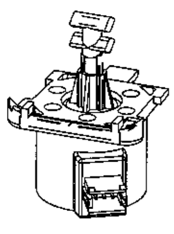

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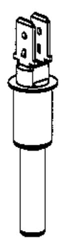


SHORT PARTS LIST

1 **Fan 25/30/35 CDi Combi**
WHS Part No. **8 717 204 453 0**
GC No. **H26 536**

2 **Fan 40 CDi Combi**
WHS Part No. **8 717 204 529 0**
GC No. **TO BE CONFIRMED**

3 **Burner**
WHS Part No. **8 718 006 658 0**
GC No. **E27 200**

4 **Gas valve**
WHS Part No. **8 716 107 053 0**
GC No. **H26 539**

5 **Control board**
WHS Part No. **8 748 300 536 0**
GC No. **H22 456**

6 **Temperature limit sensor**
WHS Part No. **8 722 963 858 0**
GC No. **H08 291**

7 **Electrodes**
WHS Part No. **8 718 107 089 0**
GC No. **H22 458**

8 **Flow reg. Type E 9litre orange**
WHS Part No. **8 716 141 143 0**
GC No. **324 823**

9 **Flow reg. Type E 11litre brown**
WHS Part No. **8 716 107 044 0**
GC No. **H22 460**

10 **Flow reg. Type E 12litre red**
WHS Part No. **8 716 141 061 0**
GC No. **395 767**

11 **Flow reg. Type E 14litre rose**
WHS Part No. **8 716 107 887 0**
GC No. **H22 461**

12 **Pressure relief valve DHW**
WHS Part No. **8 717 401 029 0**
GC No. **H02 526**

13 **Pump assembly**
WHS Part No. **8 716 106 354 0**
GC No. **H22 463**

14 **Pressure gauge**
WHS Part No. **8 717 208 107 0**
GC No. **H02 528**

15 **Flow sensor**
WHS Part No. **8 716 107 223 0**
GC No. **H02 529**

16 **DHW temperature sensor**
WHS Part No. **8 714 500 081 0**
GC No. **H02 538**

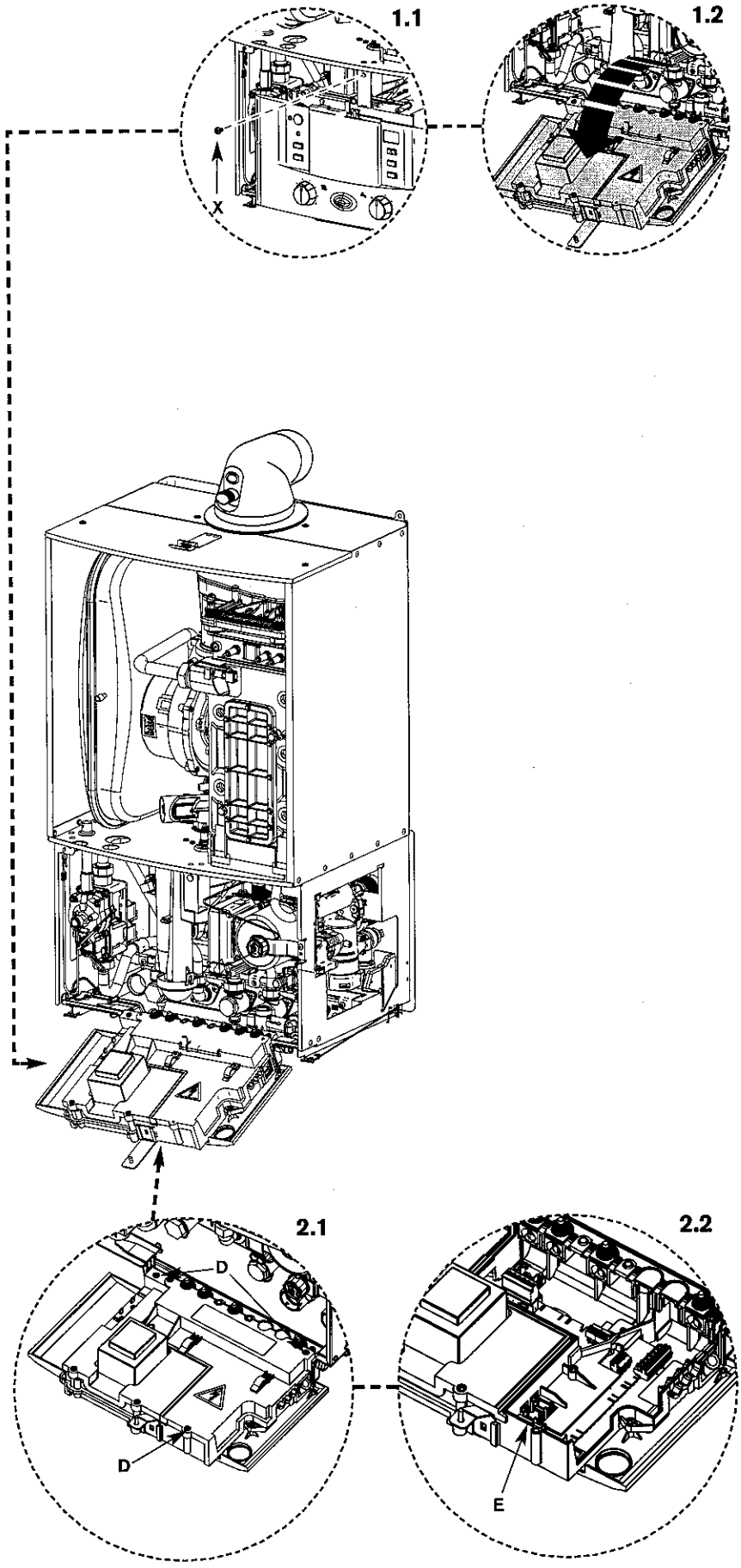
17 **Heat exchanger 16 plate**
WHS Part No. **8 716 106 685 0**
GC No. **H02 531**

18 **Heat exchanger 20 plate**
WHS Part No. **8 716 108 212 0**
GC No. **H22 465**

19 **Diverter valve assembly**
WHS Part No. **8 716 106 845 0**
GC No. **H02 533**

20 **Diverter valve motor**
WHS Part No. **8 716 106 847 0**
GC No. **H02 534**

21 **Control sensor - primary**
WHS Part No. **8 714 500 087 0**
GC No. **E74 536**



L.P.G. CONVERSION

ISOLATE MAINS ELECTRICAL SUPPLY AND REMOVE OUTER CASE AS SHOWN IN THE INSTALLATION, COMMISSIONING & SERVICING INSTRUCTIONS

THE CONVERSION MUST BE CARRIED OUT BY A COMPETENT PERSON. IT MUST **NOT** BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE CONVERSION IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.

Important: The appliance shall not be installed into a room or internal space below ground level when it is intended for use with LPG (propane - G31). This does not preclude the installation into a room or space which is a basement on one side of the building but open to ground on the opposite side.

Installation Regulations

In addition to those specified in the main booklet the following standard applies when converting to an LPG appliance: **BS 5842 Domestic Propane Gas Burning Installations.**

All conversions will require the air gas ratio to be set correctly for the gas used. The procedure for setting the air gas ratio is at the rear of these instructions.

1. Moving boiler control to service position

▸ Remove boiler case, as described on page 39.

1.1 ▸ Remove screw (X) from retaining bracket.

1.2 ▸ Lower control panel into service position.

2. Code plug

2.1 ▸ Remove 3 screws (D) retaining plastic cover at rear of control box and remove.

2.2 ▸ Replace code plug (E) with new one supplied with conversion kit.

▸ Replace plastic cover.

▸ Place control in normal position and secure with screw.

THE GAS / AIR RATIO MUST BE RESET AFTER CONVERSION. THE PROCEDURE CAN BE FOUND IN THE REPLACEMENT PARTS SECTION OF THIS MANUAL.

NOTE: This fault finding information is for guidance only. Worcester Bosch cannot be held responsible for costs incurred by persons not deemed to be competent.

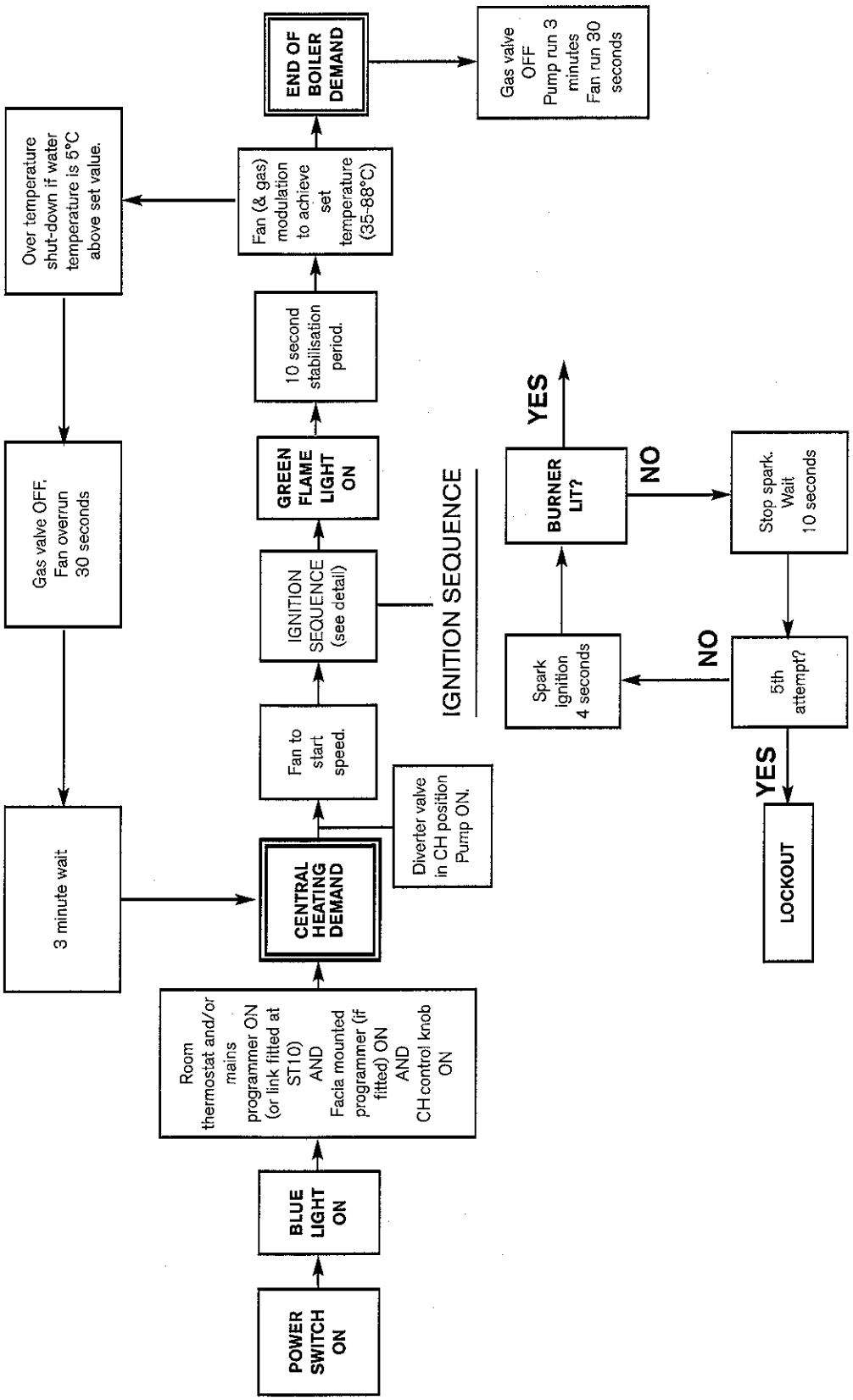
The electronic control system for this boiler incorporates a blue central indicator. This normally confirms the permanent mains supply but, by flashing during a fault, provides a guide to the cause as listed.

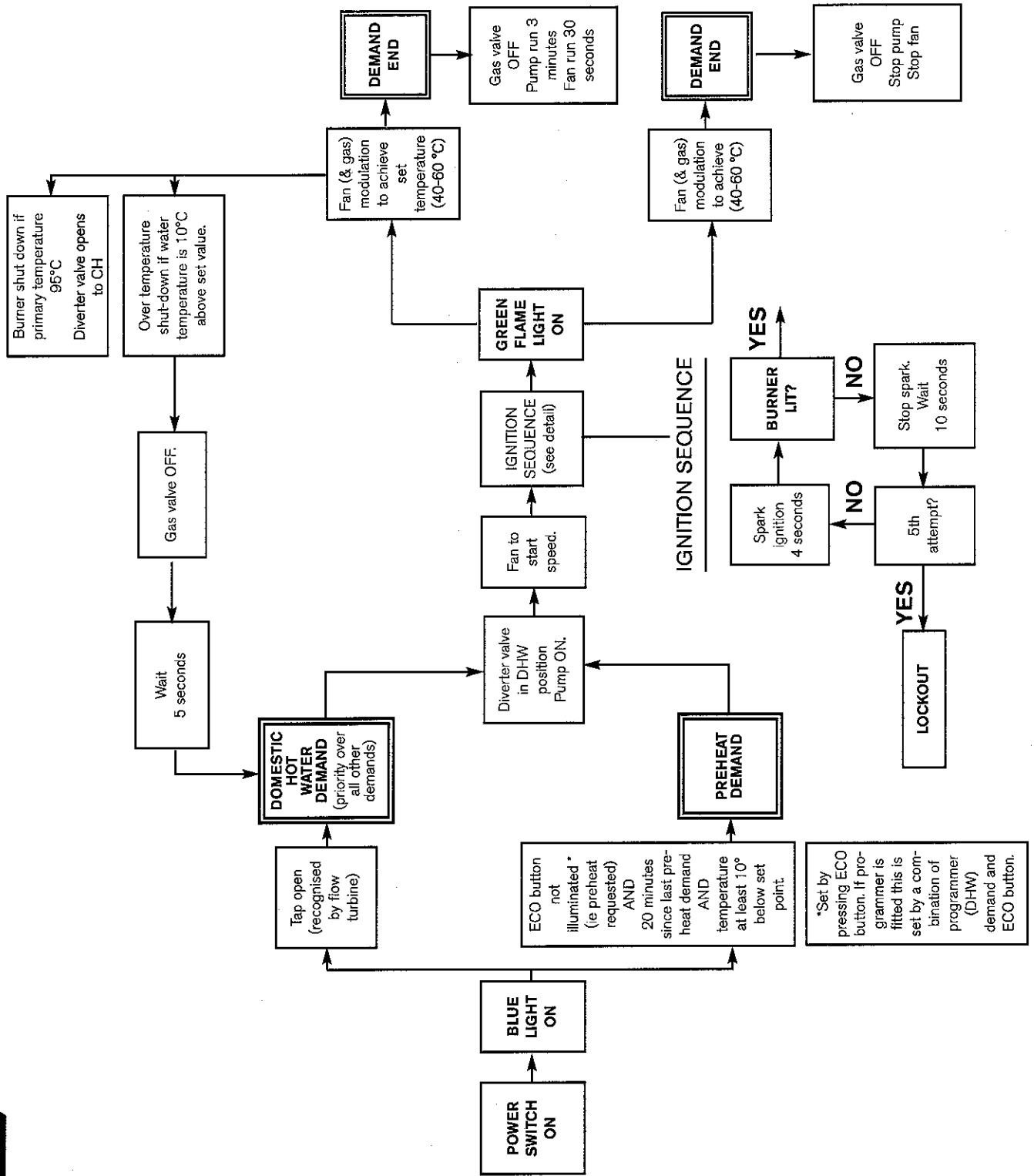
This fault finding system assumes that the appliance has been operating normally until the time of failure (i.e. not a first installation error).

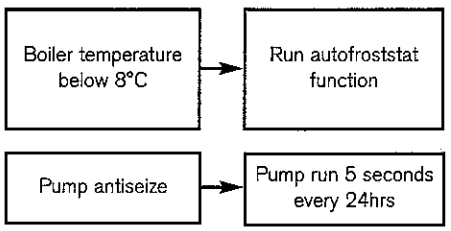
PRELIMINARY CHECKS: Preliminary electrical system checks are the first electrical checks to be carried out during a fault-finding procedure. On completion of the Service/Fault-Finding task which has required the breaking and remaking of electrical connections, check
(a) EARTH CONTINUITY, (b) SHORT CIRCUIT CHECK, (c) POLARITY and (d) RESISTANCE TO EARTH.

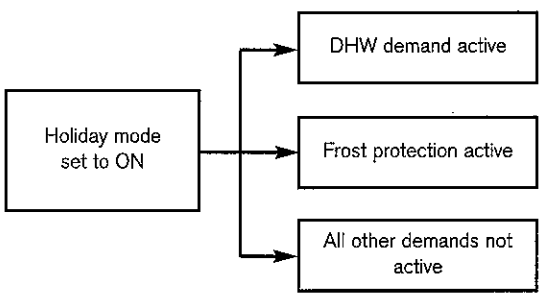
Display code	Description	Remedy
A1	Pump has run dry.	Check system pressure, add water and bleed system as necessary.
A7	Hot water NTC sensor defective.	Check hot water NTC sensor and connecting lead for circuit breaks/short circuits.
b1	Code plug not detected.	Insert code plug correctly, test and replace if necessary.
C6	Fan speed too low.	Check fan lead and connector, and fan; replace as necessary.
E2	CH flow NTC sensor defective.	Check CH flow NTC sensor and connecting lead.
E9	Safety temp. limiter in CH flow has tripped.	Check system pressure, check safety temp. limiters, check pump operation, check fuse on pcb, bleed appliance.
EA	Flame not detected.	Is gas cock turned on? Check gas supply pressure, power supply, igniter electrode and lead, ionisation sensing electrode and lead, flue duct and CO_2 level.
F0	Internal error.	Check electrical connector contacts, programmer interface module ignition leads are not loose; replace pcb if necessary.
F7	Flame detected even though appliance switched off.	Check electrode assembly, dry pcb. Flue clear?
FA	Flame detected after gas shut off.	Check gas valve and wiring to gas valve. Clean condensation trap and check electrode assembly. Flue clear?
Fd	Reset button pressed by mistake.	Press reset button again.

More detailed fault finding procedures are described in the Service booklet for the Engineer number 6 720 612 126.


POWER SWITCH ON
BLUE LIGHT ON
Room thermostat and/or mains programmer ON (or link fitted at ST10) AND Facia mounted programmer (if fitted) ON AND CH control knob ON
CENTRAL HEATING DEMAND
Diverter valve in CH position Pump ON.
3 minute wait
Fan to start speed.
IGNITION SEQUENCE (see detail)
GREEN FLAME LIGHT ON
10 second stabilisation period.
Gas valve OFF. Fan overrun 30 seconds
Fan (& gas) modulation to achieve set temperature (35-88°C)
Over temperature shut-down if water temperature is 5°C above set value.
END OF BOILER DEMAND
Gas valve OFF Pump run 3 minutes Fan run 30 seconds
IGNITION SEQUENCE
BURNER LIT?
YES
NO
Stop spark. Wait 10 seconds
Spark ignition 4 seconds
5th attempt?
NO
YES
LOCKOUT


POWER SWITCH ON
BLUE LIGHT ON
Tap open (recognised by flow turbine)
ECO button not illuminated * (ie preheat requested) AND 20 minutes since last pre-heat demand AND temperature at least 10° below set point.
*Set by pressing ECO button. If programmer is fitted this is set by a combination of programmer (DHW) demand and ECO button.
DOMESTIC HOT WATER DEMAND (priority over all other demands)
PREHEAT DEMAND
Wait 5 seconds
Gas valve OFF.
Diverter valve in DHW position Pump ON.
Fan to start speed.
IGNITION SEQUENCE (see detail)
GREEN FLAME LIGHT ON
IGNITION SEQUENCE
Burner shut down if primary temperature 95°C
Diverter valve opens to CH
Over temperature shut-down if water temperature is 10°C above set value.
Fan (& gas) modulation to achieve set temperature (40-60 °C)
DEMAND END
Gas valve OFF
Pump run 3 minutes
Fan run 30 seconds
Fan (& gas) modulation to achieve (40-60 °C)
DEMAND END
Gas valve OFF
Stop pump
Stop fan
BURNER LIT?
YES
NO
Stop spark. Wait 10 seconds
Spark ignition 4 seconds
5th attempt?
NO
YES
LOCKOUT


Boiler temperature below 8°C
Run autofroststat function
Pump antiseize
Pump run 5 seconds every 24hrs


Holiday mode set to ON
DHW demand active
Frost protection active
All other demands not active

INSTRUCTION MANUAL

INSTALLATION, COMMISSIONING & SERVICING

EXCELLENCE COMES AS STANDARD

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 01905 754624 Fax. 01905 754619
Worcester, Bosch Group is a trading name of
BBT Thermotechnology UK Ltd.
www.worcester-bosch.co.uk

6 720 611 927b (04.05) OSW

WORCESTER
Bosch Group

GREENSTAR CDi

WALL HUNG RSF GAS-FIRED CONDENSING COMBINATION BOILER

FOR SEALED CENTRAL HEATING SYSTEMS AND MAINS FED DOMESTIC HOT WATER

THE APPLIANCE IS FOR USE WITH NATURAL GAS OR L.P.G.
(Cat II 2H3P TYPE C13 & C33)

25CDi GC-Number 47-311-92
30CDi GC-Number 47-311-93
35CDi GC-Number 47-311-94
40CDi GC-Number 47-311-95

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

WORCESTER
Bosch Group

benchmark

CONTACT INFORMATION

WORCESTER BOSCH:

TECHNICAL:	08705 266241
SERVICE:	08457 256206
SPARES:	01905 752571
LITERATURE:	01905 752556
TRAINING:	01905 752526
SALES:	01905 752640

WEBSITE:

www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811
www.fernox.com

SENTINEL 0151 420 9595
www.betzdearborn.com/sentinel

FLUE TERMINAL GUARDS:

TOWER FLUE COMPONENTS
Vale Rise, Tonbridge TN9 1TB

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE OPERATING YOUR APPLIANCE

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER BOSCH 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 ONLY AND SHOULD BE FOLLOWED EXCEPT FOR ANY STATUTORY OBLIGATION.

IF YOU ARE IN ANY DOUBT CONTACT THE WORCESTER BOSCH TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER BOSCH.

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

PLEASE LEAVE THIS GUIDE, THE INSTALLATION INSTRUCTIONS AND THE COMPLETED BENCHMARK LOG BOOK WITH THE USER OR AT THE GAS METER AFTER INSTALLATION.

ABBREVIATIONS USED IN THIS BOOK:

NG - Natural Gas
LPG - Liquid Petroleum Gas
CH - Central Heating
SEDBUK - Seasonal Efficiency of Domestic Boilers in the United Kingdom

CONTENTS

EXCELLENCE COMES AS STANDARD

Thank you for purchasing a Greenstar 25CDi/30CDi/35CDi/40CDi gas-fired condensing combination boiler manufactured by Worcester Bosch. The company prides itself on manufacturing boilers to the strictest quality control standards throughout every stage of production. Worcester Bosch has led the field in innovative appliance design and performance for more than 40 years. This heritage means all products are of exceptional quality and proven reliability.

The Greenstar range in particular is extremely energy efficient, converting up to 97% of gas consumed into heat, offering you economical running costs and value for money. It sits in SEDBUK Band A, and is therefore amongst the top energy rated appliances available.

There is also the reassurance of our no-nonsense 2 years parts and labour guarantee - backed up by Worcester Total Cover, an optional complete maintenance scheme to keep your boiler operating at peak condition and efficiency.

To find out more about Worcester Bosch log onto www.worcester-bosch.co.uk.

IF YOU SMELL GAS:

- ✖ **DON'T** SMOKE OR STRIKE MATCHES
- ✖ **DON'T** TURN ELECTRICAL SWITCHES ON OR OFF

- ✔ **DO** PUT OUT NAKED FLAMES
- ✔ **DO** OPEN DOORS AND WINDOWS
- ✔ **DO** KEEP PEOPLE AWAY FROM THE AREA AFFECTED
- ✔ **DO** TURN OFF THE CONTROL VALVE AT THE METER

- ✔ TELEPHONE YOUR GAS COMPANY

BENCHMARK STANDARD

benchmark

'Benchmark' is a code of practice for correctly installing, commissioning and servicing of domestic water heating appliances.

A Benchmark Checklist is provided by the manufacturer for the installer to complete ALL details together with their CORGI registration number and sign to confirm that the boiler has been installed and commissioned according to the manufacturer's instructions.

IMPORTANT: The completed Benchmark Checklist will be required in the event of any warranty work and may be required by the local Building Control Inspector.

HEALTH & SAFETY

The appliance contains no asbestos and no substances used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988).

COMBUSTIBLE AND CORROSIVE MATERIALS

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

Chemically aggressive substances, such as halogenated hydrocarbons containing chlorine or fluorine compounds can corrode the appliance and invalidate any warranty.

FITTING & MODIFICATIONS

Fitting the appliance, any controls to the appliance and removal of the outer casing may only be carried out by a competent engineer in accordance with the Gas Safety (Installation and Use) Regulations.

Flue systems must not be modified in any way other than as described in the Installation Instructions and 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. This does not affect your statutory rights.

SERVICING

The user is recommended to have the system regularly serviced by a competent, qualified engineer (such as British Gas or CORGI registered personnel) using original spares, to help maintain the economy, safety and reliability of the appliance and to have the Service Record completed in the Benchmark Checklist.

The appliance should be serviced annually after installation unless the particular installation conditions and usage demand more frequent services.

IMPORTANT - ensure that the service engineer completes the Service Record in the Benchmark Checklist after each service.

GENERAL NOTES

To get the best from your appliance please read these instructions carefully.

SEALED HEATING SYSTEMS

This appliance is fitted to a sealed heating system which is pre-pressurised. Your installer will advise you of the minimum and maximum pressure which should be indicated on the pressure gauge.

Check regularly that the pressure is maintained and contact your installer or maintenance engineer if a permanent significant drop in pressure is indicated on the pressure gauge. If the system loses pressure it should be re-pressurised and the cause of the fall investigated.

CENTRAL HEATING SYSTEMS

During the first few hours of operation of the central heating system, check that all radiators are being heated at an even rate. If the top of a radiator is at a lower temperature than the bottom then it should be vented by releasing air through the venting screw at the top of the radiator. Ask your installer to show you how this is done.

This boiler is fitted to a sealed system; repeated venting will reduce the quantity of water in the system and this must be

replenished for safe and satisfactory operation of the appliance.

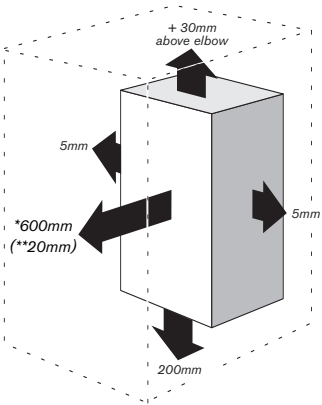
Should water leaks be found in the system or if excessive venting is required, then a service engineer must be contacted to inspect the installation and rectify any fault.

Only additives that are compatible with aluminium may be used in the system. Any incompatible additive used will invalidate the guarantee.

CONDENSATE DRAIN

This is a condensing appliance and the terminal will, at times give out a plume of water vapour. This is quite normal.

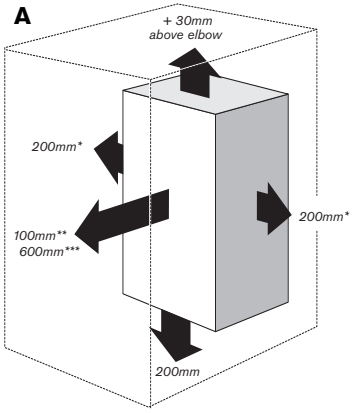
The appliance also produces quantities of condensate which is discharged regularly by a siphon within the boiler via a pipe to drain. This pipe must not be blocked or altered in any way.

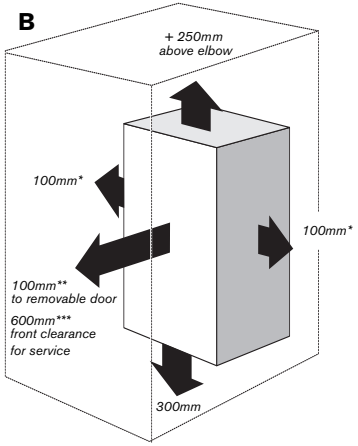


CLEARANCES - VENTILATED COMPARTMENT

Your installer will have provided adequate space around the appliance for safety and servicing access. Do not restrict this space with the addition of cupboards, shelves etc. next to the appliance.

*600 mm service clearance required to a fixed surface
(**20 mm from removable door or panel)





GENERAL NOTES

BOILER CLEARANCES - UNVENTILATED COMPARTMENT

The diagrams (A and B) opposite show two options for the minimum space required to install and service the boiler inside an unventilated compartment.

* This space can be reduced to 50 mm for one side only as long as both the side clearances add up to the total of both the side measurements shown or more.

** Space required for unventilated areas with a removable door or panel.

*** 600 mm clearance required to a fixed surface for servicing.

ROOM THERMOSTAT

A room temperature controller and programmer should be fitted to control the central heating. Refer to the instructions supplied with the thermostat for information on siting and setting.

THERMOSTATIC RADIATOR VALVES

It is recommended that this type of valve is fitted to all but one of the radiators (or at least those in the sleeping accommodation). The remaining radiator, which must be where the room thermostat is located, should be uncontrolled and must be left open. The thermostatic radiator valves should conform to the requirements of BS2767:10.

GENERAL NOTES

VENTILATION

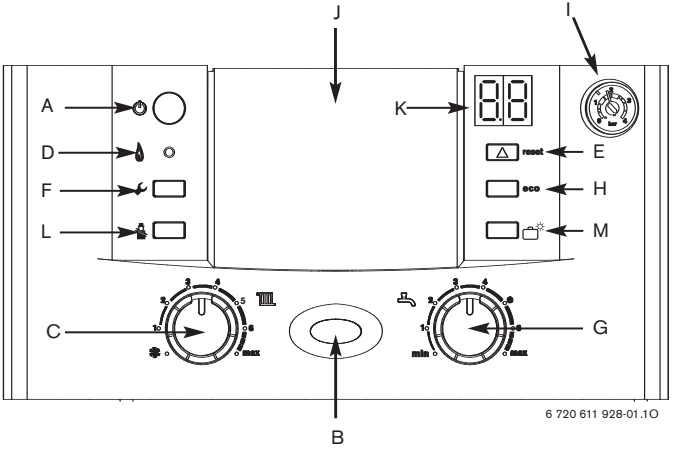
This is a room sealed appliance and does not require any air for combustion from inside the property. If the appliance is fitted into a cupboard or a compartment is built around the appliance after installation, then the compartment must be separated from the boiler space by a perforated non-combustible partition as described in BS 6798.

Notwithstanding the requirements of BS 6798 and BS 5440 there is no need for ventilation openings to be provided in the compartment because of the low heat loss from the appliance casing, if the clearances shown are maintained.

Do not operate the appliance if the flue terminal fitted on the outside wall or roof is obstructed or damaged.

PUMP ANTI-SEIZURE

If there has been no heating demand for 24 hours the boiler will run the system pump for a few seconds to reduce the possibility of pump seizure during long periods of inactivity, which is usually more frequent during the summer months.



A - MASTER SWITCH FOR ON/OFF

B - MAINS ON/OFF INDICATOR + FAULT DIAGNOSTIC LIGHT

C - CENTRAL HEATING TEMPERATURE CONTROL

D - BURNER ON INDICATOR LIGHT (GREEN)

E - FAULT RESET BUTTON

F - SERVICE BUTTON

G - DOMESTIC HOT WATER TEMPERATURE CONTROL

H - ECO BUTTON (DOMESTIC HOT WATER PRE-HEAT ON/OFF)

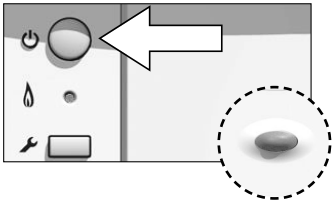
I - SYSTEM PRESSURE GAUGE

J - POSITION FOR OPTIONAL PROGRAMMER

K - DISPLAY

L - CENTRAL HEATING BOOST BUTTON

M - HOLIDAY BUTTON



SWITCHING THE APPLIANCE ON/OFF

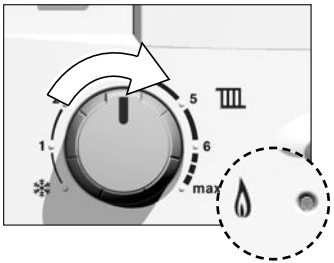
Switching on

▸ Switch on the appliance by pressing the master switch.
The indicator light shows blue

• *The boiler runs for 15 minutes at minimum heating output to fill the condensate trap, the display (K) alternates between "-II-" and the central heating flow temperature. This occurs every time the mains supply has been interrupted.*

Switching off

▸ Switch off the appliance by pressing the master switch.
The blue indicator light goes out.



SETTING THE CENTRAL HEATING TEMPERATURE

▸ Turn the central heating temperature control to the desired level, between 40 °C and 90 °C.

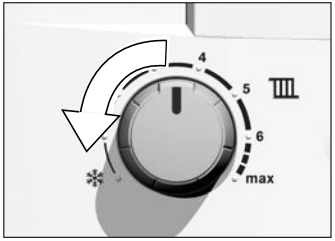
▸ When the burner is lit, the green indicator light underneath the on/off switch is illuminated.

CONTROLLING CENTRAL HEATING

▸ Set the timer to the correct time.

▸ Set room thermostat to the desired room temperature.

▸ Set the thermostatic radiator valves to the desired settings.



FROST PROTECTION

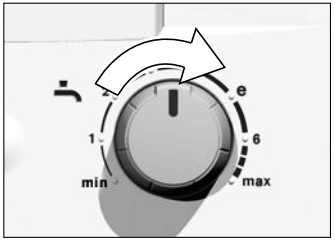
▸ Leave master switch on.

▸ Turn the central heating temperature control to ❄.

If the temperature falls to 5 °C within the boiler it will fire to avoid the possibility of freezing.

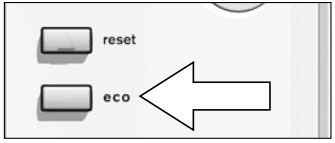
▸ Add a suitable anti-freeze fluid to the water in the central heating system.

▸ If remote pipework is likely to be subjected to freezing conditions, ensure the installer has fitted a frost thermostat in the area to protect the pipework.



CONTROLLING THE HOT WATER TEMPERATURE

▸ The hot water temperature can be set to between approx. 40 °C and 60 °C using the temperature control.



DOMESTIC HOT WATER PRE-HEAT

Pre-heat reduces the time taken to produce hot water at the tap and is controlled by the ECO button.

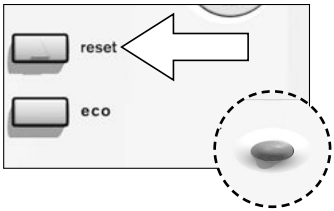
▸ Press the ECO button to select either:

When the ECO button **is not illuminated** the boiler will be in pre-heat mode

(which will reduce the time taken to produce hot water at the tap).

OR

When the ECO button **is illuminated** the boiler will be in ECO mode with no pre-heat available.



FAULT CONDITION

In the unlikely event of a fault occurring while the appliance is in operation:

The reset button will flash once per second and the mains indicator (blue light) will flash also. The display shows a fault code.

▸ To reset boiler press the reset button.

The reset button will no longer be illuminated and the mains indicator will stop flashing.

The boiler will function normally, dependent on programmer and room thermostat settings.

If the fault remains and cannot be cleared by pressing the reset button, or if fault persists contact Worcester Bosch for assistance, giving a description of the fault and, if possible, the fault code from the display.

Heating economically

The boiler is designed to provide a high level of comfort while keeping gas consumption and the resulting environmental effect as low as possible. The gas supply to the burner is controlled according to the level of demand for heat. The boiler continues to operate with a low flame if the demand for heat reduces. The technical term for this process is modulating control. Modulating control reduces temperature fluctuations and provides even distribution of heat throughout the home. This means that the boiler may stay on for relatively long periods but will use less gas than an appliance that continually switches on and off.

Central heating systems with room thermostats/thermostatic radiator valves

The central heating control on the boiler should be set to the maximum rated temperature of the central heating system.

The temperature of each room can be set individually (except primary room with the room thermostat) using the thermostatic radiator valves.

Roof insulation

Around 30% of the heat loss from a property is through the roof. Replace any old insulation with new insulation, preferably of around 200 mm thickness or more.

Window frames

Single glazed windows, particularly those with steel frames, can lose a great deal of heat. Consideration should be given to replacement with PVCu or wooden framed double glazed units.

Curtains

Lined curtains, or heavier full length curtains can provide excellent insulation. However, always ensure that the curtains do not drape over radiators.

Draughts

Try to ensure that draughts around doors, windows, letterboxes and keyholes etc. are reduced by using a suitable draught excluder. Warning - Do not block or seal any air vents that are installed to ensure the central heating boiler operates safely.

Room thermostats

Reducing the setting of the room thermostat by 1 °C can reduce fuel consumption by up to 10%.

New control systems

Upgrade your heating control system if necessary with the latest equipment available. The minimum level of control is a programmer, interlocking room thermostat and thermostatic radiator valves.

Radiators

More often than not radiators will be sited underneath a window, so the warm air from the radiator heats the colder incoming air from the window. The performance of the radiator will be affected if the curtains are allowed to drape over the radiator or shelves are fitted above it. The positioning of furniture and tables in front of the radiator should also be avoided.

It is advisable to manually adjust all radiator thermostatic valves every 2-3 months to prevent them sticking. It is also important that the plastic tops of all valves are always in position and not cracked or damaged to prevent accidents. Care should be taken when vacuum cleaning carpets to avoid damage to valves and pipework.

The heating system and the outputs of the radiators have been carefully selected by your installer. The temperature obtainable in any given room is dependent on all radiators being operated at the same time. If you decide to turn off radiators in unused rooms, spare bedrooms etc., you may experience slightly lower room temperatures in rooms adjacent to unheated rooms.

MAINTAINING YOUR APPLIANCE

Your new Greenstar 25CDi/30CDi/35CDi/40CDi gas-fired appliance represents a long term investment in a reliable, high quality product.

In order to realise its maximum working life, and to ensure it continues to operate at peak efficiency and performance, it is essential that your boiler receives regular servicing and maintenance checks from a competent person beyond the initial 2 year guarantee period.

If you would like to know more about a Worcester Bosch service contract, please tick the appropriate box on your warranty registration card.

If your Greenstar 25CDi/30CDi/35CDi/40CDi should fail to operate correctly or requires servicing please contact the Worcester Bosch Service Department (see inside front cover for details).

Details of the boiler including the Gas Council number can be found under the controls cover flap on the boiler.

This table gives information on basic operating system problems.

In the unlikely event of a boiler fault please read the following page thoroughly before contacting Worcester Bosch.

Problem	Cause	Remedy
Desired room temperature is not reached	Thermostatic radiator valve(s) set too low	Increase thermostatic radiator valve setting(s)
	Temperature control for CH flow on boiler set too low	Increase CH flow temperature control setting
	Air trapped in heating system	Bleed radiators and recharge heating system
Desired room temperature exceeded by large amount	Radiators are too hot	Turn down thermostatic radiator valves / room thermostat Reduce central heating temperature on boiler
Heating stays on for too long	Clock is incorrectly set	Check setting
No on/off indicator	Momentary power failure	Switch off appliance at master switch, wait a few seconds then switch on again
Hot water temperature too low	Temperature set too low	Check setting
	Programmer setting	Check setting
	Water flow at tap too high	Reduce flow rate at tap
Hot water temperature too high	Temperature set too high	Check setting

FAULT OR BREAKDOWN

This appliance is supported in the UK by Worcester, Bosch Group.

Specialist factory trained Service Engineers are available to attend a breakdown occurring on this appliance.

No charge will be made for parts and/or labour providing:

▸ An appliance fault is found and the appliance has been installed within the past 24 months. Reasonable evidence of this must be supplied on request. i.e. the Benchmark Checklist.

A call-out charge will be made where:

▸ The appliance has been installed for over 24 months.

OR

▸ Evidence cannot be provided that the first year service inspection has been carried out (ie. an entry in the Benchmark Checklist).

OR

▸ Our Field Service Engineer finds no fault with the appliance (see Note).

OR

▸ The cause of breakdown is misuse or with other parts of your plumbing/heating system, or with equipment not supplied by Worcester Bosch.

Note:
NO APPLIANCE FAULT IS FOUND ON OVER 30% OF ALL SERVICE CALL OUTS.

Please read this guide carefully to gain a good understanding of the operation of your appliance. In the case of a suspected fault, refer to the fault finding section of this guide.

If in doubt contact our Technical Helpline

In the event of an appliance fault or breakdown please contact our Service Department. Your service administrator will arrange for an engineer to call with the minimum of delay; under normal circumstances this will be from 1 - 3 working days (excluding weekends) for priority breakdown situations (no hot water and/or heating).

Invoices for attendance and repair work carried out on this appliance by any third party will not be accepted.

This appliance is guaranteed against faulty material or workmanship for a period of 2 years from the date of installation subject to the following terms and conditions.

▸ Your Guarantee Registration Card must be returned within 30 days for the second year of your guarantee to become valid.

▸ During the period of this guarantee any components of the unit which are proven to be faulty or defective in manufacture will be exchanged or repaired free of charge by BBT Thermotechnology UK Ltd.

▸ The householder may be asked to prove the date of installation, that the appliance was correctly commissioned and, where appropriate, the first year's service has been carried out to the satisfaction of BBT Thermotechnology UK Ltd. when requested. These should be part of the Benchmark Checklist.

▸ Any product or part returned for servicing under the guarantee must be accompanied by a claim stating the model, serial number & date of installation.

▸ BBT Thermotechnology UK Ltd. will not accept responsibility for damage caused by faulty installation, neglect, misuse or accidental damage or the non-observance of the instructions contained in the Installation and Servicing Manual and User Instructions.

▸ The appliance has been used only for the normal domestic purposes for which it was designed.

▸ This guarantee applies only to equipment purchased and used in the United Kingdom.

This guarantee does not affect your statutory rights.

GUARANTEE REGISTRATION

You should complete and return the postpaid Guarantee Registration Card within 14 days of purchase.

Returning the card will register you as the owner of your new Greenstar 25CDi/30CDi/35CDi/40CDi appliance and will assist us in maintaining an effective and efficient customer service by establishing a reference and permanent record for your boiler.

This does not affect your statutory rights.

For your own record:

Model

Serial No.

(See guarantee card)

Type / size

Date of installation

Check that the Benchmark Checklist has been completed by your installer or service engineer.

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 01905 754624 Fax. 01905 754619

www.worcester-bosch.co.uk

Worcester Bosch Group is a trading name of BBT Thermotechnology UK Ltd.

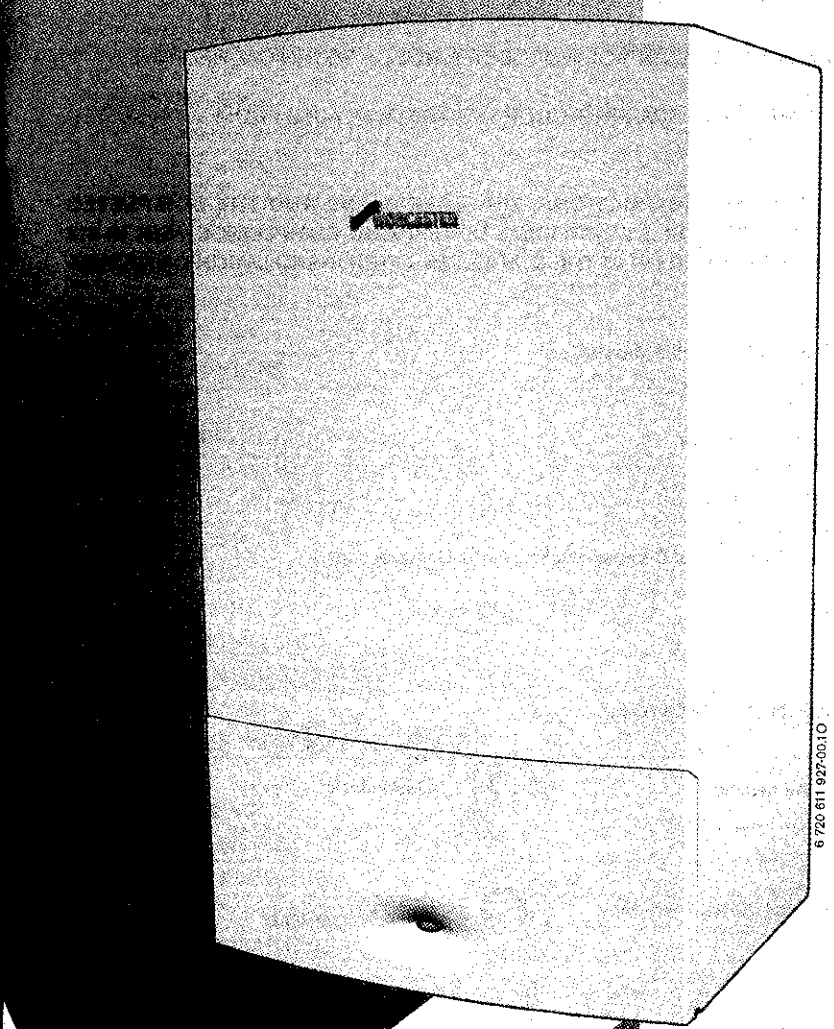
6 720 611 928a (02/05) OSW

WORCESTER
Bosch Group

GREENSTAR CDi CONVENTIONAL

WALL HUNG RSF GAS-FIRED CONDENSING REGULAR BOILER

FOR OPEN VENTED AND SEALED CENTRAL HEATING SYSTEMS AND INDIRECT DOMESTIC HOT WATER



THE APPLIANCE IS FOR USE WITH
NATURAL GAS OR L.P.G. (Cat II 2H3P TYPE C13 & C33)

NATURAL GAS:

WORCESTER GREENSTAR 30CDi Conventional
GC NUMBER 47-311-71
WORCESTER GREENSTAR 40CDi Conventional
GC NUMBER 47-311-72

LIQUID PETROLEUM GAS :

WORCESTER GREENSTAR 30CDi Conventional
GC NUMBER 47-311-73
WORCESTER GREENSTAR 40CDi Conventional
GC NUMBER 47-311-74

GB/IE

INSTRUCTION MANUAL

INSTALLATION, COMMISSIONING & SERVICING

WORCESTER
Bosch Group

benchmark

CONTACT INFORMATION

WORCESTER BOSCH:

TECHNICAL:	08705 266241
SERVICE:	08457 256206
SPARES:	01905 752571
LITERATURE:	01905 752556
TRAINING:	01905 752526
SALES:	01905 752640
WEBSITE:	www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811
www.fernox.com

SENTINEL 0151 420 9595
www.betzdearborn.com/sentinel

FLUE TERMINAL GUARD:

TOWER FLUE COMPONENTS
VALE RISE
TONBRIDGE
TN9 1TB

STORE THE APPLIANCE IN A DRY AREA PRIOR TO INSTALLATION.

LIFTING AND CARRYING PRECAUTIONS:

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

INSTALLATION & SERVICING INSTRUCTIONS

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER BOSCH 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 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.

IF YOU ARE IN **ANY DOUBT** CONTACT WORCESTER BOSCH TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER BOSCH.

PLEASE LEAVE THESE INSTRUCTIONS, THE USER GUIDE AND THE COMPLETED BENCHMARK LOG BOOK OR A CERTIFICATE CONFIRMING COMPLIANCE WITH IS 813 (EIRE ONLY) WITH THE USER OR AT THE GAS METER AFTER INSTALLATION OR SERVICING.

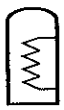
ABBREVIATIONS USED IN THIS MANUAL:

Ø	Diameter
NG	Natural Gas
LPG	Liquid Petroleum Gas
CH	Central Heating
DHW	Domestic Hot Water
IP	Ingress Protection

SEDBUK Seasonal Efficiency of Domestic Boilers in the United Kingdom

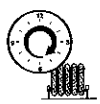
SYMBOLS USED IN THIS MANUAL:

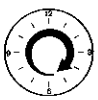

Central heating

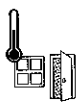

Hot water storage cylinder


Electricity supply


Gas supply


Time clock


Programmer/timer


Room thermostat


Wait time period

CONTENTS

IF YOU SMELL GAS:

✖ **DON'T** SMOKE OR STRIKE MATCHES
✖ **DON'T** TURN ELECTRICAL SWITCHES ON OR OFF

✔ **DO** PUT OUT NAKED FLAMES
✔ **DO** OPEN DOORS AND WINDOWS
✔ **DO** KEEP PEOPLE AWAY FROM THE AREA AFFECTED
✔ **DO** TURN OFF THE CONTROL VALVE AT THE METER

✔ TELEPHONE YOUR GAS COMPANY

benchmark

A Benchmark Log Book is provided by the manufacturer for the installer to complete including their **CORGI** registration number to confirm that the boiler has been installed, commissioned and serviced according to the manufacturer's instructions.

IMPORTANT: The completed Benchmark Checklist will be required in the event of any warranty work and may be required by the local Building Control Inspector.

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).

COMBUSTIBLE AND CORROSIVE MATERIALS

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

Chemically aggressive substances, such as halogenated hydrocarbons containing chlorine or fluorine compounds 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 the Gas Safety (Installation and Use) Regulations 1998.

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 serviced annually by a competent, qualified engineer (such as British Gas or CORGI registered personnel) using approved spares, to help maintain the economy, safety and reliability of the appliance.

IMPORTANT - The service engineer must complete the Service Record in the Benchmark section after each service.

Gas Safety (Installation & Use) Regulations: All gas appliances must be installed by a competent person in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

The appliance must be installed in accordance with, and comply to, the current: Gas Safety Regulations, IEE Regulations, Building Regulations, Building Standards (Scotland) (Consolidation), Building Regulations (Northern Ireland), local water by-laws, Health & Safety Document 635 (The Electricity at Work Regulations 1989) and any other local requirements.

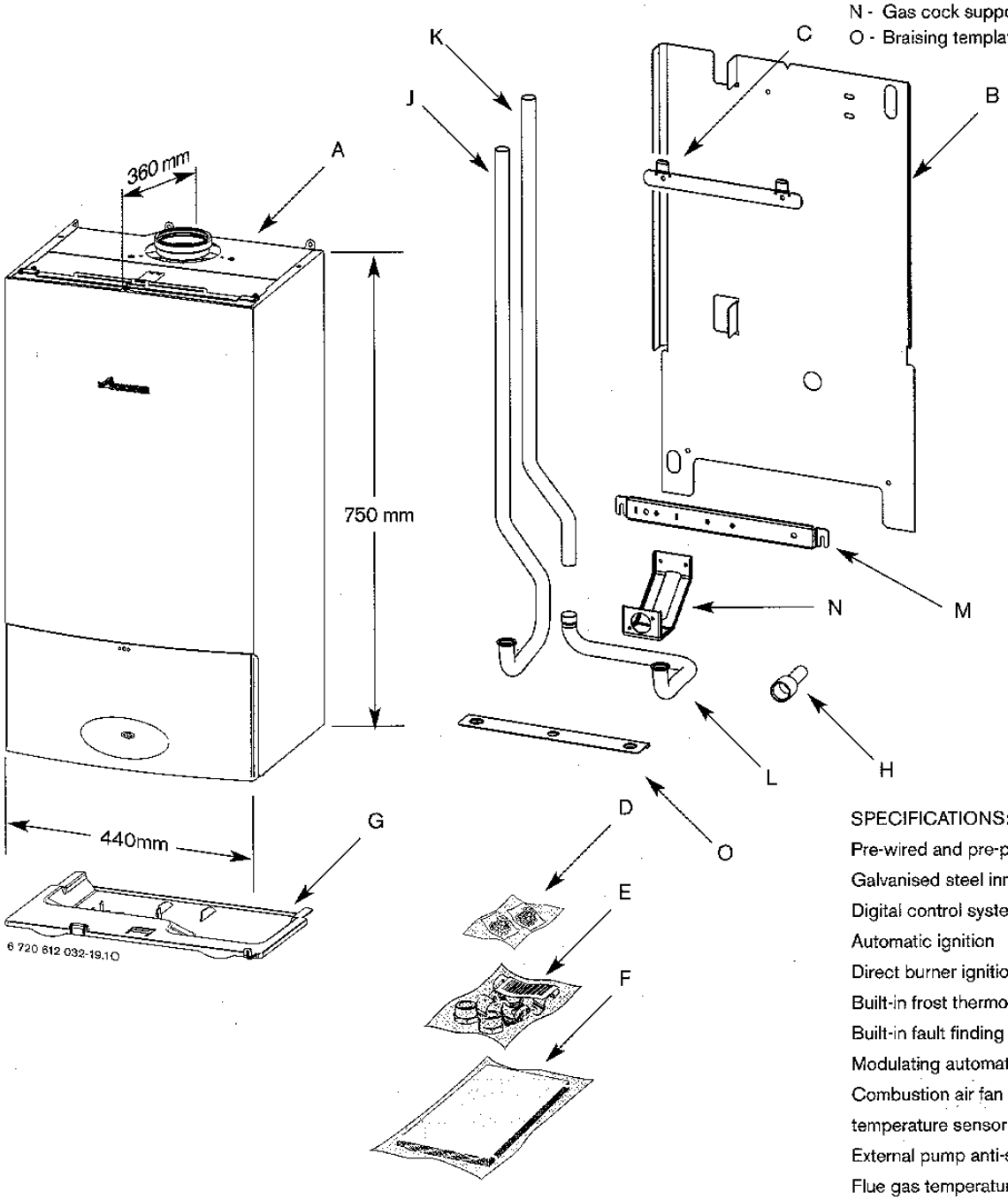
British Standards:
The relevant British Standards should be followed, including:
BS7074:1 : Code of practice for domestic and hot water supply
BS6891 : Installation of low pressure gas pipework up to 28mm (R1)
BS5546 : Installation of gas hot water supplies for domestic purposes
EN:12828 : Central heating for domestic premises
BS5440:1 : Flues and ventilation for gas appliances of rated heating not exceeding 70kW (net) : Flues
BS5440:2 : Flues and ventilation for gas appliances of rated heating not exceeding 70kW (net) : Air Supply
BS7593 : Treatment of water in domestic hot water central heating systems
BS 6798 : Installation of gas fired boilers of rated input up to 70kW (net)
Where no specific instruction is given, reference should be made to the relevant British Standard codes of Practice.

L.P.G. Installation:
An appliance using L.P.G. must not be installed in a room or internal space below ground level unless one side of the building is open to the ground.

Timber framed buildings:
Where the boiler is to be fitted to a timber framed building the guidelines laid down in BS5440: Part 1 and IGE "Gas Installations in Timber Frame Buildings" should be adhered to.

STANDARD PACKAGE:

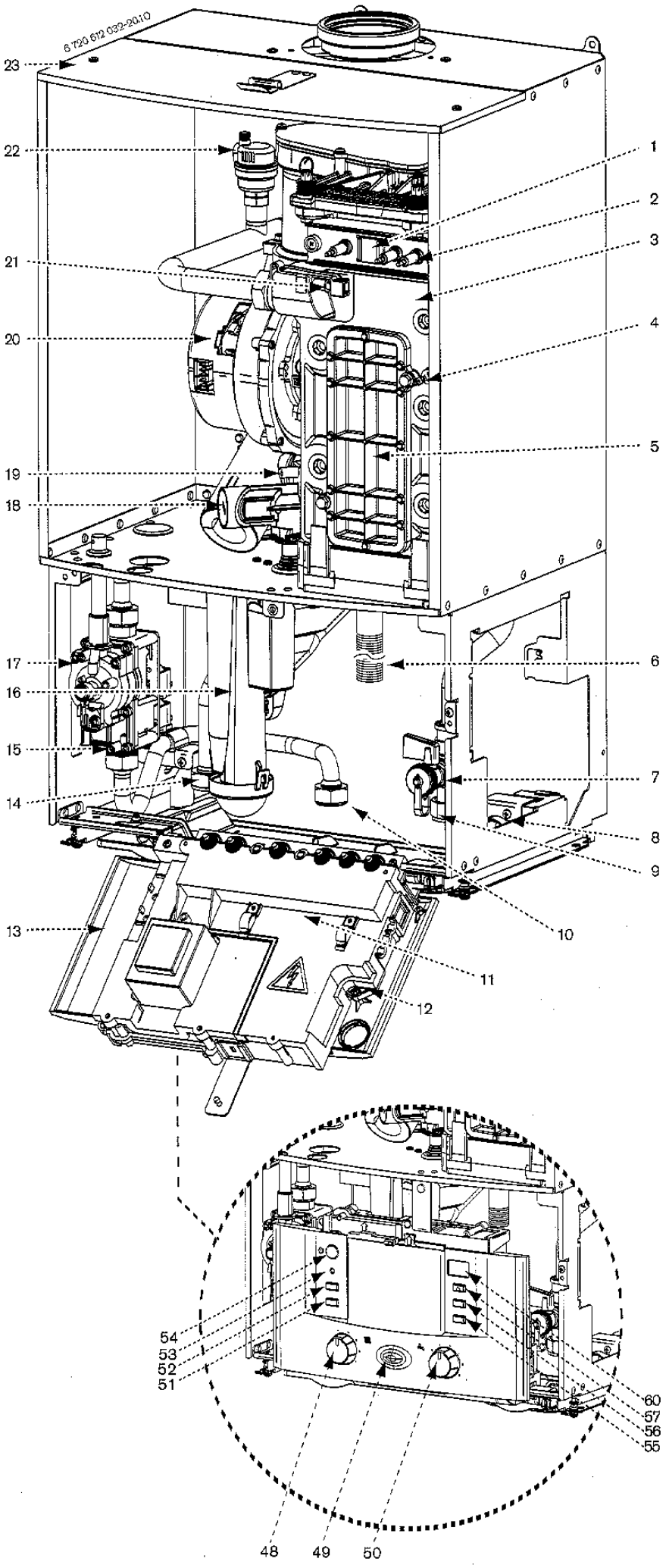
A - Wall hung gas fired condensing boiler for central heating and indirect domestic hot water
B - Wall mounting plate
C - Hanging bracket
D - Hardware pack 1
E - Hardware pack 2 (gas cock)
F - Literature pack
G - Bottom panel
H - Trap / Syphon Outlet Connection (22 mm Plastic Pipe)
J - Flow pipe
K - Return pipe 1
L - Return pipe 2
M - Pipework mounting bracket
N - Gas cock support plate
O - Braising template



SPECIFICATIONS:

Pre-wired and pre-plumbed
Galvanised steel inner frame
Digital control system
Automatic ignition
Direct burner ignition
Built-in frost thermostat (boiler protection)
Built-in fault finding diagnostics
Modulating automatic gas valve
Combustion air fan with speed regulator
temperature sensor & control
External pump anti-seizure protection
Flue gas temperature limiter
Condensate trap & syphon

DESCRIPTION	UNITS	NATURAL GAS 30CDi	NATURAL GAS 40CDi	L.P.G. 30CDi
Heating				
Max. rated heat input	kW	30.9	42.0	30.9
Max. rated heat output net 40/30°C	kW	32.1	43.7	32.1
Max. rated heat output net 50/30°C	kW	31.8	43.3	31.8
Max. rated heat output net 80/60°C	kW	30.0	40.8	30.0
Min. rated heat output net 40/30°C	kW	8.6	10.6	9.8
Min. rated heat output net 50/30°C	kW	8.6	10.5	9.7
Min. rated heat output net 80/60°C	kW	7.7	9.4	8.7
Min. rated heat input net	kW	8.0	9.8	9.1
Max. flow temperature	°C	nom. 90	nom. 90	nom. 90
Max. permissible operating pressure	bar	3.0	3.0	3.0
Gas flow rate - Max. 10 minutes from lighting				
Natural Gas G20	m^3/h	3.2	4.4	-
Propane Gas (LPG)	kg/h	-	-	2.4
Flue				
Flue Gas Temp. 80/60°C, rated min. load	°C	76/58		76/58
Flue Gas Temp. 40/30°C, rated min. load	°C	55/33		55/33
CO_2 level at max. rated heat output	%	9.6	9.7	10.8
CO_2 level at min. rated heat output	%	9.0	9.1	10.5
NOx - class		5	5	5
Condensate				
Max. condensation rate	l/h	2.7	3.7	2.7
pH value, approx.		4.8	4.8	4.8
Electrical				
Electrical power supply voltage	AC...V	230	230	230
Frequency	Hz	50	50	50
Max. power consumption	W	approx . 50	approx . 75	approx. 50
General Data				
SEDBUK	band	A	A	A
Appliance protection rating	IP	X4D	X4D	X4D
Permissible ambient temperatures	°C	0-50	0-50	0-50
Nominal capacity of appliance	l	3.5	3.5	3.5
Noise output level	dB(A)	45		45
Total boiler weight (lift weight)	kg	39.5	39.5	39.5
Packaged boiler weight	kg	48	48	48
SEDBUK	%	90.3	90.2	90.3



LAYOUT & COMPONENTS

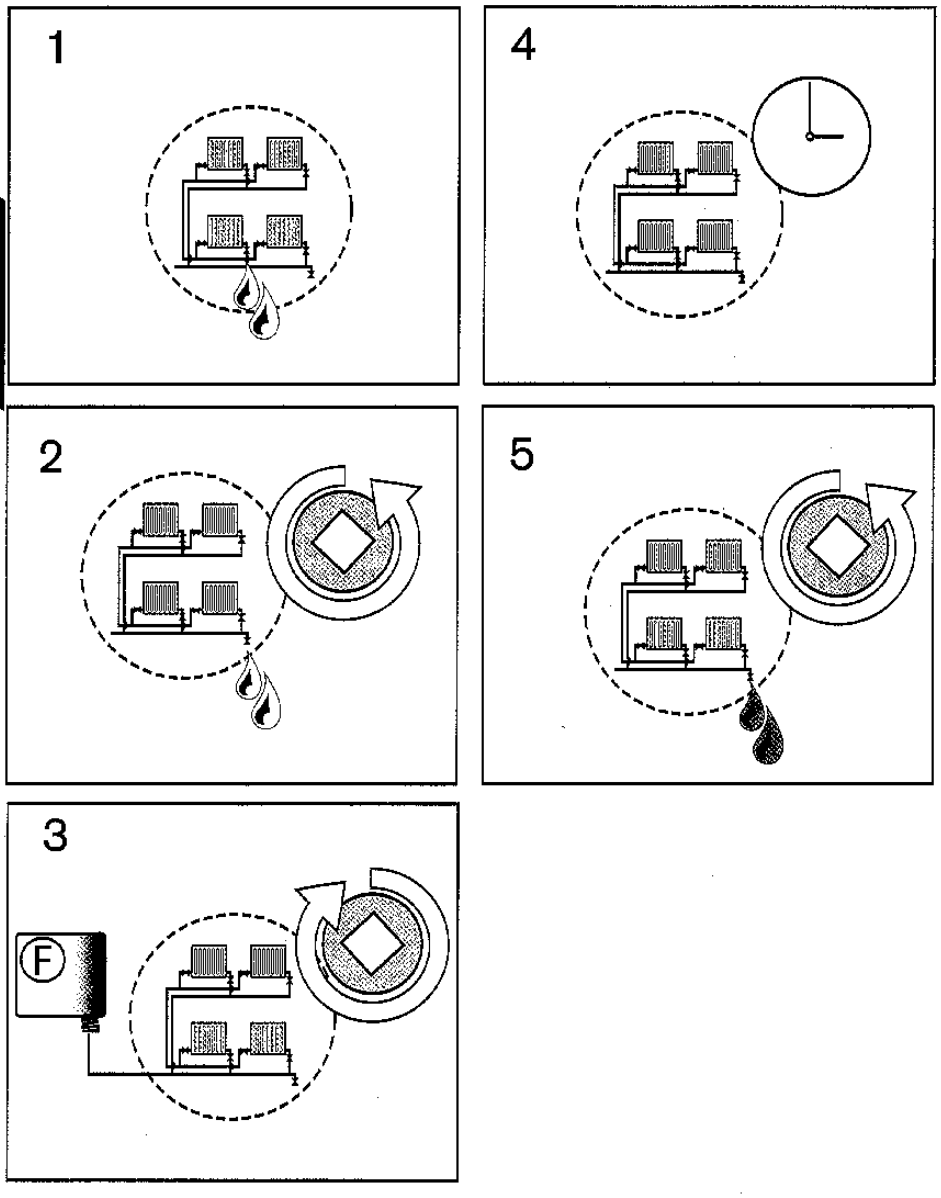
The diagram opposite shows the controls in the servicing position and excludes the outer case.

1 FLAME VIEWING WINDOW
2 IGNITION ELECTRODE AND FLAME SENSE ELECTRODE
3 HEAT EXCHANGER
4 OVERHEAT THERMOSTAT
5 ACCESS POINT FOR CLEANING HEAT EXCHANGER
6 CONDENSATE HOSE
7 DRAIN POINT
8 TRAP / SYPHON OUTLET CONNECTION (22 mm PLASTIC PIPE)
9 RETURN
10 GAS INLET CONNECTION 22 mm COMPRESSION
11 COVER FOR EXTERNAL WIRING CONNECTIONS
12 CONTROL PANEL IN SERVICE POSITION
13 ACCESS COVER FOR TRANSFORMER & PCB
14 FLOW
15 INLET PRESSURE TEST POINT
16 TRAP / SYPHON
17 GAS VALVE
18 AIR / GAS ADJUSTMENT SCREW
19 TESTING POINT FOR FAN PRESSURE
20 FAN
21 PRIMARY SENSOR
22 AUTO AIR VENT
23 REMOVABLE TOP CASE PANEL FOR SERVICING

48 TEMPERATURE CONTROL
49 MAINS ON/OFF INDICATOR/DIAGNOSTIC LIGHT (BLUE)
50 NOT USED
51 BOOST BUTTON
52 SERVICE BUTTON
53 BURNER ON INDICATOR LIGHT (GREEN)
54 MASTER SWITCH ON/OFF
55 HOLIDAY BUTTON
56 NOT USED
57 FAULT RESET BUTTON
60 DISPLAY

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.



KEY

Valve

Flushing Agent

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

KEEP THE EXISTING BOILER/ CIRCULATING PUMP WHERE POSSIBLE OR USE A POWER FLUSHING MACHINE TO AID THE CLEANSING PROCEDURE BEFORE INSTALLING A NEW BOILER.

CLEANING THE PRIMARY SYSTEM:

1 Fill the system with cold water and check for leaks.
2 Open all drain cocks and drain the system.
3 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.

4 Run the boiler/system at normal operating temperature as directed by the manufacturer of the flushing agent.
5 Drain and thoroughly flush the system to remove the flushing agent and debris.

MAINS SUPPLIES

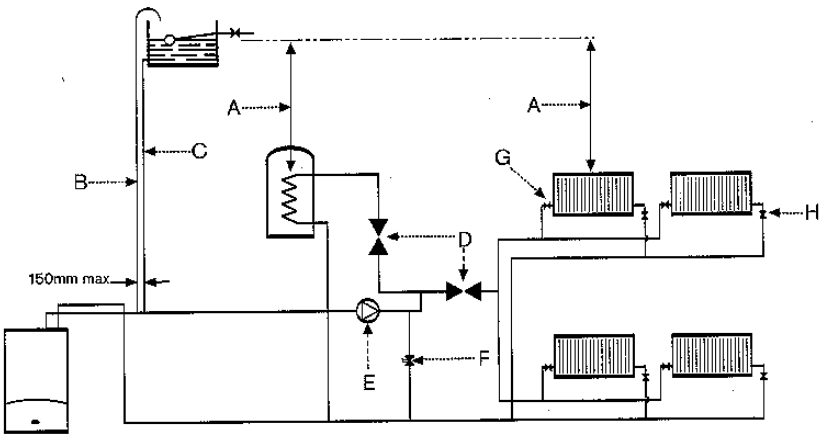
ELECTRIC SUPPLY:

- Supply: 230V - 50Hz
  (See Technical Data for IP ratings.)
- Cable: PVC insulated 0.75mm^2
  (24 x 0.2mm) temperature rated to 90°C.
- External 3A fuse to BS1362.
- The appliance must be earthed.
- All pipes to the boiler must be cross-bonded.
- Wiring must comply with IEE wiring regulations and any local regulations which may apply to fixed wiring to a stationary appliance.

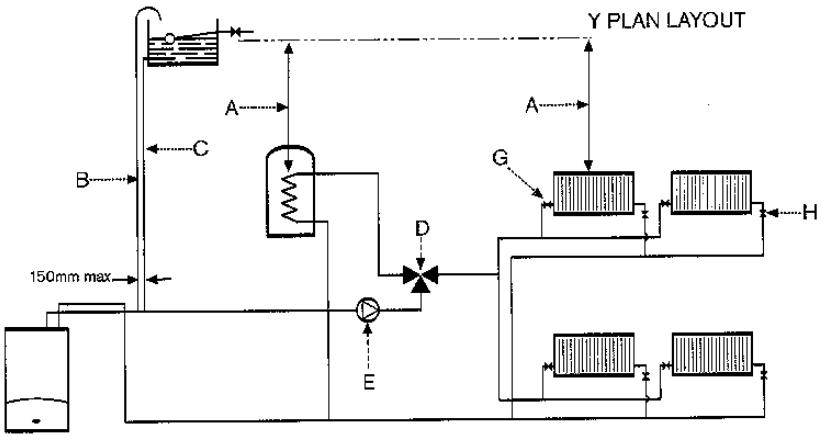
GAS SUPPLY:

- Boilers using NG must be connected to a governed meter.
- LPG boilers must be connected to a regulator.
- Installation and connection of the gas supply to the boiler must be in accordance with BS6891.
- Under no circumstances should the size of the gas supply pipe be less than that of the appliance inlet connection.
- The meter or regulator and pipework to the meter must be checked, preferably by the gas supplier, to ensure it is in good working order and can meet the gas flow and pressure requirements in addition to the demand from any other appliance being served. This does not include the pipework from the meter to the boiler.

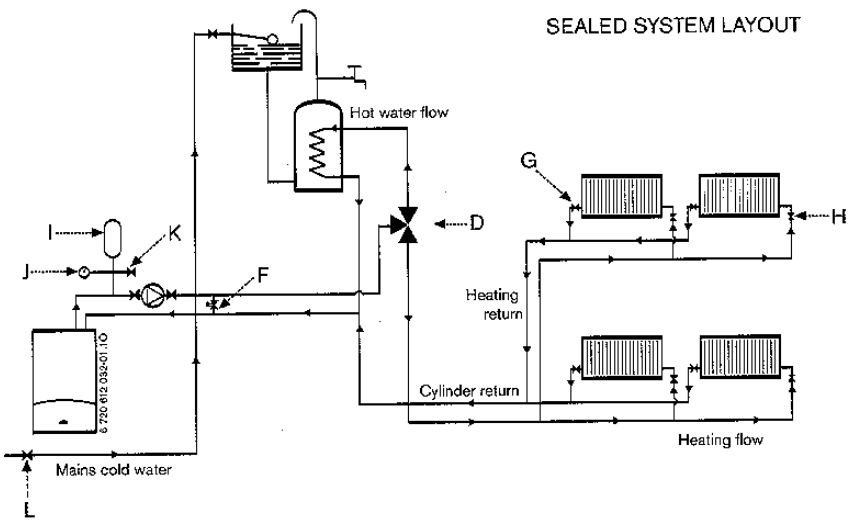
S PLAN LAYOUT



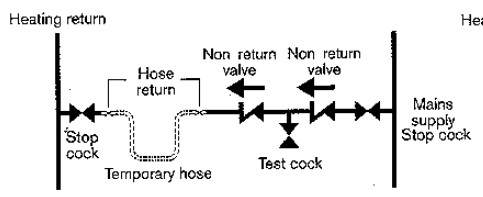
Y PLAN LAYOUT



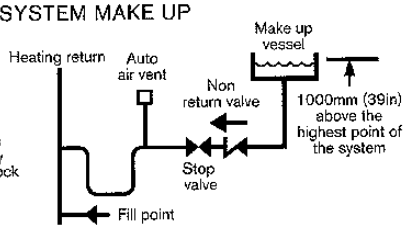
SEALED SYSTEM LAYOUT



SYSTEM FILL



SYSTEM MAKE UP



WATER SYSTEMS & PIPEWORK

PLASTIC PIPEWORK:

- Any plastic pipework must have a polymeric barrier with 600 mm (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.
  The pipework from the boiler to the blending valve must be in copper or steel (protected from corrosion).

CONNECTIONS/VALVES:

- All system connections, taps and mixing valves must be capable of sustaining a pressure up to 3 bar.
- Radiator valves should conform to BS2767:10.
- All other valves should conform to BS1010.
- Thermostatic radiator valves (TRVs) must be used on all radiators within the sleeping accommodation but not the radiator where the room thermostat is sited. This must be fitted with wheelhead and lockshield valves and left open.
- A drain cock is required at the lowest point on the system.
- An air vent is required at the highest point on the system.

S and Y PLAN SYSTEM:

- **NB Generally a bypass is not necessary on a Y plan system as one of the parts is open to flow.**

A Static Head - Minimum static head 250mm measured from the highest point in the heating system (top surface of the appliance or highest point in the heating system) to the water level in the feed and expansion tank.
B Heating Vent (22mm minimum)
C Primary Cold Feed (15mm minimum)
D Diverter Valve
E Pump
F Automatic Bypass
G Radiator Valve (Flow)
H Lockshield Valve (Return)

- **NB A drain cock should be fitted at the lowest point of the heating circuit and beneath the appliance.**

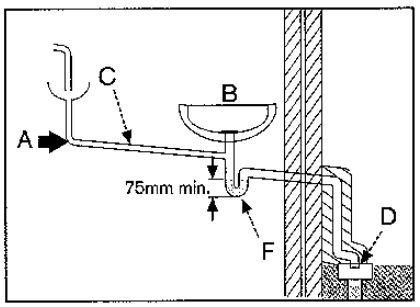
FULLY PUMPED SEALED SYSTEM:

- The sealed system must be filled using a WRAS approved filling loop or comply with the diagram opposite for System fill
- Do not use galvanised pipes or radiators.

I Expansion Vessel
J Pressure Gauge
K Relief Valve
L Stop Valve Fixed Cylinder Type or sealed systems approved connection

- **NB A drain cock should be fitted at the lowest point of the heating circuit and beneath the appliance.**

1



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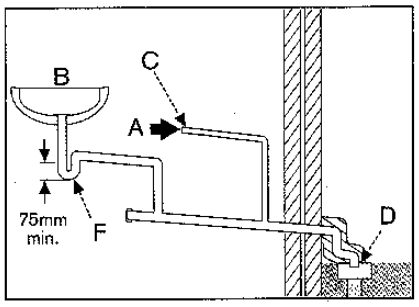

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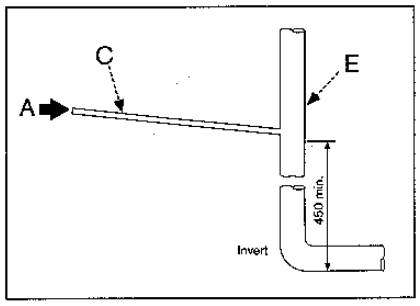

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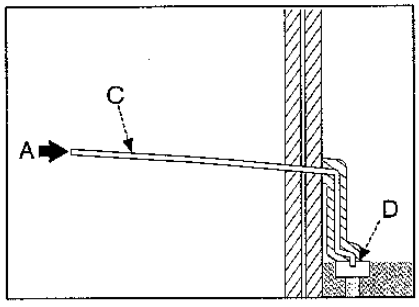

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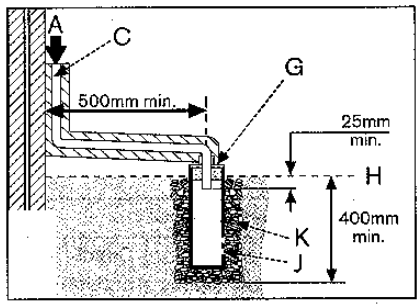


CONDENSATE PIPEWORK:

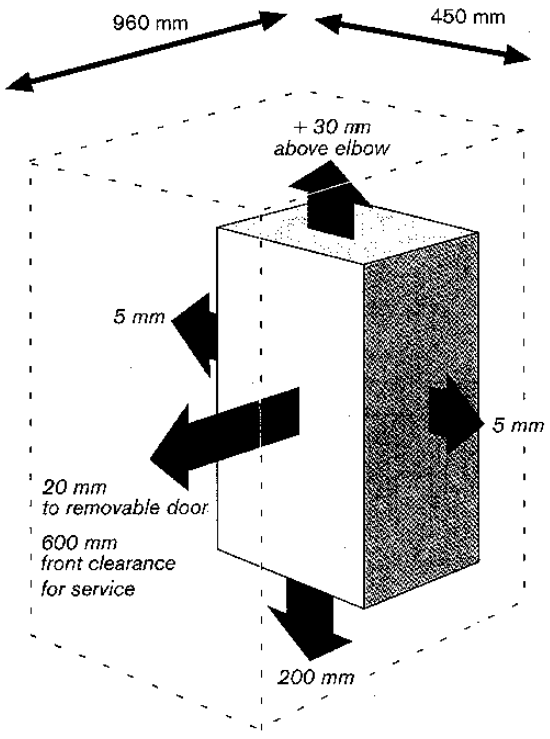
- The condensate pipe must be a minimum of 22mmØ plastic pipe
- **The condensate pipework must fall at least 50 mm per metre towards the outlet and should take the shortest practicable route.**
- The pipework must follow one of the options shown opposite into an internal serviceable-trap (min. 75 mm) such as a sink/washing machine) and discharge direct into a vent stack (E) min. 450 mm above pipe invert or into a gulley (D) below ground but above the water level.
- **Use waterproof pipe insulation in exposed positions and for excessive runs of external pipework (over 3 metres).**

IMPORTANT: Ensure there are no blockages in the pipe run.

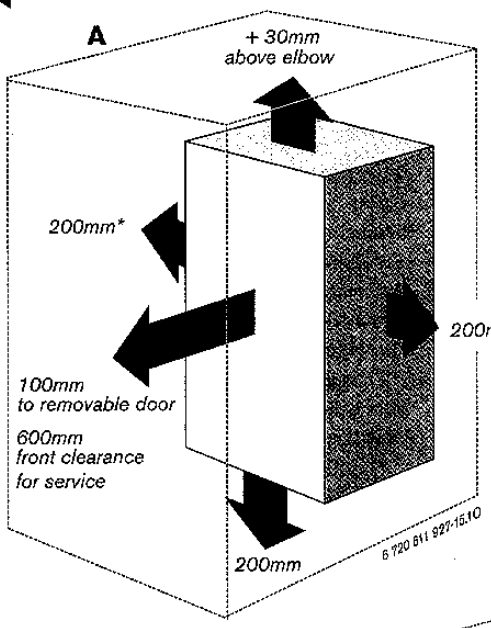
1 Internal sink/washing machine drain
2 Internal waste drainage system
3 Soil/vent stack
4 External drainage system
5 External condensate absorption point

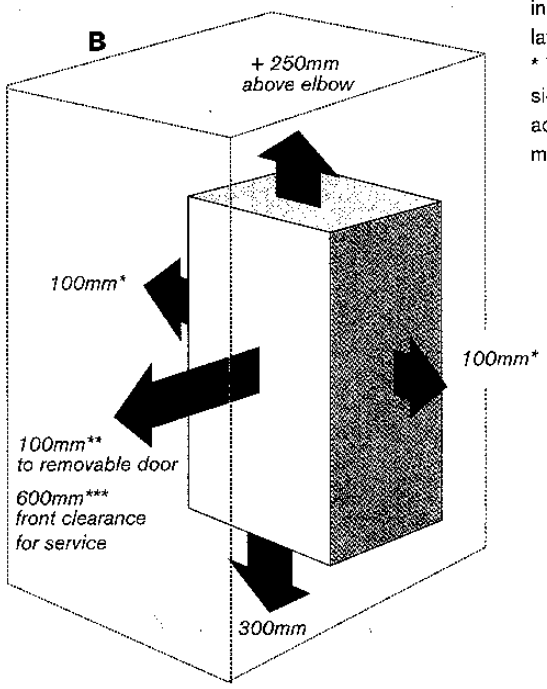
A - Condensate from boiler
B - Sink
C - 22 mm Ø plastic condensate pipe
D - Gulley
E - Internal soil and vent stack
F - Serviceable waste trap (75 mm min)
G - 300 mm x 100 mm Ø sealed plastic tube
H - Ground level
J - Drainage holes 50 mm from base of tube (12 mm Ø at 25 mm centres) facing away from building
K - Limestone chippings

SERVICING CLEARANCES VENTILATED COMPARTMENT



VENTILATION FREE COMPARTMENTS INSTALLATION CLEARANCES





BOILER LOCATION & CLEARANCES

This boiler is only suitable for installing internally within a property at a suitable location onto a fixed, rigid non-combustible surface at least the same size as the boiler and capable of supporting the boiler weight.

COMPARTMENTS:

Follow the requirements of BS6798 and BS5440 Part 2 and note:

- Minimum clearances must be maintained
- An access door is required to install, service and maintain the boiler and any ancillary equipment.
- If fitting the boiler into an airing cupboard use a non-combustible perforated material (maximum hole sizes of 13mm) to separate the boiler from the airing space.

BOILER CLEARANCES:

The diagram opposite shows the minimum space required to install and service the boiler.

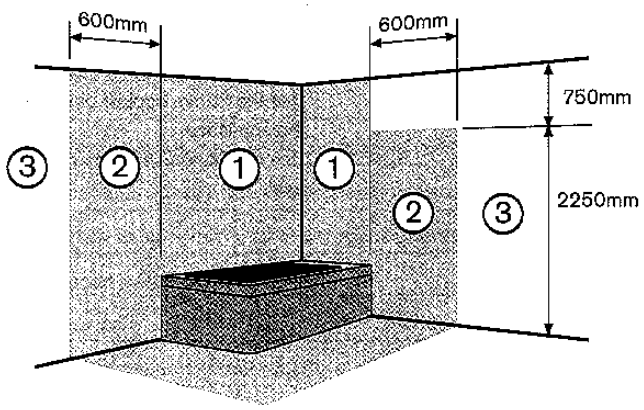
If a boiler is installed in a compartment with clearances less than shown in the diagram below, ventilation is required. Refer to tables below for size.

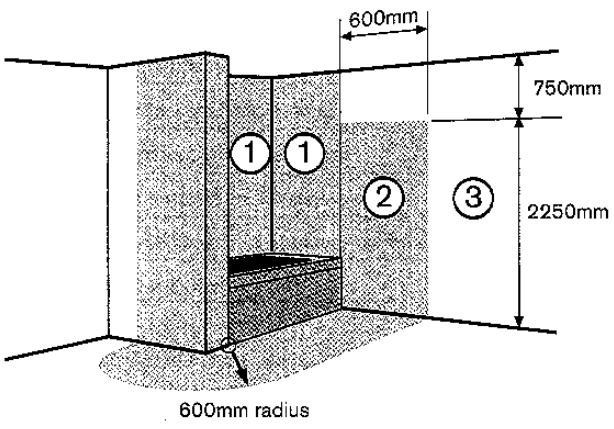
Greenstar CDi		
Vent position	**To room or internal space**	**Direct to outside**
High level	Minimum free area 122 cm^2	Minimum free area 61 cm^2
Low level	Minimum free area 122 cm^2	Minimum free area 61 cm^2

BOILER CLEARANCES - UNVENTILATED COMPARTMENT:

The diagrams (A and B) opposite show two options for the minimum space required to install and service the boiler inside an unventilated compartment.

* This space can be reduced to 50mm for one side only as long as both the side clearances add up to the total of both the side measurements shown or more.





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BATHROOMS:

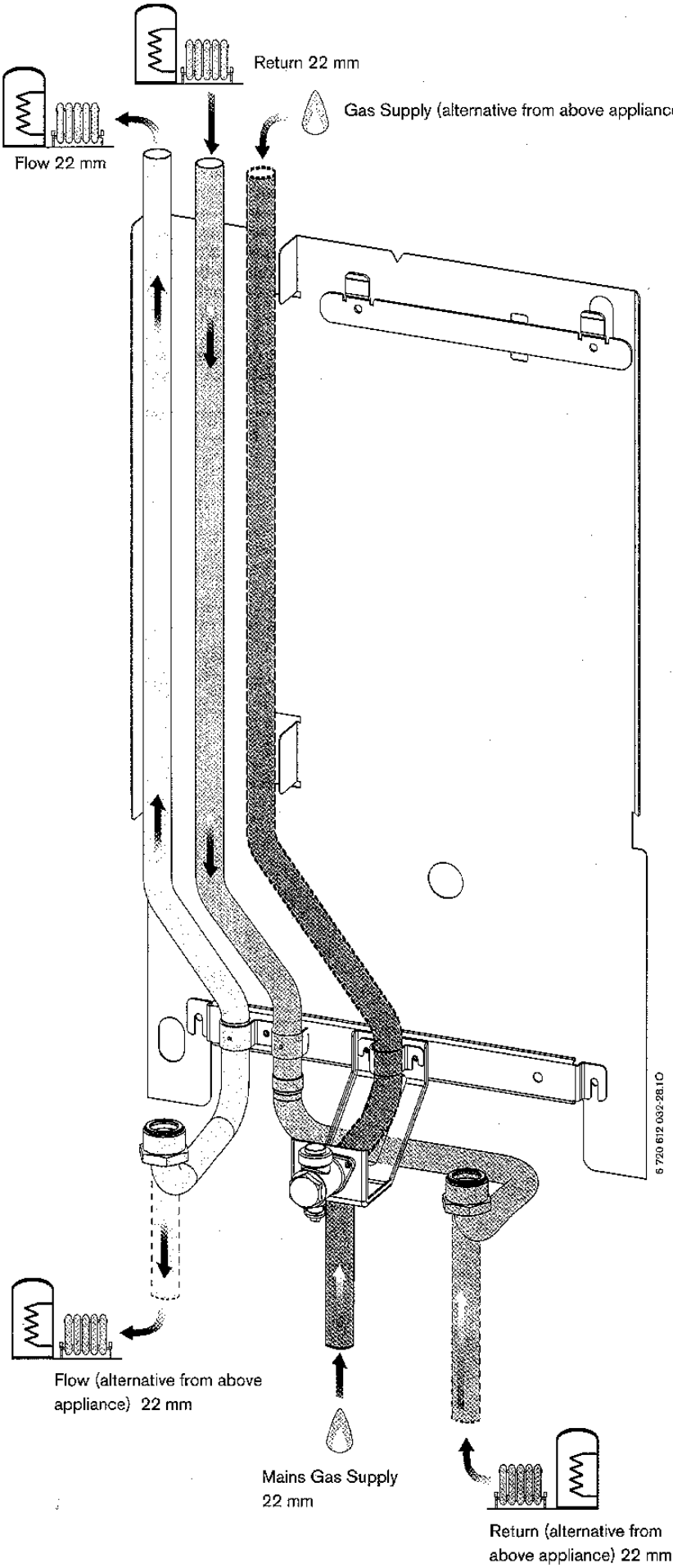
The boiler can be installed in zones 2 or 3.

See IEE wiring regulations.

(See Technical Data for IP ratings.)

IMPORTANT: any switch or appliance control using 230 V mains electricity must not be able to be touched by a person using the bath or shower.

Electrical switches, fused spur and socket outlets must not be situated in the bathroom.



CONNECTIONS:

Heating System: 22 mm compression fittings

Gas: 22 mm compression fittings

Use the 22mm copper pipes provided with the appliance.

Use the fittings supplied in the Lit/Hardware pack.

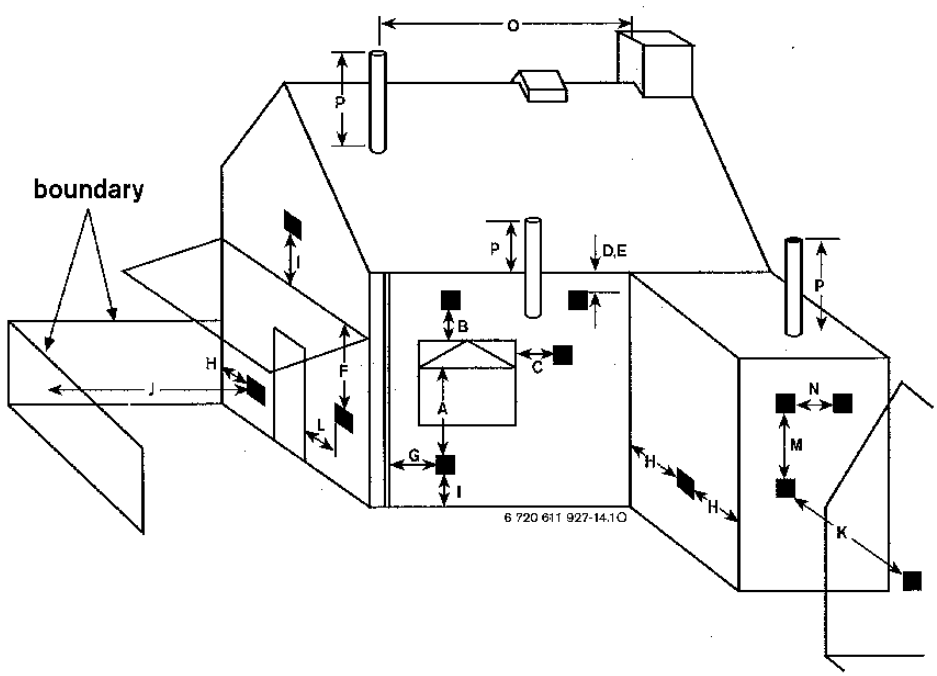
Minimum dimensions of flue terminal positions for balanced room sealed flues with fanned draught:

DRWG. REF:	TERMINAL POSITION	DISTANCE
A[1]	Directly below an opening, air brick, opening windows, etc.	300mm
B[1]	Above an opening, air brick, opening window, etc.	300 mm
C[1]	Horizontally to an opening, air brick, opening window, etc.	300 mm
D	Below gutters, soil pipes or drain pipes	75mm
E	Below eaves	200mm
F[2]	Below balconies or car port roof (lowest point)	200mm
G	From a vertical drain pipe or soil pipe	150mm
H	From an internal or external corner	300mm
I	Above ground, roof or balcony	300mm
J	From a surface facing the terminal	600mm
K	From a terminal facing the terminal	1200mm
L[2]	From an opening in the car port (e.g. door, window) into the dwelling	1200mm
M	Vertically from a terminal on the same wall	1500mm
N	Horizontally from a terminal on the same wall	300mm
O	From a non combustible vertical structure on the roof	*
P	Above intersection with roof	*

1 In addition, the terminal should not be nearer than 150mm (fanned draught) to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame.

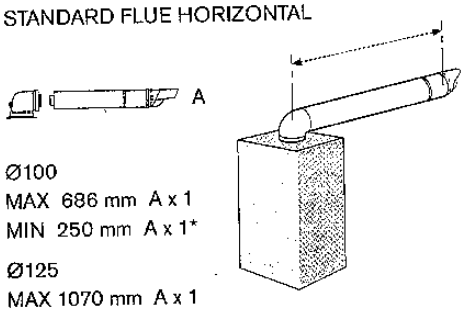
2 Not recommended.

* *See instructions supplied with vertical flue kits.*



- The flue must be fitted and terminated in accordance with the recommendations of BS5440 : Part 1.
- The flue must not cause an obstruction.
- Discharge and any noise from the flue outlet must not cause 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. Where this could be a nuisance, for example, near security lighting, an alternate position should be found.
- 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 5440:1
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface to which people have access.
  The guard must be spaced equally (minimum 50 mm) around the flue and fixed to the wall with plated screws. See Contact Information (inside front cover).

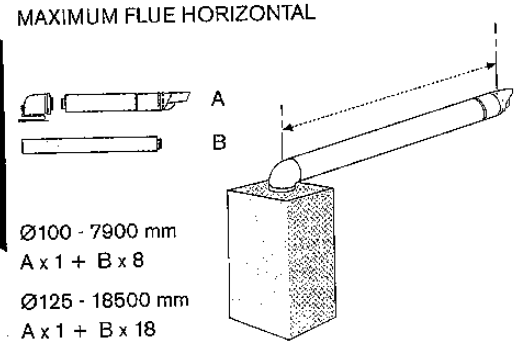
STANDARD FLUE HORIZONTAL



Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*
* Requires cutting

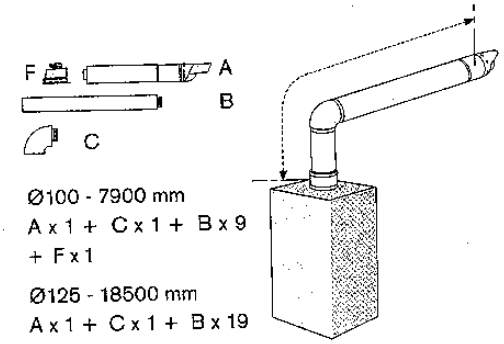
MAXIMUM FLUE HORIZONTAL



Ø100 - 7900 mm
A x 1 + B x 8

Ø125 - 18500 mm
A x 1 + B x 18

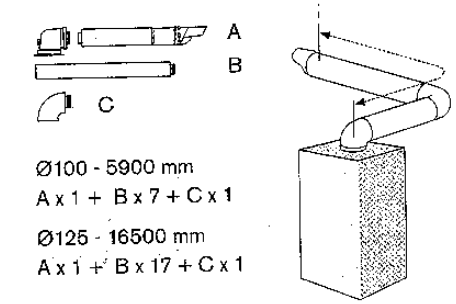
MAXIMUM FLUE VERTICAL START + 1 BEND



Ø100 - 7900 mm
A x 1 + C x 1 + B x 9 + F x 1

Ø125 - 18500 mm
A x 1 + C x 1 + B x 19 + F x 1

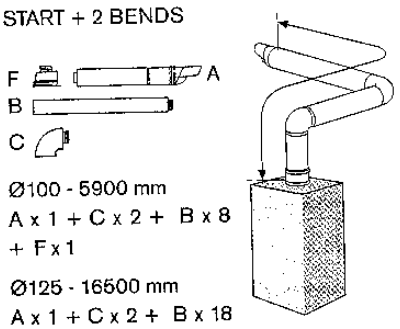
MAXIMUM FLUE HORIZONTAL + 1 BEND



Ø100 - 5900 mm
A x 1 + B x 7 + C x 1

Ø125 - 16500 mm
A x 1 + B x 17 + C x 1

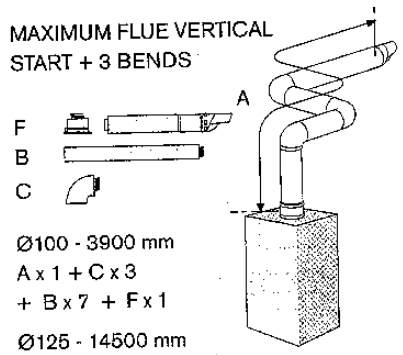
MAXIMUM FLUE VERTICAL START + 2 BENDS



Ø100 - 5900 mm
A x 1 + C x 2 + B x 8 + F x 1

Ø125 - 16500 mm
A x 1 + C x 2 + B x 18 + F x 1

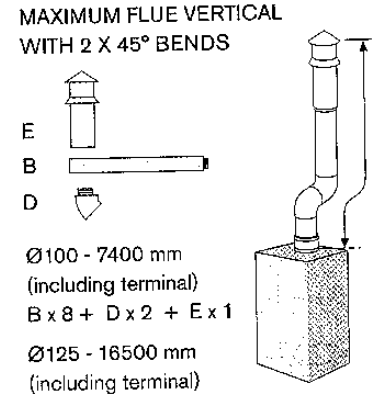
MAXIMUM FLUE VERTICAL START + 3 BENDS



Ø100 - 3900 mm
A x 1 + C x 3 + B x 7 + F x 1

Ø125 - 14500 mm
A x 1 + C x 3 + B x 17 + F x 1

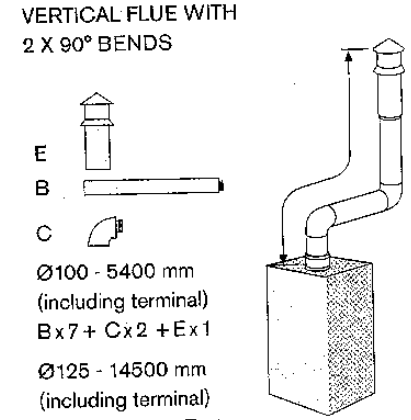
MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS



Ø100 - 7400 mm
(including terminal)
B x 8 + D x 2 + E x 1

Ø125 - 16500 mm
(including terminal)
B x 17 + D x 2 + E x 1

VERTICAL FLUE WITH 2 X 90° BENDS



Ø100 - 5400 mm
(including terminal)
B x 7 + C x 2 + E x 1

Ø125 - 14500 mm
(including terminal)
B x 16 + C x 2 + E x 1

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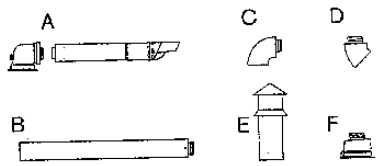
FLUE OPTIONS 30CDi

CONVENTIONAL

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 7900 mm
Horizontal 80/125 mm Ø: 18500 mm
Vertical 60/100 mm Ø: 9400 mm
Vertical 80/125 mm Ø: 18500 mm

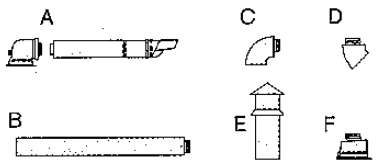
Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

CONVENTIONAL

- The diagrams (opposite) show the components used and the maximum flue length for each configuration of 100 mm and 125 mm Ø flues.
- Shaded flue components indicate the standard 100 mm Ø horizontal flue.
- Only straight flue sections can be reduced in length and cut.
- The flue terminal end can be fitted from the inside or outside of the building.
- Fixing kits are supplied with the flue extension kits.
- Horizontal 125 mm Ø and Vertical 100 mm and 125 mm Ø flue kits are available with separate instructions. Contact your supplier or Worcester Bosch.



A - Standard horizontal flue (100 mm Ø shown)
B - Straight flue extension
C - Flue bend, 90°
D - Flue bends, 45°
E - Vertical terminal (vertical adaptor supplied with terminal)
F - Vertical adaptor (used with horizontal terminal)

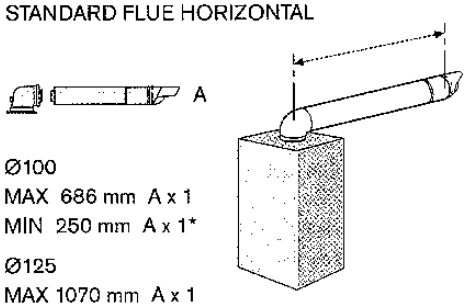
Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:
Horizontal 60/100 mm Ø: 2600 mm
Horizontal 80/125 mm Ø: 12500 mm
Vertical 60/100 mm Ø: 4900 mm
Vertical 80/125 mm Ø: 16000 mm

Then reduce the total straight flue length for each extra flue bend (excluding the turret) by:
2000 mm for 90°
1000 mm for 45°

Flue extension **total** lengths:
Horizontal & Vertical 60/100 mm Ø: 960 mm
Horizontal & Vertical 80/125 mm Ø: 1000 mm

Flue terminal **total** lengths:
Horizontal 60/100 mm Ø: 800 mm
Horizontal 80/125 mm Ø: 1200 mm
Vertical 60/100 mm Ø: 1140 mm
Vertical 80/125 mm Ø: 1365 mm

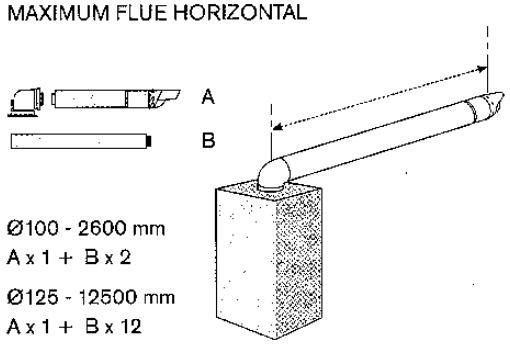
STANDARD FLUE HORIZONTAL



Ø100
MAX 686 mm A x 1
MIN 250 mm A x 1*

Ø125
MAX 1070 mm A x 1
MIN 250 mm A x 1*
* Requires cutting

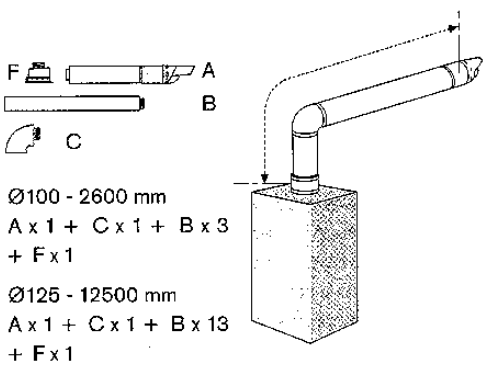
MAXIMUM FLUE HORIZONTAL



Ø100 - 2600 mm
A x 1 + B x 2

Ø125 - 12500 mm
A x 1 + B x 12

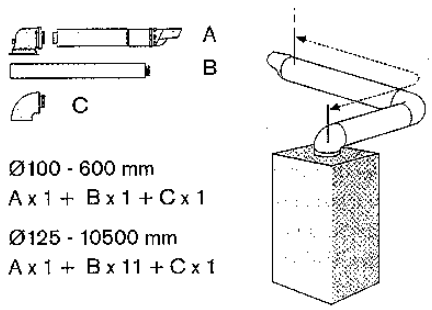
MAXIMUM FLUE VERTICAL START + 1 BEND



Ø100 - 2600 mm
A x 1 + C x 1 + B x 3 + F x 1

Ø125 - 12500 mm
A x 1 + C x 1 + B x 13 + F x 1

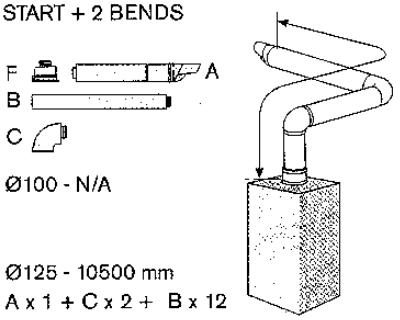
MAXIMUM FLUE HORIZONTAL + 1 BEND



Ø100 - 600 mm
A x 1 + B x 1 + C x 1

Ø125 - 10500 mm
A x 1 + B x 11 + C x 1

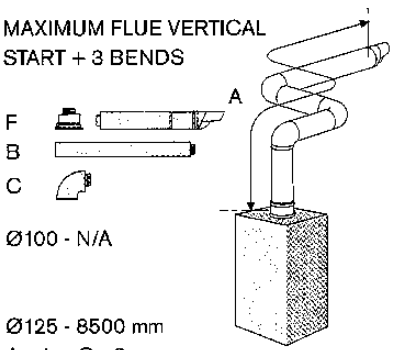
MAXIMUM FLUE VERTICAL START + 2 BENDS



Ø100 - N/A

Ø125 - 10500 mm
A x 1 + C x 2 + B x 12 + F x 1

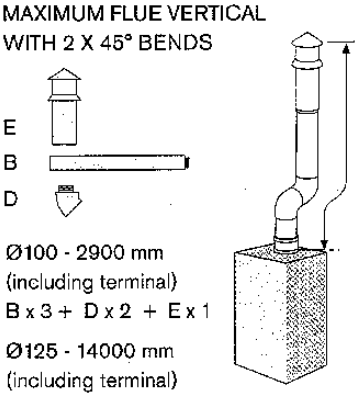
MAXIMUM FLUE VERTICAL START + 3 BENDS



Ø100 - N/A

Ø125 - 8500 mm
A x 1 + C x 3 + B x 11 + F x 1

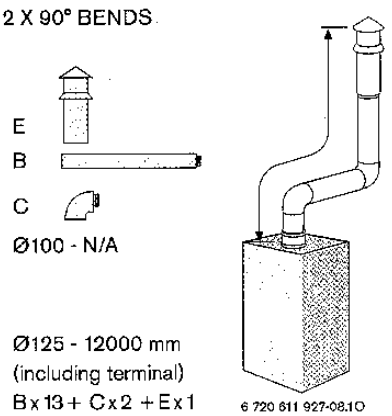
MAXIMUM FLUE VERTICAL WITH 2 X 45° BENDS



Ø100 - 2900 mm
(including terminal)
B x 3 + D x 2 + E x 1

Ø125 - 14000 mm
(including terminal)
B x 14 + D x 2 + E x 1

VERTICAL FLUE WITH 2 X 90° BENDS

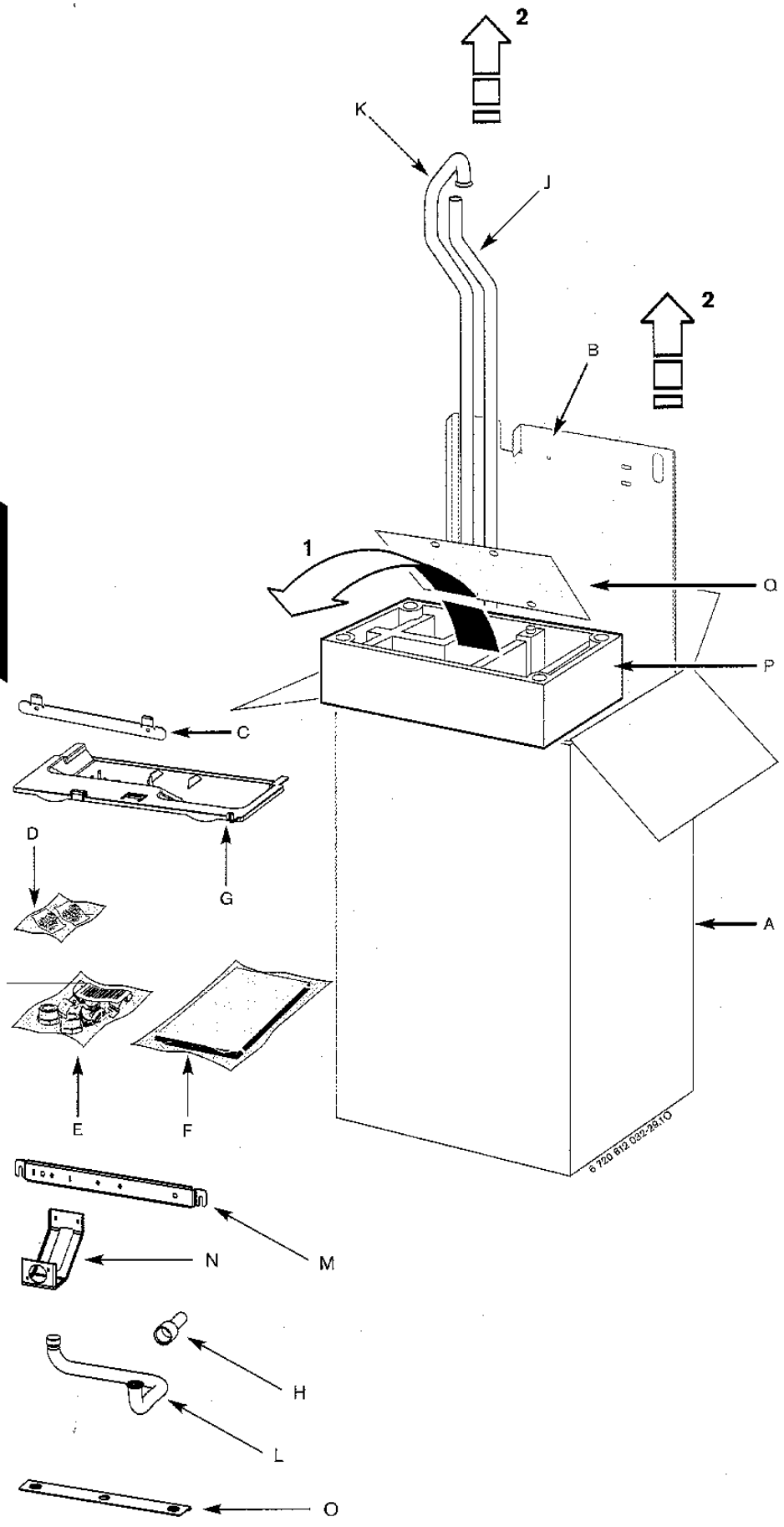


Ø100 - N/A

Ø125 - 12000 mm
(including terminal)
B x 13 + C x 2 + E x 1

6 720 611 927-08.1O

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



UNPACKING WALL FRAME AND ANCILLARY ITEMS

LIFTING AND CARRYING PRECAUTIONS:

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

A - Carton
B - Wall mounting plate
C - Hanging bracket
D - Hardware pack 1
E - Hardware pack 2 (gas cock)
F - Literature pack
G - Bottom panel
H - Trap / Syphon Outlet Connection (22 mm Plastic Pipe)
J - Flow pipe
K - Return pipe 1
L - Return pipe 2
M - Pipework mounting bracket
N - Gas cock support plate
O - Braising template
P - Upper support (polystyrene)
Q - Carton cover

IMPORTANT HANDLING INSTRUCTIONS

- It is advised that two people are used to carry the carton from the van to the point of delivery.
- Once the carton has been delivered, the top of the carton is opened. If a sharp implement is used make sure the 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.

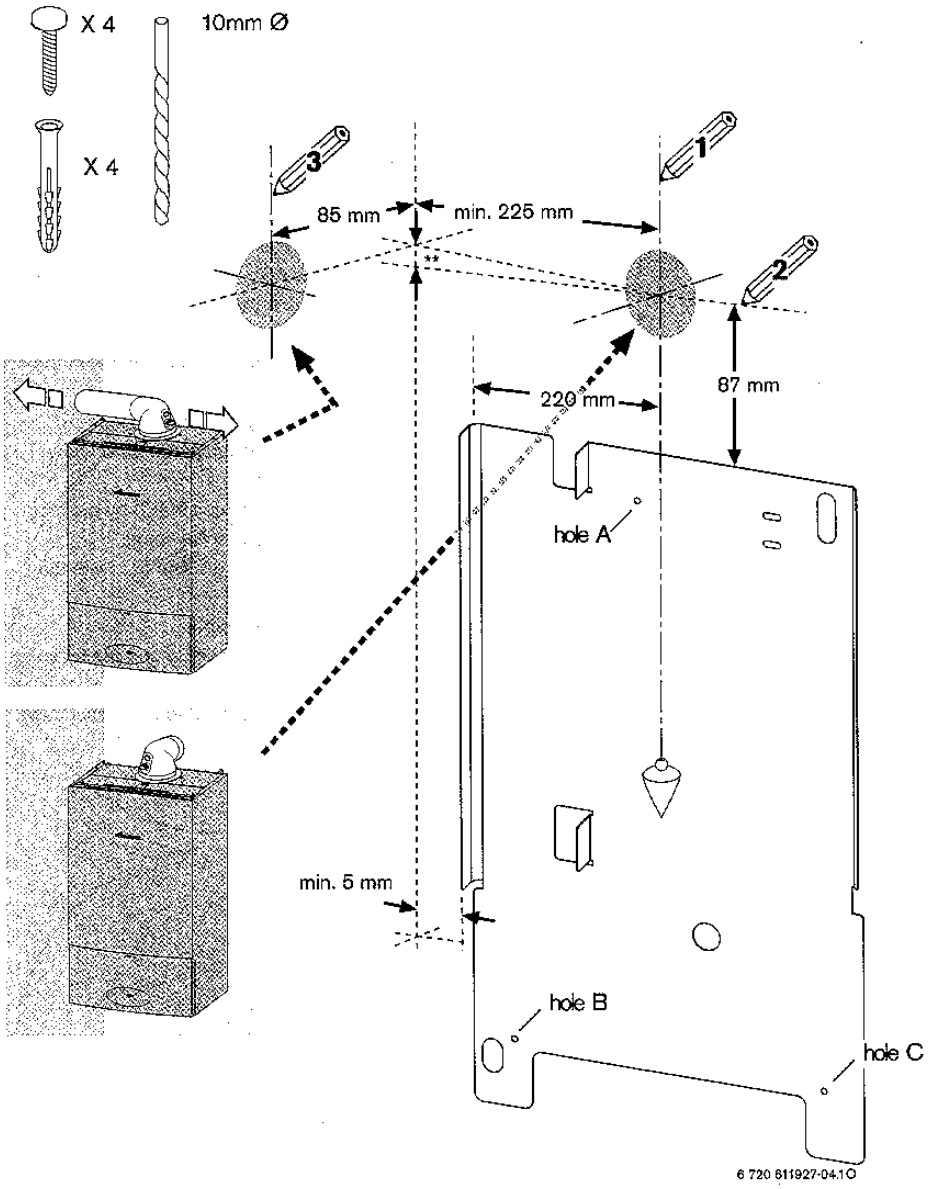
► **1.** The upper support is now removed with the components (bottom panel, pipework mounting bracket, return pipe 2, gas cock support plate, braising template, fixings, documentation set, hanging bracket). Open the support cover to teke the components.

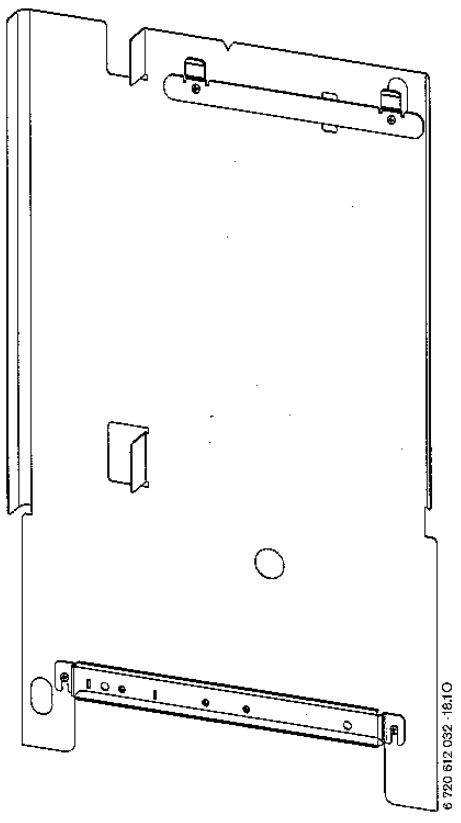
► **2.** The boiler wall mounting plate as well as flow and return pipe 1 can now be pulled out.

Additional requirements for roof space installation:

- The boiler should be first unpacked before ascending ladder to loft space.
- Two sets of steps should be used.
- Two people should share the lifting of the boiler up to the loft hatch, where the boiler is entered into the loft space tilted and slid on its back into the loft.

Once the appliance is removed from its packaging check the contents against the packing list. **Before installing appliance ensure system has been cleaned as explained on page 8.**





WALL MOUNTING PLATE

FLUE OPENING

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

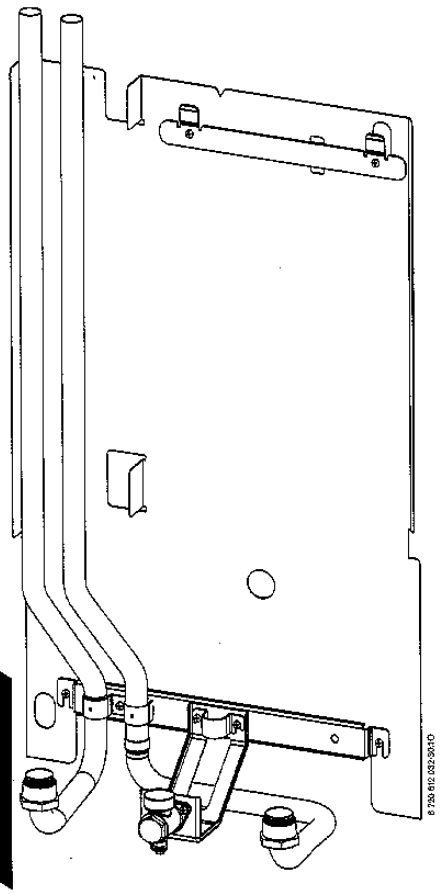
SAFETY:
All relevant safety precautions must be undertaken. Protective clothing, footwear, gloves and safety goggles must be worn as appropriate.

FIXING THE POSITION OF THE WALL MOUNTING PLATE:

- The diagram opposite shows the relative positions of the flue and the fixing of the wall mounting plate, the mounting plate and pipework mounting bracket.
- ▸ Place the wall mounting plate against the wall in the desired position.
- ▸ Mark 3 fixing points through the holes (A, B, C) in the wall mounting plate.
- ▸ Drill the 3 holes for wall mounting plate, wall hanging bracket and pipework mounting bracket.
- ▸ Secure wall mounting plate with hanging bracket and pipework mounting bracket with 3 screws (supplied with the boiler).
- ▸ Use the horizontal slots in the wall mounting plate to level the hanging bracket, mark the 4th hole and drill.
- ▸ Fix and secure the hanging bracket with both screws.

FLUE OUTLET

- ▸ Follow the diagram opposite to mark the centre of the flue for rear outlet (1, & 2) or for side outlet (2 & 3).
  ** Note: increase this height by 52 mm for every 1000 mm of horizontal length that the flue outlet is away from the boiler.
- ▸ For the 60/100 mm Ø flue make a 125 mm diameter hole through the wall using a core drill or similar.
  For flues using an optional weather collar, fitted from inside the building make a 150 mm Ø hole.
- ▸ Clear away any debris.



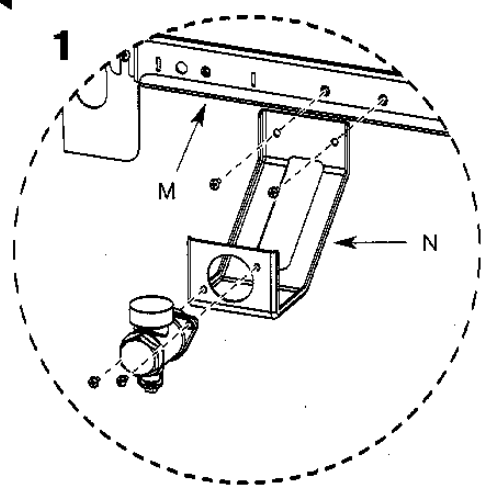
MOUNTING THE PIPES

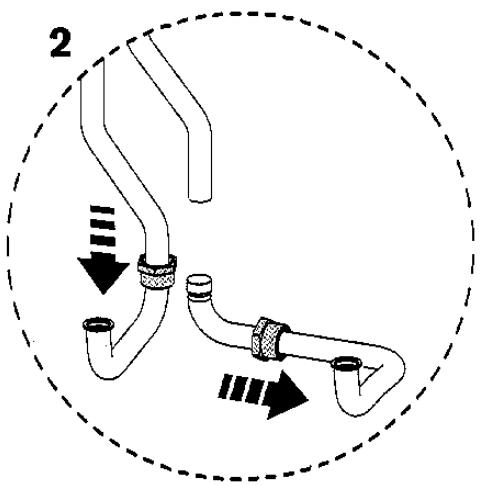
1 ▸ Fix the gas cock support plate (N) on the pipework mounting bracket (M) with two screws supplied with the gas cock.
▸ Fix the gas cock on the mounting plate (N)

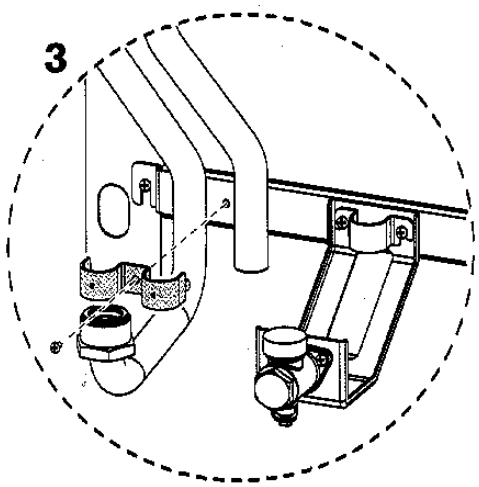
2 ▸ Pull the two nuts on the flow and return pipe.

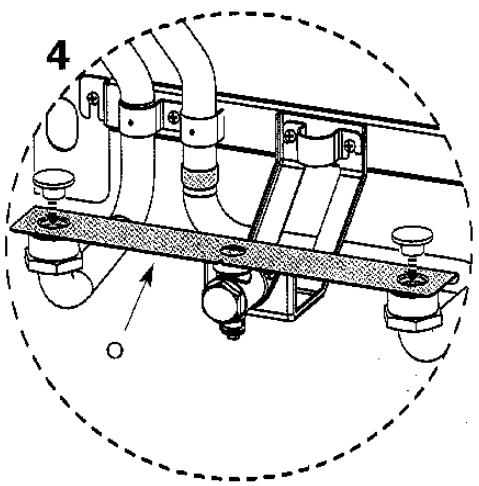
3 ▸ Fix the flow and the return pipe with the bracket.

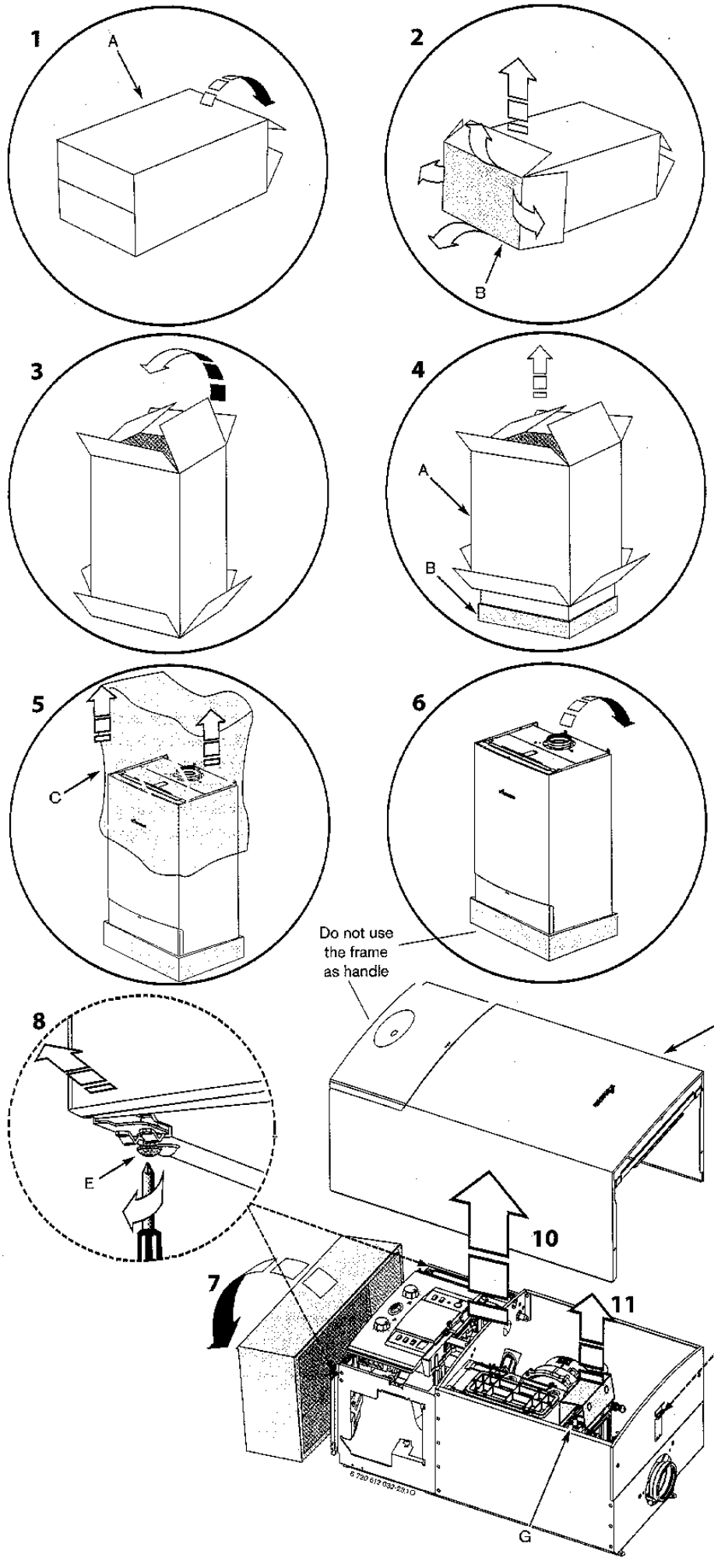
4 ▸ Remove dummy plug from gas cock.
▸ Position braising template (O) on flow pipe and gas cock.
▸ Fix the braising template (O) by pushing the dummy plugs into flow pipe.
▸ Position return pipe 2 and fix it with the dummy plug.
▸ Solder the return pipe.
▸ Remove the dummy plug and the braising template (O).
▸ Replace the dummy plugs to prevent any contamination.











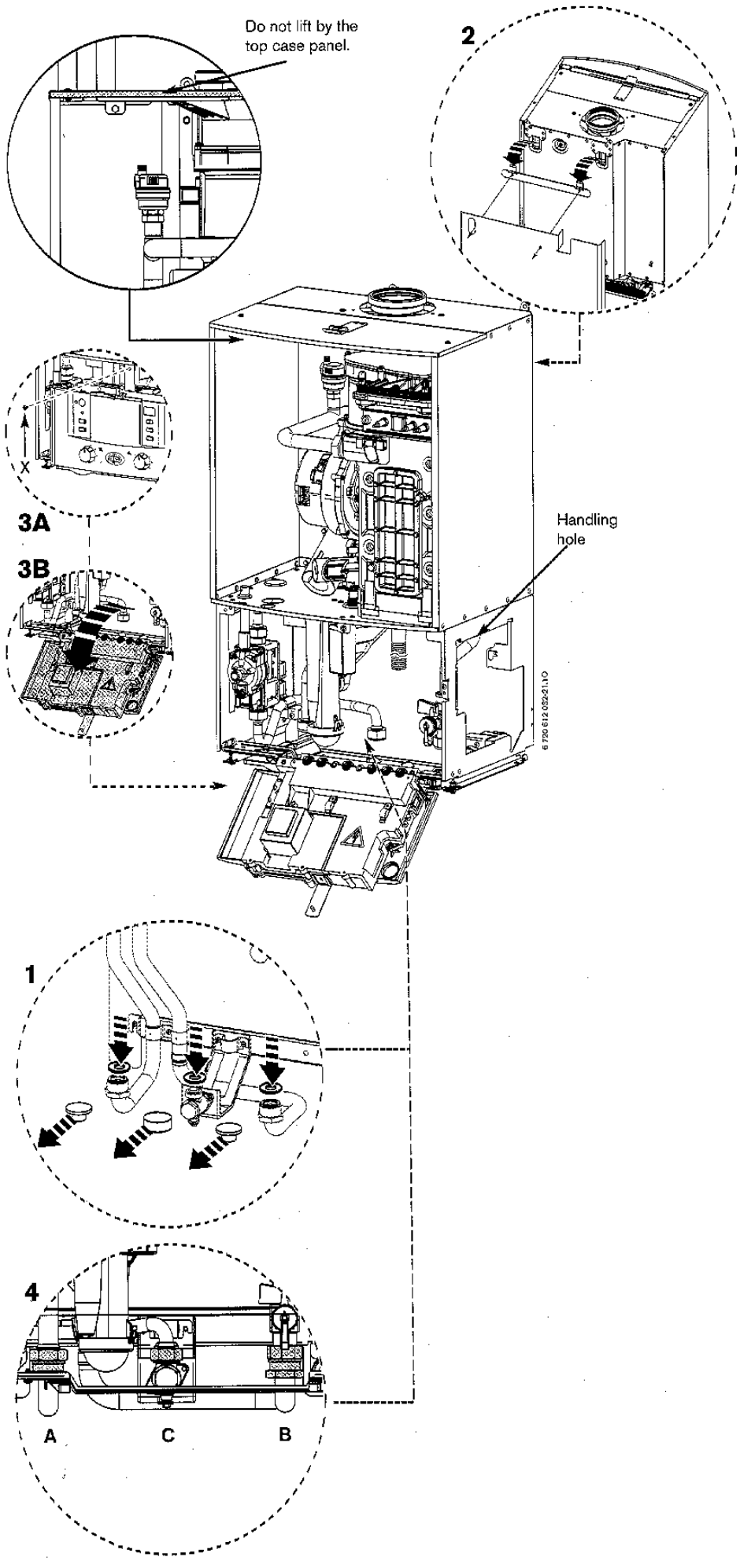
UNPACKING THE APPLIANCE

A - Outer carton
B - Packaging base
C - Protective wrapping
D - Appliance outer case
E - Screws
F - Clip
G - Protective packaging

- **1.** With the wall frame and ancillary items removed (see page 18), lay the carton (A) on its back.
- **2.** Open the carton bottom flaps and fold under boiler. Do not remove the packaging base.
- **3.** Stand carton (A) with boiler upright on the packaging base (B).
- **4.** Remove outer carton (A) and place safely away from the working area.
- **5.** Remove the protective wrapping (C)
- **6.** Lie the boiler on its back.
- **7.** Remove the packaging base (B) and place safely away from the working area.

REMOVING OUTER CASE

- **8.** Loosen but do not remove the 2 screws (E) securing boiler casing at the bottom of the appliance.
- **9.** Pull upwards to release the clip (F) on top of the boiler and pull the case upwards.
- **10.** Remove the outer case.
- **11.** Remove the protective packaging (G) from the electrode assembly.



FITTING THE APPLIANCE

BOILER CONNECTIONS

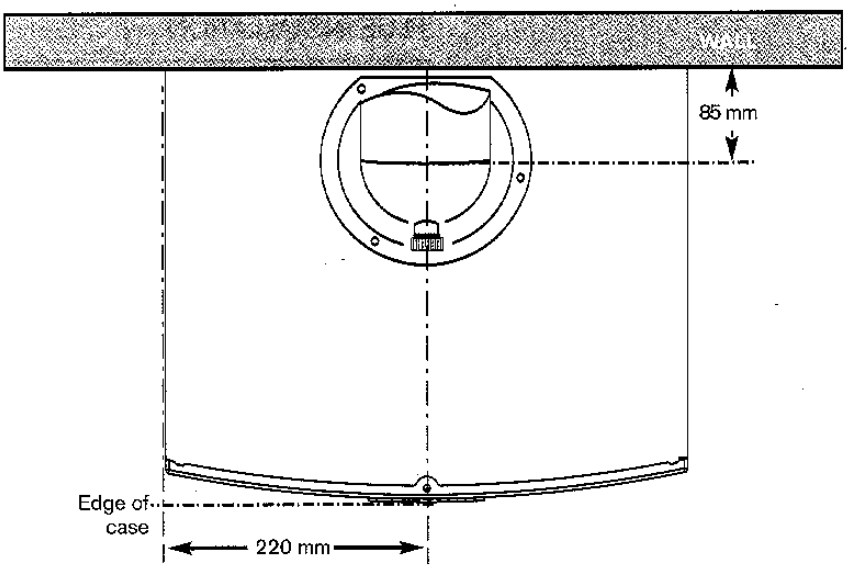
CAUTION: ISOLATE THE MAINS GAS SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.

GAS AND WATER CONNECTIONS:

- If there is greater than 600 mm clearance below the appliance it is possible to fit the flow and return pipes, supplied, with the boiler installed on the wall.
  If clearance is less than 600 mm below the appliance it may be necessary to fit the flow and return pipes before hanging the appliance.
- ▸ System pipes may be run vertically upwards behind the boiler or below it. See Plumbing Manifold Section on page 14.
  NOTE: If pipes require reducing in length this is best done before they are fitted to the boiler.

  A - Flow (22 mm),
  B - Return (22 mm),
  C - Gas inlet (22 mm),

- ▸ **1.** Remove dummy plugs and fit sealing washers before hanging boiler.
- ▸ **2.** Hang the boiler on to the hanging bracket. The lugs pass through the rectangular holes in the boiler back panel.
  Take care not to disturb the washers on the connections.
  NOTE: *It is recommended that this lifting operation is carried out by 2 people, observing all precautions for the safe lifting of heavy objects.*
  Do not lift by the top case panel. There are two handling holes incorporated into the inner casing left and right in the lower section of the appliance.
- ▸ **3.** Lower the control panel into the service position by removing the screw (X) from the retaining bracket.
- ▸ **4.** Make connections to the heating system.
- ▸ Connect the gas supply to the boiler gas cock 22 mm compression.



HORIZONTAL FLUE

(60/100 mm diameter)

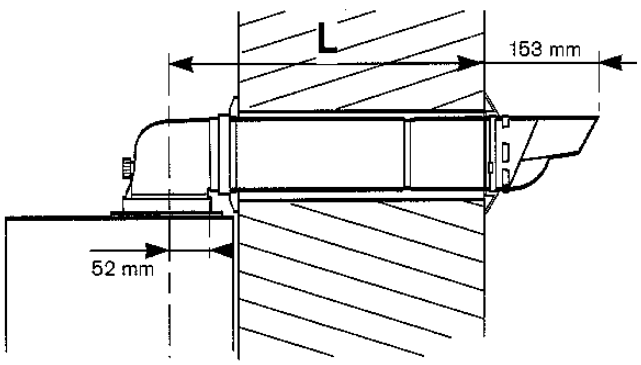
For vertical flues and 80/125 mm horizontal flues, please refer to separate Flue Kit instructions.

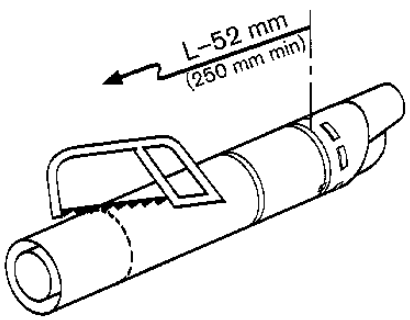
NOTE: to ease the assembly of flue components, apply silicone lubricant to sealing surfaces.

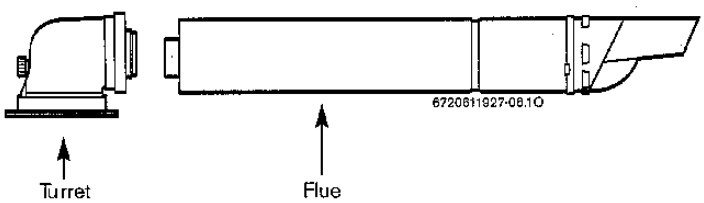
The instructions for the 60/100 mm diameter flue are shown below.

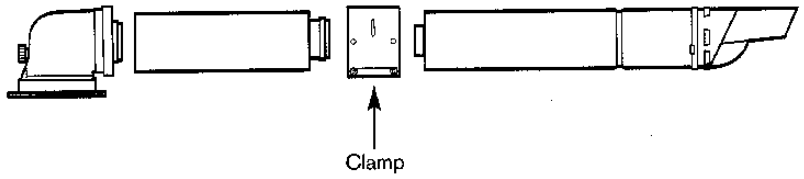
MEASURING THE FLUE (Standard Flue):

- Measure from the outside wall to the centre line of the flue turret (length L).
- Subtract 52 mm from the length L to give the correct dimension to the flue elbow connection.
- The terminal section should be cut to this dimension, however it must not be shorter than 250 mm.
- After cutting the end must be square and free from burrs to prevent damage to the flue seals.





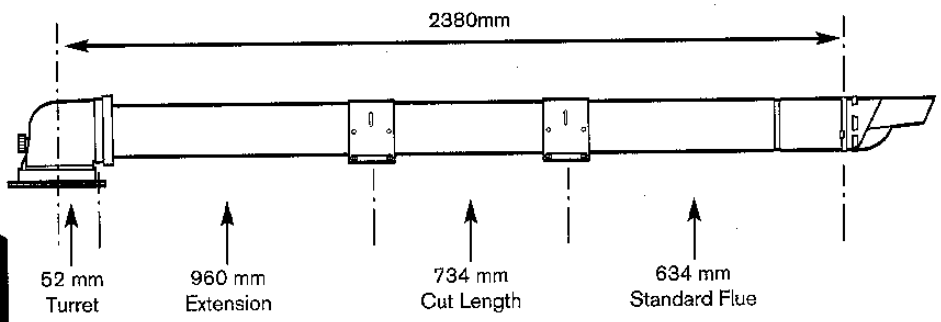




MEASURING THE FLUE (Extension Flue Kits):

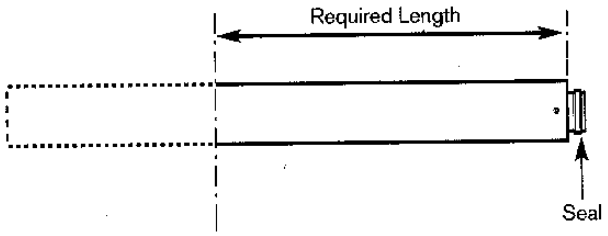
ONLY CUT EXTENDED FLUE LENGTHS

- As with the Standard Flue measure from the outside wall to the centre line of the flue turret (length L).
- Subtract the usable length of the standard flue (634 mm) from length L.
- Subtract the usable length of the turret (52 mm) from length L.
- Subtract 960 mm for each full length extension from the figure.
- Cut one of the extensions to the remainder.
- Cut both tubes square taking care not to distort the tubes.
- Remove any burrs.

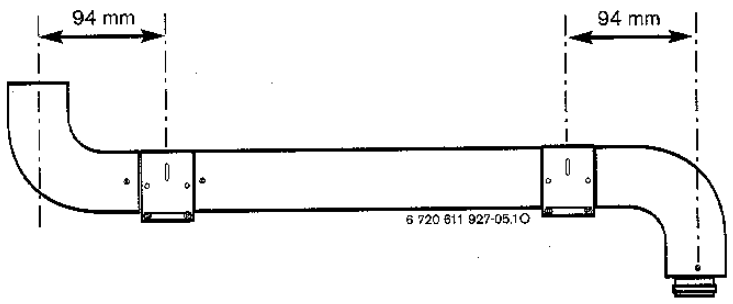


EXAMPLE:

Length L	=	2380 mm
Subtract Standard Flue		− 634 mm
Subtract Turret		− 52 mm
Subtract Full Extension		− 960 mm
Cut Length	=	**734 mm**



NOTE: Where extensions are reduced, cut length which **DOES NOT** contain the seal.



ADDITION OF FLUE BENDS:

When flue bends are being used an allowance of 94 mm per bend must be allowed from the centre line of the bend. In the example shown using a flue extension (960 mm) with 2 bends will achieve a total length of 1148 mm.

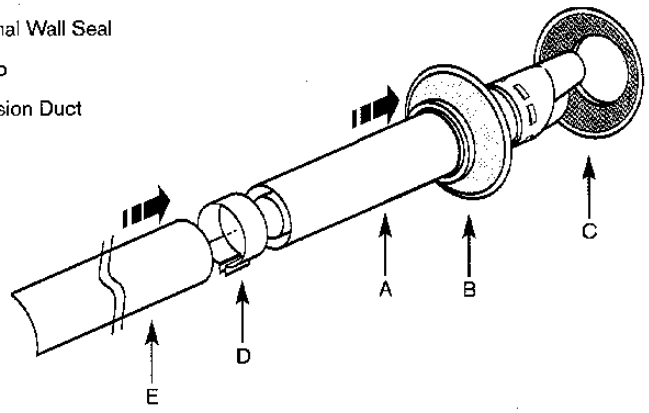
A - Standard Flue

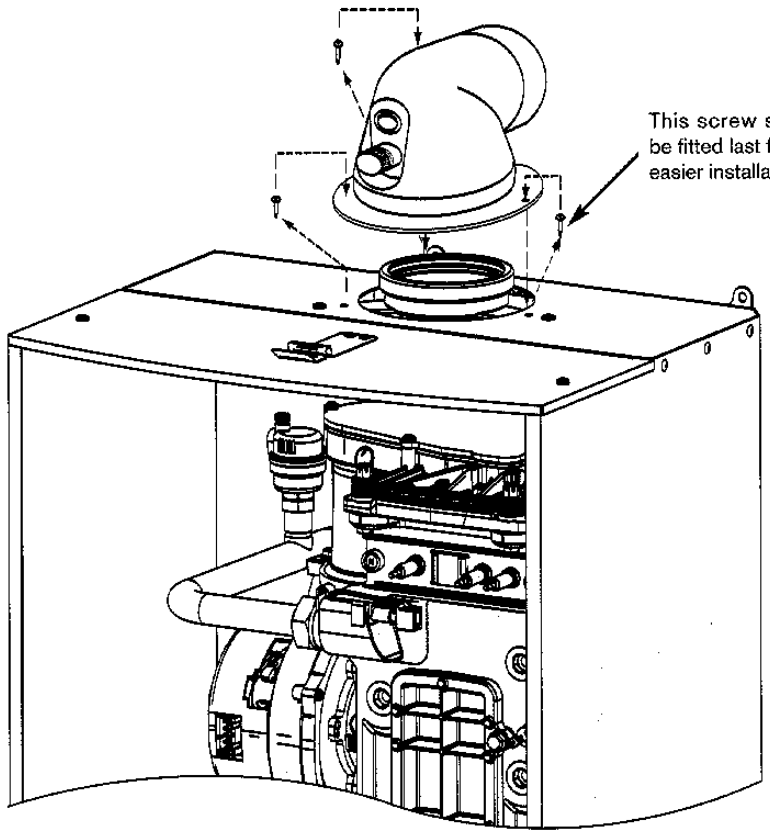
B - Internal Wall Seal

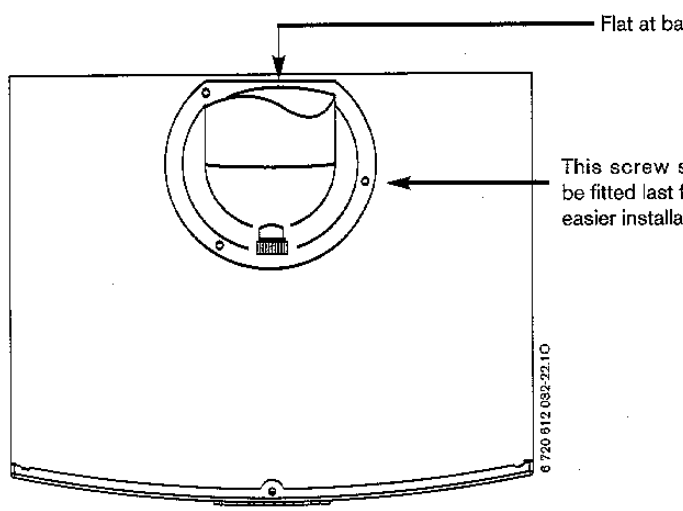
C - External Wall Seal

D - Clamp

E - Extension Duct







ASSEMBLING THE FLUE

1 Slide inner collar (B) onto terminal (A)

2 Additional extensions or bends:
Push fit all extensions/bends/terminal together and secure connections with clamps (D). The slope of the terminal outlet must face downwards.

FITTING THE FLUE

3 Fit the terminal (A) through the flue opening in the wall, exposing the plastic outlet section to the outside and fit the outer flue collar (C) over the notches to secure.

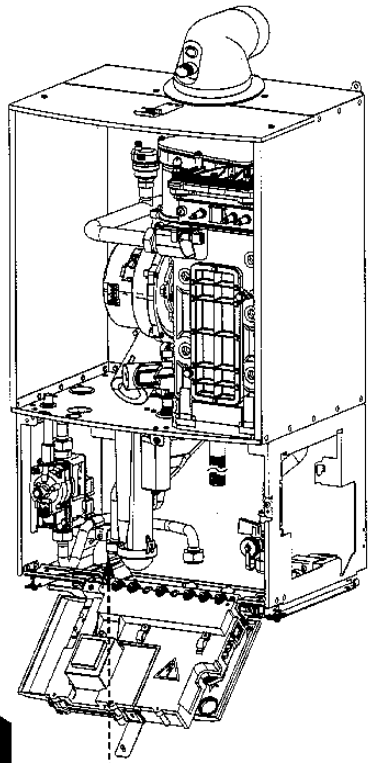
4 Assemble turret to boiler using the three screws (see below).
Note: Screws are in boiler or in flue kit.

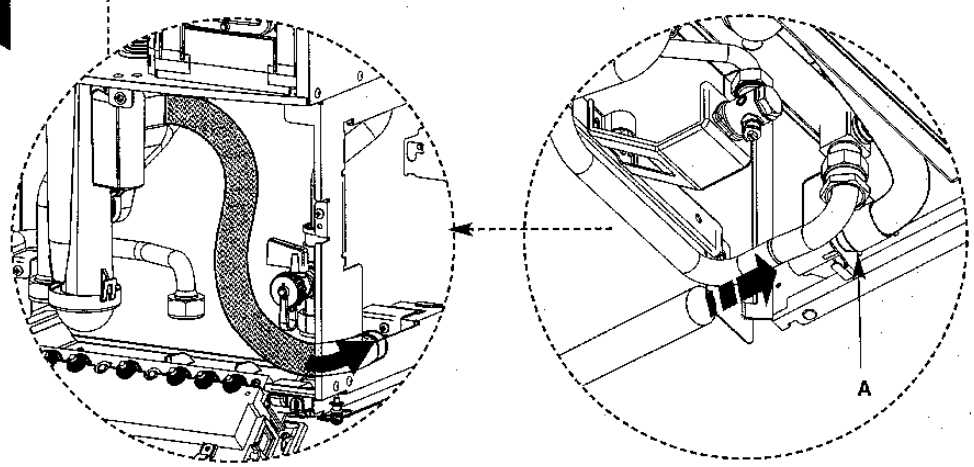
FITTING THE TURRET:

- Flue turret should push directly down and not be twisted into correct position.
- Fit turret onto appliance and retain with three screws.
  NOTE: The clamping plate flat should be at the rear of the appliance.

ADDITIONAL NOTES AND REMINDERS:

- Ensure that all cut lengths are square and free from burrs.
- The flue, when assembled, is fully sealed and components are pushed home.
- The flue is set at an angle of 3° or 52 mm per additional 1m length of extension used.

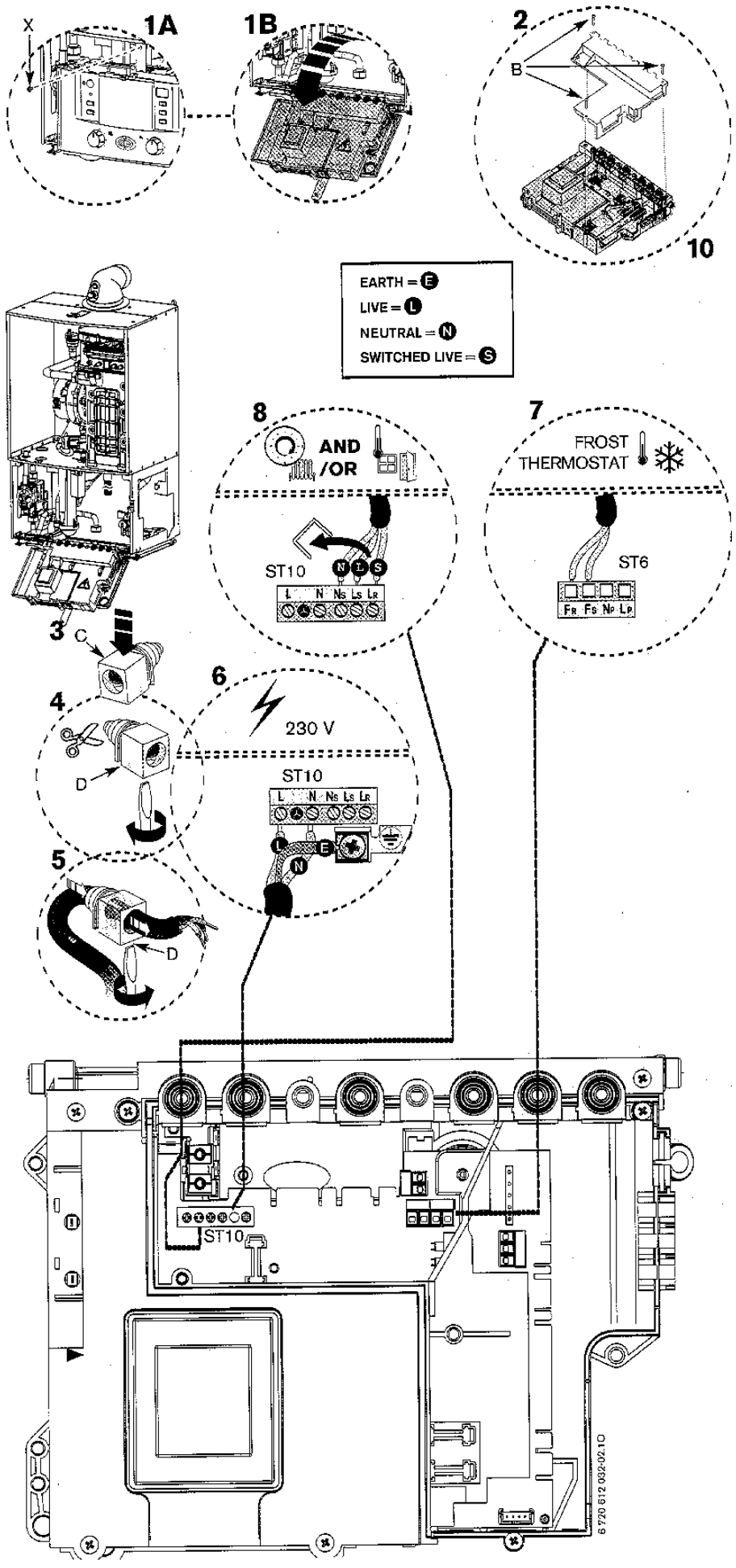




Never terminate or discharge into any open source, including; sink, bath, shower, bidet, toilet etc.

Note: any external condensate pipework of excessive runs should be protected with weather resistant insulation to help prevent freezing.

- Ensure that the condensate drain is 22 mm diameter plastic pipe. It must fall at least 50 mm per metre towards the outlet.
- An adapter (A) in 22 mm pipe is contained in the fitting pack.



CAUTION: ISOLATE THE MAINS ELECTRICITY SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS

Danger of short circuit: When connecting the cables ensure that no cable pieces fall into the Heatronic.

Note: Mains supply to the boiler must be through a fused double pole isolator situated adjacent to the appliance. The isolator must have a contact separation of 3 mm minimum in all poles.

Access to electrical connections:

- ▸ Remove boiler casing to access control panel.

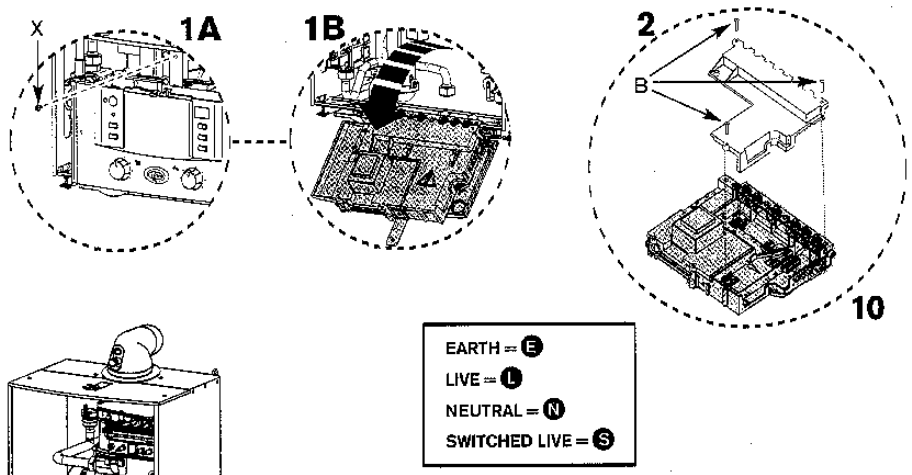
1. Lower the control panel into the service position by removing the screw (X) from the retaining bracket.
2. Unscrew the three screws (B) on the back of the control panel and pull off the connections cover.
3. Unclip cable clamp (C).
4. Cut off the tapered cable entry to fit cable diameter required.
5. Turn cable retaining screw (D) anti-clockwise. Run cable over the main crossbar and through the cable clamp (C), ensuring there is ample cable to reach the connectors. Turn cable clamping screw (D) clockwise to secure cable and replace clamp (C) into control panel.

6. Mains power 230 V connection (ST10):
   - ▸ Separate wires from cable end and strip to 6 mm
   - ▸ Connect LIVE wire to terminal (L)
   - ▸ Connect NEUTRAL wire to the terminal (N)
   - ▸ Connect EARTH wire to the earth connector (⏚)

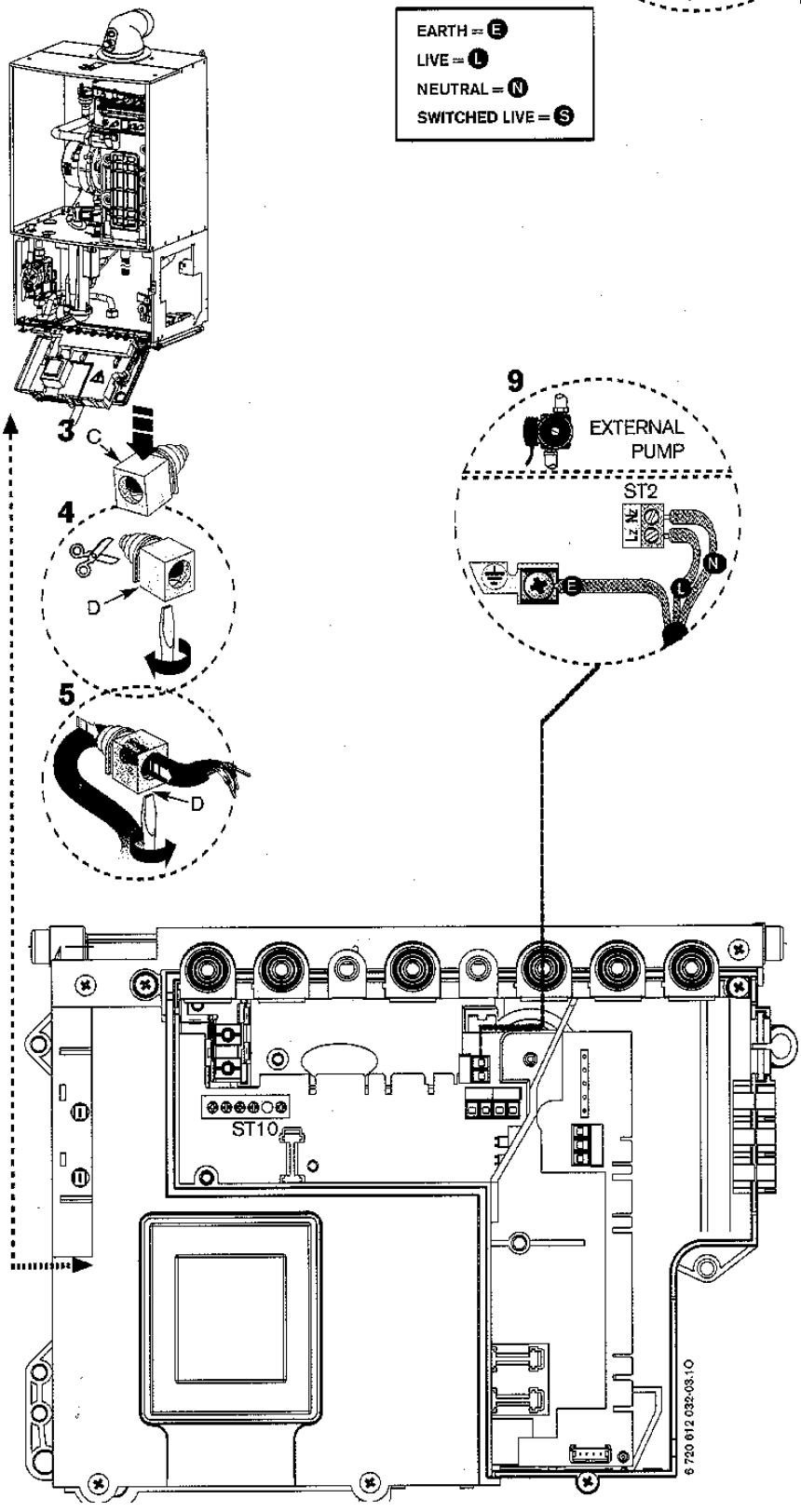
   NOTE: Earth cable to be longer so that it pulls out last if mains cable is snagged.

7. Optional external frost thermostat connection (ST6):
   - ▸ Connect frost thermostat supply wire to terminal (Fs)
   - ▸ Connect frost thermostat return wire to terminal (Fr)

8. 230V room thermostat and/or external timer (ST10):
   - ▸ Remove link
   - ▸ Connect room thermostat LIVE supply to terminal (Ls)
   - ▸ Connect room thermostat LIVE return to terminal (Lr)
   - ▸ Connect room thermostat NEUTRAL to terminal (Ns)



EARTH = E
LIVE = L
NEUTRAL = N
SWITCHED LIVE = S



CAUTION: ISOLATE THE MAINS ELECTRICITY SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS

Danger of short circuit: When connecting the cables ensure that no cable pieces fall into the Heatronic.

Note: Mains supply to the boiler must be through a fused double pole isolator situated adjacent to the appliance. The isolator must have a contact separation of 3 mm minimum in all poles.

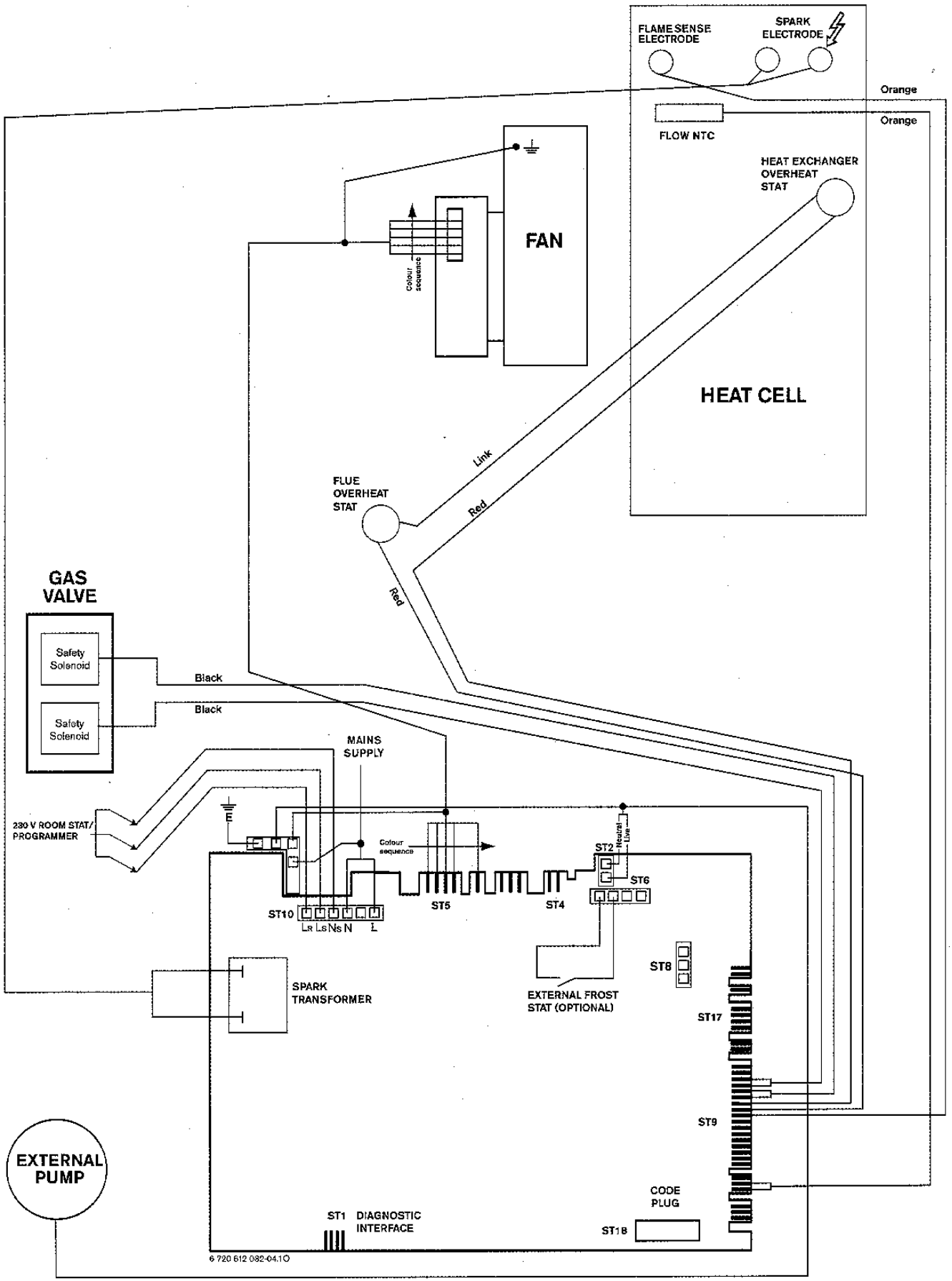
9 External Pump (ST2):

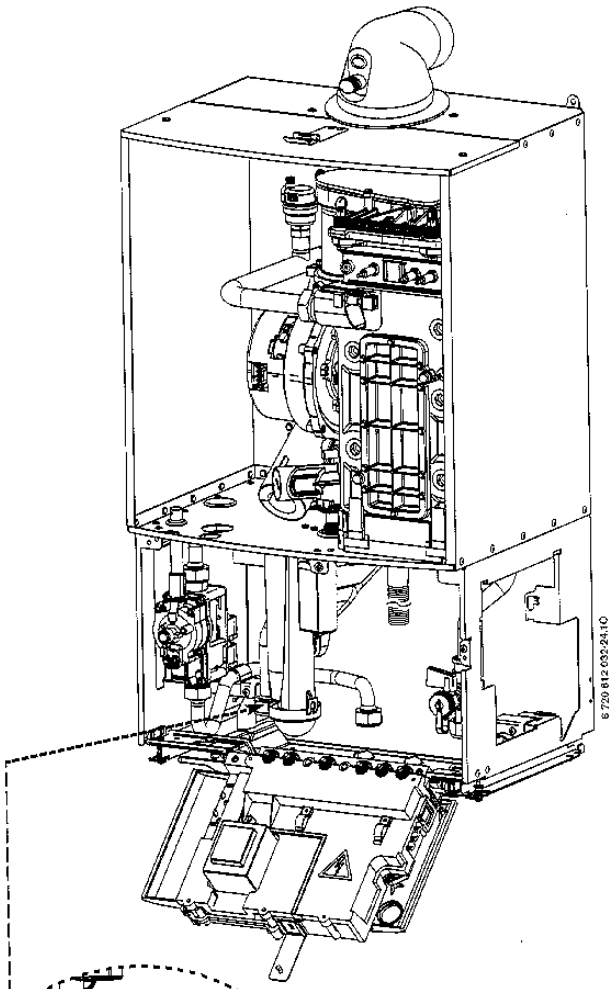
- Connect NEUTRAL wire to terminal (Nz)
- Connect LIVE wire to terminal (Lz)
- Connect EARTH wire to earth bracket (E)

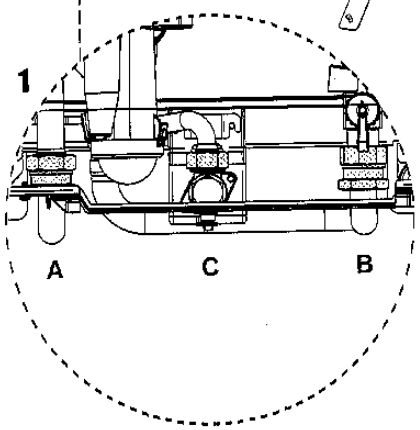
NOTE: THE SYSTEM PUMP MUST BE CONNECTED TO THE APPLIANCE CONTROL FOR THE PUMP OVER-RUN FACILITY.

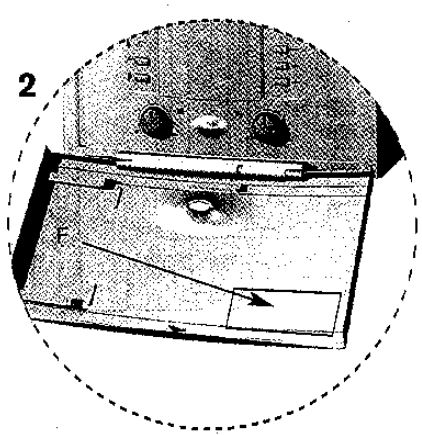
10. Refit control panel cover:

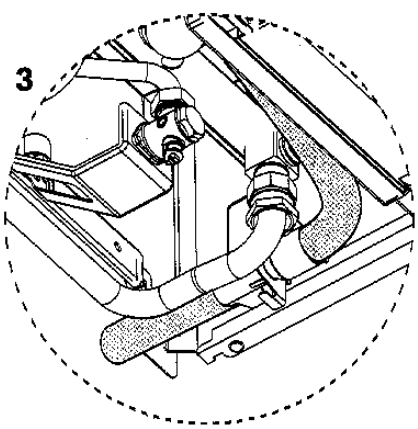
- Refit panel and secure with screws (B).
- Bring the control panel to its upper position and fix it with screw (A).


FLAME SENSE ELECTRODE
SPARK ELECTRODE
Orange
Orange
FLOW NTC
HEAT EXCHANGER OVERHEAT STAT
FAN
Colour sequence
HEAT CELL
Link
Red
FLUE OVERHEAT STAT
Red
GAS VALVE
Safety Solenoid
Safety Solenoid
Black
Black
MAINS SUPPLY
230 V ROOM STAT/ PROGRAMMER
E
Colour sequence
Neutral
Live
ST2
ST6
ST10
LR LS NS N L
ST5
ST4
ST8
SPARK TRANSFORMER
EXTERNAL FROST STAT (OPTIONAL)
ST17
ST9
EXTERNAL PUMP
CODE PLUG
ST1 DIAGNOSTIC INTERFACE
ST18
6 720 612 082-04.1O









PRE-COMMISSIONING

CHECKS

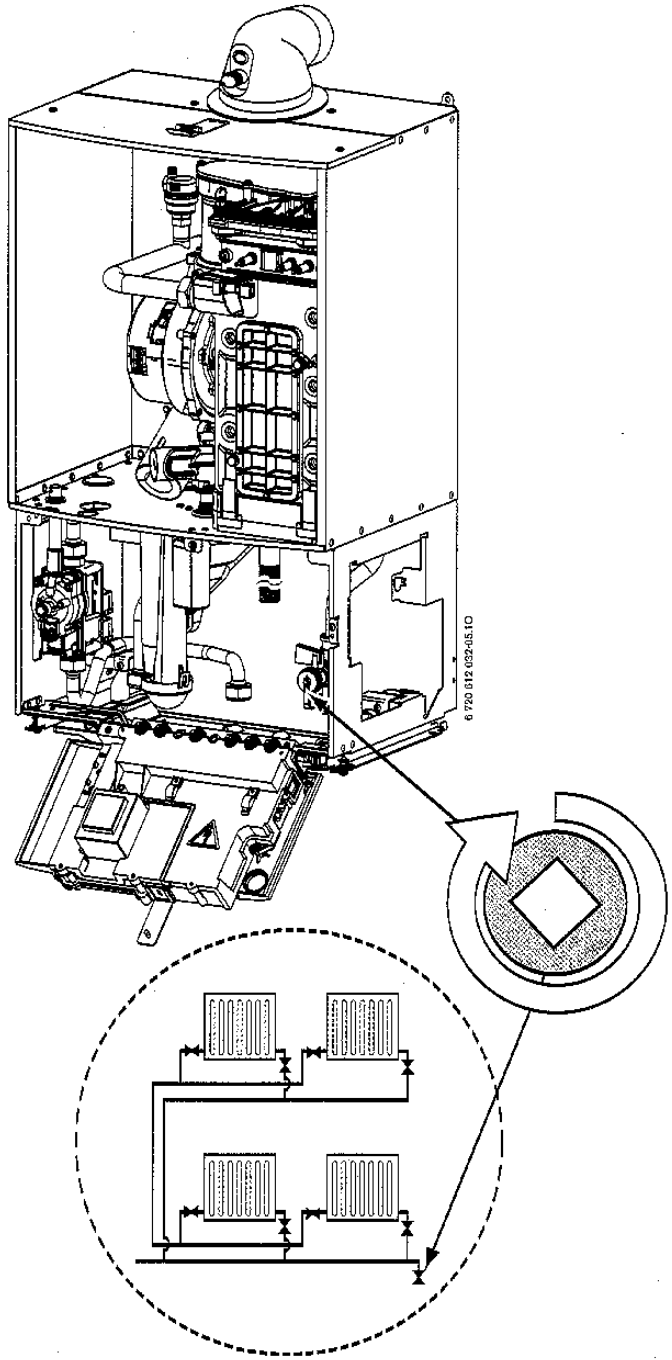
CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS

- **1.** Check that the service and water pipes are connected to the correct position.

  A - Flow (22mm),
  B - Return (22mm),
  C - Gas inlet (22mm),

- **2.** Check the gas type specified on the identification plate (F) matches that of the gas supply. Turn on the main gas supply, check the gas pipework, connections and rectify any leaks.
- **3.** Check that the condensate pipe has been connected to the adapter.

IMPORTANT: If the boiler is not to be commissioned immediately then: after sucessfully completing all of the checks and any rectification work, close the gas and water valves, shut off the gas supply and electrically isolate the boiler.

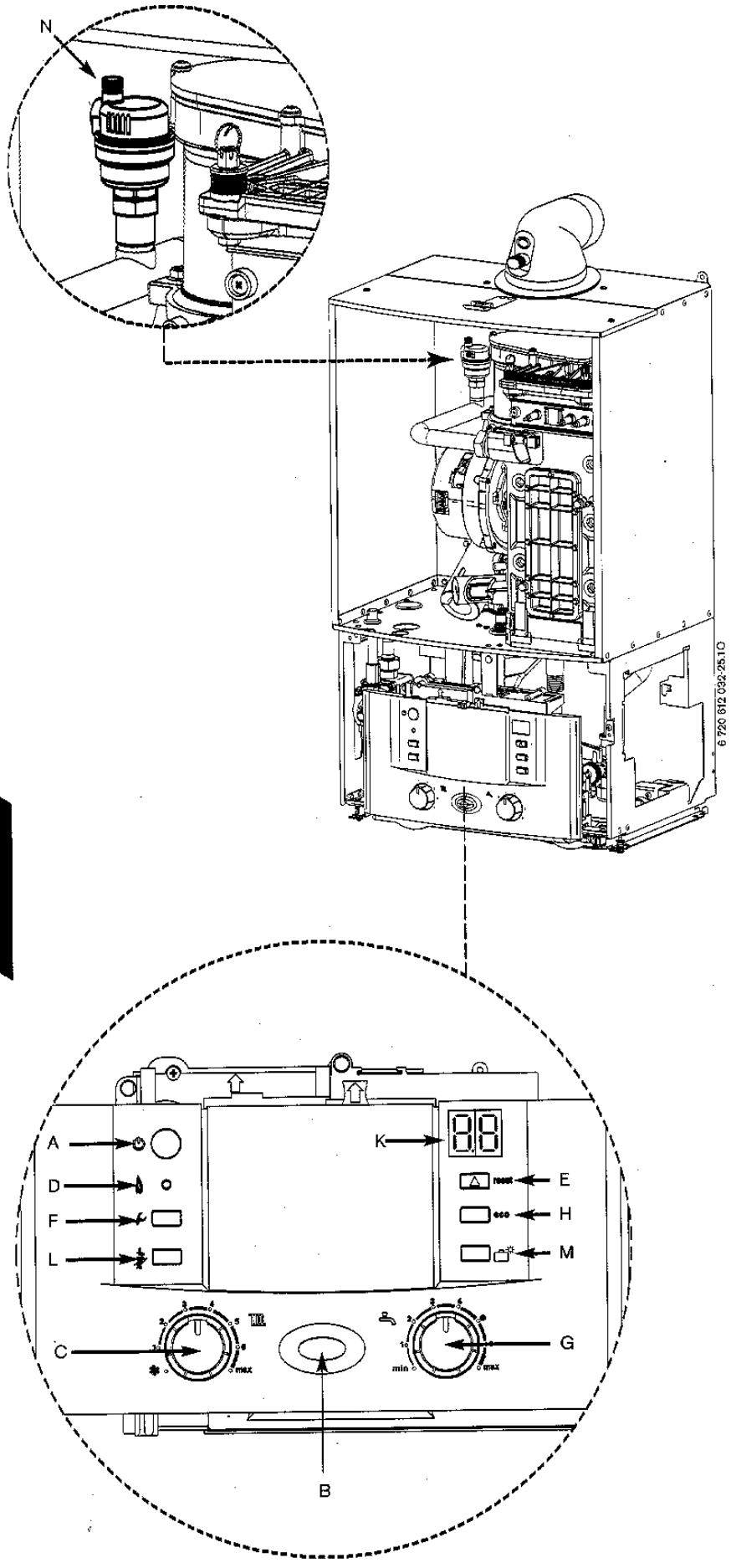


FILLING THE SYSTEM

1 Ensure all system and boiler drain points are closed.
2 If connected to an open vented system turn on the water supply to system header tank and allow to fill the system.
3 For sealed systems fill the system using a WRAS approved filling loop to a pressure of 1 bar.
4 Vent all radiators and primary side of the hot water cylinder.
5 Refill the system up to 1 bar.

GAS SUPPLY

- Open gas cock on the boiler and purge the gas supply to the boiler ensuring that the room is well ventilated.
- Test gas supply for soundness as described in BS 6891.



IMPORTANT: Never run the appliance when the appliance/system is empty or partially filled.

SWITCHING THE APPLIANCE ON/OFF:

1 ▸ Turn on mains power supply.
▸ Turn on any external controls.
Set the thermostatic radiator controls to maximum temperature.
Set the clock/programmer to continuously ON and the room thermostat to maximum temperature.

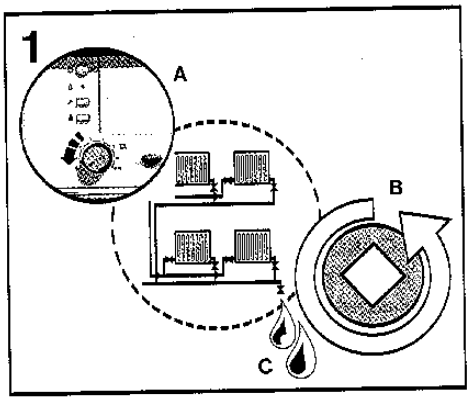
2 A - On/off button
B - On/off and fault indicator (BLUE)
C - Temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - Not used
H - Not used
K - Display
L - Boost button
M - Holiday button
N - Automatic air vent

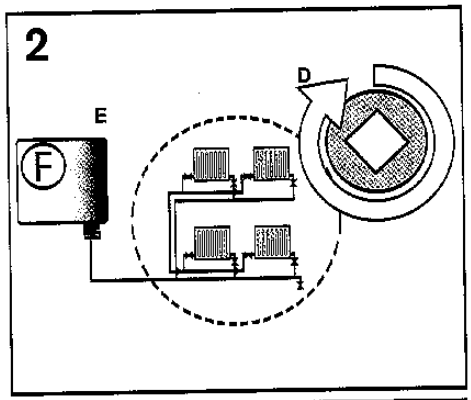
▸ Press button (A) and the power on indicator (B) illuminates BLUE. After a few seconds the display will show the flow temperature.

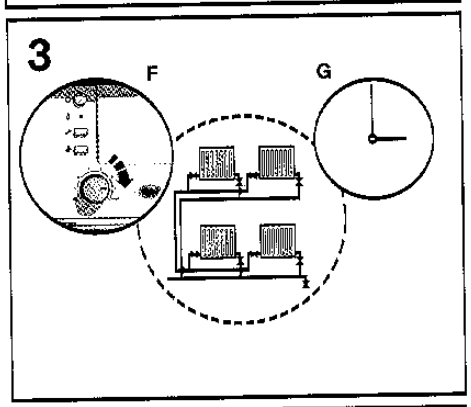
3 ▸ Turn the temperature control (C) to maximum. The burner on indicator (D) illuminates GREEN when the burner has lit.
NOTES:
• The first time the appliance is switched on, a once-only venting function is activated. The heating pump then switches on and off at intervals. This sequence lasts about 8 minutes. The display shows shows $_0{}^0$ in alternation with the flow temperature. The automatic air vent (N) must be open, please verify.
• The boiler runs for 15 minutes at minimum heating output to fill the condensate trap, the display (K) alternates between "-II-" and the flow temperature. This occurs every time the mains supply has been interrupted.

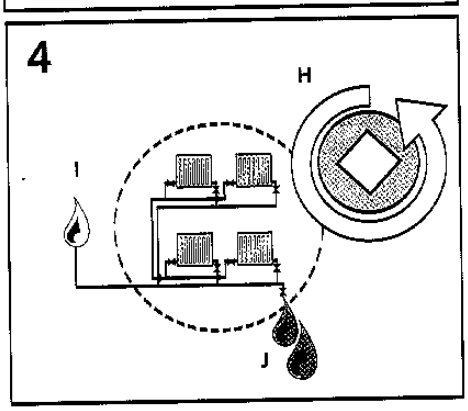
4 ▸ If the boiler fails to light the BLUE power indicator (B) and reset button (E) will flash alternately.
To reset press and hold the reset button (E) for 2 seconds. The boiler will be reset.

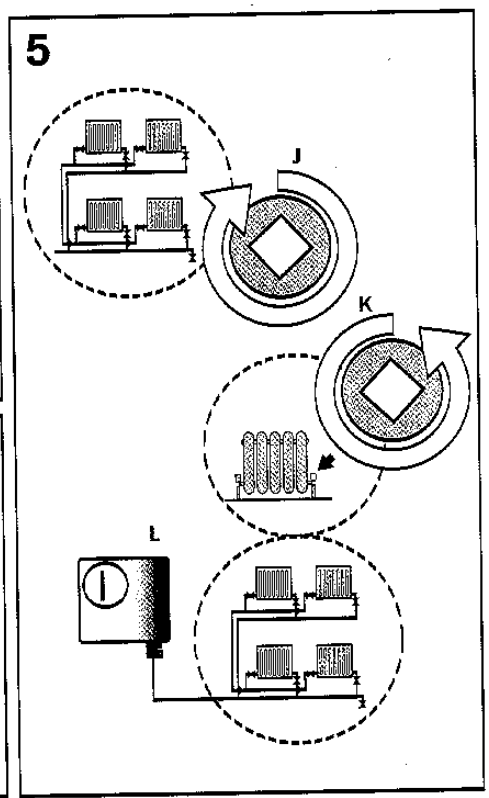
CAUTION: DO NOT PRESS POWER INDICATOR (B) TO RESET BOILER.

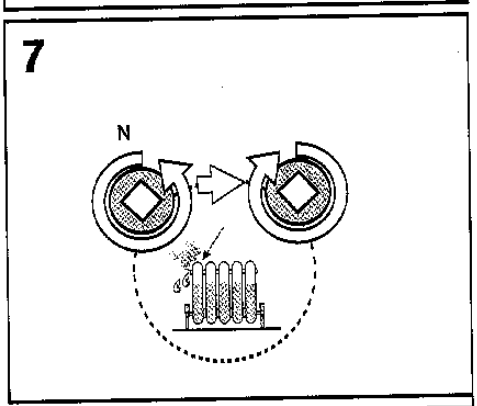


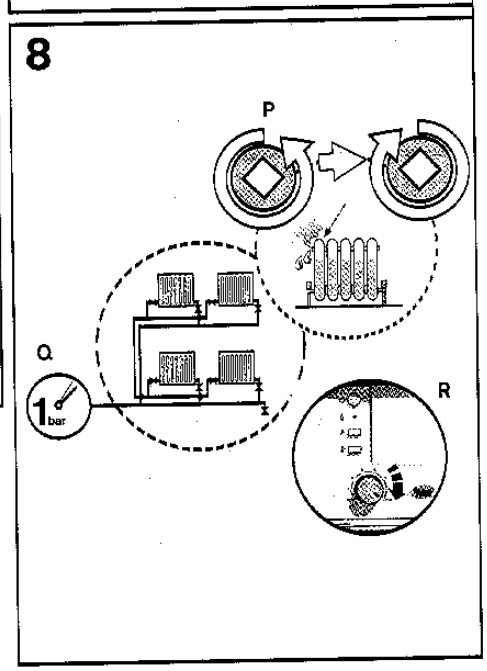












KEY

- Valve
- Flushing Agent
- Inhibitor

6 720 612 032-06.1O

WATER TREATMENT

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.

ENSURE THAT THE SYSTEM HAS BEEN CLEANED AS ON PAGE 8 OF THESE INSTRUCTIONS.

FLUSHING (Central Heating):

1. ▸ Switch off the boiler (A).
   ▸ Open all drain cocks (B) and drain the system (C) while the appliance is hot.
2. ▸ Close drain cocks (D) and add a suitable flushing agent (E) at the correct strength for the system condition in accordance with the manufacturer's instructions.
3. ▸ Run the boiler/system at normal operating temperature (F) for the time stated by the manufacturer of the flushing agent (G).
4. ▸ Drain (H) and thoroughly flush the system to remove the flushing agent and debris (I).

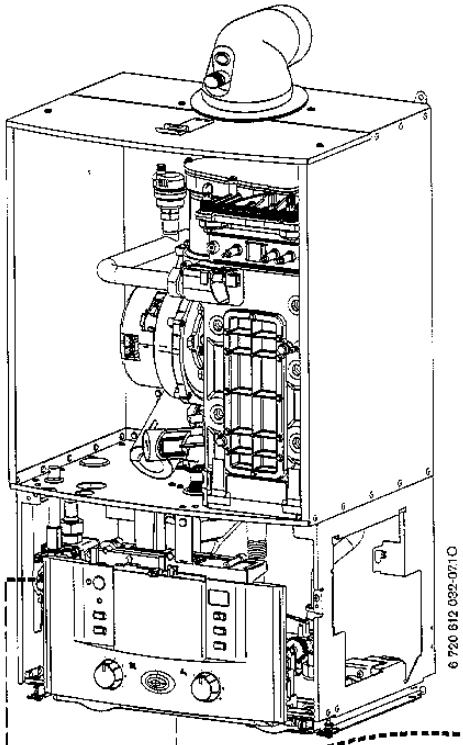
INHIBITOR (Central Heating):

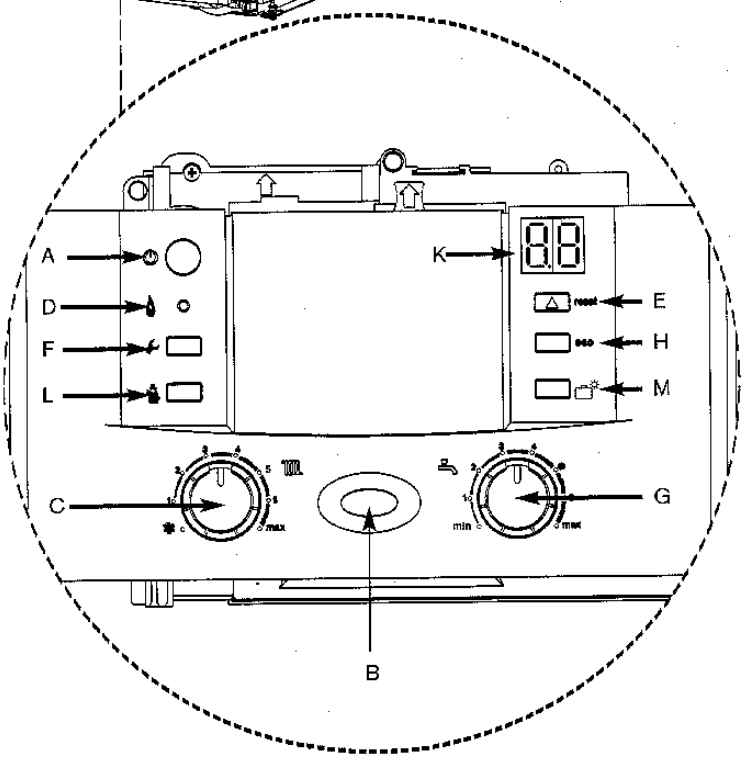
5. ▸ Check drain cocks are closed (J) and all radiator valves are open (K) before adding a suitable* inhibitor (or combined inhibitor/ anti-freeze if the system is exposed to freezing conditions) to the heating system water (L) in accordance with the manufacturers instructions.
6. If connected to an open vent system turn on the water supply to the system header tank and allow to fill the system.
   If connected to a sealed system fill via a WRAS approved filling loop to between 1 and 2 bar.
7. ▸ Vent all radiators; retighten vents when complete (N).
8. Vent the primary side of the hot water tank (P).
   ▸ For sealed systems re-pressurise if necessary (Q).
   ▸ Set all controls to maximum (R).
   ▸ 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.

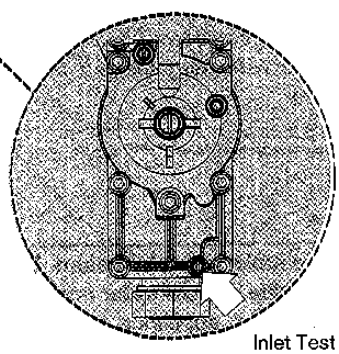
The addition of sealing agents to the system water is not recommended as this can cause problems with deposits left in the heat exchanger.

*** compatible with aluminium. The pH value of the system water must be less than 8 or the appliance guarantee will be invalidated.**





A - On/off button
B - On/off and fault indicator (BLUE)
C - Temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - Not used
H - Not used
K - Display
L - Boost button
M - Holiday button



Inlet Test Nipple

COMMISSIONING

THE COMBUSTION FOR THE APPLIANCE IS FACTORY SET.
NO ADJUSTMENT IS REQUIRED IF THE GAS INLET PRESSURE IS CORRECT.

CHECKING GAS INLET PRESSURE:

The inlet pressure to the appliance must be checked using the following procedure:

SETTING THE BOILER TO MAXIMUM:

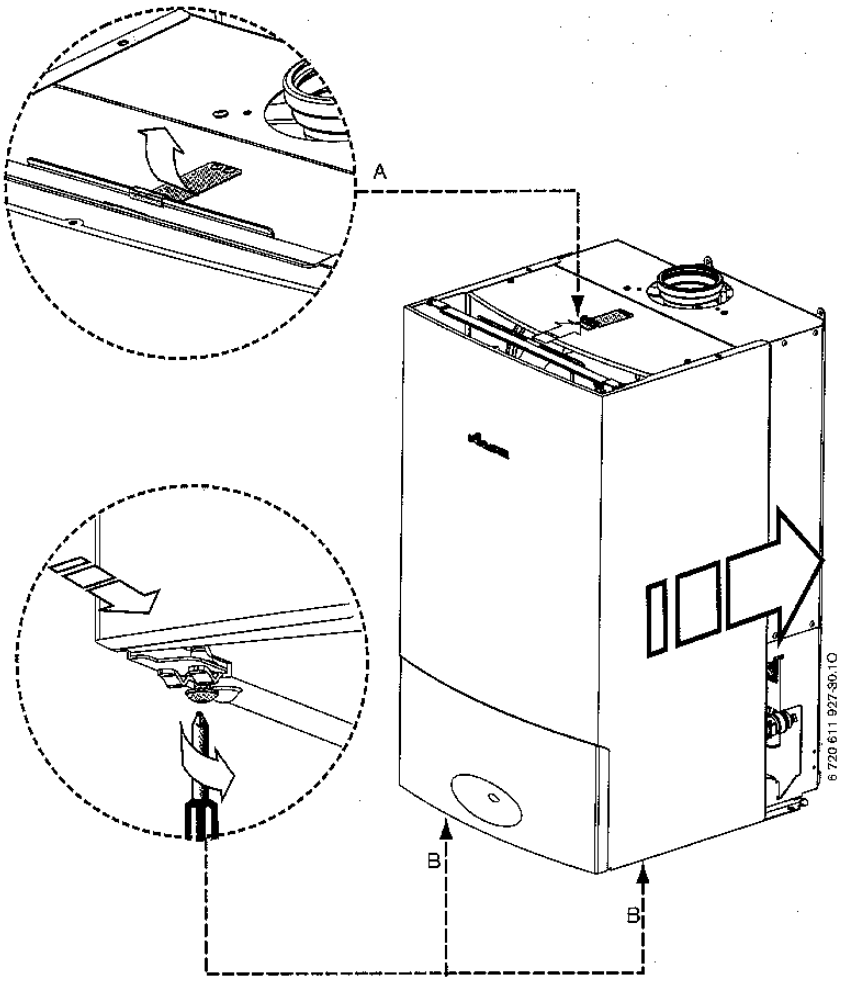
1 ▸ Press boost button (L) for ten seconds and set temperature to maximum.
• The boost button will illuminate continually.

MEASURING THE INLET PRESSURE:

2 ▸ Slacken the screw in the inlet pressure test point and connect a manometer.
▸ Measure the pressure with the boiler running at maximum.
▸ Check the gas supply working pressure at the gas valve inlet point:
N.G. minimum 18 mbar
L.P.G. 37 mbar
▸ The gas rate should be measured at the gas meter after 10 minutes operation at maximum. See technical data section at the front of this manual.
▸ Ensure inlet pressure is satisfactory with all other gas appliances working.
▸ Replace controls cover. NOTE: This boiler is designed with a differential of 20°C across the heating system.

IMPORTANT: Do not continue commissioning until the correct gas inlet pressure is achieved.

▸ If pressure is satisfactory press the boost button (L) again and the boiler will return to normal operation.
• If left in the service mode the control will return to normal operation after 15 minutes.
▸ Re-seal the screw in the gas inlet pressure test point.



FINISHING COMMISSIONING

The boiler has been factory set, so there should be no need to adjust any controls.

REPLACE OUTER CASING:

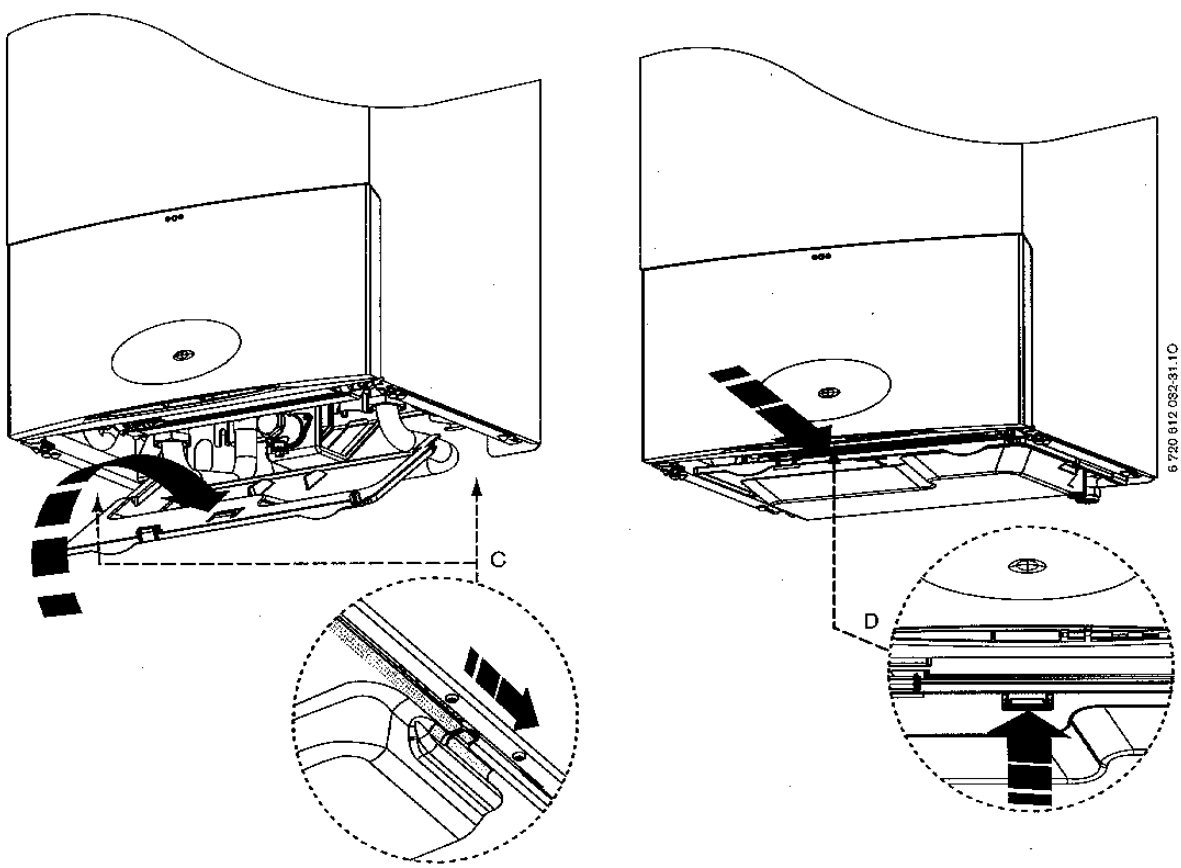
1 Replace outer casing making sure that the securing points are properly located.
   ▸ Press the clip (A) downwards to secure casing on top.
   ▸ Retighten bottom two screws (B).

INSTALLING BOTTOM PANEL:

2 The bottom panel slides onto two ledges (C) either side of the boiler frame.
   ▸ Hold the panel up against the underside of the boiler and slide towards the rear until it is fully engaged.

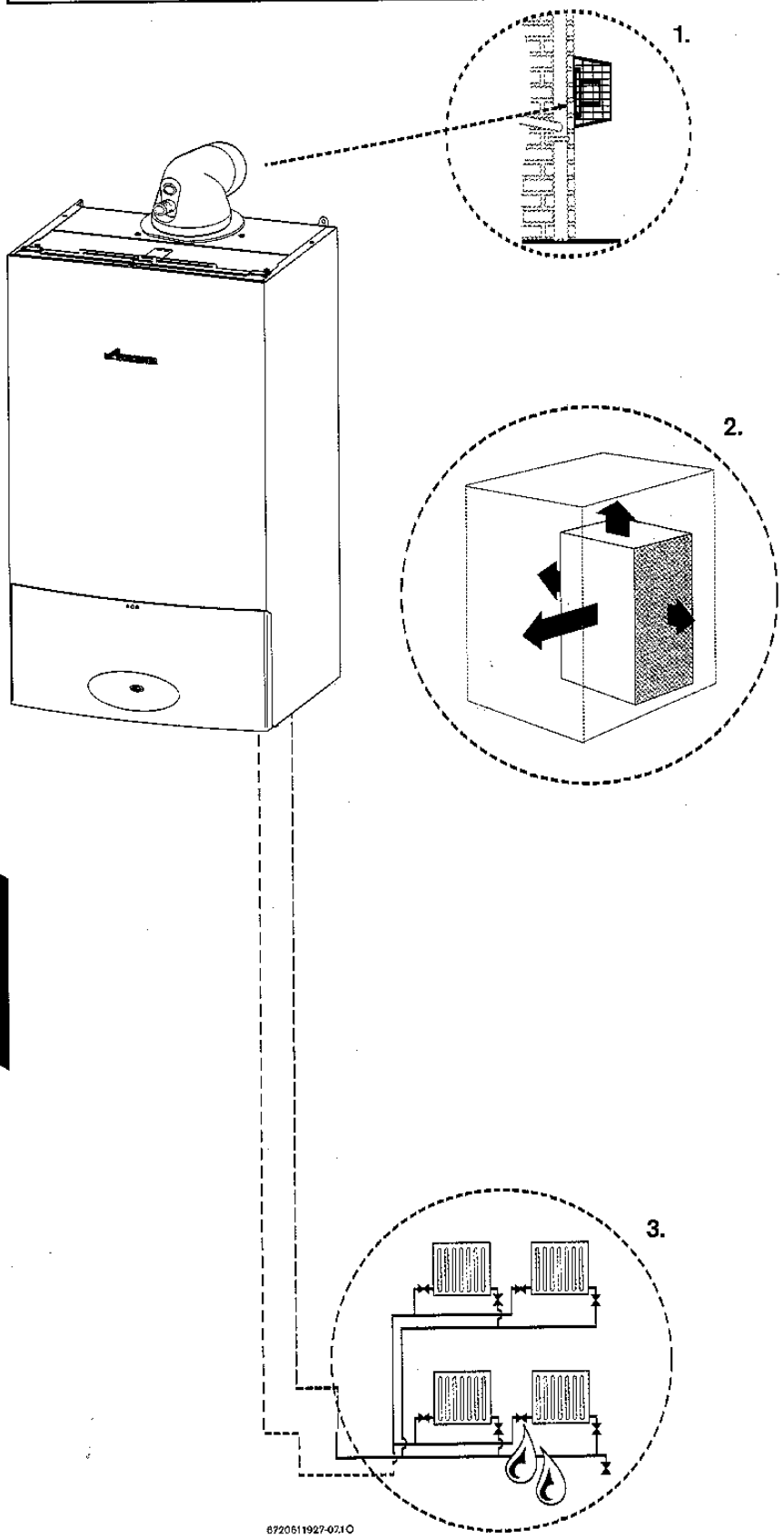
HANDOVER:

- Complete the Benchmark check list.
- Set up the controls and show the user how to operate all the controls shown in the User Guide.
- If the appliance is unused and exposed to freezing conditions; shut off all the mains supplies and drain the system and boiler.



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

IMPORTANT: AFTER REPLACEMENT OF ANY COMPONENTS ALWAYS CHECK FOR GAS SOUNDNESS WHERE RELEVANT AND CARRY OUT FUNCTIONAL CHECKS AS DESCRIBED IN COMMISSIONING.
ANY O-RING OR GASKET THAT APPEARS DAMAGED MUST BE REPLACED.



INSPECTION AND SERVICE

IMPORTANT: Any service work must be carried out by competent registered engineers such as British Gas or Corgi registered engineer.

- To ensure the continued efficient operation of the appliance it must be checked at regular intervals.
- The frequency of servicing will depend upon the particular installation conditions and usage. However, an annual service is recommended.
- The extent of the service required by the appliance is determined by the operating condition of the appliance when tested by **fully qualified engineers.**

INSPECTION

1. Check that the terminal and the terminal guard, if fitted, are clear and undamaged.
2. If the appliance is in a compartment or cupboard check that the specified service space around the appliance is clear.
3. Check all the joints and connections in the system and remake any that show signs of leakage. Refill and re-pressurise if applicable as described in Commissioning.
   ▸ Operate the appliance and take note of any irregularities. Call up the last fault stored by the Bosch Heatronic, Service Function **.0**. Refer to Fault Finding for rectification procedures.

COMPONENT ACCESS

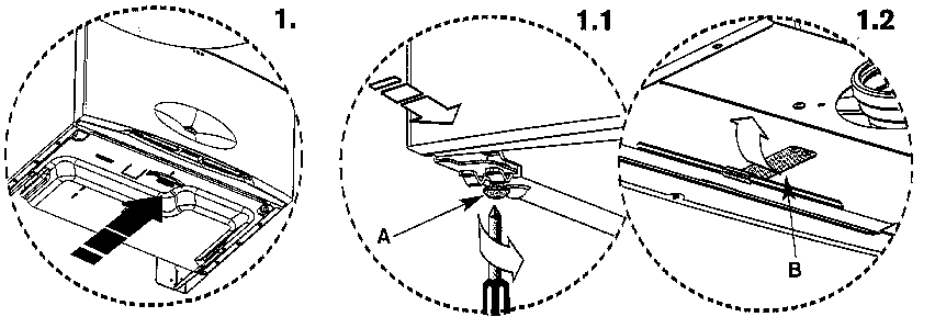
1. Removing outer case

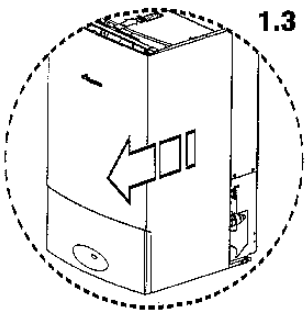
1. Remove bottom panel by pulling it forward and off.

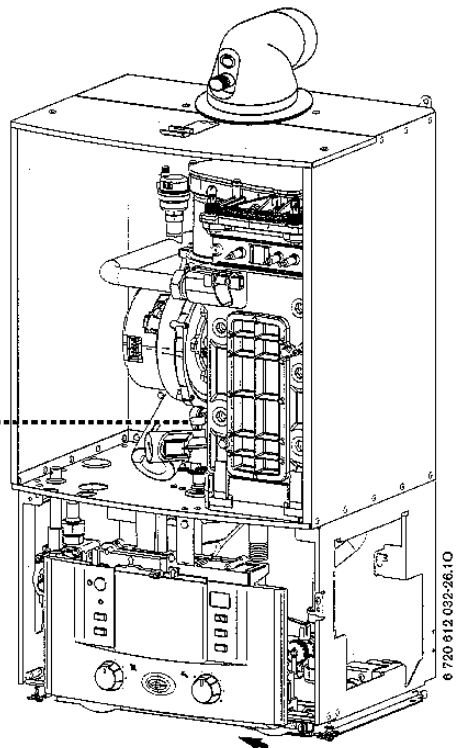
1.1 Undo but do not remove the 2 screws (A) securing boiler casing at the bottom of the appliance.

1.2 Pull upwards to release the clip (B) on top of the boiler.

1.3 Pull case forward and remove.



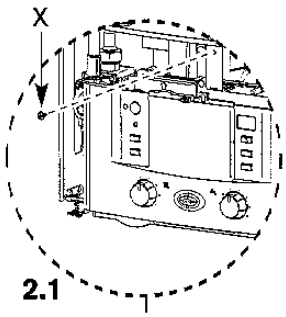


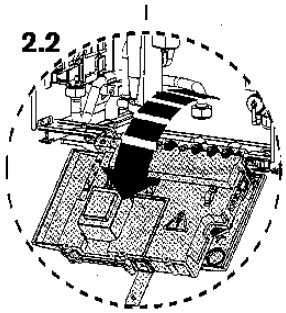


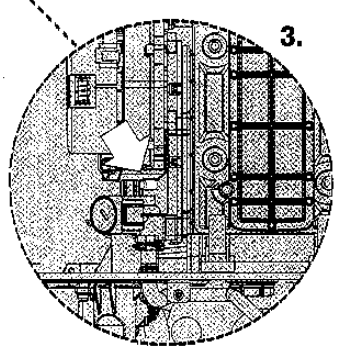
2. Adjusting boiler control to service position

2.1 Remove screw (X) securing control.

2.2 Gently pull forward until it comes to rest in service position.







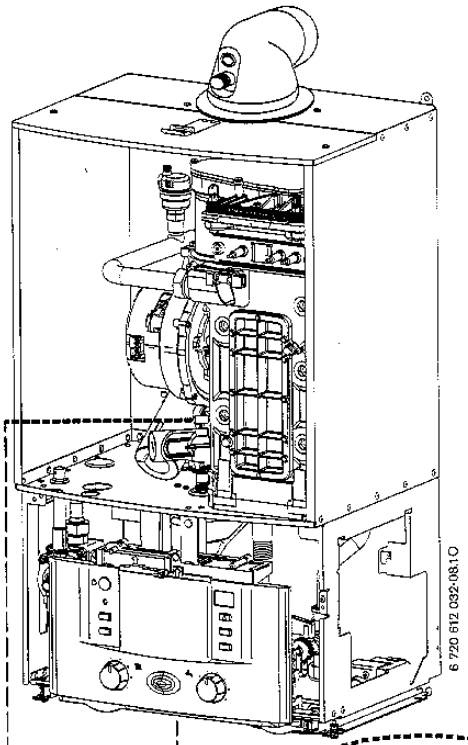
Primary Heat Exchanger

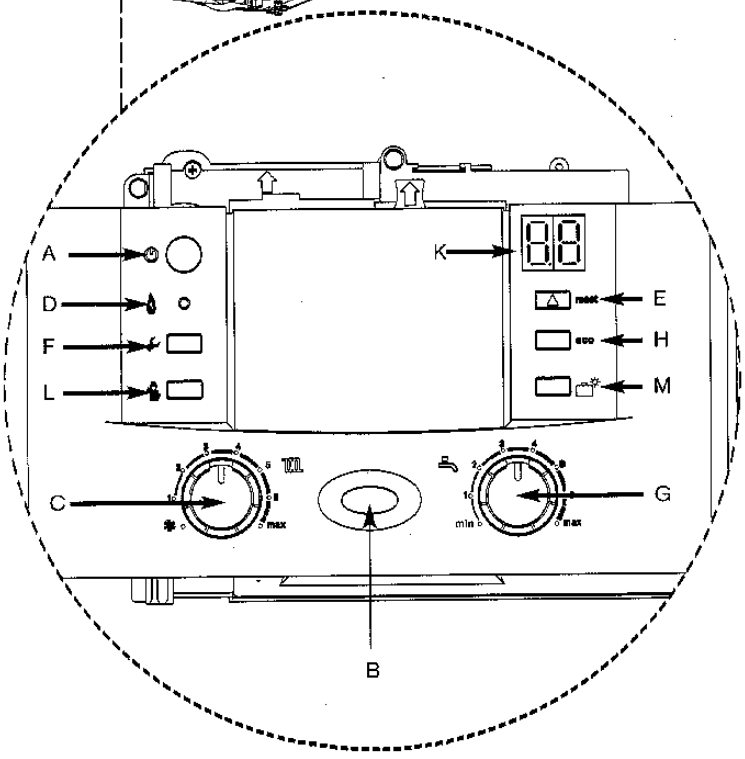
There is a special accessory kit available specifically designed for cleaning the heat exchanger. If required order 7 719 001 996.

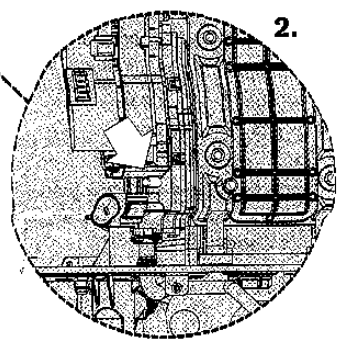
3. ▸ Check fan pressure at the test point next to the fan using an electronic manometer
▸ The boiler must be run at maximum output. Pressure will read negative and be greater than:

30CDi - 4.1 mbar
40CDi - 5.2 mbar

▸ Pressures measured below these figures will indicate that the heat exchanger will require cleaning.







Setting Boiler to Maximum.

A - On/off button
B - On/off and fault indicator (BLUE)
C - Temperature control
D - Burner indicator (GREEN)
E - Reset button
F - Service button
G - Not used
H - Not used
K - Display
L - Boost button
M - Holiday button

1 ▸ Press and HOLD boost button (L) for 10 seconds and set the heating temperature to maximum.
• The boost button will illuminate continually.
• The boiler will stay in this mode for 15 minutes unless the boost button is pressed again.

2 ▸ Pull the cover off and connect a manometer to the fan pressure test point.
▸ After measurement replace test point cover.

Pressure will read negative and be greater than:
30CDi - 4.1 mbar
40CDi - 5.2 mbar

• Pressures measured below these figures will indicate that the heat exchanger will require cleaning.
• There is a special accessory kit available specifically designed for cleaning the heat exchanger. If required order 7 719 001 996.

COMBUSTION TESTING MUST BE CARRIED OUT BY A COMPETENT PERSON. IT MUST **NOT** BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE COMBUSTION CHECK IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN IT'S USE.

To Clean the Heat Exchanger

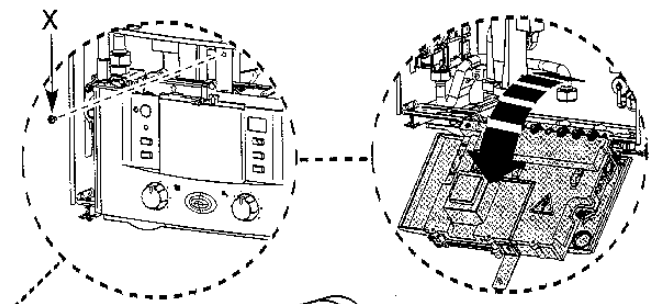
▸ Remove outer case and base panel and isolate the appliance from power.

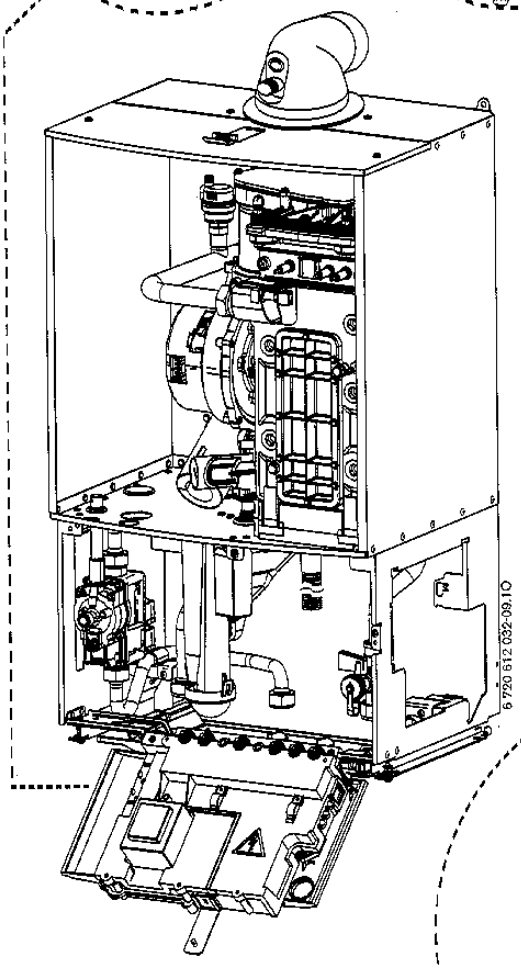
1. ▸ Remove cleaning access cover (B), seal (C) and metal plate (D) securing it, if present.

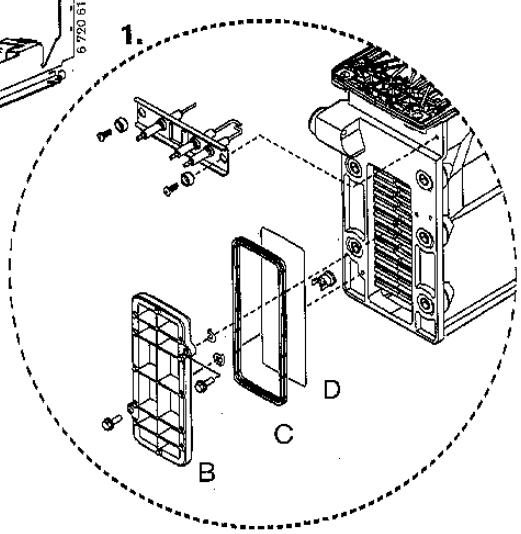
2.1 ▸ Loosen any deposits in the heat exchanger from top to bottom using the cleaning blade.

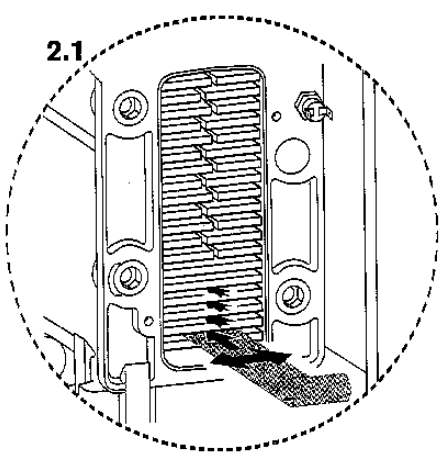
2.2 ▸ Clean the heat exchanger from top to bottom using the brush.

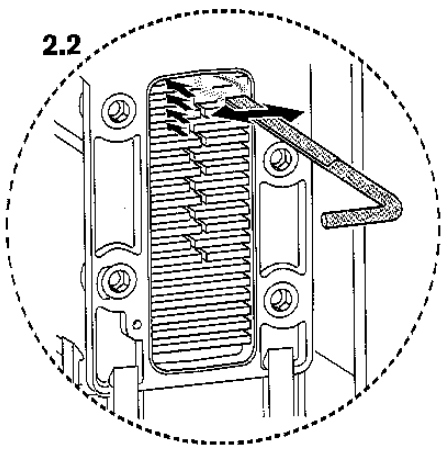
▸ Refit the clean out coverplates in reverse order using a new seal (C) and tighten screws to a torque of approximately 5 Nm.

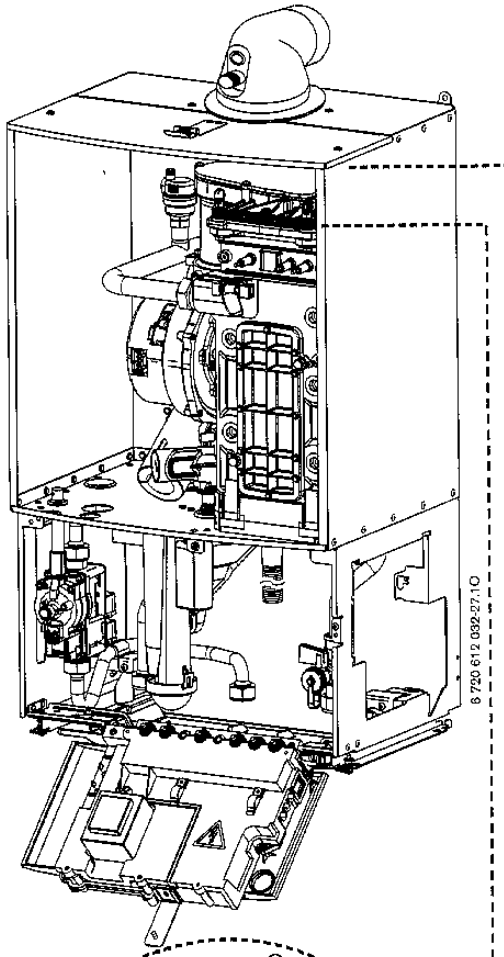


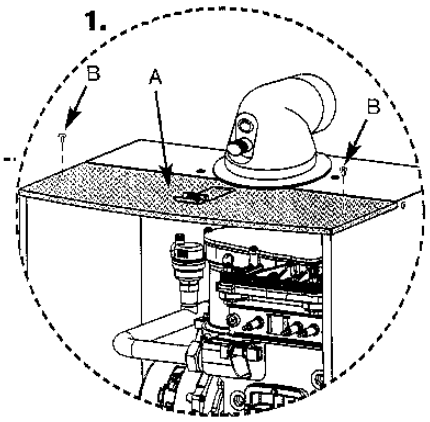


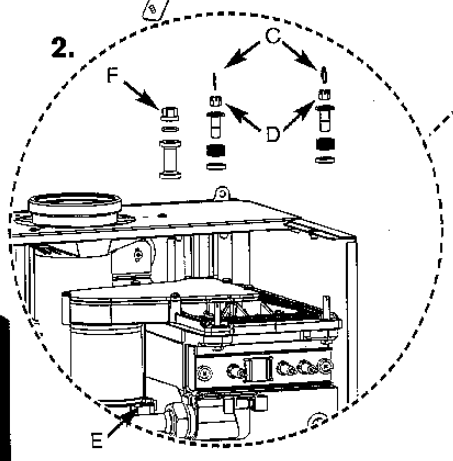


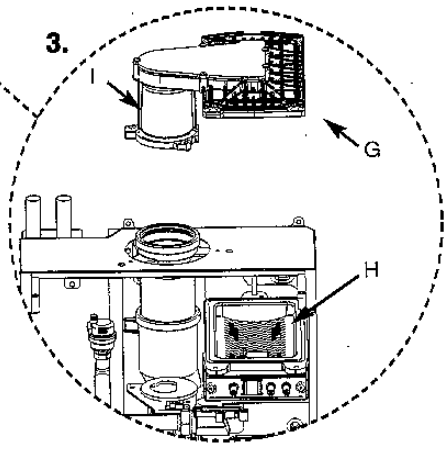


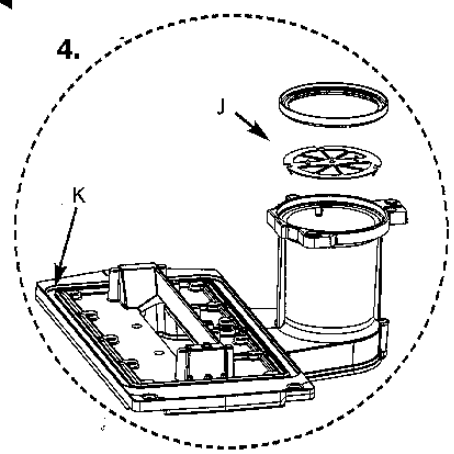


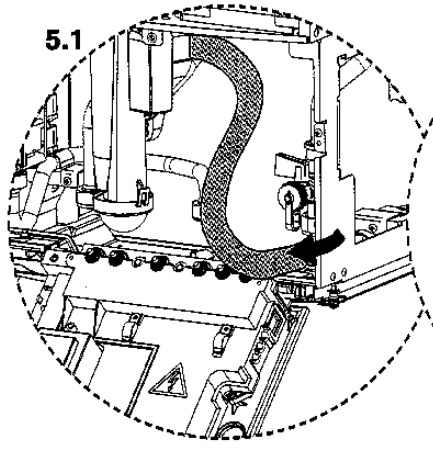


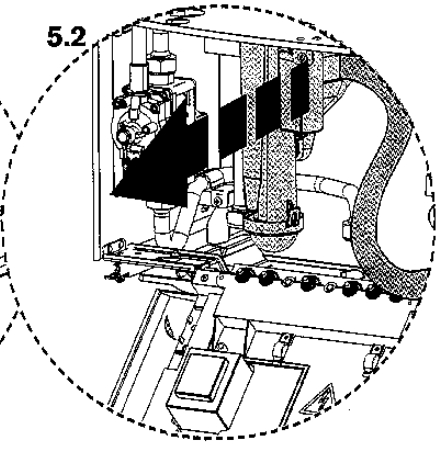












To Clean the Burner

1. ▸ Remove cover panel (A) by removing the screws (B).
   ▸ Check that the boiler is completely isolated from the gas supply.
2. ▸ Remove the clips (C) and unscrew the two bolts (D).
   ▸ Unscrew and remove the two hexagon screws (E) securing the fan.
   ▸ Slacken fully the rear securing bolt (F).
   ▸ Remove the burner cover plate (G).
3. ▸ Remove the burner (H) and clean components. **Do not use a wire brush.**

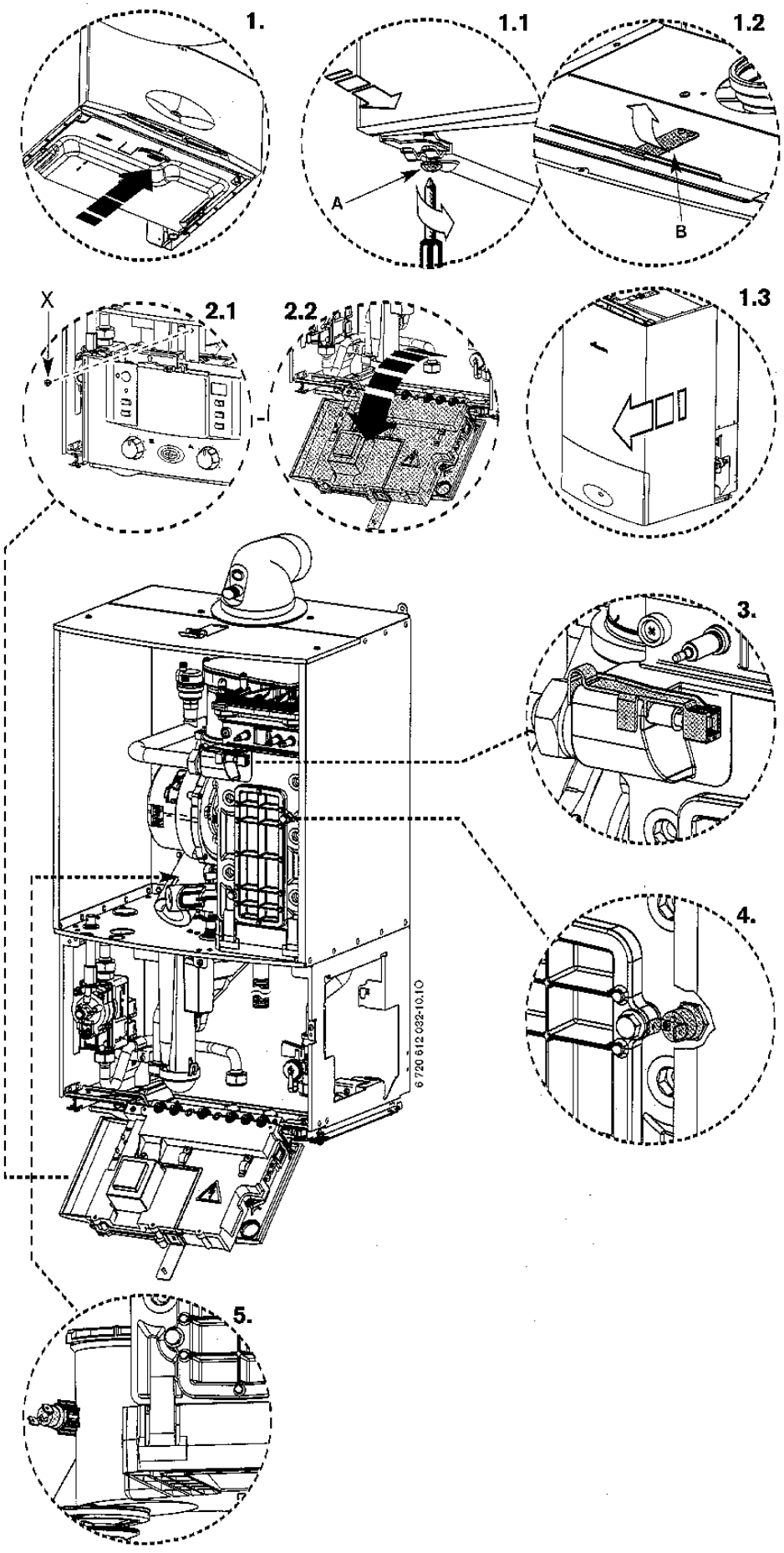
To Check the Diaphragm in Burner Cover

4. ▸ Carefully withdraw diaphragm (J) from fan intake tube and check for soiling and splits.
   ▸ Carefully refit diaphragm (J) the correct way round into the fan intake tube.
   Note: The flaps of the diaphragm (J) must open upwards.
   ▸ Re-assemble burner in reverse order using a new seal (K).
   ▸ Adjust gas/air ratio. Refer to section "Setting the gas/air ratio".

To Clean the Condensate Trap

5.1 ▸ Pull condensate pipe out of the adapter.
5.2 ▸ Remove trap from boiler.
   ▸ Clean trap and check that the connection to the heat exchanger is clear.
   ▸ Fill the condensate trap with approximately 1/4 litre of water and refit in reverse order.

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



IMPORTANT: AFTER REPLACEMENT OF ANY COMPONENTS ALWAYS CHECK FOR GAS SOUNDNESS WHERE RELEVANT AND CARRY OUT FUNCTIONAL CHECKS AS DESCRIBED IN COMMISSIONING. ANY O-RING OR GASKET THAT APPEARS DAMAGED MUST BE REPLACED.

1. Removing outer case

1. ▸ Remove bottom panel by pulling it forward and off.

1.1 ▸ Loosen but do not remove the 2 screws (A) securing boiler casing at the bottom of the appliance.

1.2 ▸ Pull upwards to release the clip (B) on top of the boiler.

1.3 ▸ Pull case forward and remove.

2. Moving boiler control to service position

2.1 ▸ Remove screw (X)securing control.

2.2 ▸ Gently pull forward.

3. Primary sensor

▸ Press retaining clip on plastic moulding and pull upwards until clear of pocket in heat exchanger.

▸ Separate sensor from connector, coat new sensor with heat conductive paste and replace.

4. Overheat thermostat

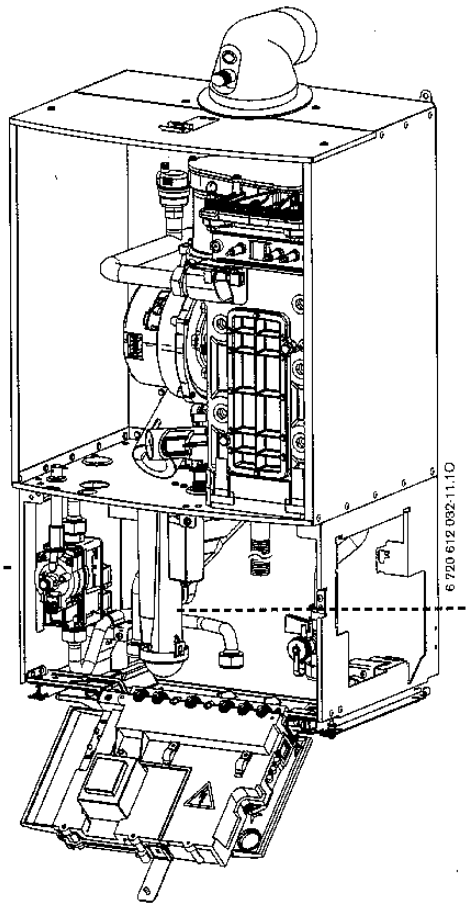
▸ Remove two electrical connectors from thermostat.

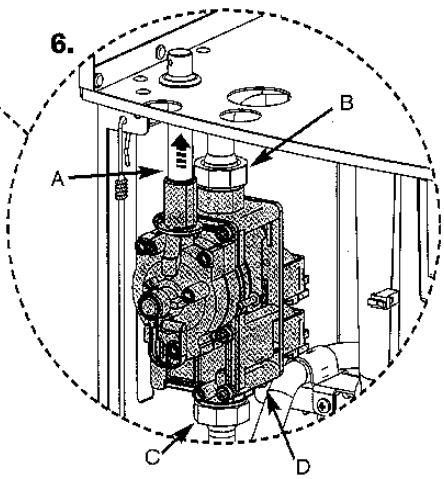
▸ Unscrew the sensor.

5. Flue limit thermostat

▸ Remove electrical connections.

▸ Unscrew thermostat from flue.





6. Gas valve

- ▸ Isolate gas supply at boiler gas cock.
- ▸ Push air inlet tube (A) upwards.

6.1 ▸ Undo top gas connection (B) to gas valve.

6.1 ▸ Undo bottom gas connection (C) to gas valve.

6.2 ▸ Undo two securing screws (D) on the underside of casing.

- ▸ Pull valve up and forward out of boiler.
- ▸ Disconnect electrical connections.
- ▸ Replace valve with new seals and check for gas soundness.

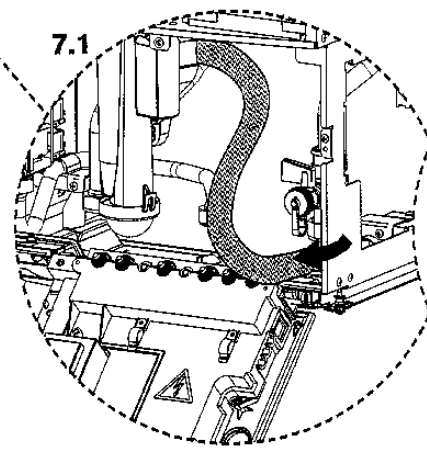
Note: *The valve will require setting, follow procedure "Setting the gas/air ratio" in the gas conversion section.*

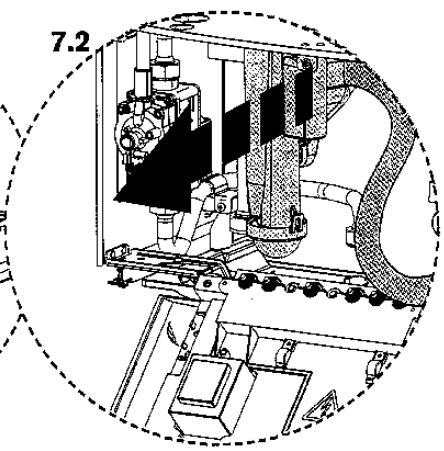
7. Siphon

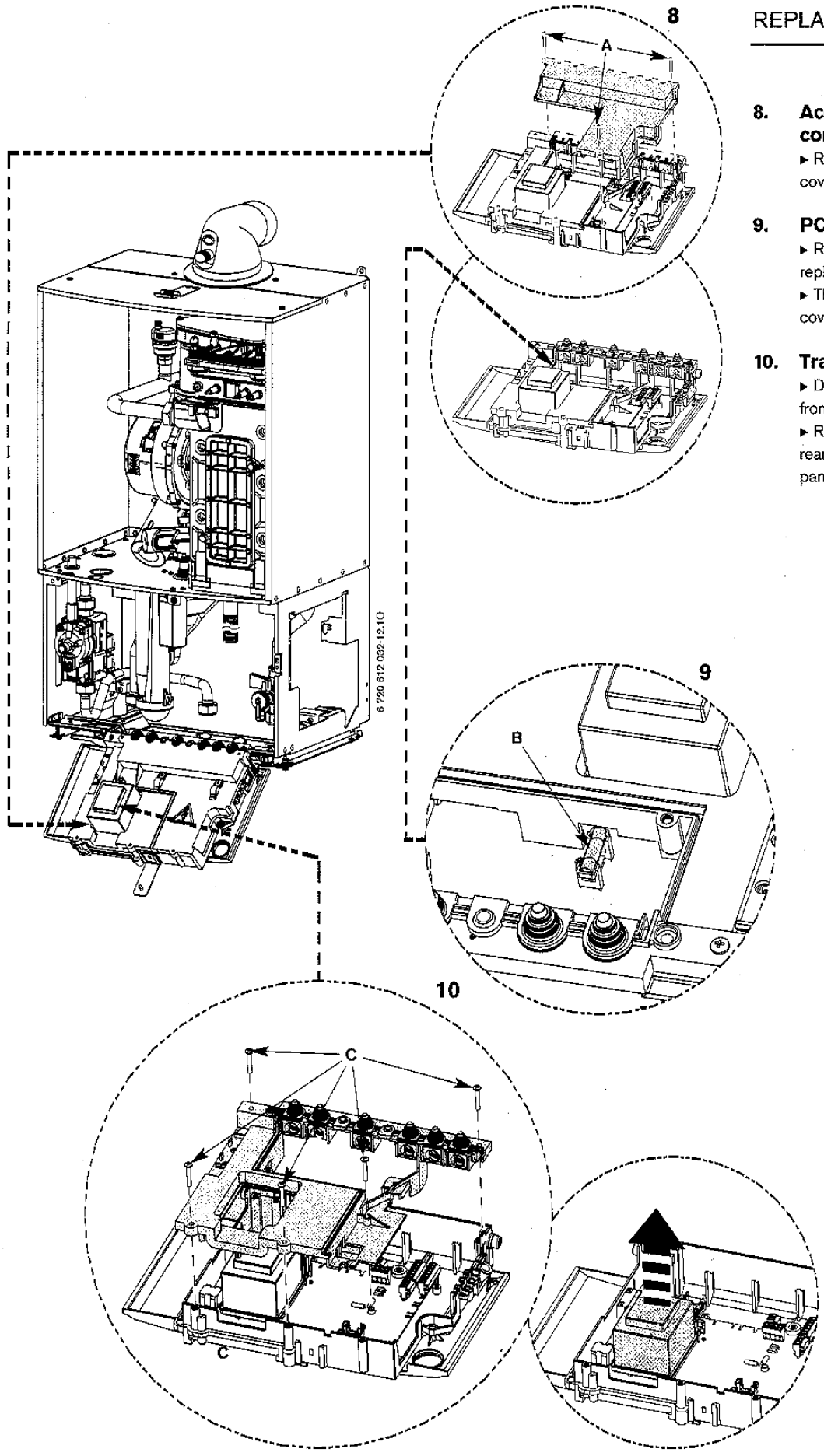
7.1 ▸ Pull condensate pipe out of the adapter.

7.2 ▸ Remove trap from boiler.

- ▸ Clean trap and check that the connection to the heat exchanger is clear.
- ▸ Fill the condensate trap with approximately 1/4 litre of water and refit in reverse order.







8. Access to boiler control components

▸ Remove 3 screws (A) and remove cover from control.

9. PCB fuse

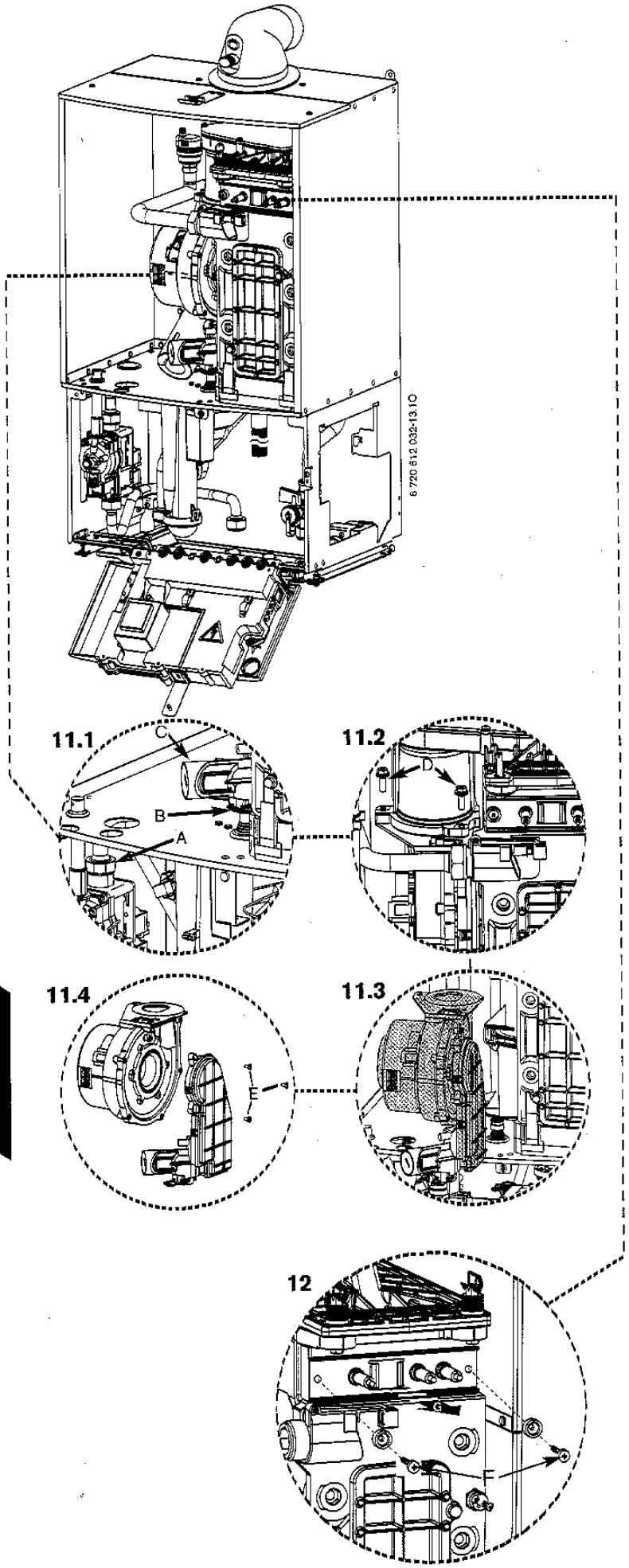
▸ Remove fuse (B) from the PCB and replace.

▸ There is a spare fuse clipped into the cover.

10. Transformer / PCB

▸ Disconnect all electrical connections from the control.

▸ Remove 5 screws (C) retaining the rear panel of the control and remove panel.



IMPORTANT: AFTER REASSEMBLY THE COMBUSTION MUST BE CHECKED USING THE PROCEDURE IN THE SECTION "SETTING THE GAS AIR RATIO". MEASUREMENT AND SETTING (IF NECESSARY) OF THE GAS RATIO MUST NOT BE ATTEMPTED UNLESS THE PERSON IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.

11. Fan assembly

▸ Remove electrical connector from fan.

▸ Remove condensate trap (see page 40).

11.1 ▸ Undo the union connection (A).

▸ Remove wire clip (B) from air/gas adjustment assembly (C) then pull gas pipe down.

11.2 ▸ Unscrew two screws (D).

11.3 ▸ Remove fan from boiler.

11.4 ▸ Remove three screws retaining the air/gas adjustment assembly (E).

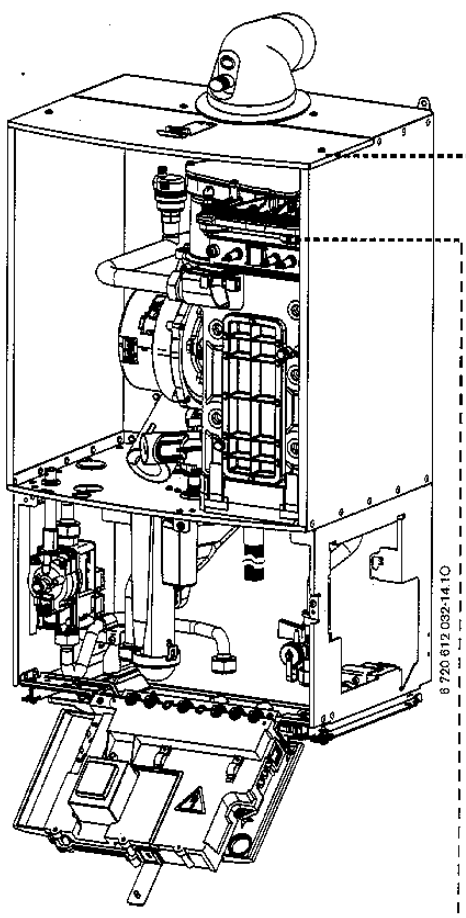
▸ Reassemble with new fan assuring that seals are correctly fitted.

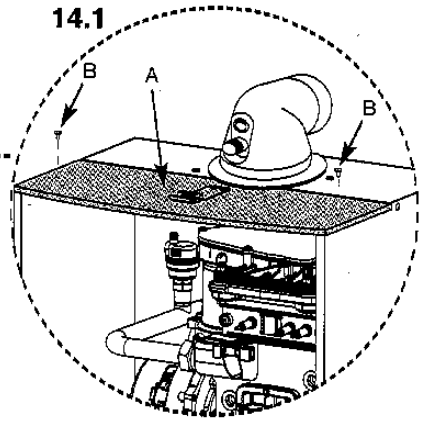
12. Electrode assembly

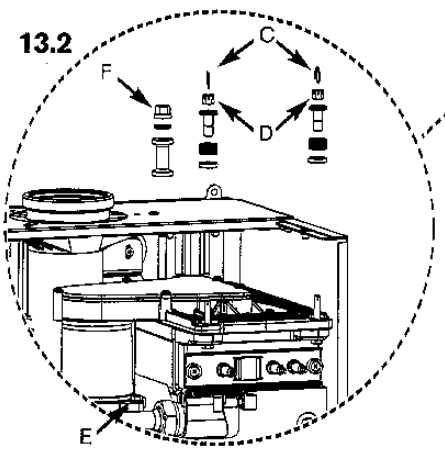
▸ Disconnect spark electrodes and flame sensor connection.

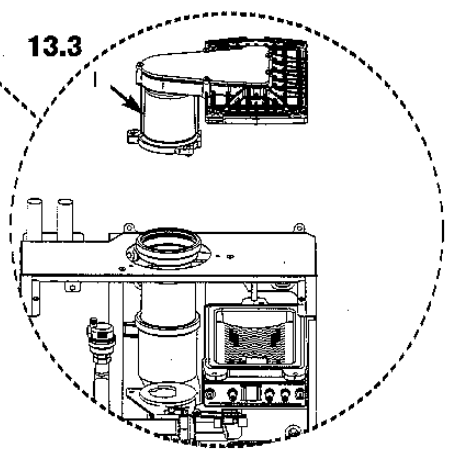
▸ Remove two screws (F).

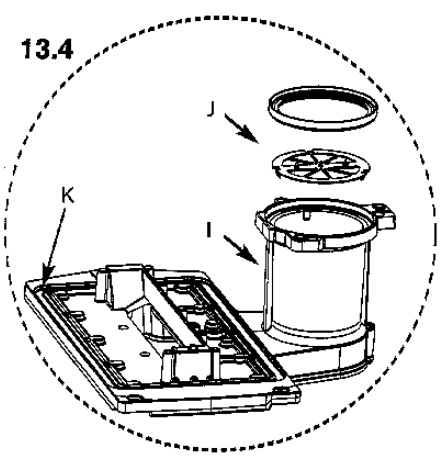
▸ Remove spark/flame electrode assembly (G) from heat exchanger.

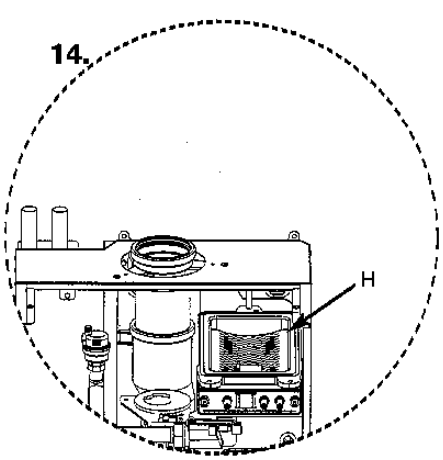












13. Air/gas manifold

13.1 ▸ Remove cover panel (A) by removing the screws (B).

▸ Check that the boiler is completely isolated from the gas supply.

13.2 ▸ Remove the clips (C) and unscrew the two bolts (D).

▸ Unscrew and remove the two hexagon screws (E) securing the fan.

▸ Slacken fully the rear securing bolt (F).

13.3 ▸ Remove air/gas manifold (I)

13.4 ▸ Open air/gas manifold (I).

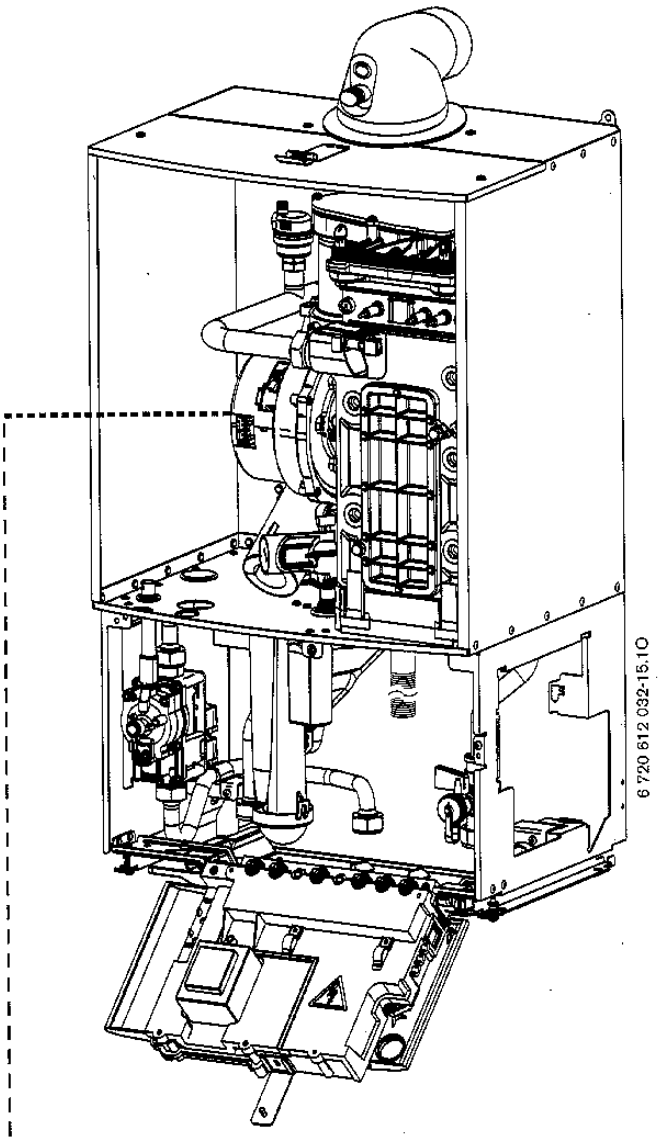
▸ Carefully withdraw diaphragm (J) from fan intake tube and check for soiling and splits.

14. Burner

▸ Remove the burner (H).

▸ Replace new burner in correct position.

▸ Ensure that a new seal (K) is used.



15. Heat exchanger

▸ Isolate flow and return valves and drain the boiler.

▸ Remove condensate trap (see page 40).

▸ Remove fan assembly (see page 44).

15.1 ▸ Remove plastic nut (A) from the base of the inner casing.

15.2 ▸ Remove return pipe (B) at the bottom of heat exchanger.

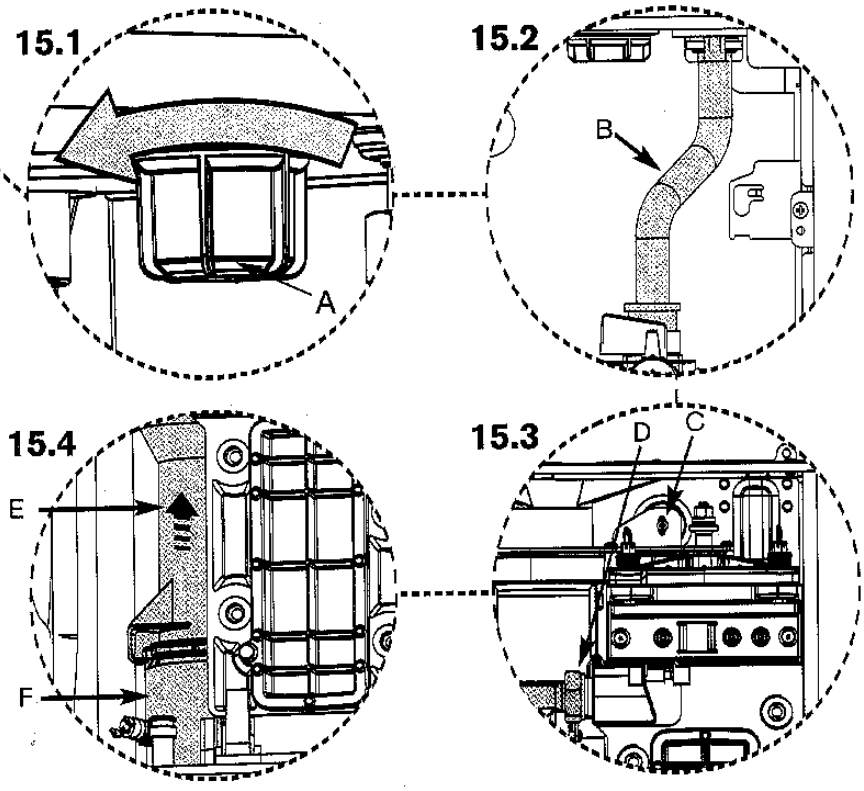
15.3 ▸ Remove screw at the top of the heat exchanger (C).

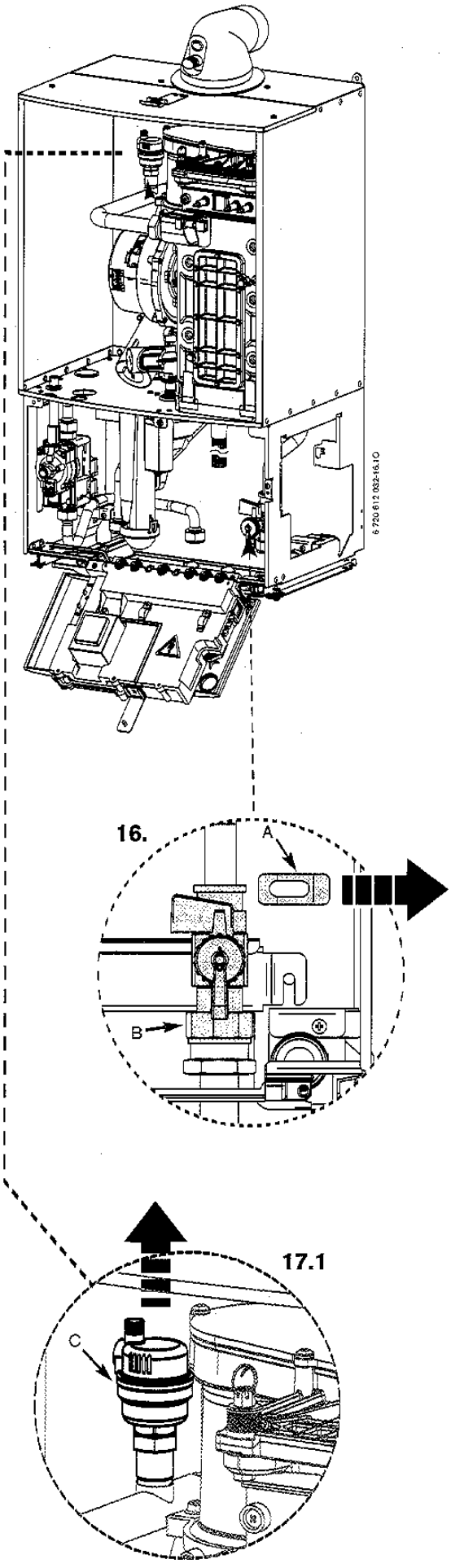
▸ Unscrew the flow pipe (D).

15.4 ▸ Undo flue connection (E) from sump (F).

▸ Pull flue pipe up.

▸ Remove the heat exchanger.





16. Drain tap

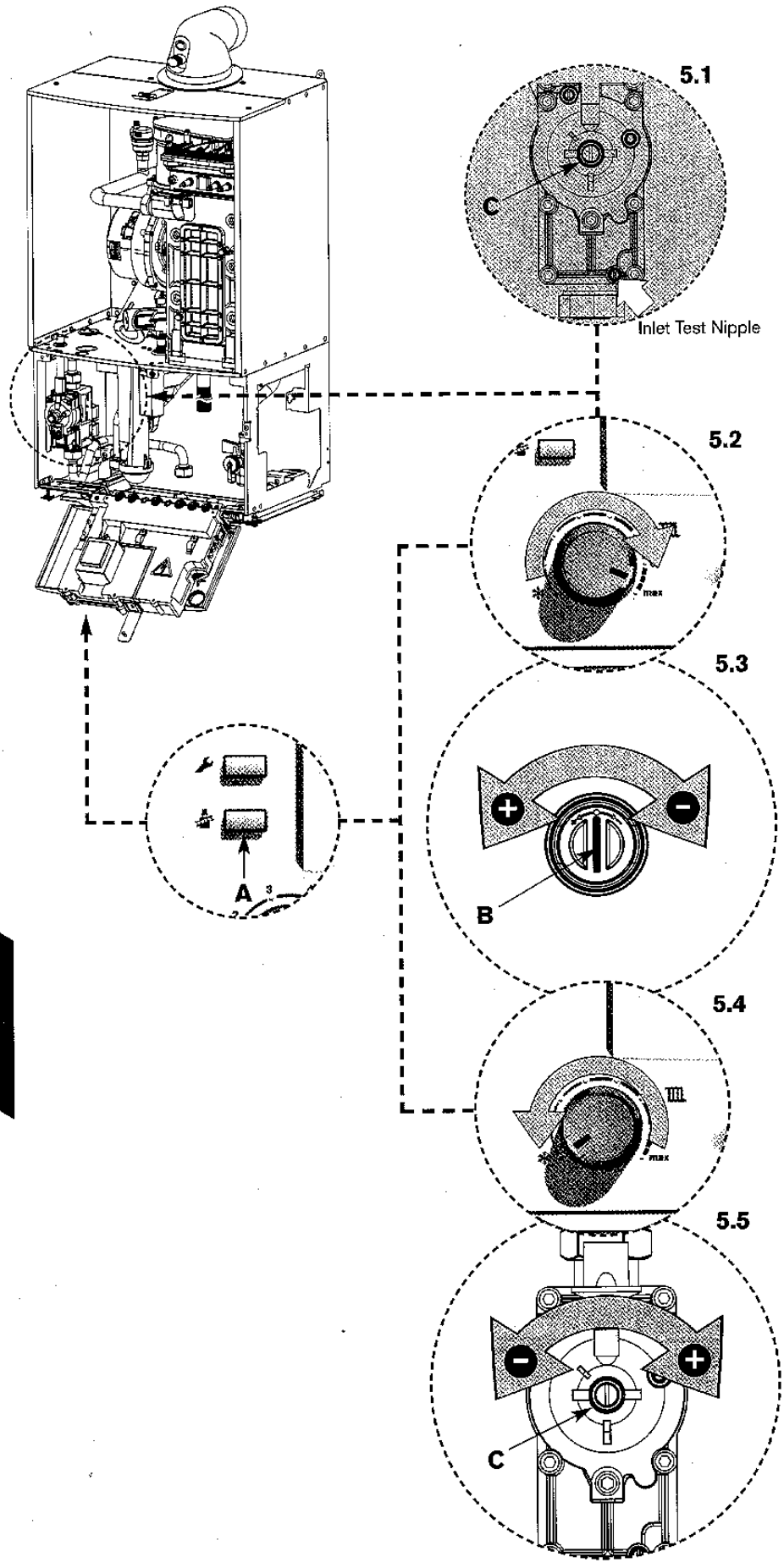
- ▸ Remove clip (A).
- ▸ Unscrew nut (B).
- ▸ Replace drain tap.

17. Auto air vent

- ▸ Ensure the appliance has been fully drained.

17.1 ▸ Unscrew air vent (C) and replace.

THE SETTING OF THE GAS RATIO MUST BE CARRIED OUT BY A COMPETENT PERSON. SETTING OF THE GAS RATIO MUST NOT BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE CONVERSION IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.



5. Setting the CO_2

5.1 ▸ Connect manometer to inlet pressure point on the gas valve.

▸ To adjust the CO_2 it will be necessary to first operate the boiler at maximum output.

▸ Press and hold down the boost button (A) for 10 seconds until illuminated.

5.2▸ Turn heating control to maximum; the boiler will then go to maximum output.

Note: The control will resume normal operation after 15 minutes or if the boost button is pressed for over a second.

5.3▸ Using a flat blade screwdriver set the CO_2 via adjuster (B) using table below.

Note: CO_2 should be measured 10 minutes after firing the appliance.

Gas type	CO_2 setting maximum	CO_2 setting minimum
Greenstar 30CDi		
Natural gas	9.6 % ±0.2	9.0 % ±0.2
LPG	10.8 % ±0.2	10.5 % ±0.2
Greenstar 40CDi		
Natural gas	9.7 % ±0.2	9.1 % ±0.2

▸ Check CO is less than 200 ppm.

▸ Measure the inlet pressure; it should be a minimum of 18 mbar for natural gas and 37 mbar for LPG.

5.4▸ Set the heating control to minimum. This will make the boiler go to minimum power.

5.5▸ Measure the CO_2; it should now be at the figure for minimum output. If not adjust (C) on the gas valve until correct.

▸ Return to maximum and re-check the CO_2. If correct press and hold down the boost button for 2 seconds; the button will cease to be illuminated and the blue power indicator will be permanently illuminated.

▸ Remove manometer and re-seal inlet pressure point on gas valve.

▸ Fit new plastic sealing cover on to outlet adjuster (B).

▸ Fit white cover over valve adjuster (C) and secure with black security tag.

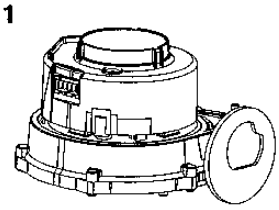
▸ Remove red arrow from data plate and fit new one in correct position for gas type.

▸ Re-assemble and refit boiler case.

▸ Re-connect mains electrical supply and check boiler operation as stated in the commissioning section.

▸ Fit new label from kit over existing label on the appliance bottom panel.

1



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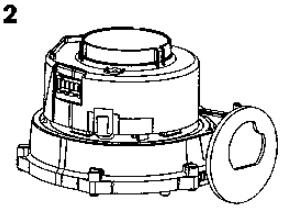

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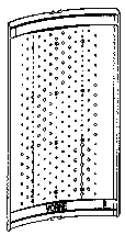

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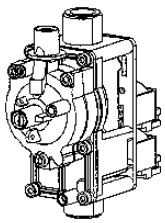

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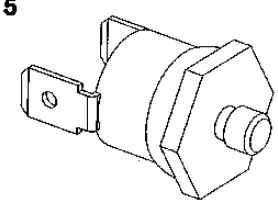

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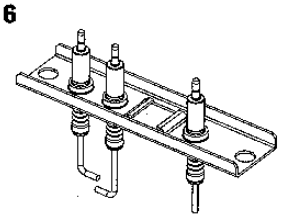

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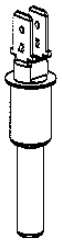


SHORT PARTS LIST

1 **Fan CDi 30 Conventional**
WHS Part No. **8 717 204 453 0**
GC No. **H26 536**

2 **Fan CDi 40 Conventional**
WHS Part No. **8 717 204 529 0**
GC No. **TO BE CONFIRMED**

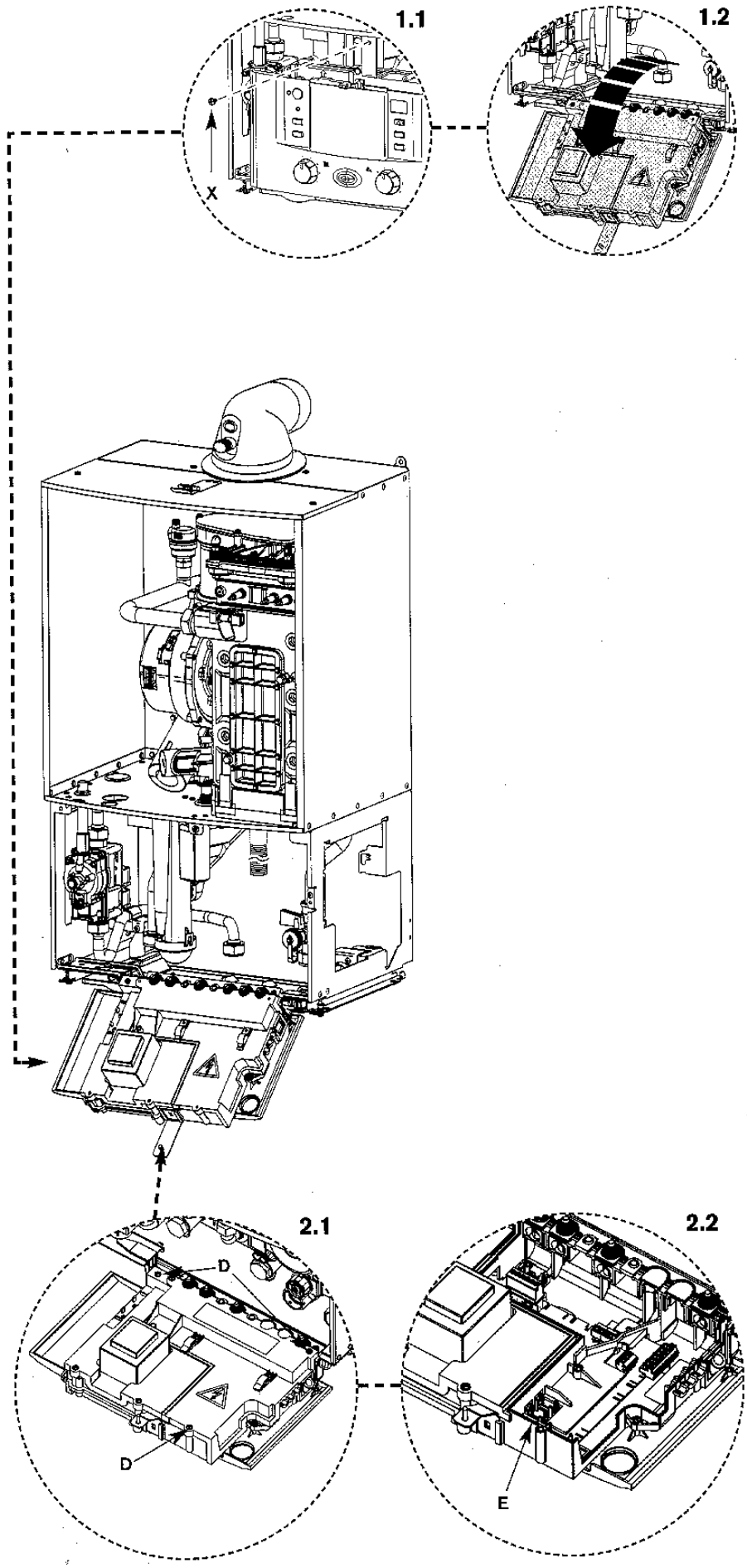
3 **Burner**
WHS Part No. **8 718 006 658 0**
GC No. **E27 200**

4 **Gas valve**
WHS Part No. **8 716 107 053 0**
GC No. **H26 539**

5 **Temperature limit sensor**
WHS Part No. **8 722 963 858 0**
GC No. **H08 291**

6 **Electrodes**
WHS Part No. **8 718 107 089 0**
GC No. **H22 458**

7 **Control sensor - primary**
WHS Part No. **8 714 500 087 0**
GC No. **E74 536**



L.P.G. CONVERSION

ISOLATE MAINS ELECTRICAL SUPPLY AND REMOVE OUTER CASE AS SHOWN ON PAGE 37.

THE CONVERSION MUST BE CARRIED OUT BY A COMPETENT PERSON. IT MUST **NOT** BE ATTEMPTED UNLESS THE PERSON CARRYING OUT THE CONVERSION IS EQUIPPED WITH A COMBUSTION ANALYSER CONFORMING TO BS 7927 AND IS COMPETENT IN ITS USE.

Important: The appliance shall not be installed into a room or internal space below ground level when it is intended for use with LPG (propane - G31). This does not preclude the installation into a room or space which is a basement on one side of the building but open to ground on the opposite side.

Installation Regulations
In addition to those specified in the main booklet the following standard applies when converting to an LPG appliance: **BS 5842 Domestic Propane Gas Burning Installations.**

All conversions will require the air gas ratio to be set correctly for the gas used. The procedure for setting the air gas ratio is at the rear of these instructions.

1. Moving boiler control to service position

▸ Remove boiler case, as described on page 37.

1.1 ▸ Remove screw (X) from retaining bracket.

1.2 ▸ Lower control panel into service position.

2. Code plug

2.1 ▸ Remove 3 screws (D) retaining plastic cover at rear of control box and remove.

2.2 ▸ Replace code plug (E) with new one supplied with conversion kit.

▸ Replace plastic cover.

▸ Place control in normal position and secure with screw.

THE GAS / AIR RATIO MUST BE RESET AFTER CONVERSION. THE PROCEDURE CAN BE FOUND IN THE REPLACEMENT PARTS SECTION OF THIS MANUAL.

NOTE: This fault finding information is for guidance only. Worcester Bosch cannot be held responsible for costs incurred by persons not deemed to be competent.

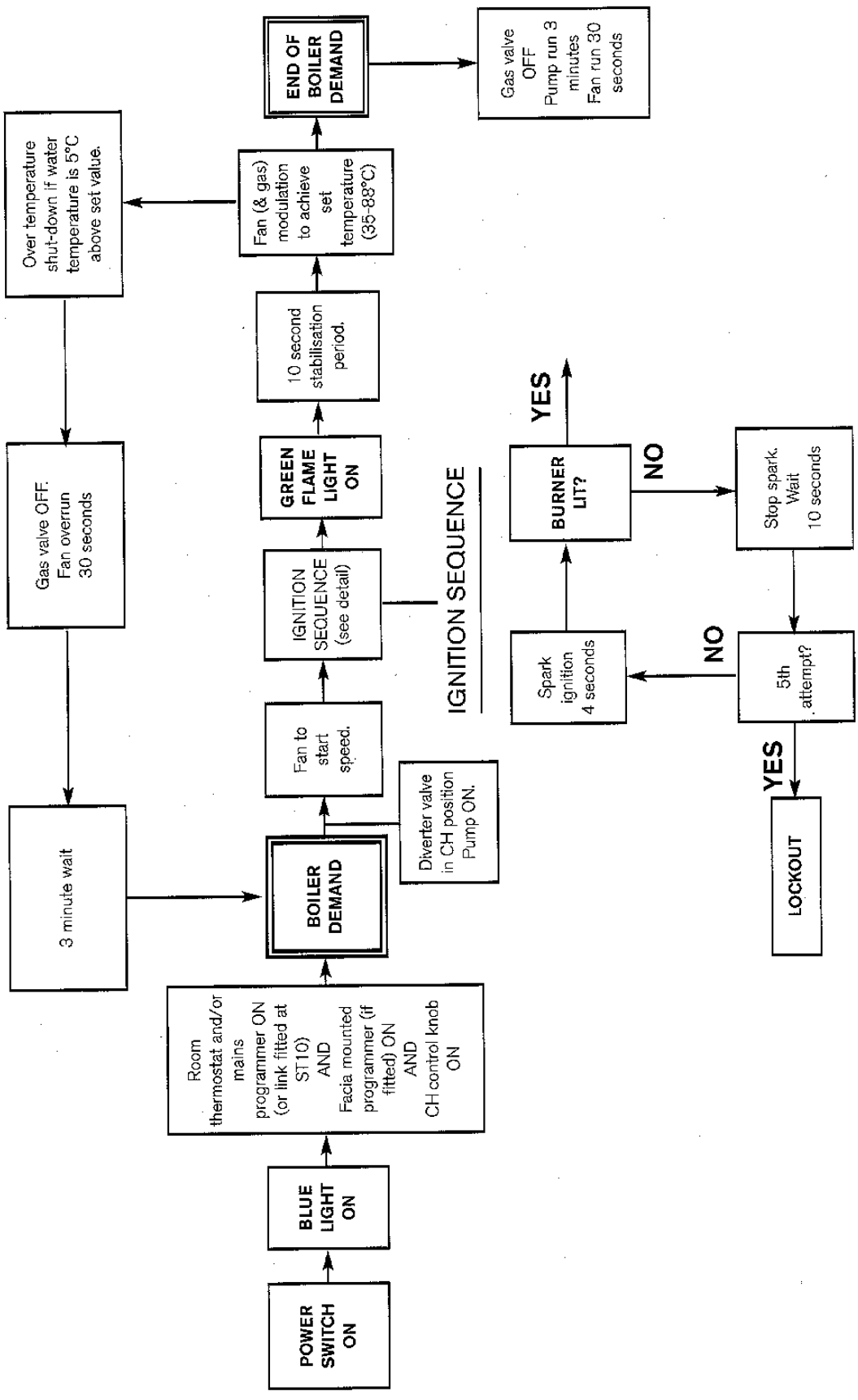
The electronic control system for this boiler incorporates a blue central indicator. This normally confirms the permanent mains supply but, by flashing during a fault, provides a guide to the cause as listed.

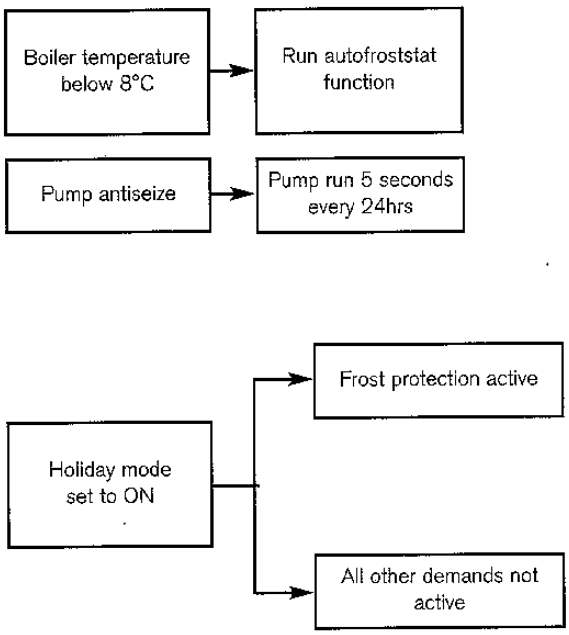
This fault finding system assumes that the appliance has been operating normally until the time of failure (i.e. not a first installation error).

PRELIMINARY CHECKS: Preliminary electrical system checks are the first electrical checks to be carried out during a fault-finding procedure. On completion of the Service/Fault-Finding task which has required the breaking and remaking of electrical connections, check
(a) EARTH CONTINUITY, (b) SHORT CIRCUIT CHECK, (c) POLARITY and (d) RESISTANCE TO EARTH.

Display code	Description	Remedy
b1	Code plug not detected.	Insert code plug correctly, test and replace if necessary.
C6	Fan speed too low.	Check fan lead and connector, and fan; replace as necessary.
E2	Flow NTC sensor defective.	Check flow NTC sensor and connecting lead.
E9	Safety temp. limiter in flow has tripped.	Check system pressure, check safety temp. limiters, check pump operation, check fuse on pcb, bleed appliance.
EA	Flame not detected.	Is gas cock turned on? Check gas supply pressure, power supply, igniter electrode and lead, ionisation sensing electrode and lead, flue duct and CO_2 level.
F0	Internal error.	Check electrical connector contacts, programmer interface module ignition leads are not loose; replace pcb if necessary.
F7	Flame detected even though appliance switched off.	Check electrode assembly, dry pcb. Flue clear?
FA	Flame detected after gas shut off.	Check gas valve and wiring to gas valve. Clean condensation trap and check electrode assembly. Flue clear?
Fd	Reset button pressed by mistake.	Press reset button again.

More detailed fault finding procedures are described in the Service booklet for the Engineer number 6 720 612 126.


POWER SWITCH ON
BLUE LIGHT ON
Room thermostat and/or mains programmer ON (or link fitted at ST10) AND Facia mounted programmer (if fitted) ON AND CH control knob ON
BOILER DEMAND
Diverter valve in CH position Pump ON.
3 minute wait
Fan to start speed.
IGNITION SEQUENCE (see detail)
GREEN FLAME LIGHT ON
10 second stabilisation period.
Fan (& gas) modulation to achieve set temperature (35-88°C)
Over temperature shut-down if water temperature is 5°C above set value.
Gas valve OFF Fan overrun 30 seconds
END OF BOILER DEMAND
Gas valve OFF Pump run 3 minutes Fan run 30 seconds
IGNITION SEQUENCE
BURNER LIT?
YES
NO
Stop spark. Wait 10 seconds
Spark ignition 4 seconds
5th attempt?
NO
YES
LOCKOUT


Boiler temperature below 8°C
Run autofroststat function
Pump antiseize
Pump run 5 seconds every 24hrs
Holiday mode set to ON
Frost protection active
All other demands not active

INSTRUCTION MANUAL

INSTALLATION, COMMISSIONING & SERVICING

EXCELLENCE COMES AS STANDARD

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 01905 754624 Fax. 01905 754619
Worcester, Bosch Group is a trading name of
BBT Thermotechnology UK Ltd.
www.worcester-bosch.co.uk

6 720 612 032a (03.05) OSW

WORCESTER
Bosch Group

GREENSTAR CDi CONVENTIONAL

WALL HUNG RSF GAS-FIRED CONDENSING BOILER

FOR OPEN VENT & SEALED CENTRAL HEATING SYSTEMS & INDIRECT FED DOMESTIC HOT WATER

THE APPLIANCE IS FOR USE WITH NATURAL GAS OR L.P.G. (Cat II 2H3P TYPE C13 & C33)

30CDi Conventional
40CDi Conventional

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

WORCESTER
Bosch Group

benchmark

CONTACT INFORMATION

WORCESTER BOSCH:

TECHNICAL:	08705 266241
SERVICE:	08457 256206
SPARES:	01905 752571
LITERATURE:	01905 752556
TRAINING:	01905 752526
SALES:	01905 752640

WEBSITE:

www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811
www.fernox.com

SENTINEL 0151 420 9595
www.betzdearborn.com/sentinel

FLUE TERMINAL GUARDS:

TOWER FLUE COMPONENTS
Vale Rise, Tonbridge TN9 1TB

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE OPERATING YOUR APPLIANCE

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER BOSCH 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 ONLY AND SHOULD BE FOLLOWED EXCEPT FOR ANY STATUTORY OBLIGATION.

IF YOU ARE IN ANY DOUBT CONTACT THE WORCESTER BOSCH TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER BOSCH.

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

PLEASE LEAVE THIS GUIDE, THE INSTALLATION INSTRUCTIONS AND THE COMPLETED BENCHMARK LOG BOOK WITH THE USER OR AT THE GAS METER AFTER INSTALLATION.

ABBREVIATIONS USED IN THIS BOOK:

NG - Natural Gas
LPG - Liquid Petroleum Gas
CH - Central Heating
SEDBUK - Seasonal Efficiency of Domestic Boilers in the United Kingdom

CONTENTS

EXCELLENCE COMES AS STANDARD

Thank you for purchasing a Greenstar 30/40CDi Conventional gas-fired condensing conventional boiler manufactured by Worcester Bosch. The company prides itself on manufacturing boilers to the strictest quality control standards throughout every stage of production. Worcester Bosch has led the field in innovative appliance design and performance for more than 40 years. This heritage means all products are of exceptional quality and proven reliability.

The Greenstar range in particular is extremely energy efficient, converting up to 97% of gas consumed into heat, offering you economical running costs and value for money. It sits in SEDBUK Band A, and is therefore amongst the top energy rated appliances available.

There is also the reassurance of our no-nonsense 2 years parts and labour guarantee - backed up by Worcester Total Cover, an optional complete maintenance scheme to keep your boiler operating at peak condition and efficiency.

To find out more about Worcester Bosch log onto www.worcester-bosch.co.uk.

IF YOU SMELL GAS:

- ✖ **DON'T** SMOKE OR STRIKE MATCHES
- ✖ **DON'T** TURN ELECTRICAL SWITCHES ON OR OFF

- ✔ **DO** PUT OUT NAKED FLAMES
- ✔ **DO** OPEN DOORS AND WINDOWS
- ✔ **DO** KEEP PEOPLE AWAY FROM THE AREA AFFECTED
- ✔ **DO** TURN OFF THE CONTROL VALVE AT THE METER

- ✔ TELEPHONE YOUR GAS COMPANY

BENCHMARK STANDARD

benchmark

'Benchmark' is a code of practice for correctly installing, commissioning and servicing of domestic water heating appliances.

A Benchmark Checklist is provided by the manufacturer for the installer to complete ALL details together with their CORGI registration number and sign to confirm that the boiler has been installed and commissioned according to the manufacturer's instructions.

IMPORTANT: The completed Benchmark Checklist will be required in the event of any warranty work and may be required by the local Building Control Inspector.

HEALTH & SAFETY

The appliance contains no asbestos and no substances used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988).

COMBUSTIBLE AND CORROSIVE MATERIALS

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

Chemically aggressive substances, such as halogenated hydrocarbons containing chlorine or fluorine compounds can corrode the appliance and invalidate any warranty.

FITTING & MODIFICATIONS

Fitting the appliance, any controls to the appliance and removal of the outer casing may only be carried out by a competent engineer in accordance with the Gas Safety (Installation and Use) Regulations.

Flue systems must not be modified in any way other than as described in the Installation Instructions and 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. This does not affect your statutory rights.

SERVICING

The user is recommended to have the system regularly serviced by a competent, qualified engineer (such as British Gas or CORGI registered personnel) using original spares, to help maintain the economy, safety and reliability of the appliance and to have the Service Record completed in the Benchmark Checklist.

The appliance should be serviced annually after installation unless the particular installation conditions and usage demand more frequent services.

IMPORTANT - ensure that the service engineer completes the Service Record in the Benchmark Checklist after each service.

GENERAL NOTES

To get the best from your appliance please read these instructions carefully.

SEALED HEATING SYSTEMS

If the appliance is fitted to a sealed heating system, which is pre-pressurised, your installer will advise you of the minimum and maximum pressure which should be indicated on the pressure gauge.

Check regularly that the pressure is maintained and contact your installer or maintenance engineer if a permanent significant drop in pressure is indicated on the pressure gauge. If the system loses pressure it should be re-pressurised and the cause of the fall investigated.

CENTRAL HEATING SYSTEMS

During the first few hours of operation of the central heating system, check that all radiators are being heated at an even rate. If the top of a radiator is at a lower temperature than the bottom then it should be vented by releasing air through the venting screw at the top of the radiator. Ask your installer to show you how this is done.

If the boiler is fitted to a sealed system, repeated venting will reduce the quantity of water in the system and this must be

replenished for safe and satisfactory operation of the appliance.

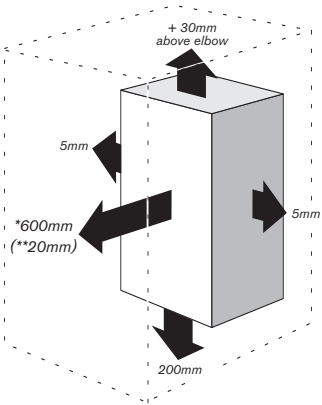
Should water leaks be found in the system or if excessive venting is required, then a service engineer must be contacted to inspect the installation and rectify any fault.

Only additives that are compatible with aluminium may be used in the system. Any incompatible additive used will invalidate the guarantee.

CONDENSATE DRAIN

This is a condensing appliance and the terminal will, at times give out a plume of water vapour. This is quite normal.

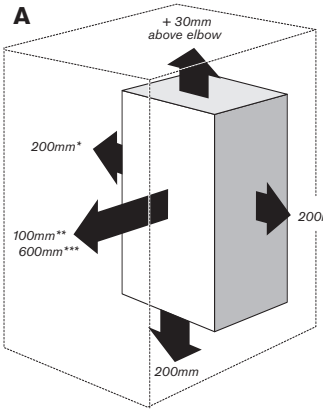
The appliance also produces quantities of condensate which is discharged regularly by a siphon within the boiler via a pipe to drain. This pipe must not be blocked or altered in any way.

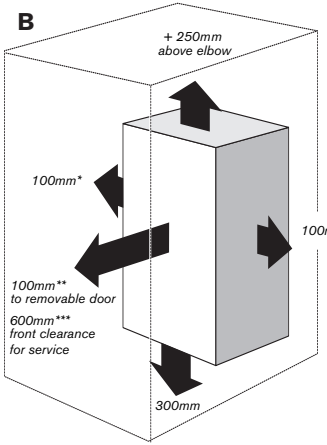


CLEARANCES - VENTILATED COMPARTMENT

Your installer will have provided adequate space around the appliance for safety and servicing access. Do not restrict this space with the addition of cupboards, shelves etc. next to the appliance.

*600 mm service clearance required to a fixed surface
(**20 mm from removable door or panel)





GENERAL NOTES

BOILER CLEARANCES - UNVENTILATED COMPARTMENT

The diagrams (A and B) opposite show two options for the minimum space required to install and service the boiler inside an unventilated compartment.

* This space can be reduced to 50 mm for one side only as long as both the side clearances add up to the total of both the side measurements shown or more.

** Space required for unventilated areas with a removable door or panel.

*** 600 mm clearance required to a fixed surface for servicing.

ROOM THERMOSTAT

A room temperature controller and programmer should be fitted to control the central heating. Refer to the instructions supplied with the thermostat for information on siting and setting.

THERMOSTATIC RADIATOR VALVES

It is recommended that this type of valve is fitted to all but one of the radiators (or at least those in the sleeping accommodation). The remaining radiator, which must be where the room thermostat is located, should be uncontrolled and must be left open. The thermostatic radiator valves should conform to the requirements of BS2767:10.

GENERAL NOTES

VENTILATION

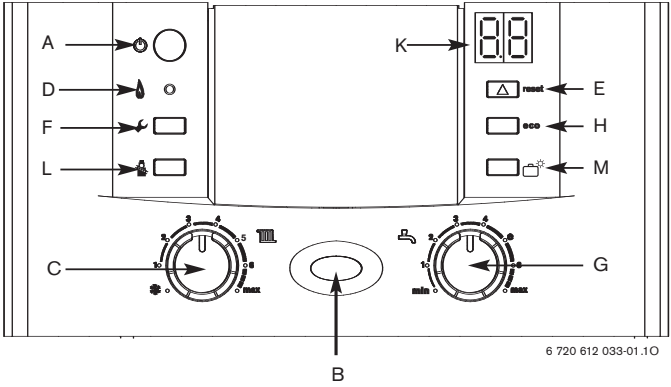
This is a room sealed appliance and does not require any air for combustion from inside the property. If the appliance is fitted into a cupboard or a compartment is built around the appliance after installation, then the compartment must be separated from the boiler space by a perforated non-combustible partition as described in BS 6798.

Notwithstanding the requirements of BS 6798 and BS 5440 there is no need for ventilation openings to be provided in the compartment because of the low heat loss from the appliance casing, if the clearances shown are maintained.

Do not operate the appliance if the flue terminal fitted on the outside wall or roof is obstructed or damaged.

PUMP ANTI-SEIZURE

If there has been no heating demand for 24 hours the boiler will run the system pump for a few seconds to reduce the possibility of pump seizure during long periods of inactivity, which is usually more frequent during the summer months.



A - MASTER SWITCH FOR ON/OFF

B - MAINS ON/OFF INDICATOR + FAULT DIAGNOSTIC LIGHT

C - BOILER TEMPERATURE CONTROL

D - BURNER ON INDICATOR LIGHT (GREEN)

E - FAULT RESET BUTTON

F - SERVICE BUTTON

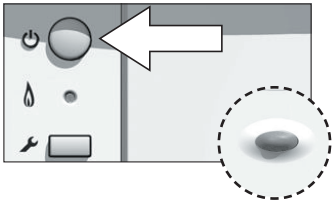
G - NOT USED

H - NOT USED

K - DISPLAY

L - CENTRAL HEATING BOOST BUTTON

M - HOLIDAY BUTTON



SWITCHING THE APPLIANCE ON/OFF

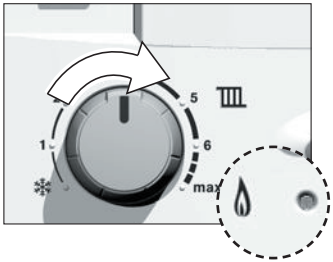
Switching on

▸ Switch on the appliance by pressing the master switch.
The indicator light shows blue

• The boiler runs for 15 minutes at minimum heat output to fill the condensate trap, the display (K) alternates between "-II-" and the boiler flow temperature. This occurs every time the mains supply has been interrupted.

Switching off

▸ Switch off the appliance by pressing the master switch.
The blue indicator light goes out.



SETTING THE BOILER TEMPERATURE

▸ Turn the central heating temperature control to the desired level, between 40 °C and 90 °C.

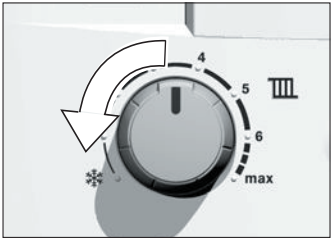
▸ When the burner is lit, the green indicator light underneath the on/off switch is illuminated.

CONTROLLING CENTRAL HEATING

▸ Set the timer to the correct time.

▸ Set room thermostat to the desired room temperature.

▸ Set the thermostatic radiator valves to the desired settings.



FROST PROTECTION

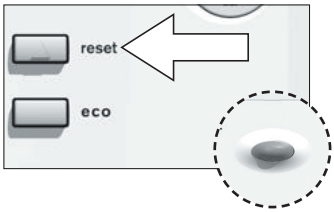
▸ Leave master switch on.

▸ Turn the central heating temperature control to ❄.

If the temperature falls to 5 °C within the boiler it will fire to avoid the possibility of freezing.

▸ Add a suitable anti-freeze fluid to the water in the central heating system.

▸ If remote pipework is likely to be subjected to freezing conditions, ensure the installer has fitted a frost thermostat in the area to protect the pipework.



FAULT CONDITION

In the unlikely event of a fault occurring while the appliance is in operation:

The reset button will flash once per second and the mains indicator (blue light) will flash also. The display shows a fault code.

▸ To reset boiler press the reset button.

The reset button will no longer be illuminated and the mains indicator will stop flashing.

The boiler will function normally, dependent on programmer and room thermostat settings.

If the fault remains and cannot be cleared by pressing the reset button, or if fault persists contact Worcester Bosch for assistance, giving a description of the fault and, if possible, the fault code from the display.

Heating economically

The boiler is designed to provide a high level of comfort while keeping gas consumption and the resulting environmental effect as low as possible. The gas supply to the burner is controlled according to the level of demand for heat. The boiler continues to operate with a low flame if the demand for heat reduces. The technical term for this process is modulating control. Modulating control reduces temperature fluctuations and provides even distribution of heat throughout the home. This means that the boiler may stay on for relatively long periods but will use less gas than an appliance that continually switches on and off.

Central heating systems with room thermostats/thermostatic radiator valves

The central heating control on the boiler should be set to the maximum rated temperature of the central heating system.

The temperature of each room can be set individually (except primary room with the room thermostat) using the thermostatic radiator valves.

Roof insulation

Around 30% of the heat loss from a property is through the roof. Replace any old insulation with new insulation, preferably of around 200 mm thickness or more.

Window frames

Single glazed windows, particularly those with steel frames, can lose a great deal of heat. Consideration should be given to replacement with PVCu or wooden framed double glazed units.

Curtains

Lined curtains, or heavier full length curtains can provide excellent insulation. However, always ensure that the curtains do not drape over radiators.

Draughts

Try to ensure that draughts around doors, windows, letterboxes and keyholes etc. are reduced by using a suitable draught excluder. Warning - Do not block or seal any air vents that are installed to ensure the central heating boiler operates safely.

Room thermostats

Reducing the setting of the room thermostat by 1 °C can reduce fuel consumption by up to 10%.

New control systems

Upgrade your heating control system if necessary with the latest equipment available. The minimum level of control is a programmer, interlocking room thermostat and thermostatic radiator valves.

Radiators

More often than not radiators will be sited underneath a window, so the warm air from the radiator heats the colder incoming air from the window. The performance of the radiator will be affected if the curtains are allowed to drape over the radiator or shelves are fitted above it. The positioning of furniture and tables in front of the radiator should also be avoided.

It is advisable to manually adjust all radiator thermostatic valves every 2-3 months to prevent them sticking. It is also important that the plastic tops of all valves are always in position and not cracked or damaged to prevent accidents. Care should be taken when vacuum cleaning carpets to avoid damage to valves and pipework.

The heating system and the outputs of the radiators have been carefully selected by your installer. The temperature obtainable in any given room is dependent on all radiators being operated at the same time. If you decide to turn off radiators in unused rooms, spare bedrooms etc., you may experience slightly lower room temperatures in rooms adjacent to unheated rooms.

MAINTAINING YOUR APPLIANCE

Your new Greenstar 30/40CDi Conventional gas-fired appliance represents a long term investment in a reliable, high quality product.

In order to realise its maximum working life, and to ensure it continues to operate at peak efficiency and performance, it is essential that your boiler receives regular servicing and maintenance checks from a competent person beyond the initial 2 year guarantee period.

If you would like to know more about a Worcester Bosch service contract, please tick the appropriate box on your warranty registration card.

If your Greenstar 30/40CDi Conventional should fail to operate correctly or requires servicing please contact the Worcester Bosch Service Department (see inside front cover for details).

Details of the boiler including the Gas Council number can be found under the controls cover flap on the boiler.

This table gives information on basic operating system problems.

In the unlikely event of a boiler fault please read the following page thoroughly before contacting Worcester Bosch.

Problem	Cause	Remedy
Desired room temperature is not reached	Thermostatic radiator valve(s) set too low	Increase thermostatic radiator valve setting(s)
	Temperature control on boiler set too low	Increase temperature control setting
	Air trapped in heating system	Bleed radiators and recharge heating system
Desired room temperature exceeded by large amount	Radiators are too hot	Turn down thermostatic radiator valves / room thermostat Reduce temperature on boiler
Heating stays on for too long	Clock is incorrectly set	Check setting
No on/off indicator	Momentary power failure	Switch off appliance at master switch, wait a few seconds then switch on again
Hot water Temperature too low	Tank thermostat temperature set too low Programmer setting Diverter valve	Check setting

FAULT OR BREAKDOWN

This appliance is supported in the UK by Worcester, Bosch Group.

Specialist factory trained Service Engineers are available to attend a breakdown occurring on this appliance.

No charge will be made for parts and/or labour providing:

▸ An appliance fault is found and the appliance has been installed within the past 24 months. Reasonable evidence of this must be supplied on request. i.e. the Benchmark Checklist.

A call-out charge will be made where:

▸ The appliance has been installed for over 24 months.

OR

▸ Evidence cannot be provided that the first year service inspection has been carried out (ie. an entry in the Benchmark Checklist).

OR

▸ Our Field Service Engineer finds no fault with the appliance (see Note).

OR

▸ The cause of breakdown is misuse or with other parts of your plumbing/heating system, or with equipment not supplied by Worcester Bosch.

Note:
NO APPLIANCE FAULT IS FOUND ON OVER 30% OF ALL SERVICE CALL OUTS.

Please read this guide carefully to gain a good understanding of the operation of your appliance. In the case of a suspected fault, refer to the fault finding section of this guide.

If in doubt contact our Technical Helpline

In the event of an appliance fault or breakdown please contact our Service Department. Your service administrator will arrange for an engineer to call with the minimum of delay; under normal circumstances this will be from 1 - 3 working days (excluding weekends) for priority breakdown situations (no hot water and/or heating).

Invoices for attendance and repair work carried out on this appliance by any third party will not be accepted.

This appliance is guaranteed against faulty material or workmanship for a period of 2 years from the date of installation subject to the following terms and conditions.

▸ Your Guarantee Registration Card must be returned within 30 days for the second year of your guarantee to become valid.

▸ During the period of this guarantee any components of the unit which are proven to be faulty or defective in manufacture will be exchanged or repaired free of charge by BBT Thermotechnology UK Ltd.

▸ The householder may be asked to prove the date of installation, that the appliance was correctly commissioned and, where appropriate, the first year's service has been carried out to the satisfaction of BBT Thermotechnology UK Ltd. when requested. These should be part of the Benchmark Checklist.

▸ Any product or part returned for servicing under the guarantee must be accompanied by a claim stating the model, serial number & date of installation.

▸ BBT Thermotechnology UK Ltd. will not accept responsibility for damage caused by faulty installation, neglect, misuse or accidental damage or the non-observance of the instructions contained in the Installation and Servicing Manual and User Instructions.

▸ The appliance has been used only for the normal domestic purposes for which it was designed.

▸ This guarantee applies only to equipment purchased and used in the United Kingdom.

This guarantee does not affect your statutory rights.

GUARANTEE REGISTRATION

You should complete and return the postpaid Guarantee Registration Card within 14 days of purchase.

Returning the card will register you as the owner of your new Greenstar 30/40CDi Conventional appliance and will assist us in maintaining an effective and efficient customer service by establishing a reference and permanent record for your boiler.

This does not affect your statutory rights.

For your own record:

Model

Serial No.

(See guarantee card)

Type / size

Date of installation

Check that the Benchmark Checklist has been completed by your installer or service engineer.

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 01905 754624 Fax. 01905 754619

www.worcester-bosch.co.uk

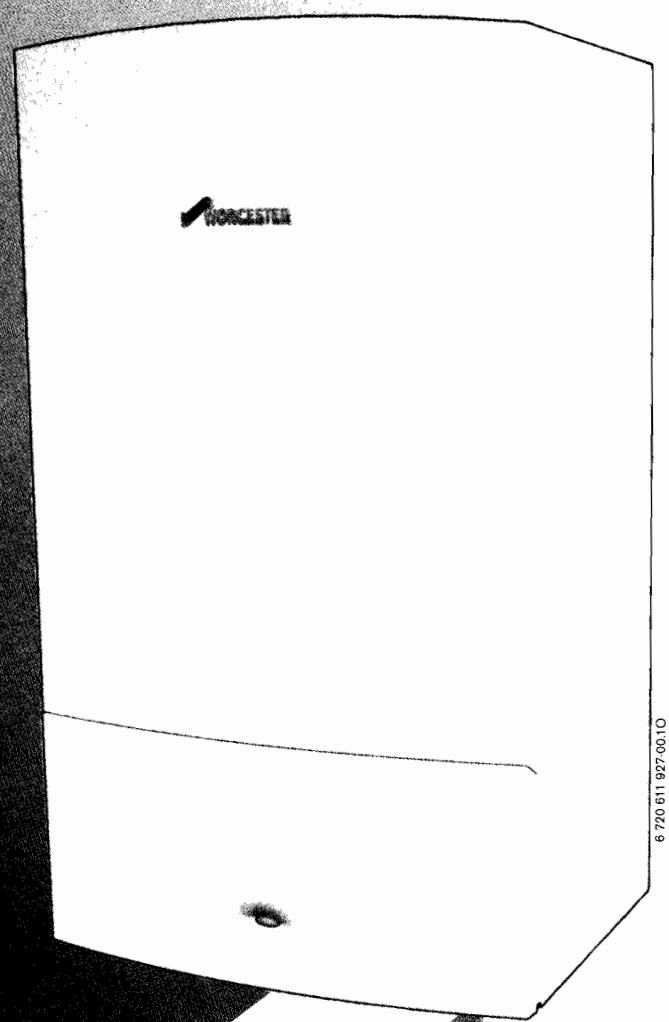
Worcester Bosch Group is a trading name of BBT Thermotechnology UK Ltd.

6 720 612 033a (03/05) OSW

WORCESTER
Bosch Group

GREENSTAR CDi

WALL HUNG RSF GAS-FIRED CONDENSING BOILER



THE APPLIANCE IS FOR USE WITH
NATURAL GAS OR L.P.G. (Cat II 2H3P TYPE C13 & C33)

WORCESTER GREENSTAR 25CDi Combi	GC NUMBER 47-311-92
WORCESTER GREENSTAR 30CDi Combi	GC NUMBER 47-311-93
WORCESTER GREENSTAR 35CDi Combi	GC NUMBER 47-311-94
WORCESTER GREENSTAR 40CDi Combi	GC NUMBER 47-311-95
WORCESTER GREENSTAR 30CDi Conventional	
WORCESTER GREENSTAR 40CDi Conventional	

GB/IE

SERVICE BOOKLET
FOR THE ENGINEER

benchmark

WORCESTER
Bosch Group

Contents

Safety precautions

Repairs

- ▶ Repairs may only be carried out by an approved installer (such as British Gas or CORGI registered personnel)!
- ▶ Before carrying out any work on the appliance, isolate mains supply before starting any work and observe any safety precautions!
- ▶ Even when the appliance is switched off at the mains supply, some components on the pcb inside the control box are still live.
  Therefore:
- ▶ Before carrying out any work on the electrical parts of the appliance fully disconnect it from the power supply (e. g. by means of fuse or circuit breaker)!
- ▶ Flue ducting must not be modified in any way.
- ▶ Use only original spare parts!

Instructions to the customer

- ▶ Advise the customer that he/she must not make any modifications to the appliance or carry out any repairs on it.
- ▶ Draw attention to the need for an annual service (or maintenance contract if applicable).

Symbols

Safety instructions in this document are identified by a warning-triangle symbol and are printed on a grey background.

Signal words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **Caution** indicates that minor damage to property could result.
- **Warning** indicates that minor personal injury or serious damage to property could result.
- **Danger** indicates that serious personal injury could result. In particularly serious cases, lives could be at risk.

Notes are identified by the symbol shown on the left. They are bordered by horizontal lines above and below the text.

Notes contain important information in cases where there is no risk of personal injury or damage to property.

1 Layout of Appliance

1.1 Combi appliances

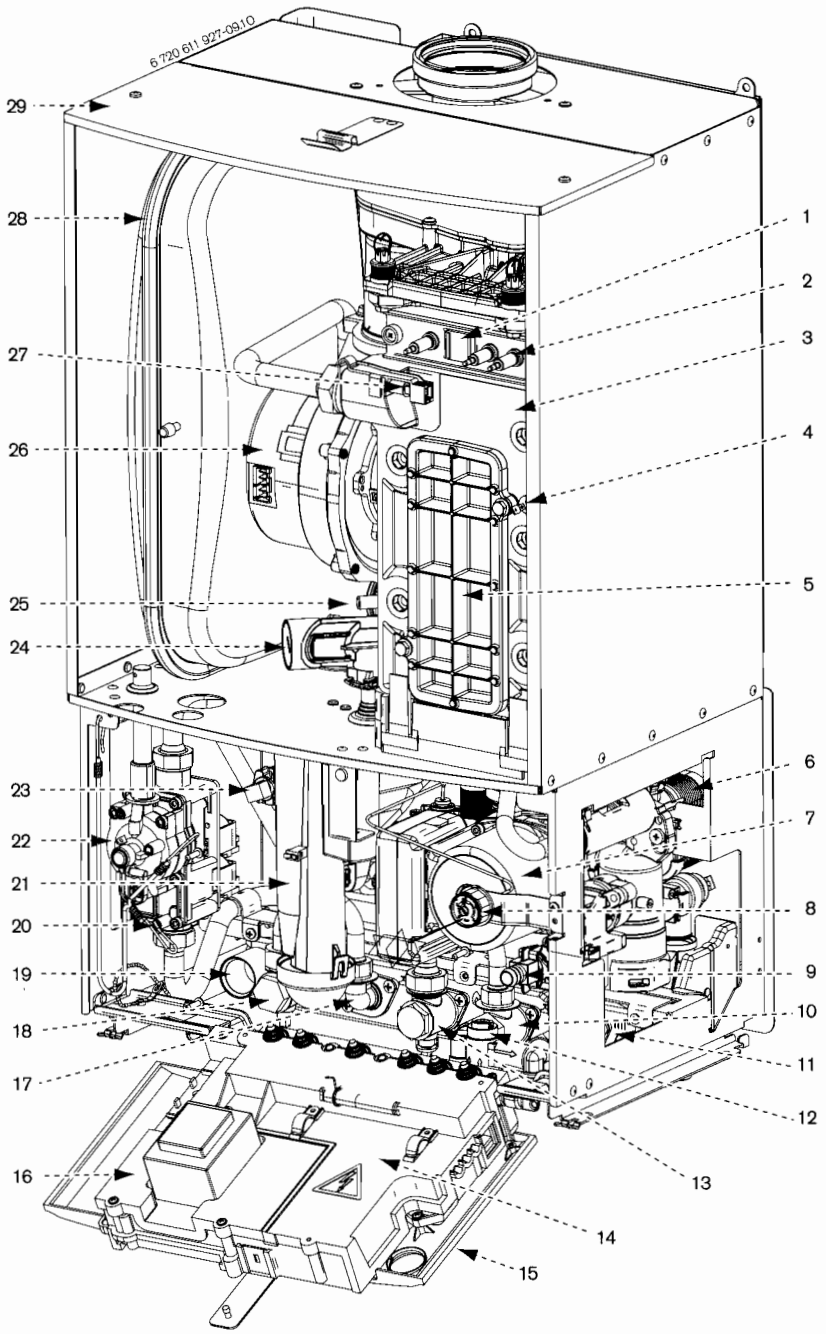


Fig. 1

The diagram shows the controls in the servicing position and excludes the outer case and fascia panel.

1 Flame viewing window
2 Ignition electrode and flame sense electrode
3 Heat exchanger
4 Overheat thermostat
5 Access point for cleaning heat exchanger
6 Plate to plate dhw heat exchanger
7 Pump
8 System pressure gauge
9 Drain point
10 Mains cold water in
11 CH return
12 Charging link assembly (optional)
13 Gas inlet connection 22 mm compression
14 Cover for external wiring connections
15 Control panel in service position
16 Access cover for transformer & PCB
17 DHW out
18 CH flow
19 Trap / syphon outlet connection (22 mm plastic pipe)
20 Inlet pressure test point
21 Trap / syphon
22 Gas valve
23 DHW temperature sensor
24 Air / gas adjustment screw
25 Testing point for fan pressure
26 Fan
27 Primary sensor
28 Expansion vessel
29 Removable top case panel for servicing

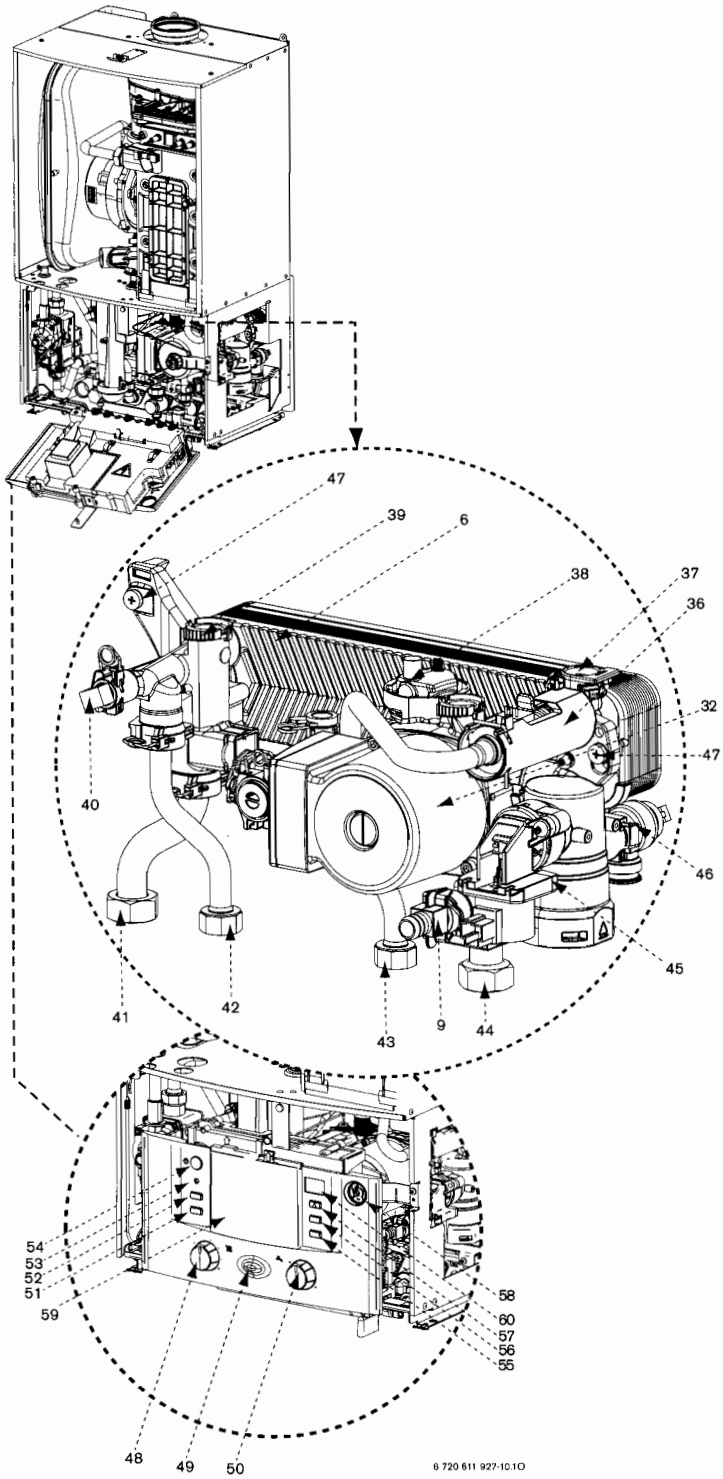


Fig. 2

6	Plate to plate dhw heat exchanger
9	Drain point
32	System pump
36	Flow turbine
37	Unused port
38	Auto air vent
39	Flow connection from boiler heat exchanger
40	DHW sensor
41	CH flow connection to service valve
42	DHW out connection
43	Cold water in connection
44	CH return connection to service valve
45	Diverter valve
46	Pressure relief valve
47	Compact hydraulic mounting screw (2) to boiler
48	CH temperature control
49	Mains on/off indicator/diagnostic light (blue)
50	DHW temperature control
51	Central heating boost button
52	Service button
53	Burner on indicator light (green)
54	Master switch on/off
55	Holiday button
56	ECO button
57	Fault reset button
58	System pressure gauge
59	Position for optional programmer
60	Display

1.2 Conventional appliances

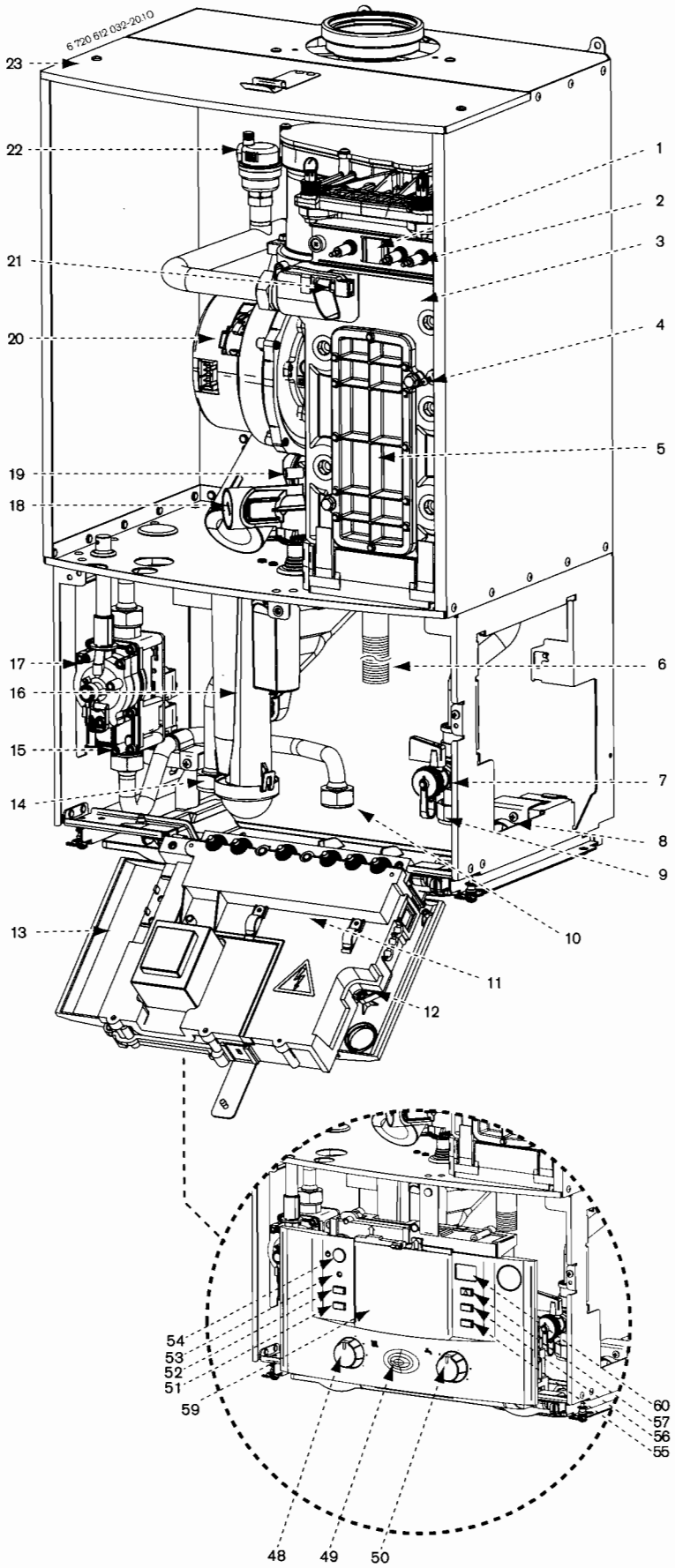


Fig. 3

The diagram shows the controls in the servicing position and excludes the outer case and fascia panel.

1 Flame viewing window
2 Ignition electrode and flame sense electrode
3 Heat exchanger
4 Overheat thermostat
5 Access point for cleaning heat exchanger
6 Condensate hose
7 Drain point
8 Trap / syphon outlet connection (22 mm plastic pipe)
9 CH return
10 Gas inlet connection 22 mm compression
11 Cover for external wiring connections
12 Control panel in service position
13 Access cover for transformer & PCB
14 CH flow
15 Inlet pressure test point
16 Trap / syphon
17 Gas valve
18 Air / gas adjustment screw
19 Testing point for fan pressure
20 Fan
21 Primary sensor
22 Auto air vent
23 Removable top case panel for servicing
48 CH temperature control
49 Mains On/off indicator/diagnostic light (blue)
50 Not used
51 Central heating boost button
52 Service button
53 Burner on indicator light (green)
54 Master switch on/off
55 Holiday button
56 ECO button
57 Fault reset button
58 System pressure gauge
59 Position for optional programmer
60 Display

2 Operation

2.1 Initialisation

When it is switched on, the appliance performs a self-test which takes about 10 seconds.

While the test is in progress, the display shows for the first two seconds 88. Additionally buttons and light up orange and the **reset** button lights up red. Afterwards the display shows the CH flow temperature.

On completion of the test sequence the appliance is ready for operation.

2.2 Display messages

The 7-Segment-Display has following display messages (tabel 1 and 2):

Displayed value	**Description**	**Range**
digit, dot followed by letter	Service function	
letter followed by digit or letter	Error code	
two digits	decimal value e.g. flow temperature	00..99
U followed by 0..9	decimal value; 100..109 will be displayed as U0..U9	0..109
one digit (long displayed) followed by twice two digits (short displayed)	decimal value (triple-digit); first digit will be displayed alternating with two last digits (e.g.: 1...69..69 for 169)	0..999
two dashes followed by twice two digits	code plug number; the value is displayed in 3 steps: 1. two dashes 2. two first digits 3. two last digits (e.g.: -- 10 04)	1000.. 9999
two letters followed by twice two digits	version number; the value is displayed in 3 steps: 1. two first letters 2. two first digits 3. two last digits (e.g.: CF 10 20)	

Table 1 Display messages

Special messages	**Description**
-	Key acknowledgement after pressing one button (except **reset** button)
- -	Key acknowledgement after pressing two buttons simultaneously
[ ]	Key acknowledgement after pressing button longer than 3 sec (storage function)
- -	The display shows alternatively the CH flow temperature and _ _. The appliance works continuously at the minimum power (see service function **2.F**).
- - - - - -	The display shows alternatively the CH flow temperature and = =. The appliance works continuously at the maximum power (see service function **2.F**).
o°	Appliance is in Air purge mode, see service function **2.C.**
⊣⊢	The display shows alternatively the CH flow temperature and ⊣⊢. The Siphon-fill programme is active. See service function **4.F**.
SE	The display shows alternatively the CH flow temperature and SE reminding next service is due. The burner service intervall of 2324 hours has run out. See service function **5.A**.
‖ ‖	The display shows alternatively the CH flow temperature and ‖. The pump is blocked. See error E9.
⌜ ⌟	The display shows alternatively the CH flow temperature and ⌜ ⌟. The gradient limitation is active. The primary temperature is rising too fast and the burner has switched off for 2 minutes. See error E9.

Table 2 Special display messages

2.3 Operating elements

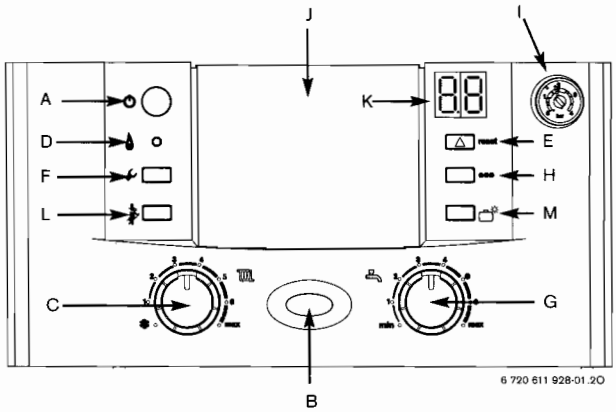


Fig. 4

A On/off button
B On/off and fault indicator (BLUE)
C Central heating temperature control
D Burner indicator (GREEN)
E Reset button (RED)
F Service button (ORANGE)
G DHW temperature control
H ECO button (GREEN) (in service mode for selecting upwards)
I System pressure gauge
J Cover or optional programmer
K Display
L Central heating boost button (ORANGE) (in service mode for displaying and storing values, for selection of max. or min. heat output)
M Holiday button (GREEN) (in service mode for selecting downwards)

Modifications of appliance parameters become active only after storage.

2.4 First service level

2.4.1 Display the value of the service function

- ▸ Press the button for approx.10 sec (the display shows -). When the button will light up orange, release it. In the display appears Digit.Letter e. g. 1.A.
- ▸ Press the button **eco** for going upwards or the button for going downwards to select the service function.
- ▸ Press the button and release it. After releasing the button will light up orange. The display shows the value of the service function.

2.4.2 Set and store values in the service function

- ▸ Display the value of the service function.
- ▸ Press the button **eco** for going upwards or the button for going downwards to select the value.
- ▸ Press the button longer than 3 sec until [ ] appears on the display. After releasing the button goes out and the value is stored. The first service level is active.

2.4.3 Exit service function/service level without storing

- ▸ Press the button to exit the service function without storing. After releasing the button goes out.
- ▸ Press the button to exit service level. After releasing the button goes out. The display shows the flow temperature.

2.5 Second service level

2.5.1 Display the value of the service function

- ▸ Press the button for approx.10 sec (the display shows -). When the button will light up orange, release it.
- ▸ Press buttons **eco** and simultaneously for 3 sec (the display shows - -) until in the display appears Digit.Letter e. g. 8.A.
- ▸ Press the button **eco** for going upwards or the button for going downwards to select the service function.
- ▸ Press the button and release it. After releasing the button will light up orange. The display shows the value of the service function.

2.5.2 Set and store values in the service function

- ▸ Display the value of the service function.
- ▸ Press the button **eco** for going upwards or the button for going downwards to select the value.
- ▸ Press the button longer than 3 sec until [ ] appears on the display. After releasing the button goes out and the value is stored. The second service level is active.

2.5.3 Exit service function/service level without storing

- ▸ Press the button to exit the service function without storing. After releasing the button goes out. First service level is active.
- ▸ Press buttons **eco** and simultaneously for 3 sec (the display shows - -) in order to go to the first service level. Afterwards the display shows the last selected service function.

-or-

- ▸ Press the button to exit all service levels. After releasing the button goes out.

2.6 Resetting service functions to factory settings

To reset all settings on Service levels **1 and 2** to the factory settings:

- ▸ Display the value of the service function **8.E** (second service level, value = 0) and store it. The appliance restarts with factory settings (see also section 2.1).

2.7 Select max. or min. heat output

- Press the button for approx.10 sec (the display shows -). When the button will light up orange, release it.
- Turn the CH kontrol knob on the right and adjust maximum heat output (the display shows alternatively the CH flow temperature and).

-or-

- Turn the CH kontrol knob on the left and adjust minimum heat output (the display shows alternatively the CH flow temperature and _ _).
- Press the button to exit the function. After releasing the button goes out.

Max. or min. heat output is active for only 15 min. Afterwards the appliance changes to normal mode.

2.8 Reset the appliance

- Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts without parameter reset. (For a parameter reset see section 2.6).

3 Boiler service functions

3.1 First service level (pressing the button for approx. 10 sec)

	Description	Display	Range adjustable from - to/ Description	Reset Value (after parameter reset)
1.A	Max. output (heating)	*-U0	min adjustable output - 100%	depends on appliance type
1.b	Max. output (hotwater)	*-U0	min adjustable output - 100%	U0
1.C	Pump map (heating) (combi only) (see section 3.3.1, **1.C/1.d**)	00-05	0 Pump step adjustable 1 Constant pressure high 2 Constant. pressure middle 3 Constant pressure low 4 Proportional pressure high 5 Proportional pressure low	04
1.d	Map pump step (heat.) (combi only)	02-07	2-7	07
1.E	Pump switch mode	01-03	1 - 3	02
2.b	Max. flow temperature	35-88	35 - 88°C	88°C
2.C	Air purge mode (burner keeps off while air purge mode is on)	00-02	0 off 1 on, automatic deactivation (on for 8 minutes, then off) 2 permanent on	01
2.F	Operating mode	00-02	0 Normal 1 Minimal (for 15 min) 2 Maximal (for 15 min)	00
3.b	Anti-cycle time	00-15	0 - 15 min	03 min
3.C	Anti-cycle flow temperature differential	00-30	0-30 K (Note: 1K ≙ 1 °C)	10 K
3.E	Pre heat cycle time (hot water) (combi only)	20-60	20 - 60 min	20 min
3.F	Burner off after DHW demand (hot water) (combi only)	00-30	0 - 30 min (0 = 10sec)	01 min
4.F	Siphon-fill programme	00-01	0 off , 1 on, boiler min.output	01
5.A	Reset service reminder	00	0 must be stored in order to reset service reminder	00
5.b	Fan over-run time	01-18	1-18 (= 10 sec - 180 sec)	03 (30 sec)
6.A	Last fault	00 - FF	last fault code can be displayed	00
6.d	Actual flow rate turbine (combi only)	00-99	0-99 l/min	read only

Table 3

	Description	Display	Range adjustable from - to/ Description	Reset Value (after parameter reset)
6.E	Programmer input	00-11	00, 01, 10, 11 (left digit: heating, right digit: hotwater)	read only
7.A	Fault indicator LED on/off	00-01	0 off 1 on Flashes in case of error even when its setting is off (0).	01

Table 3

3.2 Second service level (going in the first service level and pressing buttons eco and simultaneously for 3 sec)

	Description	Display	Range adjustable from - to/ Description	Reset Value (after parameter reset)
8.A	Software version	CF ** **	-	read only
8.b	Code plug n°.	-- ** **	1000-4000; corresponds to digits n°. 7 up to 10 of order n°.; example: 8 714 411 **062** 0	read only
8.C	GFA status (not applicable)	-	-	read only
8.d	GFA error (not applicable)	-	-	read only
8.E	Reset all parameters	00	0 (must be stored in order to set all parameters to factory settings)	00
8.F	Permanent ignition	00-01	0 = off 1 = on (Do not run for more than 2 minutes!)	00
9.A	Operation mode permanent	00-02	0 normal 1 min 2 max	00
9.b	Actual fan speed	*..** (Hz)	-	read only
9.C	Actual heat output	** (%)	0-U0	read only
9.d	Start fan speed	45-55	45-55 Hz	50 Hz
9.E	Turbine signal delay (combi only)	02-08	2-8 [quarter seconds] (corresponds to 0,5-2 sec)	04 (corresponds to 1 sec)
9.F	Pump over-run time (CH mode)	00-03	0-3 min	03

Table 4

3.3 Explanation of service functions

3.3.1 First service level

1.A Max. output (heating)

The heating output can be set to any level between min. rated heat output and max rated heat output to limit it to the specific heat requirements.

> Even if the heating output is limited, the full rated heat output remains available for hot water.

The factory setting is maximum rated output – it depends on appliance type.

1.b Max. output (hotwater)

The hotwater output can be set to any level between min. rated hotwater output and max rated hotwater output to limit it to the specific hotwater requirements.

The factory setting is maximum rated output – display shows **U0**.

1.C Pump map (heating) (combi only)

The appliance is supplied with this function set to **4** (Proportional pressure high). See pump characteristics below.

The pump map indicates how the pump is controlled in heating mode. The pump switches between the various pump speeds so as to reproduce the characteristic curve selected.

Changing the pump characteristic can be helpful if a lower pressure difference will guarantee the necessary circulation on the basis of the system dimensions and pump characteristic.

> In order to save as much energy as possible and to minimise the possibility of water circulation noise, a low characteristic should be chosen.

The pump map can be selected within:

- **0** (Pump step adjustable), see service function **1.d** (Map pump step (heating))
- **1** (Constant pressure high)
- **2** (Constant pressure middle)
- **3** (Constant pressure low)
- **4** (Proportional pressure high)
- **5** (Proportional pressure low).

The factory setting is:

1.C Pump map (heating) **4** (Proportional pressure high)

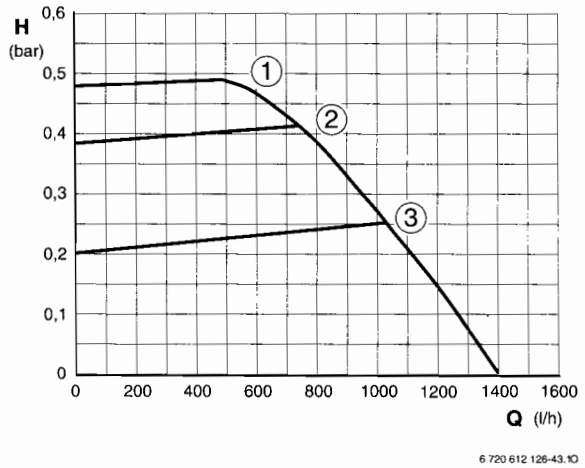


Fig. 5 Constant pressure

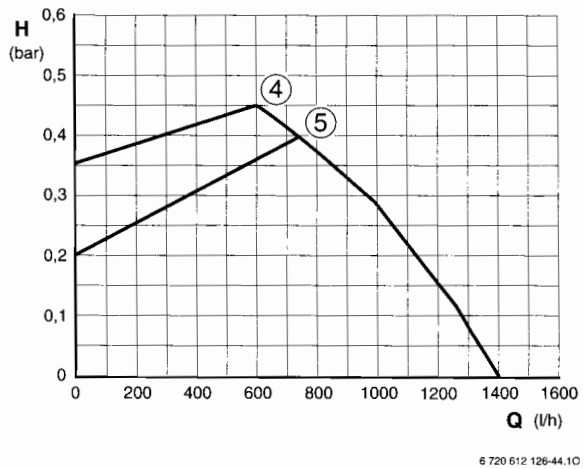


Fig. 6 Proportional pressure

1-5 Caracteristics
H Pressure
Q Water circulation rate

If this parameter is set to **0** then the pump speed set under function **1.d** (Map pump step (heating)) is active.

1.d Map pump step (heating) (combi only)

This service function corresponds to the pump speed switch used on conventional heating pumps.

However, the setting is only active if function **1.C** (Pump map (heating)), is set to **0**.

The factory setting is:

1.d Map pump step (heating) **7**

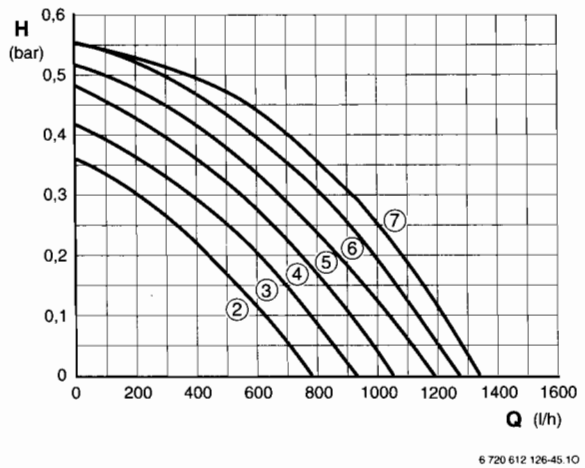


Fig. 7 Caracteristics

2-7 Caracteristics
H Pressure
Q Water circulation rate

1.E Pump switch mode

The choice of settings is as follows:

- **Control Mode 1**
  For heating equipment without a control unit.
  The pump is controlled by the central heating flow temperature control.
- **Control Mode 2 (factory setting)**
  For heating systems with room thermostat.
  The central heating flow temperature control controls only the gas, the pump is not affected. The room thermostat controls both the gas and the pump.
  The pump and fan have an over-run time of between 15 s and 3 min.
- **Control Mode 3**
  Not applicable.

2.b Max. flow temperature

The maximum CH flow temperature can be set to between 35°C and 88°C (factory setting). Even if the CH flow temperature control is set higher, the setting entered for **2.b** (Max. flow temperature) is not exceeded.

2.C Air purge mode

The first time the appliance is switched on, a once-only venting function is activated. The heating pump then switches on and off at intervals. This sequence lasts about 8 minutes.
The 2-digit display shows ⊓⊔ in alternation with the CH flow temperature.
The automatic vent must be opened and then closed again once the venting sequence is complete.

The venting function can be activated manually after servicing.

- If the venting function is set to "On" (with automatic deactivation), the function is set to "Off" once the sequence has been completed.

2.F Operating mode

There are 3 operating modes to choose from.

- **Normal mode**: the appliance operates according to the commands received from the programmer. The display shows **0**.
- **Minimal mode**: the appliance runs constantly at minimum output.
  The display shows **1**. The 2-digit display alternates between the CH flow temperature and _ _. After 15 min the minimal mode changes to normal mode.
- **Maximal mode**: the appliance runs constantly at maximum output.
  The display shows **2**. The 2-digit display alternates between the CH flow temperature and ¯ ¯. After 15 min the maximal mode changes to normal mode.

3.b Anti-cycle time

The anti-cycle time is factory set to 3 minutes.

The shortest possible anti-cycle time is 1 minute (recommended for single-pipe and hot-air heating systems).

If the setting 0 is entered, the anti-cycle time is inactive.

▶ Enter the anti-cycle time on the commissioning record enclosed with the appliance.

3.C Anti-cycle flow temperature differential

The switching difference is the permissible differential from the specified CH flow temperature. It can be set in increments of 1 K. The adjustment range is 0 to 30 K (is factory set to 10 K). The minimum CH flow temperature is 35°C.

Note: 1K ≙ 1 °C.

▶ The switching difference setting should be entered on the commissioning record supplied with the appliance.

3.E Cycle time (hot water) (combi only)

The appliance is supplied with the pre-heat cycle time set to 20 minutes.

After pre-heating or DHW demand, this function will stipulate the period of time before the next permissible pre-heat. This will prevent excessive pre-heat cycling.

3.F Burner off after DHW demand (hot water) (combi only)

The appliance is supplied with the hot water duration set to 1 minute.

The hot water duration specifies how long after hot water is drawn heating mode remains disabled.

4.F Siphon-fill programme

The trap filling programme ensures that the condensation trap is filled when the appliance is first installed or after it has been shut down for a long period: The condensation trap prevents flue gas escaping from the appliance into the room in which it is installed.

The trap filling programme is activated:

- the appliance is switched on at the master switch
- the burner has not been in operation for at least 48 hours
- the appliance is switched from summer to winter mode.

The next time the heating or hot water system calls for heat, the appliance is held at minimum output for 15 minutes. The trap filling programme remains active until the appliance has completed 15 minutes of operation at minimum output.
The 2-digit display alternates between ⊣⊢ and the CH flow temperature.

If the condensation trap is not filled, flue gas can escape!

- ▶ Only deactivate the trap filling programme in order to carry out servicing work.
- ▶ Always re-activate trap filling programme once servicing is complete.

5.A Reset service reminder

The burner service intervall of 2324 hours has run out. After the service inspection store 0 for resetting the service intervall.

5.b Fan over-run time

Set the time of fan over-run after a boiler demand.

6.A Last fault

The last fault can also be recalled for servicing purposes when the appliance is functioning correctly.

6.d Actual flow rate turbine (combi only)

The actual flow rate of the turbine is displayed.

6.E Programmer input

Shows the status of channel 1 of the timer DT10/20. Left digit is "Heat demand", heating mode will be activated according to the programmer commands.

Shows the status of channel 2 of the timer DT20. Right digit is "DHW demand", hot water mode will be activated according to the programmer commands.

7.A Fault indicator LED on/off

The fault indicator LED flashes in case of error even when its setting is off (0).

3.3.2 Second service lvel

8.A Software version

The version number of the software is displayed.

8.b Code plug

The 4-digit part number of the code plug (digits n°. 7 up to 10 of order n°.) is indicated.
The code plug determines the appliance functions. If the appliance is converted from natural gas to LPG or vice versa (using conversion kit) the code plug also has to be changed.

8.C GFA status

(not applicable)

8.d GFA error

(not applicable)

8.E Reset all parameters

Set all parameters to factory setting. See also section 2.6.

8.F Permanent ignition

This function allows permanent ignition without gas supply to be activated for the purposes of checking the ignition mechanism.

Do not run for more than 2 minutes!

9.A Operation mode permanent

Set a fixed operation mode even when boiler has been switched off.

9.b Actual fan speed

The current fan speed is displayed in Hertz (Hz).

9.C Actual heat output

The actual heat output of the appliance at the time viewed is displayed.

9.d Start fan speed

The actual start fan speed between 45 and 55 Hz is displayed in Hertz (Hz).

9.E Turbine signal delay (combi only)

Set a delay time relates to the beginning of DHW demand to avoid an undesired demand by water surge hammer.

9.F Pump over-run time (CH mode)

Set the time of pump over-run after the end of a heating demand.

4 Rectifying faults

4.1 Indication of faults

Faults are indicated simultaneously by a letter code in the display and by flashing of the fault indicator LED. This helps to identify and eliminate the cause of the fault quickly and reliably.

The fault codes displayed are grouped into four categories:

- **Category 1:**
  The appliance is disabled until it has been switched off and then on again.
- **Category 2:**
  The appliance is disabled until the cause of the fault has been eliminated.
- **Category 3:**
  The appliance continues to operate with limited function.
- **Category 4:**
  The appliance is disabled and locked (button **reset** and fault indicator LED are flashing) until the cause of the fault has been eliminated and the appliance unlocked.

Unlocking the appliance:

▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. (See also section 2.1).

4.2 Summary

4.2.1 Appliance faults

Appliance faults	Category	conventional boiler	combi boiler	Page
A1	1	X	X	18
A7	3	X	X	19
b1	2	X	X	20
C6	2	X	X	21
E2	2	X	X	22
E9	4	X	X	23
EA	4	X	X	26
F0	2/4	X	X	30
F7	4	X	X	31
FA	4	X	X	32
Fd	4	X	X	33

Table 5

4.2.2 Faults that are not displayed

Appliance faults	conventional boiler	combi boiler	Page
Excessive burner noise, rumbling noises	X	X	34
Flow noises	X	X	35
Heating up of last radiators in system too slow	X	X	35
Flue gas levels incorrect, CO level too high	X	X	36
Ignition too harsh, ignition poor	X	X	37
Condensation in the flue pipe	X	X	38
Inadequate hot water outlet temperature (combi boiler)		X	39

Table 6

Programmer faults	Page
Set room temperature not reached (DT10/ DT20)	40
Set room temperature exceeded by large amount (230 V On/Off room stat)	40
Excessive fluctuations in room temperature (230 V On/Off room stat)	41

Table 7

4.3 Notes on using the fault code tables

The procedure is best described with the aid of an example:

- Work through the table from top to bottom and from left to right.
- First make a note of the present settings and restore them before leaving the appliance.
- Read question **1.** (Check column)and depending on the answer (yes or no) read the action required from the relevant box and carry out the instruction given; ignore the other answer. **For example:** if the burner flame is visible, follow the instructions for **yes**, i.e. ↓5.!
- ↓5. means go to number 5., ignoring the steps in between.

In this example: check the flue is clear by testing the CO_2 level.

- If the appliance is locked (button **reset** and the fault indicator LED are flashing), press the **reset** button.
- If the fault has been rectified, the appliance will then start up without indicating a fault and the fault isolation procedure is complete.
- If the fault is still present after performing the action specified and, if necessary, restarting the appliance, move on to the next step in the fault isolation procedure.
- If another fault code is displayed, work through the fault code table for that code.

Flame not detected

	Check		Action
1.	Is a burner flame visible?	**yes:**	↓ 5.
		no:	↓ 2.
2.	Is the gas cock turned on?	**yes:**	Ø 5.
		no:	▸ Open the gas cock. ▸ Press button ⚠. EA? ↓3.
3.	Has the thermal cut-out on the gas cock tripped?	**yes:**	...
		no:	↓ ...
4. ...	...		
5. ...	Problem with flue? ▸ Check CO_2 level in combustion air. Is CO_2 level above 0,2 %?	**yes:**	Check flue.
		no:	↓ ...

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Fig. 8 Example of fault code table

4.4 Error codes on the display

A1 **and fault indicator LED are flashing.**

Controlled-characteristic pump has run dry

	Check		Action
1.	System pressure below 1.2 bar?	**yes:**	▶ Power OFF the appliance. ▶ Check appliance and system for water leaks and repair as necessary. ▶ Fill system, bleed and re-pressurise (see Installation Instructions). ▶ Turn ON the appliance. A1? ↓2.
		no:	↓2.
2.	Pump seized or sticking?	**yes:**	Free/release pump.
		no:	↓3.
3.	Audible bearing damage on pump?	**yes:**	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Drain appliance. ▶ Change the pump (see Installation Instructions). ▶ Fill system, bleed and re-pressurise (see Installation Instructions). ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ↓4.
		no:	↓4.
4.	Activate venting sequence.	**yes:**	▶ Select in the first service level the service function **2.C** (Air purge mode). ▶ Select the value **1** and store. ▶ Exit the service function. ▶ The appliance vents itself for 8 minutes. ▶ Vent radiators manually.

A7 and fault indicator LED are flashing.

(Boiler still produces hot water but at a lesser degree of accuracy over the temperature.)

Water NTC sensor defective.

	Check		Action
1.	▶ Check if the water NTC connector corroded[1)], damaged or dirty.	**yes:**	▶ Change relative parts. A7?↓2.
		no:	↓2.
2.	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Un-plug 20-pin connector from PCB. ▶ Check resistance from connections 3 to 4 on the cable side. Does the value match the ones described in table 9, page 42?	**yes:**	▶ Connect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Make a note of the altered service function settings (see table 3 on page 11) in order to keep the altered values. ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.
		no:	↓3.
3.	▶ Un-plug NTC sensor from cable. ▶ Check resistance of NTC sensor. Does the value match the ones described in table 9, page 42?	**yes:**	▶ Change the 20-pin connector lead assembly. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance.
		no:	▶ Change NTC sensor. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance.

1) For notes, refer to Appendix

b1 **and fault indicator LED are flashing.**

Code plug not detected.

	Check		Action
1.	▶ Select in the second service level the service function **8.b** (Code plug). ▶ Compare number displayed with that shown in Appendix (only digits n°. 7 up to 10 of order n°.). No number or incorrect number displayed. ▶ Exit the service function.	**yes:**	↓2.
		no:	↓3.
2.	Code plug loose, incorrect or defective.		▶ Power OFF the appliance. ▶ Fit code plug (correctly), making sure code number is correct (see Appendix). ▶ Turn ON the appliance. b1? ↓3.
3.	The PCB control board is damaged.		▶ Make a note of the altered service function settings (see table 3 on page 11) in order to keep the altered values. ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

C6 and fault indicator LED are flashing.

Fan speed too low

	Check		Action
1.	Fan lead connector properly connected?	**yes:**	↓2.
		no:	▶ Power OFF the appliance. ▶ Plug in connector. ▶ Turn ON the appliance. C6? ↓2.
2.	Check power supply to appliance, check supply with all electrical appliances on. Is the supply strong enough (230 V AC)?	**yes:**	↓3.
		no:	▶ Switch off some electrical appliances. ↓3.
3.	Is fan lead defective? ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Measure the fan lead for continuity. Is there continuity for each one of the cores?	**yes:**	↓4.
		no:	▶ Replace fan lead. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. C6? ↓4.
4.	Fan defective.	**yes:**	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Un-plug the connection wire. ▶ Replace fan. ▶ Plug the connection wire. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. C6? ↓5.
5.	The PCB control board is damaged.		▶ Make a note of the altered service function settings (see table 3 on page 11) in order to keep the altered values. ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

E2 and fault indicator LED are flashing.

The flow temperature NTC sensor defect.

	Check		Action
1.	▶ Check if the flow temp. NTC connector corroded[1)], damaged or dirty.	**yes:**	▶ Change relative parts. E2?↓2.
		no:	↓2.
2.	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Un-plug 20-pin connector from PCB. ▶ Check resistance from connections 8 to 9 on the cable side. Does the value match the ones described in table 9, page 42?	**yes:**	▶ Connect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Make a note of the altered service function settings (see table 3 on page 11) in order to keep the altered values. ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.
		no:	↓3.
3.	▶ Un-plug NTC sensor from cable. ▶ Check resistance of NTC sensor. Does the value match the ones described in table 9, page 42? ▶ Reconnect the boiler electrical connection.	**yes:**	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change the 20-pin connector lead assembly. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance.
		no:	▶ Change NTC sensor.

1) For notes, refer to Appendix

E9 and button reset and fault indicator LED are flashing.

Safety temperature limiters has tripped.

	Check		Action
1.	Type of CH system: Is the appliance installed in a fully pumped sealed system?	**yes:**	↓3.
		no:	↓2.
2.	Open vented CH system: Is there enough water in the feed and expansion tank?	**yes:**	↓4.
		no:	▶ Top up system. ▶ Vent appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓4.
3.	Fully pumped sealed system: Is the heating pressure between 1 and 2 bar (sealed systems)?	**yes:**	↓4.
		no:	▶ Top up system. ▶ Vent appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓4.
4.	Is the pump seized?	**yes:**	▶ Free/release the pump. If pump won't start: ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Drain appliance. ▶ Change the pump (see Installation Instructions). ▶ Fill system, bleed and re-pressurise (see Installation Instructions). ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓5.
		no:	↓5.
5.	Lead disconnected from flue safety temperature limiter and/or CH flow safety temperature limiter?	**yes:**	▶ Power OFF the appliance. ▶ Reconnect lead. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓4.
		no:	↓4.

E9 and button reset and fault indicator LED are flashing.

Safety temperature limiters has tripped.

	Check		Action
4.	▶ Power OFF the appliance. ▶ Un-plug the connector from the flue safety temperature limiter. ▶ Measure the flue safety temperature limiter for continuity. Resistance small?	**yes:**	▶ Connect flue gas safety temperature limiter lead. ↓5.
		no:	▶ Change the flue safety temperature limiter. ▶ Connect flue gas safety temperature limiter lead. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓5.
5.	▶ Disconnect lead to CH flow safety temperature limiter. ▶ Measure the CH flow safety temperature limiter for continuity. Resistance small?	**yes:**	▶ Connect CH flow safety temperature limiter. ↓6.
		no:	▶ Change CH flow safety temperature limiter. ▶ Connect CH flow safety temperature limiter. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓6.
6.	▶ Disconnect the boiler electrical connection. ▶ Un-plug connector of harness that connects the limiters to PCB from control board. Test harness (including the two limiters) for continuity. Resistance small?	**yes:**	▶ Re-plug connector. ↓7.
		no:	Harness defective. ▶ Repair or replace the harness. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓7.
7.	▶ Disconnect the boiler electrical connection. ▶ Remove fuse SI 3 from appliance PCB control board and test for continuity. Resistance small?	**yes:**	▶ Remount the fuse. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ↓8.
		no:	▶ Change the fuse. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. E9? ↓8.

E9 **and button reset and fault indicator LED are flashing.**

Safety temperature limiters has tripped.

	Check		Action
8.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

EA and button reset and fault indicator LED are flashing.

During operation: flame not detected.

	Check		Action
1.	Is a burner flame visible?	**yes:**	↓5.
		no:	↓2.
2.	Is the gas cock turned on?	**yes:**	↓3.
		no:	▸ Open the gas cock. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓3.
3.	Is there air in the supply pipe?	**yes:**	▸ Vent supply pipe. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓4.
		no:	↓4.
4.	**Natural gas models**: messure gas supply at gas valve. Is the pressure OK according to technical data?	**yes:**	▸ Is correct code plug fitted? If not, fit correct code plug (see Appendix). ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓5.
		no:	▸ Check working pressure at appliance to eliminate pipewirk problems. ▸ Check pressure at the building supply pressure regulator, inform gas company if outside correct range. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓5.
	LPG models: is the flow rate of the gas supply to the appliance correct?	**yes:**	↓5.
		no:	▸ Is there enough gas in the supply cylinder? ▸ Is there air in the supply pipe? ▸ Is the supply pressure OK? (if supply pressure outside correct range, inform gas supplier) ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓5.
5.	▸ Power OFF the appliance. ▸ Disconnect the boiler electrical connection. Is the earth connection correct?	**yes:**	▸ Reconnect the boiler electrical connection. ▸ Turn ON the appliance. ↓6.
		no:	▸ Correct the electrical connection. ▸ Reconnect the boiler electrical connection. ▸ Turn ON the appliance. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓6.

EA and button reset and fault indicator LED are flashing.

During operation: flame not detected.

	Check		Action
6.	Is the condensate trap blocked?	**yes:**	▸ Clean out condensation trap discharge pipe. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓7.
		no:	↓7.
7.	Is diaphragm in air/gas manifold fitted correctly (see installation instructions)? ▸ Open air/gas manifold. ▸ Check diaphragm for correct orientation, soiling and splitting. Is diaphragm OK?	**yes:**	▸ Close air/gas manifold (see installation instructions). ↓8.
		no:	▸ Insert diaphragm in the fan intake tube as per installation instructions so that the flaps open upwards. ▸ Close air/gas manifold (see installation instructions). EA? ↓8.
8.	Check the gas valve. ▸ Power OFF the appliance. ▸ Un-plug the connectors from the gas valve. ▸ Measure the gas valve coils **I** and **II** electrical resistance . R = 164±40 Ω? ▸ Remove gas valve and check inlet filter for blockage.	**yes:**	▸ Reconnect the connectors. ▸ Turn ON the appliance. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓9.
		no:	▸ Turn off gas cock. ▸ Disconnect the boiler electrical connection. ▸ Change the gas valve. ▸ Open the gas cock. ▸ Reconnect the connectors. ▸ Reconnect the boiler electrical connection. ▸ Turn ON the appliance. ▸ Check appliance for leaks. ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓9.
9.	Problem with flue? ▸ Open up heat exchanger - is it dirty? ▸ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	▸ Check flue installation for agreement with the instruction manual. **Then:** ▸ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓10.
		no:	↓10.

EA and button reset and fault indicator LED are flashing.

During operation: flame not detected.

	Check		Action
10.	Is flue gas CO_2 level incorrect[1)]?	**yes:**	▶ Adjust to correct level. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓11.
		no:	↓11.
11.	▶ Select in the second service level the service function **8.F** (Permanent ignition). ▶ Select the value **1** and store. Check the permanent ignition at the electrodes (without gas). Is it OK?	**yes:**	▶ Select the value **0** and store. ▶ Exit the service function. ↓12.
		no:	▶ Select the value **0** and store. ▶ Exit the service function. ↓15.
12.	Ignition lead connected to ignition electrodes?	**yes:**	↓13.
		no:	▶ Reconnect lead. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓13.
13.	Ignition cable connector engaged in switchbox?	**yes:**	↓14.
		no:	▶ Power OFF the appliance. ▶ Engage ignition cable connector in switchbox. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓14.
14.	Is the ignition electrical wire damaged?	**yes:**	▶ Power OFF the appliance. ▶ Change the ignition electrical wire. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓15.
		no:	↓15.
15.	Electrode assembly defective? ▶ Power OFF the appliance. ▶ Remove electrode assembly. Electrode assembly burnt out or cracked?	**yes:**	▶ Replace electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓16.
		no:	▶ Refit electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓16.

EA and button reset and fault indicator LED are flashing.

During operation: flame not detected.

	Check		Action
16.	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Check if the 20-pin connector lead assembly is damaged.		▶ Change the 20-pin connector lead assembly. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. EA? ↓17.
17.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

1) See installation instructions

F0 **and fault indicator LED (and possibly button reset) are flashing.**

Internal failure

	Check		Action
1.	Button **reset** flashing?	**yes:**	▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. ▶ Initiate demand for heat by pressing button for 10 sec and then press again after 30 seconds to cancel. ▶ Initiate two more demands for heat as above. F0? ↓2.
		no:	↓2.
2.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

F7 and button reset and fault indicator LED are flashing.

Although appliance switches off, flame still detected

	Check		Action
1.	Electrode(s) dirty or defective? ▶ Power OFF the appliance. ▶ Remove electrode assembly and bracket and check for wear, deposits and mechanical damage.	**yes:**	▶ Replace electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. F7? ↓2.
		no:	▶ Refit electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. F7? ↓2.
2.	Problem with flue? ▶ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	There is flue in the combustion air. ▶ Check flue and repair or replace if necessary. F7? ↓3.
		no:	↓3.
3.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

FA and button reset and fault indicator LED are flashing.

After appliance switches off flame is detected

	Check		Action
1.	Is the condensate trap blocked?	**yes:**	▶ Power OFF the appliance. ▶ Clean out condensate trap discharge pipe. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. FA? ↓2.
		no:	↓2.
2.	Electrode assembly defective? ▶ Power OFF the appliance. ▶ Remove electrode assembly. Electrode assembly burnt out?	**yes:**	▶ Replace electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. FA? ↓3.
		no:	↓3.
3.	Problem with flue? ▶ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	There is flue in the combustion air. ▶ Check flue, clean if necessary. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. FA? ↓4.
		no:	↓4.
4.	Is the gas valve damaged?	**yes:**	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Turn off gas cock. ▶ Change the gas valve. ▶ Open the gas cock. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Check appliance for leaks. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. FA?↓5.
		no:	↓5.

FA and button reset and fault indicator LED are flashing.

After appliance switches off flame is detected

	Check		Action
5.	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Check if the 20-pin connector lead assembly is damaged.		▶ Change the 20-pin connector lead assembly. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. FA? ↓6.
6.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

Fd and button reset and fault indicator LED are flashing.

Reset button pressed inadvertently

	Check		Action
1.	**reset** button flashing?		▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Fd? ↓2.
2.	The PCB control board is damaged.		▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

4.5 Faults that are not displayed

4.5.1 Appliance faults

Excessive burner noise, rumbling noises

	Check		Action
1.	Does the gas supply type match the specifications on the appliance identification plate?	**yes:**	↓2.
		no:	▶ Convert appliance to correct gas type. Rumbling noises? ↓2.
2.	▶ Test gas supply pressure - OK? Does pressure match figure specified in installation instructions?	**yes:**	↓3.
		no:	▶ De-commission appliance. Natural gas models: ▶ Notify gas company.
3.	Problem with flue? ▶ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	There is flue in the combustion air. ▶ Check flue and repair or replace if necessary. Rumbling noises? ↓4.
		no:	↓4.
4.	Is appliance's internal air/flue channel leaking or blocked? ▶ Open up heat exchanger and inspect. ▶ Check control pressure at test point as stated in installation instructions. ▶ Remove silencer, flue duct and air flow limit. ▶ Open trap and inspect. Air channels dirty/clogged, seals defective or not correctly fitted?	**yes:**	▶ Repair or replace components. ▶ Grease seal before fitting. Make sure it is fitted in correct position. Rumbling noises? ↓5.
		no:	↓5.
5.	▶ Measure CO_2 levels. CO_2 levels in flue gas at min and max output do not match figures specified in installation instructions.	**yes:**	▶ Adjust CO_2 level as per installation instructions.
		no:	▶ Power OFF the appliance. ▶ Turn off gas cock. ▶ Change the gas valve. ▶ Open the gas cock. ▶ Turn ON the appliance. ▶ Check appliance for leaks.

Flow noises

	Check		Action
1.	Pump map/pump step incorrect?		Combi appliances: ▶ Set appropriate pump map/pump step (service function **1.C/1.d**). Conventional appliances: ▶ Set appropriate pump velocity on pump.

Heating up of last radiators in system too slow

	Check		Action
1.	Pump map/pump step incorrect?		Combi appliances: ▶ Set appropriate pump map/pump step (service function **1.C/1.d**). Conventional appliances: ▶ Set appropriate pump velocity on pump.

Flue gas levels incorrect, CO level too high			
	Check		**Action**
1.	Does the gas supply type match the specifications on the appliance identification plate?	**yes:**	↓2.
		no:	▸ Convert appliance to correct gas type. Flue gas levels **incorrect**? ↓2.
2.	▸ Test gas supply pressure - OK? Does pressure match figure specified in installation instructions?	**yes:**	↓3.
		no:	▸ De-commission appliance. Natural gas models: ▸ Notify gas company.
3.	Problem with flue? ▸ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	There is flue in the combustion air. ▸ Check flue and repair or replace if necessary. Flue gas levels **incorrect**? ↓4.
		no:	↓4.
4.	Flue gas CO_2 levels measured at min. and max. load do not match specified levels? ▸ Measure CO_2 levels.	**yes:**	▸ Adjust CO_2 level as per installation instructions. Flue gas levels **incorrect**? ↓5.
		no:	↓5.
5.	Gas rate too high when CO_2 level correctly set.	**yes:**	▸ Reduce gas rate by means of adjusting screw on gas valve and/or gas flow restrictor. ▸ Check CO_2 adjustment. Flue gas levels **incorrect**? ↓6.
		no:	↓6.
6.			▸ Power OFF the appliance. ▸ Turn off gas cock. ▸ Change the gas valve. ▸ Open the gas cock. ▸ Turn ON the appliance. ▸ Check appliance for leaks.

Ignition too harsh, ignition poor			
	Check		**Action**
1.	▶ Select in the second service level the service function **8.F** (Permanent ignition). ▶ Select the value **1** and store. Check the permanent ignition at the electrodes (without gas). Is it OK?	**yes:**	▶ Select the value **0** and store. ▶ Exit the service function. ↓6.
		no:	▶ Select the value **0** and store. ▶ Exit the service function. ↓2.
2.	Ignition lead connected to ignition electrodes?	**yes:**	↓3.
		no:	▶ Connect cable to ignition electrodes. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Ignition poor? ↓3.
3.	Ignition cable connector engaged in switchbox?	**yes:**	↓4.
		no:	▶ Power OFF the appliance. ▶ Engage ignition cable connector in switchbox. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Ignition poor? ↓4.
4.	Is the ignition electrical wire damaged?	**yes:**	▶ Power OFF the appliance. ▶ Change the ignition electrical wire. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Ignition poor? ↓5.
		no:	↓5.
5.	Electrode assembly defective? ▶ Power OFF the appliance. ▶ Remove electrode assembly. Electrode assembly burnt out?	**yes:**	▶ Replace electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Ignition poor? ↓6.
		no:	▶ Refit electrode assembly. ▶ Turn ON the appliance. ▶ Press the **reset** button for 3 sec and release it. After releasing the appliance re-starts. Ignition poor? ↓6.

Ignition too harsh, ignition poor

	Check		Action
6.	Does the gas supply type match the specifications on the appliance identification plate?	**yes:**	↓7.
		no:	▸ Convert appliance to correct gas type. Ignition poor? ↓7.
7.	▸ Test gas supply pressure - OK? Does pressure match figure specified in installation instructions?	**yes:**	↓8.
		no:	▸ De-commission appliance. In case of natural gas: ▸ Notify gas company.
8.	Problem with flue? ▸ Check CO_2 level in combustion air in the flue (with outer casing fitted). Is CO_2 level above 0,2 % ?	**yes:**	There is flue in the combustion air. ▸ Check flue and repair or replace if necessary. Ignition poor? ↓9.
		no:	↓9.
9.	Flue gas CO_2 levels measured at min. and max. load do not match specified levels? ▸ Measure CO_2 levels.	**yes:**	▸ Adjust CO_2 level as per installation instructions. Ignition poor? ↓10.
		no:	↓10.
10.	Burner not correctly fitted or defective? ▸ Power OFF the appliance. ▸ Turn off gas cock. ▸ Remove burner. Cover fixings not tight **or** seal defective or not correctly fitted **or** burner defective?		▸ Replace burner and seal if necessary. ▸ Ensure seal is fitted in correct position. ▸ Open the gas cock. ▸ Turn ON the appliance. ▸ Check appliance for leaks.

Condensation in the flue pipe

	Check		Action
1.	Is diaphragm in air/gas manifold fitted correctly (see installation instructions)? ▸ Open air/gas manifold. ▸ Check diaphragm for correct orientation, soiling and splitting.		▸ Fit diaphragm as per installation instructions or replace. ▸ Close air/gas manifold (see installation instructions).

Inadequate hot water outlet temperature (combi boiler)			
	Check		**Action**
1.	Pump does'nt turn? ▶ Un-plug connector from pump; is voltage between terminal 1 and terminal 3 on connector 230 V AC?	**yes:**	▶ Try to start pump. ▶ If not sucessfull, change pump.
		no:	↓2.
2.	▶ Compare flow rate from boiler with showed flow rate in service function **6.d.** Are they equal?	**yes:**	↓3.
		no:	▶ Change turbine.
3.	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Un-plug connector from Heatronic; ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Is voltage between terminal 1 and terminal 3 on Heatronic 230 V AC?	**yes:**	▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change the lead assembly. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance.
		no:	▶ Make a note of the altered service settings (see table 3 on page 11). ▶ Power OFF the appliance. ▶ Disconnect the boiler electrical connection. ▶ Change PCB control board. ▶ Reconnect the boiler electrical connection. ▶ Turn ON the appliance. ▶ Restore service settings previously noted down.

4.5.2 Programmer faults

Set room temperature not reached (DT10/DT20)

	Check		Action
1.	Thermostatic valve(s) set too low?	**yes:**	▶ Turn up thermostatic valve(s). ↓2.
		no:	↓2.
2.	Set time periods for channel 1 at the timer DT10/20 correct?	**yes:**	↓3.
		no:	▶ Correct the time periods for channel 1.
3.	Check the channel 1 at DT10/20 with the service function **6.E.** Is the left digit set to 1?	**yes:**	↓4.
		no:	▶ Change DT10/20.
4.	CH flow temperature control on boiler set too low?	**yes:**	▶ Turn up CH flow temperature control. ↓5.
		no:	↓5.
5.	Air in the heating system.		▶ Power OFF the appliance. ▶ Check appliance and system for water leaks and repair as necessary. ▶ Top up system. ▶ Turn ON the appliance. ▶ Select in the first service level the service function **2.C** (Air purge mode). ▶ Select the value **1** and store. ▶ Exit the service function. ▶ The appliance vents itself for 8 minutes. ▶ Vent radiators manually.

Set room temperature exceeded by large amount (230 V On/Off room stat)

	Check		Action
1.	Do radiators get too hot?	**yes:**	▶ Decrease setting of "Heating" control. ↓2.
		no:	↓2.

Set room temperature exceeded by large amount (230 V On/Off room stat)

	Check		Action
2.	Bad choice of location for programmer, e.g. outside wall, near window, in draught, on hollow wall, etc.	**yes:**	▶ Select better installation location. or ▶ Fit external room thermostat. ↓3.
		no:	↓3.
3.			▶ Turn down thermostatic valve(s).

Excessive fluctuations in room temperature (230 V On/Off room stat)

	Check		Action
1.	Bad choice of location for programmer, e.g. outside wall, near window, in draught, on hollow wall, etc.		▶ Select better installation location.

5 Appendix

5.1 NTC values, temperature limiter values

5.1.1 Flue sensor

Flue temperature (°C) Measurement tolerance ±10%	Resistance (Ω)
20	124 900
40	53 290
60	24 890
80	12 550
100	6 777
120	3 873
140	2 328
160	1 455
180	948
200	540

Table 8

5.1.2 CH flow NTC sensor and hot water NTC sensor

Temperature (°C) Measurement tolerance ±10%	Resistance (Ω)
20	14 772
25	11 981
30	9 786
35	8 047
40	6 653
45	5 523
50	4 608
55	3 856
60	3 243
65	2 744
70	2 332
75	1 990
80	1 704
85	1 464
90	1 262
95	1 093
100	950

Table 9

5.2 Fan speed ranges

Appliance	Fan speed ranges (Hz)
25 CDi N.G.	29 - 78
30 CDi N.G.	29 - 94
35 CDi N.G.	29 - 104
40 CDi N.G.	31 - 110
25 CDi L.P.G.	32 - 77
30 CDi L.P.G.	32 - 92
35 CDi L.P.G.	32 - 104
40 CDi L.P.G.	32 - 110
30 CDi conventional N.G.	29 - 94
40 CDi conventional N.G.	31 - 110
30 CDi conventional L.P.G.	32 - 92
40 CDi conventional L.P.G.	32 - 110

Table 10

5.3 Electrical wiring diagram

5.3.1 Combi appliances

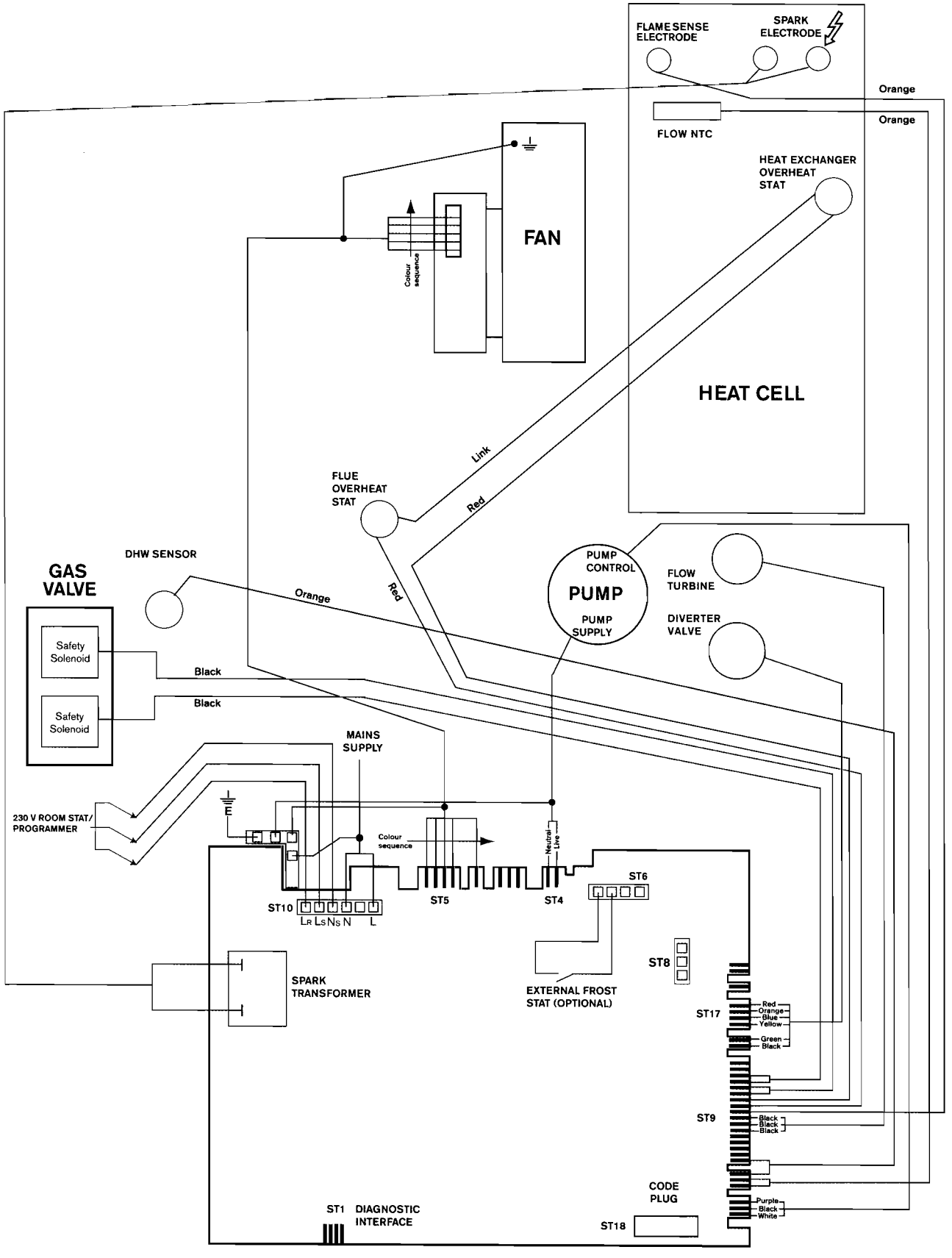

Fig. 9

5.3.2 Conventional appliances

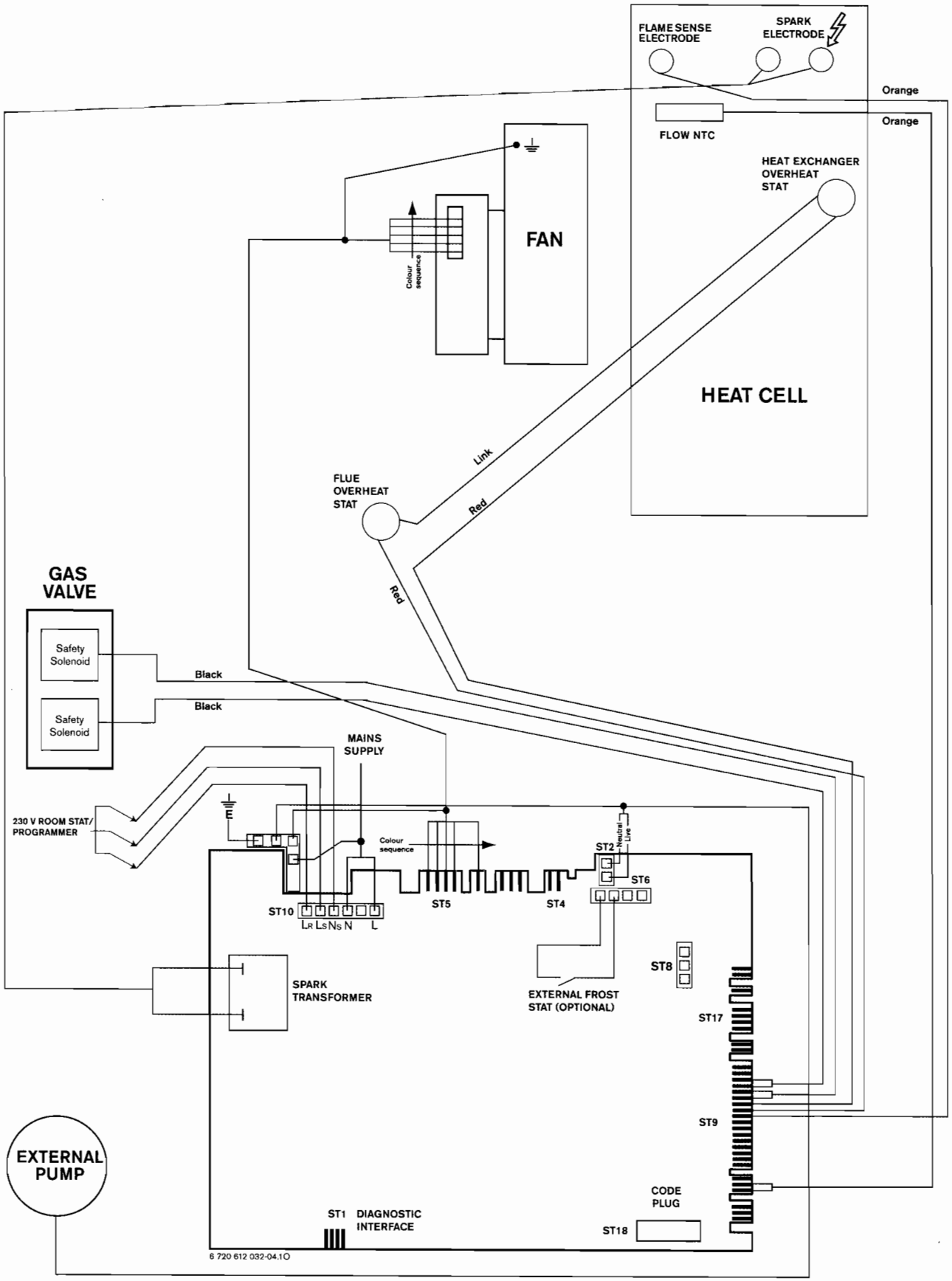

Fig. 10

5.4 Approved corrosion inhibitors and anti-freeze fluids for central heating water

Corrosion inhibiter

The following corrosion inhibiters are permitted:

Manufacturer	Product	Concentration
Fernox	MB 2	1 %

Table 11

Anti-freeze fluid

Please contact Worcester BBT for more information (see rear side).

5.5 List of Code plugs used with this appliance

Component	Order no.	Remarks
Code plug		
25 CDi N.G.	8 714 431 004 0	-
30 CDi N.G.	8 714 431 002 0	
35 CDi N.G.	8 714 431 000 0	-
40 CDi N.G.	8 714 431 006 0	
25 CDi L.P.G.	8 714 431 005 0	-
30 CDi L.P.G.	8 714 431 003 0	
35 CDi L.P.G.	8 714 431 001 0	-
40 CDi L.P.G.	8 714 431 007 0	
30 CDi conventional N.G.	8 714 431 008 0	Mid position diverter valve systems and Zone valves systems
40 CDi conventional N.G.	8 714 431 010 0	
30 CDi conventional L.P.G.	8 714 431 009 0	
40 CDi conventional L.P.G.	8 714 431 011 0	

Table 12

5.6 Summary of BDH Information Sheet on Identifying Corrosion by CFCs

The presence of halogenated hydrocarbons in the combustion air causes surface corrosion on affected metals. Particularly susceptible is the combustion chamber and the heat exchanger surfaces (including stainless steel) as well as the metal components in the flue socket, flue pipe connections and in the chimney.

The halogen compounds present in the combustion air produce highly corrosive hydrochloric acid in the flame and in some cases - depending on the precise composition of the combustion air - hydrofluoric acid, both of which accumulate in the boiler and remain active over long periods.

In order to limit the damage, the source of the air contamination must be located and sealed off. If this is not possible, the combustion air must be drawn from an alternative clean source.

Halogens can occur in the following locations:

Commercial and industrial sources	
Dry cleaners	Trichloroethylene, tetrachloroethylene, fluorinated hydrocarbons
Degreasing baths	Perchloroethylene, trichloroethylene, methyl chloroform
Printers	Trichloroethylene
Hairdressers	Aerosol spray propellants, hydrocarbons containing fluorine and chlorine (freons)
Sources in the home	
Cleaning and degreasing agents	Perchloroethylene, methyl chloroform, trichloroethylene, methylene chloride, carbon tetrachloride, hydrochloric acid
Home workshops	
Solvents and thinners	Various chlorinated hydrocarbons
Spray cans	Chlorofluorohydrocarbons (freons)

Table 13

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