

TRIANCO



OPTIMA 28 CB AND 28 SB
WALL MOUNTED GAS BOILERS



INSTALLATION
INSTRUCTIONS

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1 WARNINGS

This booklet, together with the user and service manual should be kept by the user and must always accompany the boiler even when passed on to another owner or user and/or when transferred to another system. Read the instructions and warnings in this booklet and in the user manual carefully, as they provide important directions for safe installation, usage and maintenance.

- This boiler is used to heat water at a temperature lower than boiling point at atmospheric pressure. It must be connected to a heating system and/or a domestic hot water system at the limits of its performance and its power. Any other use of this boiler must be considered incorrect and therefore hazardous.

- Installation, maintenance and repair must be carried out by a CORGI Registered Installer and be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, the Building Regulations (Scotland)(Consolidation), the Local Building Regulations, the current I.E.E.Wiring Regulations and the bye laws of the Local Water Undertaking. Where no specific instruction is given reference should be made to the relevant BRISITH STANDARDS CODES OF PRACTICE. For Ireland install in accordance with IS 813 "Installation of Gas Appliance"

B.S. Codes of Practice

Standard	Scope
BS 6891	Gas Installation
BS 5546	Installation of hot water supplies for domestic purposes.
BS 5449 Part.1	Forced circulation hot water systems.
BS 6798	Installation of gas fired hot water boilers.
BS 5440 Part 1	Flues.
BS 5440 Part 2	Ventilation.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

WARNING – The addition of anything that may interfere with the normal operation of the appliance without the express written permission of Trianco Ltd could invalidate the appliance warranty and infringe the Gas Safety (Installation and Use) Regulations.

Incorrect installation may cause harm to people, animals and property. The manufacturer is not liable for damage caused by incorrect installation and by non-observance of the instructions accompanying the boiler

Installation, maintenance and any other operation must be carried

out in compliance of current regulations and instructions supplied by the manufacturer.

Installation is the purchaser's responsibility.

The boiler is supplied in a carton pack; when it is removed, ensure that the appliance is complete and that all the parts are supplied.

The packing components (clips, plastic bags, polystyrene foam, etc) must be kept out of reach of children, since they are a hazard for them.

The technical notes and instructions contained in this document are to help fitters install the system correctly.

Any repair should be carried out using solely original spares and operations involving the removal of the appliance must only be carried out by qualified engineers. Failure to abide by the above exempts the manufacturer from any liability and may jeopardise the safety of the unit.

It is forbidden to climb on to the unit.

INSTALLATION AND INITIAL START-UP OF THE BOILER MUST BE CARRIED OUT BY QUALIFIED PERSONNEL, IN ACCORDANCE WITH CURRENT NATIONAL REGULATIONS ON INSTALLATION AND ANY DIRECTIONS FROM LOCAL AUTHORITIES AND PUBLIC HEALTH BODIES.

When turning the boiler on or off, the fan may make a slightly louder noise because of the rapid increase or reduction in the number of rotations.

The expansions of the materials that make up the unit, due to rises or falls in temperature, may cause slight tapping noises. This may normally occur after the boiler is turned off or on.

An excessively high flow-rate of domestic hot water may cause a slight noise in the circuit and a drop in temperature at the domestic water outlet.

1.1 USE OF ANTIFREEZE LIQUID



If antifreeze substances are used in the system, check carefully that they are compatible with the aluminium that forms the body of the boiler.

In particular, **DO NOT USE** ordinary ETHYLENE GLYCOL, since it is corrosive in relation to aluminium and its alloys, as well being toxic.

Trianco suggests the use of suitable antifreeze products and in the correct dose, which will prevent rust and incrustation taking place.

Periodically check the pH of the water-antifreeze mixture of the boiler circuit and replace it when the amount measured is lower than the limit stipulated by the manufacturer.

DO NOT MIX DIFFERENT TYPES OF ANTIFREEZE

TRIANCO is not liable for damage caused to the boiler or system as a result of the use of incorrect antifreeze or additive substances.

1.2 FEATURES OF UNDER FLOOR HEATING SYSTEMS



In floor systems, the use of plastic pipes without protection against penetration of oxygen through the walls can cause corrosion of the system's metal parts (metal piping, boiler, etc), the formation of oxides and bacterial agents.

To prevent this problem, it is necessary to use pipes with an "oxygen-proof barrier", in accordance with standards DIN 4726/4729.

If pipes of this kind are not used, keep the system separate by installing heat exchangers or those with a specific system water treatment.



In floor systems, a system safety thermostat must be installed to protect against overtemperature calibrated at around 45°C (see wiring diagram on page 14).

TRIANCO is not liable for damage caused to the unit or the system due to failure to comply with the above.

1.3 SAFETY ADVICE

- If you smell gas:
 - do not operate electrical appliances
 - extinguish any fires
 - close the stopcock upstream of the meter
 - open the windows and ventilate the room
 - call your local authorised engineer
- Do not store or use flammable materials near the boiler.
- Do not obstruct intake/exhaust terminals.
- To guarantee boiler efficiency and correct operation, it is imperative to have yearly maintenance, and combustion analysis every two years, carried out by qualified engineers, and to have the system booklet prepared, as stipulated by law.
- It is forbidden to touch the boiler either with bare feet and/or with wet parts of the body.
- In order to clean the outside parts, turn off the boiler turn off the power at the isolating switch. Clean with a damp cloth. Do not use detergents and/or harsh liquids, or toxic products.
- In order to carry out any work on the boiler, do not mount it on chairs, stools, ladders or unstable stands.
- Before carrying out any work on the boiler always turn the power off at the isolating switch
- The user is forbidden to carry out any maintenance work on the boiler that must be carried out by a specialised engineer.
- In the case of structural work or maintenance near the pipes, flue systems or any accessories, switch off the appliance and, when the work is completed, have the system checked by a qualified engineer to ensure the system is in good working order.

2 GENERAL FEATURES

The TriStar OPTIMA boiler is a sealed-type electronic condensing gas wall mounted boiler with high seasonal efficiency.

The burner, of premix type, guarantees high efficiencies and safe combustion at all power ratings, with minimal pollutant emissions.

The electronic board provides for a periodic selfdiagnostic of the functions, with indications of any irregularities or failures by means of a code that appears on the control panel display.

It is simple to use and has fully automatic operation, and thus user operations are reduced to the basic simple operations.

The production of domestic hot water is always activated and has priority over the heating function.

The external temperature probe (OPTIMAZER) must be fitted to ensure maximum running efficiency.

2.1 WINTER OPERATION

The boiler is started and regulated automatically so as to meet the requirement of the heating system.

With the outside temperature probe, the system's water temperature is regulated automatically according to the heating curve set, guaranteeing maximum comfort in all conditions.

DOMESTIC HOT WATER DRAW OFF (CB MOD.)

When calling for domestic hot water, the boiler, by means of an appropriate sensor, automatically switches over in order to guarantee supply of the correct amount of water at the desired temperature.

Regulation of the domestic water temperature is also carried out precisely and automatically by the boiler's electronics.

The domestic hot water comfort function is activated automatically at the end of every withdrawal and guarantees a quick response for subsequent withdrawals for the programmed time.

2.2 SUMMER OPERATION (CB MODELS)

The boiler is started and regulated automatically so as to meet the domestic water requirement.

Switching from summer to winter operation and viceversa may be carried out by hand or automatically (if external probe present) depending on the outside temperature set.

2.3 HARD WATER AREAS

If the boiler is to be installed in a area recognised for having hard water, it is recommended that a suitable water treatment device is installed in the mains supply to the boiler.

The water hardness can be determined by using the standard test paper or by contacting your local water authority.

3 TECHNICAL FEATURES OF THE APPLIANCE

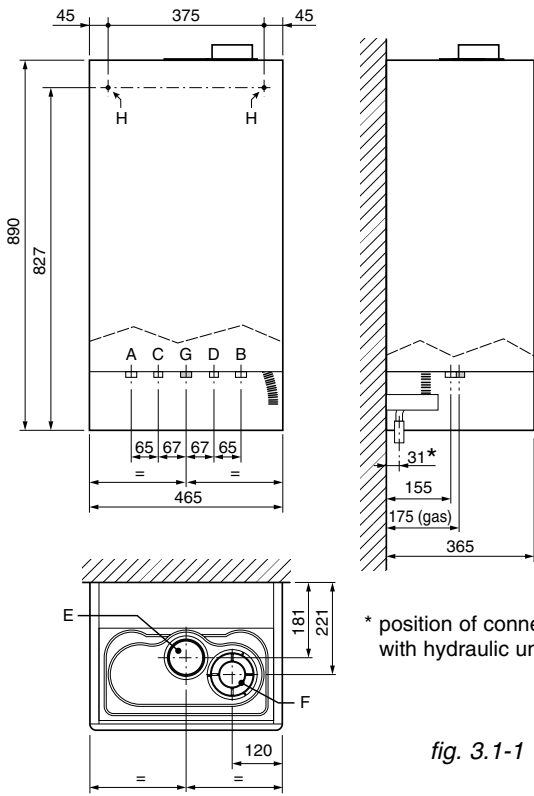
Operating gas	NAT. GAS (G20)		LPG (G31)		
	CB	SB	CB	SB	
OPTIMA model					
Maximum heat output Q _{max} (80°/60°C)	kW	28,0	28,0	28,0	28,0
Minimum heat output Q _{min} (80°/60°C)	kW	5,6	5,6	7,3	7,3
Maximum heat output (50°/30°C)	kW	29,7	29,7	29,7	29,7
Minimum heat output (50°/30°C)	kW	6,1	6,1	8	8
Maximum heat range	kW	28,7	28,7	28,7	28,7
Minimum heat range	kW	5,7	5,7	7,5	7,5
Working efficiency at max output (80°/60°C)	%	97,6	97,6	97,6	97,6
Working efficiency at max output (50°/30°C)	%	103,5	103,5	103,5	103,5
Working efficiency at 30% max output (Average T=50°C)	%	107,0	107,0	107,0	107,0
Working efficiency at min output (80°/60°C)	%	98,2	98,2	97,3	97,3
Working efficiency at min output (50°/30°C)	%	107,0	107,0	106,7	106,7
Flue losses with burner in operation	%	2,1	2,1	2,1	2,1
Flue losses with burner extinguished	%	<0,1	<0,1	<0,1	<0,1
Shell losses	%	0,3	0,3	0,3	0,3
Flue Gas temperature	°C	73,0	73,0	73,0	73,0
%CO ₂ in dry fumes	% vol	9,8	9,8	11,5	11,5
Class of NO _x emissions (EN 483)	Cl.	5	5	5	5
Combustion efficiency	%	97,9	97,9	97,9	97,9
Flue Gas mass range at nominal capacity	kg/h	43,5	43,5	43,5	43,5
Residual flue gas discharge head	Pa	73	73	73	73
Gas consumption (15°C, 1013 mbar)	m ³ /h	3,0	3,0	1,17	1,17
Max. production of condensation water	l/h	2,4	2,4	2,4	2,4
Water content	l	2,4	2,4	2,4	2,4
Available head (ΔT=20°C)	kPa	28	28	28	28
Max. operating pressure	bar	3	3	3	3
Expansion vessel volume	l	10	10	10	10
Expansion vessel preload press.	bar	1	1	1	1
Nominal G20 natural gas press.	mbar	20	20	--	--
Nominal G31 LPG gas press.	mbar	--	--	37	37
Max. heating temperature	°C	90	90	90	90
Min. heating temperature	°C	20	20	20	20
Specific domestic water range (ΔT=30°C)	l/min	13,4	–	13,4	–
Max. domestic circuit pressure	bar	8	–	8	–
Min. domestic water withdrawal	l/min	2,3	–	2,3	–
Max. domestic hot water temperature	°C	60	–	60	–
Min. domestic hot water temperature	°C	30	–	30	–
Power supply	V/Hz	230/50	230/50	230/50	230/50
Max. power consumed	W	110	110	110	110
Degree of electrical protection		IPX4D	IPX4D	IPX4D	IPX4D
Weight	kg	56,5	52	56,5	52
Noise at 1m at nominal capacity	dB(A)	41,8	41,8	41,8	41,8
Appliance class		II 2H 3P			
Appliance type		B23, C13, C33, C43, C53, C83			
Appliance CE Certificate No.					

Key to boiler models

CB = Combi Boiler

SB = System Boiler

3.1 OVERALL DIMENSIONS AND CONNECTIONS



- A - Heating delivery 3/4"
- B - Heating Return 3/4"
- C - Domestic hot water flow** 1/2"
- D - Domestic cold water inlet ** 1/2"
- E - Precut for air intake pipe ø80 mm
- F - Collar for concentric fume pipe ø60/100mm
- G - Gas Inlet 3/4"
- H - Holes for mounting plate to wall ø8mm

** = present on CB models only

* position of connections with hydraulic unit installed

fig. 3.1-1

3.2 HYDRAULIC DIAGRAM

OPTIMA CB

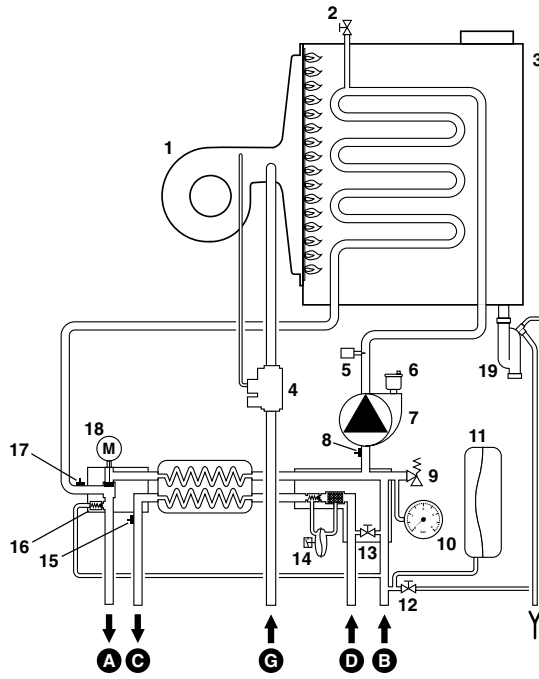


fig. 3.2-1

KEY:

- 1 - Burner
- 2 - Manual air valve
- 3 - Boiler shell
- 4 - Gas valve
- 5 - Boiler water pressure sensor
- 6 - Automatic air valve
- 7 - Pump
- 8 - Return temperature sensor
- 9 - Safety valve
- 10 - Pressure gauge
- 11 - Expansion vessel
- 12 - Drain tap
- 13 - System Filling Valve
- 14 - Domestic water pressure switch
- 15 - Domestic water temperature sensor
- 16 - Bypass
- 17 - Delivery temperature sensor
- 18 - Three-way valve
- 19 - Condensation Trap

- A - Heating Flow
- B - Domestic hot water Flow
- C - Gas inlet
- D - Domestic cold water inlet
- E - Heating return

OPTIMA SB

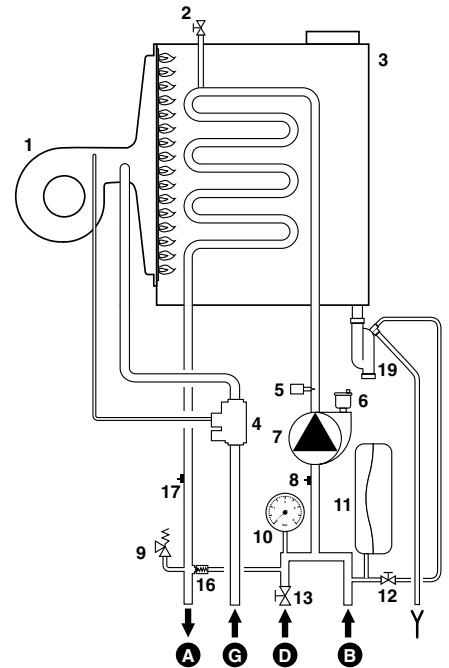
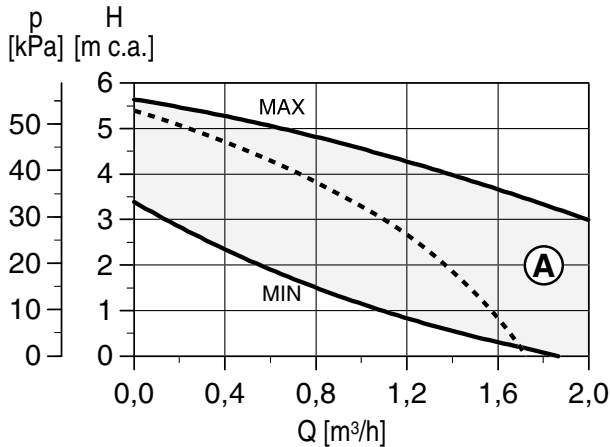


fig. 3.2-2

3.3 FEATURES OF CIRCULATOR / GENERATOR LOAD LOSS



----- Head available to system at maximum circulator speed

A Circulator working area

TECHNICAL FEATURES OF STANDARD CIRCULATOR INSTALLED

	Capacity absorbed	
	max (W)	min (W)
Maximum speed	91	73
Minimum speed	49	40

Note: Circulator speed is regulated automatically by boiler control board

4 UNIT ASSEMBLY

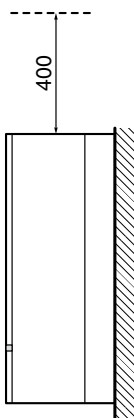
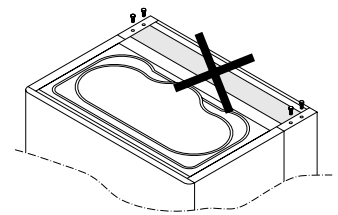


fig. 4-1

The boiler must be installed in an accessible position that complies with the dimensions set out in the drawing below, so as to make any maintenance and cleaning operations easier.



Caution:
Before mounting the boiler, remove rear cross pieces shown in figure 4-2.

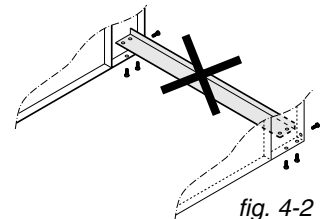


fig. 4-2

For positioning use the template included in the pack and, with a spirit level check the boiler is horizontal. Then mark and drill the holes for mounting the wall plate and the hydraulic connections. Then mark and drill the holes for the boiler mounting plate, insert appropriate rawlplugs in them, fix the plate in position and attach the boiler to it.

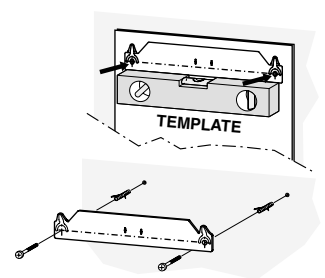


fig. 4-3

4.1 HYDRAULIC CONNECTION

For optimum performance after installation this Boiler and its associated central heating system must be flushed in accordance with the guidelines given in BS7593 "Treatment of water in domestic hot water central heating systems. It is also advisable to install suitable stop gate valves on the systems delivery and return piping.

Caution: the pressure relief valve is set at 3 bar therefore all pipework, fittings, etc. should be suitable for pressures in excess of 3 bar.

The pressure relief discharge pipe should be not less than 15mm dia, run continuously downward and preferably over a drain. It should be routed in such a manner that no hazard occurs to occupants or causes damage to wiring or electrical components. The end of the pipe should terminate facing down and towards the wall.

The discharge must not be above a window, entrance or other public access. Consideration must be given to the possibility that boiling water / steam could discharge from the pipe.

For hydraulic connection of the boiler, use the equipment kit and follow the directions given on the attached instruction sheet.

The 10 Ltr expansion vessel supplied with the boiler is suitable for a system volume of approx. 140 Ltr.

An additional vessel will be required for system volumes above this, following this formula:

$$V = 0,07 \times C$$

V = Expansion vessel volume (Ltr)

C = Water system volume (Ltr)

4.2 FLUE SYSTEM

Important: since the TRISTAR OPTIMA is a condensing boiler, exhaust temperature is very low; therefore it is normal for part of the residual water vapour in the exhaust fumes to be capable of condensing in the flue pipe

You are advised to pay attention to the following:

- a - to the positioning of the exhaust terminals (they may drip and also produce a plume of condensation)
- b - to the incline of the flue pipe so as to avoid condensation becoming stagnant;
- c - to the correct positioning of the condensation collection parts;
- d - to connecting the condensation drain correctly.

The TRISTAR OPTIMA boiler is a type C certified Appliance (sealed boiler).

Connection of the flue exhaust pipes is made according to the diagrams attached.

For the parts to use, please refer to the TRIANCO catalogue of boiler installation accessories.

IMPORTANT: As with all flues the kit must be installed taking due account of the current issue of BS5440 parts 1 & 2 and timber frame housing REF IGE/UP/7/1998.

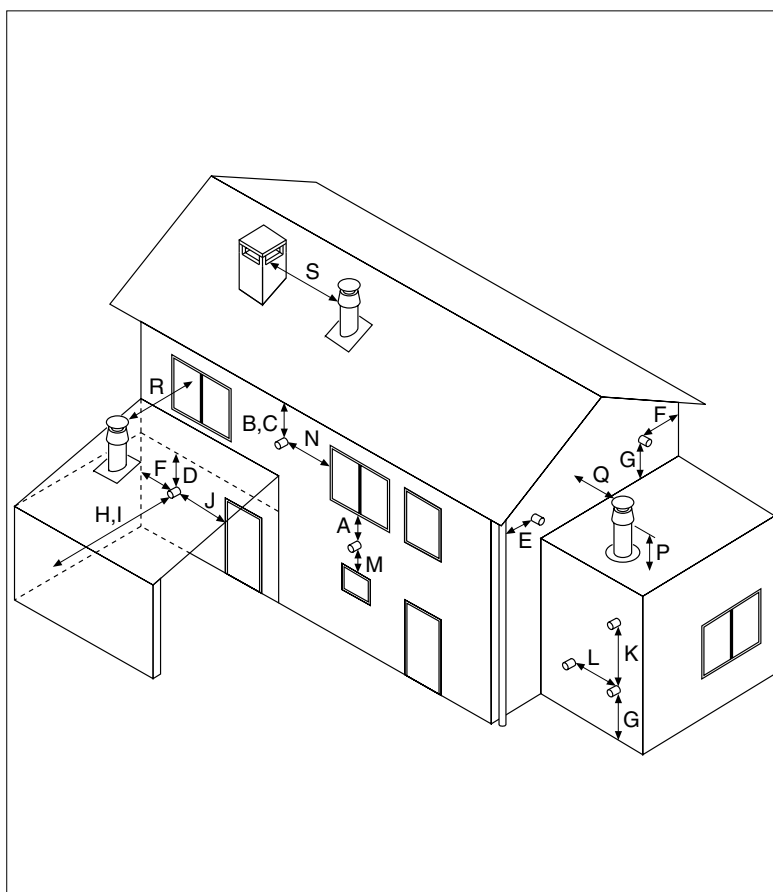
Also note that the requirements will vary depending upon the kit being installed. Guidance is provided but unless otherwise stated, always comply with recommendations of the relevant codes of practice.

The following guidelines indicate the general requirements for siting balanced flue terminals.

Recommendations for flues are given in BS 5440 Pt.1.

If the terminal discharges onto a pathway or passageway, check that combustion products will not cause a nuisance and that the terminal will not obstruct the passageway.

If a terminal is less than 2 metres above a balcony, above ground or above a flat roof to which people have access, then a suitable terminal guard must be provided.



Terminal position with minimum distance mm

A	Directly below an openable window, air vent or any other ventilation opening.	300
B	Below gutter, drain/soil pipe.	150
C	Below eaves.	200
D	Below a balcony/car port roof.	200
E	From vertical drain pipes and soil pipes.	75
F	From internal or external corners.	300
G	Above adjacent ground or balcony level.	300
H	From a surface facing a terminal.	600
I	Facing a terminal.	1200
J	From opening (door/window) in carport into dwelling.	1200
K	Vertically from a terminal on the same wall.	1500
L	Horizontally from a terminal on the same wall.	300
M	Above an opening, air brick, opening window etc.	300
N	Horizontally to an opening, air brick, opening window etc.	300

Vertical Flues - minimum distance to edge of terminal mm

P	Above the roof level (to base of terminal).	300
Q	From adjacent wall to flue.	300
R	From adjacent opening window.	1000
S	From another terminal.	600

HORIZONTAL BALANCED FLUE KIT (SEE PAGE 32)

IMPORTANT: As with all flues the kit must be installed taking due account of the current issue of BS 5440 parts 1 & 2 and timber frame housing REF IGE/UP/7/1998.

Also note that the requirements will vary depending upon the kit being installed. Guidance is provided but unless otherwise stated, always comply with the recommendations of the relevant codes of practice.

EXPOSED PIPE: any pipe exposed to the elements should be protected with a suitable material, and maintained regularly.

Installing the Balanced Flue Kit

- 1 Having decided the position of the boiler, accurately mark out the position of the terminal and boiler fixing holes using the template provided. Cut a $\varnothing 120\text{mm}$ hole through the wall to accept the terminal, and drill 2 $\varnothing 8\text{mm}$ holes to accept rawlplugs and mounting bolts.
- 2 Fix the boiler to the wall using the wall-mounting bracket.
- 3 Pass the terminal through the wall, and fit the internal wall seal to the terminal.
- 4 Fit the $\varnothing 60\text{mm}$ (black) seal to the inner spigot on the boiler flue off-take (Fig. 1).
- 5 Fit the $\varnothing 100\text{mm}$ and $\varnothing 60\text{mm}$ (blue) seal into the 90° concentric bend.
- 6 Fit the 90° concentric bend into the boiler flue off-take, and secure in position with clamp.
- 7 Slide the terminal into the 90° bend ensuring it is pushed home firmly, and ensure wall seal is fitted against wall.
- 8 Fit the external wall seal to the terminal.
- 9 To extend the terminal length, use the 500mm concentric pipe and cut to length, ensuring the inner is cut 20mm longer than the outer.

NOTE: For High Level Balanced flue Kit

- 1 Measure vertically 950mm (max) from position of the cut-out on the template to give position of terminal required.
- 2 Cut the 1000mm concentric pipe to required length. Fit the $\varnothing 100\text{mm}$ and $\varnothing 60\text{mm}$ (blue) seal into the pipe.
- 3 Fit the concentric pipe into the boiler flue off-take, and secure in position with clamp.
- 4 Fit 90° concentric bend into pipe, and fit remaining components as above.

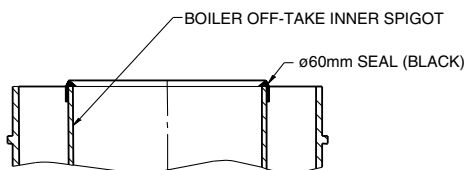


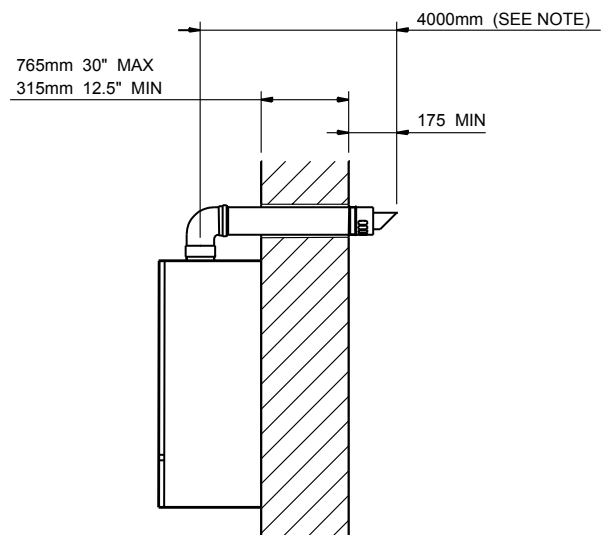
Fig. 1

IMPORTANT:

When installing the flue system, it is important that the flue assembly inclines slightly up from the boiler. This will allow any condensation formed to run back to the condensate drain

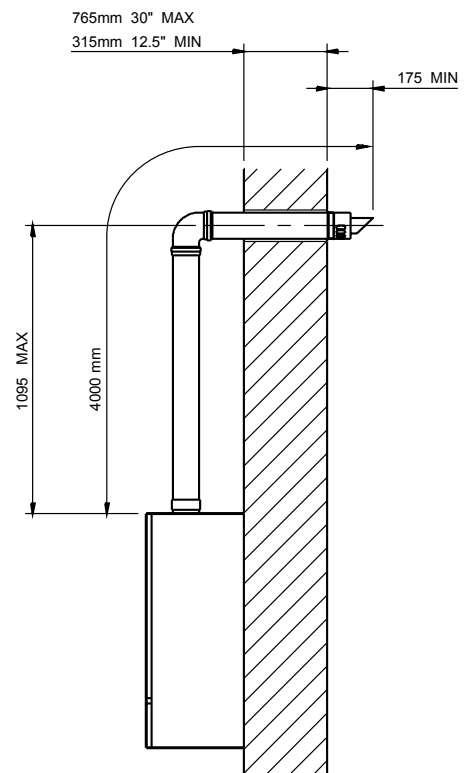
REAR OUTLET

HORIZONTAL BALANCED FLUE



MAX/MIN WALL THICKNESS IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

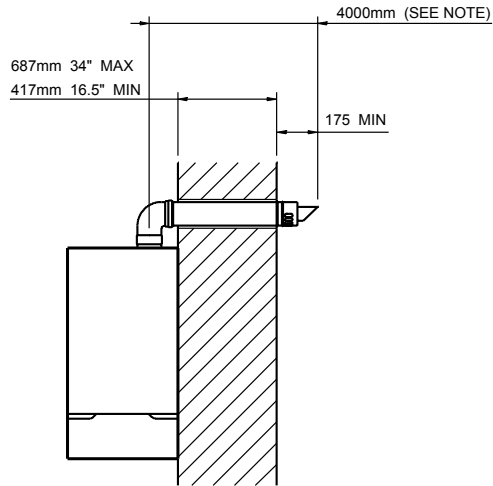
HIGH LEVEL HORIZONTAL BALANCED FLUE



MAX/MIN WALL THICKNESS AND HEIGHT IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

R/H SIDE OUTLET

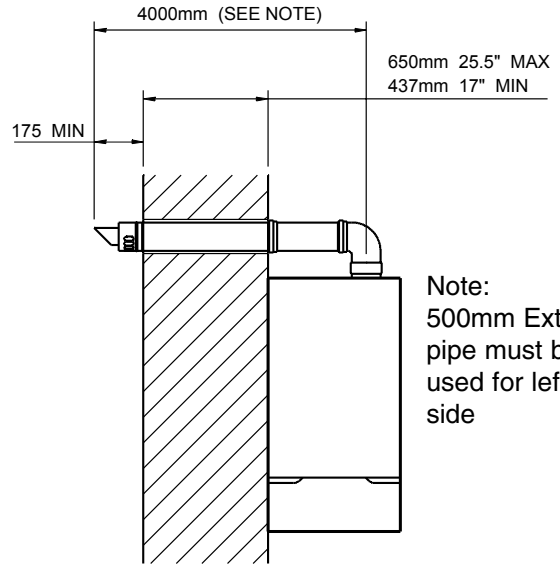
HORIZONTAL BALANCED FLUE



MAX/MIN WALL THICKNESS IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

L/H SIDE OUTLET

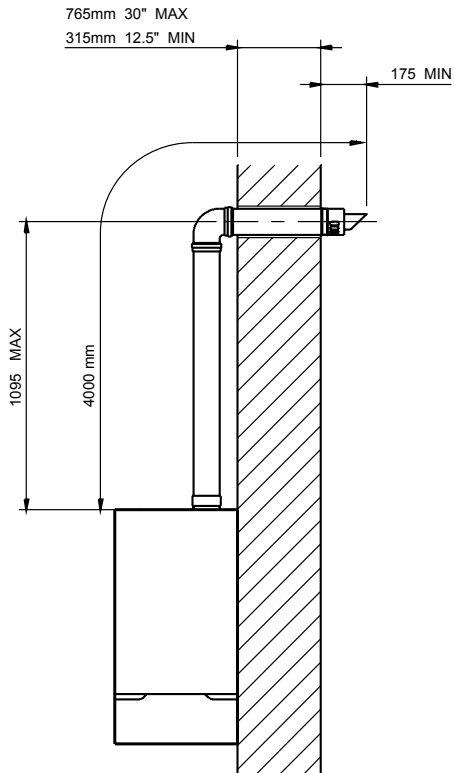
HORIZONTAL BALANCED FLUE



Note:
500mm Extension
pipe must be
used for left-hand
side

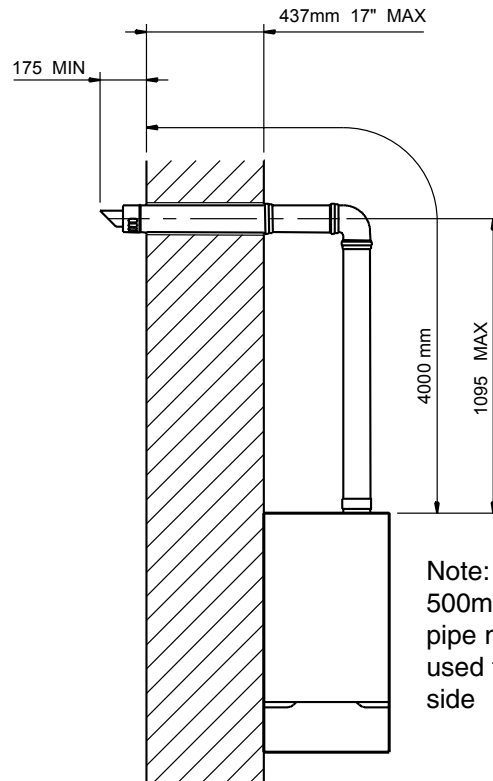
MAX/MIN WALL THICKNESS IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

HIGH LEVEL HORIZONTAL BALANCED FLUE



MAX/MIN WALL THICKNESS AND HEIGHT IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

HIGH LEVEL HORIZONTAL BALANCED FLUE



Note:
500mm Extension
pipe must be
used for left-hand
side

MAX/MIN WALL THICKNESS IS WITH KIT SUPPLIED
EXTRA PIPES CAN BE PURCHASED TO EXTEND TO 4 MTRS

VERTICAL BALANCED FLUE KIT (SEE PAGE 32)

Installing the Balanced Flue Kit

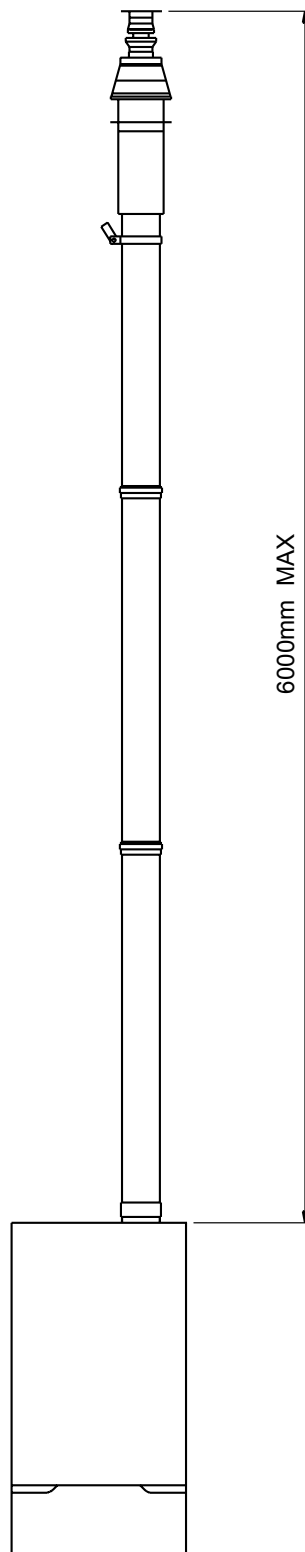
- 1 Having decided the position of the boiler, accurately mark out the position of the boiler fixing holes using the template provided. Drill 2 Ø8mm holes to accept rawlplugs and mounting bolts.
- 2 Cut a Ø150mm hole in the ceiling and roof.
- 3 Determine the flue length required, ensuring the maximum permissible flue length is not exceeded. If it is necessary to cut one of the pipes to achieve the required ensure the inner is cut 20mm longer than the outer, and both inner and outer are de-burred.
- 4 Fit Ø60mm (black) seal to the inner spigot on the boiler flue off-take (Fig. 1).
- 5 Fit the Ø100mm and Ø60mm (blue) seal into the concentric flue pipes.
- 6 If possible, pre-assemble the entire flue on a flat surface, ensuring all sections are pushed firmly home. Secure bottom section to boiler with clamp.
- 7 Fit a roof flashing sleeve to the roof (not supplied), and insert Vertical Flue Terminal through flashing from the outside.
- 8 Starting at the appliance end assemble the extension pipes, ensuring each joint is pushed firmly home. Ensure none of the flue joints are situated within the joist space.
- 9 Fit ceiling plate centrally around pipe, ensuring that the outer flue pipe has a minimum clearance of 25mm from any combustible material. Pack space with glass fibre insulation.
- 10 Fit wall clamp around terminal and secure to roof member, ensure weight of terminal is carried by the wall clamp and not the roof flashing sleeve.
- 11 Ensure flue is adequately supported.

IMPORTANT: FLUE SEALING

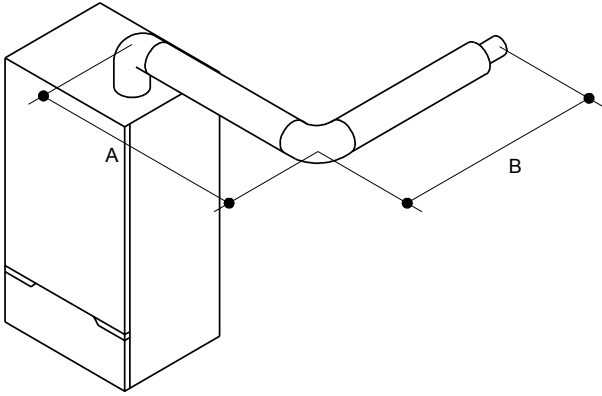
TO FIT FLUE PIPES TOGETHER, IT IS ESSENTIAL TO APPLY A THIN BEAD OF LUBRICANT (E.G. WASHING UP LIQUID, VASELINE) AROUND ALL RUBBER SEALING RINGS.

AS THE FLUE SYSTEM OPERATES UNDER POSITIVE PRESSURE, IT IS ESSENTIAL TO ACHIEVE A TOTAL SEAL ON ALL FLUE JOINTS.

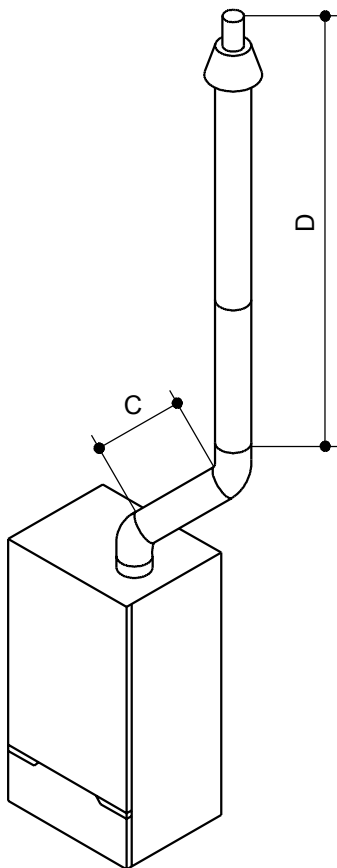
VERTICAL BALANCED FLUE



90° BEND = 1000mm
45° BEND = 750mm



A+B = 2500mm MAX



C+D = 4000mm MAX

NOTE:

For each additional elbow reduce straight lengths by the relevant elbow dimension 90° 1500mm and 45° 750mm

5 ACCESS TO ELECTRICAL PANEL FOR CONNECTING ADDITIONAL UNITS

In order to access the electrical panel, proceed as follows:

- disconnect voltage to appliance
- open boiler front control panel cover
- remove upper screws A from front cover
- gently lift cover and pull towards you.



fig. 5-1

- remove screws V1 and V2 that secure control panel (fig 5-2)
- Lower the control panel until it stops approximately 45°
- To unlock it and bring it down completely, lift up front control panel cover until it is supported on control panel and lower them both together (fig. 5-3)



fig. 5-2

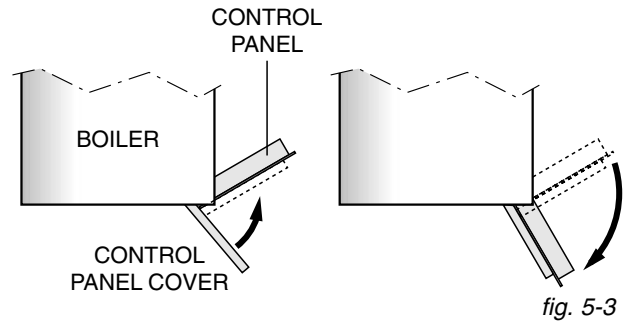


fig. 5-3

In order to connect any external controls and wire the controls into the specific terminals on terminal board M (fig. 5-5).

The wires must pass under panel P and retained using cable clips F.

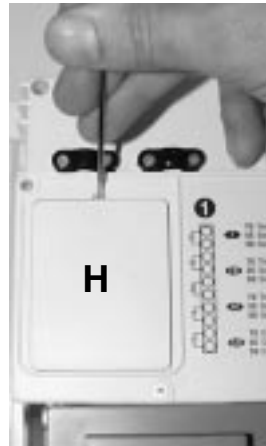


fig. 5-4

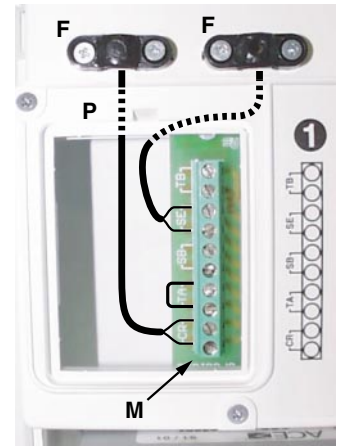


fig. 5-5

To wire in any external valves it is necessary to gain access to the inside of the control panel. To do this, remove rear screws C and take off protection panel P.

For electrical assembly and connection, follow the directions given on the instruction sheets attached

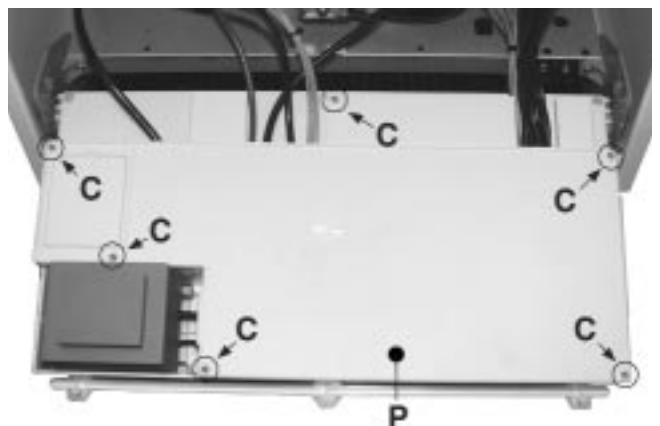


fig. 5-6

6 ELECTRICAL CONNECTIONS

After having fixed the boiler to the wall and connected all the hydraulic connections from the system, make the electrical connections.

To gain access to the board, follow the directions in paragraph 5, "Access to boiler", pass all electrical cables through one of the cable ducts.

For related connections to the board, consult the wiring diagram below.

IMPORTANT:

In connecting the appliance to the mains, strictly observe the phase-neutral polarity stated in the diagram. Electrical wiring to the boiler must be in accordance with current I E E wiring regulations.

NOTE The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance.

Connection may be via a fused double-pole isolator with a contact separation of at least 3mm in all poles and servicing the boiler and system controls only.

In the event of replacement, use a cable with the same features as that fitted (section 3 x 0.75 - maximum external ø8mm)

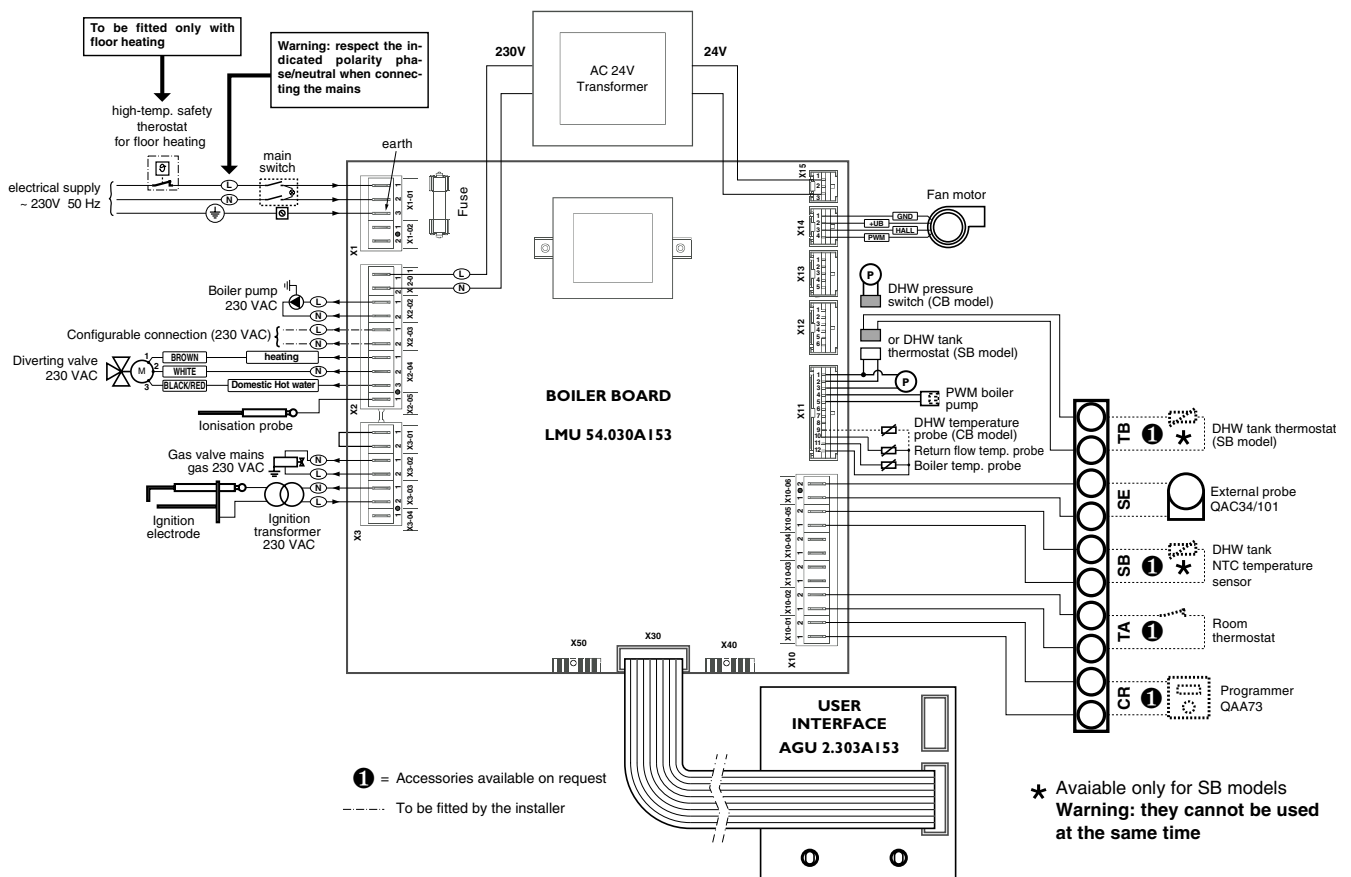


fig. 6-1

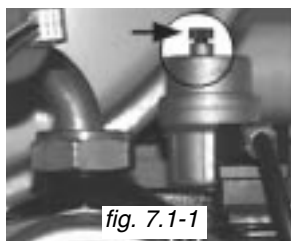
7 PRELIMINARY CHECKS TO BE CARRIED OUT BEFORE APPLIANCE START-UP

Before starting the boiler, check that:

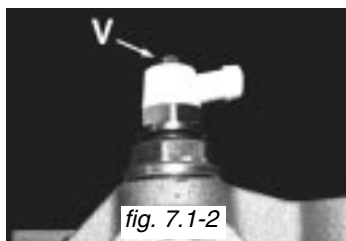
- the gas line is not closed upstream of the appliance;
- the gas and water stopcocks are open;
- the appliance has been correctly connected to the mains electricity and in such a way that the phase-neutral polarity is observed;
- the system has been correctly filled with water (see point 7.1).

7.1 LOADING THE SYSTEM

In order to fill the system, gain access to the inside of the sealed chamber, loosen the automatic escape valve cap on the automatic air vent (fig. 7.1-1) and screw V of the manual escape cock on the top of the exchanger (fig.7.1-2) and gradually open the filling valve tap.



automatic air vent



manual air vent

The boiler operates correctly at a water pressure between 1 and 1.5 bar this should be checked on the pressure gauge located on the lower side of the boiler. Once all the air has been vented from the system, close the escape cocks and, when the desired pressure has been reached, close the filling valve tap.



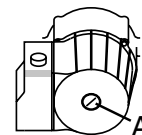
fig. 7.1-4

Control pressure gauge

7.2 STARTING THE CIRCULATING PUMP

On initial start-up, the pump may be slightly noisy. This may be caused by a small amount of air still trapped in the pump. In order to let it out, proceed as follows:

- Loosen cap A (adjacent fig.) and let out any air present.
- fasten cap A.



If pump not turning:

- remove screw A
- attempt to turn rotator knob using the fig. 7.2-1 device on the shaft, taking care not to apply excessive force so as not to damage it
- replace cap A checking that there are no water losses



Before proceeding, take suitable precautions to avoid possible scalds from hot water and risks of damage to components due to water losses from pump.

7.3 CHECKING SYSTEM PRESSURE AND POSSIBLE WATER RECOVERY

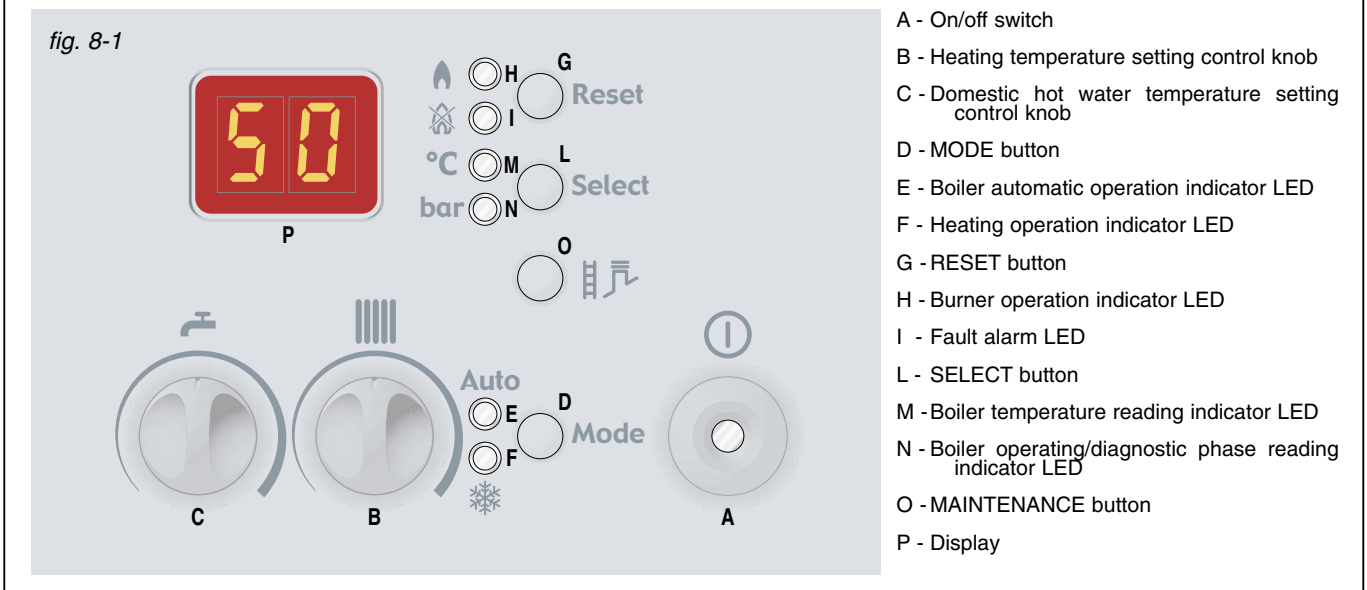
The water pressure is checked periodically on the pressure gauge described in paragraph 7.1.

In order to reset the pressure to within the preset values, gradually open the filling valve; when the desired pressure has been reached, close the tap.



If, during normal operation, the appliance frequently loses pressure or the boiler safety valve comes into operation, consult your installer or service engineer.

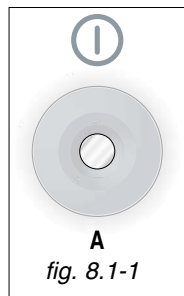
8 CONTROL PANEL



8.1 STARTING THE APPLIANCE

Press switch A: the switch pilot light and the display will go on; after a few seconds the boiler is ready for operation.

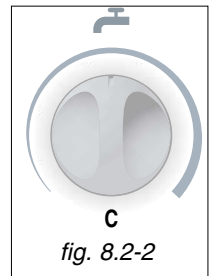
The boiler temperature appears on the display.



DOMESTIC HOT WATER TEMPERATURE REGULATION KNOB (C)

For models CB and for the SB ones with a boiler unit with NTC sensor connected, domestic hot production is always activated.

The figure set is displayed for a few seconds directly on the display, after which the boiler temperature reappears.



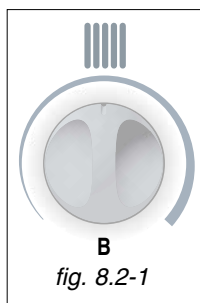
8.2 USE OF THE CONTROLS

HEATING TEMPERATURE REGULATION KNOB (B)

When the heating is activated, with this knob the heating circuit water temperature is set.

The figure set is displayed for a few seconds directly on the display, after which the boiler temperature reappears.

If the external probe is fitted, by operating knob B the calculated ambient temperature is displayed for a few seconds, after which the boiler temperature reappears.



In model SB used for heating only, regulation has no effect.

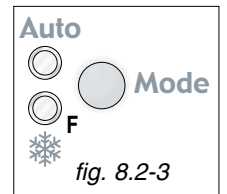
Note: The settings made with knobs B and C (Heating and domestic hot water temperatures) remain unchanged even after power supply failure.

MODE BUTTON

The MODE button makes it possible to switch from summer to winter operation, and viceversa.

Pressing the button activates or deactivates the heating indicated by the LED F going on.

If the external temperature probe is connected to the boiler, switching from winter operation (heating + domestic hot water) to summer operation (domestic hot water) is made automatically when the outside temperature is higher than 20°C.



In this case the LED AUTO lights up, while the LED F, if lit, indicates winter operation; if not lit, it indicates summer operation. In the case where you wish to deactivate automatic switching, press the MODE button (the LED AUTO goes out).

SELECT BUTTON

When in operating phase, the digital display indicates the boiler delivery temperature (LED °C lit and continuous). As well as this, by repeatedly pressing the SELECT button, the following can be displayed in rotation:

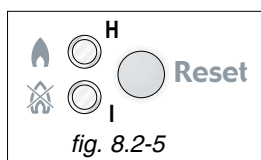


- 1 - reading of domestic hot water temperature (flashing LED °C)
- 2 - --
- 3 - boiler operating phase reading (LEDS °C and bar off); at that moment the active phase is shown by codes that have the following meanings:
 - 0 - pause, no heat request
 - 10 - system heating mode
 - 11 - domestic hot water production mode
- 4 - Fault code or information on boiler operating status (alternating flashing between LEDES °C and bar).

By pressing the SELECT button once again, the display returns to reading 1; in all cases, after some minutes the boiler temperature display is reset.

RESET BUTTON (RESETTING THE APPLIANCE)

After an operating irregularity, the boiler stops for safety reasons (fault: the red LED I goes on). To reset the operation, action must be taken by holding down the fault RESET button for around 2 seconds.



If the fault has to be checked again, check that the gas stopcock and those possibly fitted on the heating delivery and return pipes and domestic water inlet and outlet pipes are open and that the boiler water pressure is correct; if the fault persists, call your installer or service engineer.

MAINTENANCE BUTTON

The maintenance button is used by the maintenance engineer to perform the calibration and required for correct operation of the appliance and UNDER NO CIRCUMSTANCES MUST IT BE OPERATED BY THE USER.



If it is accidentally pressed, do not press any other button and switch off and relight the boiler using button A. Further uses of the maintenance button are described in paragraphs 10 and 12.

8.3 READING AND SETTING BOILER PARAMETERS

In order to read and set the values of some boiler parameters the SELECT button is used. By keeping it pressed, a series of letters (A, b, C, d and P) appear in rotation on the display.

By releasing the button when the letter appears and pressing it again briefly the desired parameter is activated (a number appears to the right of the letter).

In order to return the display to standard parameter (1) (boiler delivery temperature), enable parameter 1.

After approximately 8 minutes from the last operation performed. The display will return to parameter 1.

The series of parameters which can be accessed are as follows:

One letter only:

- A1** - letter of boiler delivery temperature (°C)
- A2** - letter of domestic hot water temperature (°C)
- A3** - not used
- A4** - letter of boiler operating phase
- A0** - Technical value according to programming of the board

- b1** - letter of boiler return temperature (°C)
- b2** - not used
- b3** - not used
- b4** - letter of outside temperature (°C)
- b5** - not used
- b6** - not used
- b7** - second zone circuit temperature (°C)

- C1** - letter of ionisation current value (µA)
- C2** - letter of number of fan revolutions (thousands and hundreds)
- C3** - fan PWM (%)
- C4** - letter of boiler relative heat output value (%)
- C5** - not used
- C6** - not used

- d1** - Setpoint calculated on basis of operation in domestic hot water or heating
- d2** - value of calculated temperature of boiler delivery (°C)
- d3** - Display of value of ambient temperature set (°C); If external probe is not present, value is fixed at 20°C.
- d4** - setting of value of domestic hot water temperature (°C)
- d5** - not used
- d6** - maximum fan speed in heating function

Parameters that can be set:

In order to alter the value of the parameter, use at the buttons SELECT (to increase it) and MAINTENANCE (to decrease it). In order to store the new value in the memory, hold down the SELECT button until the display value flashes twice, and then release the button.

- P3** - not used
- P4** - not used
- P5** - Value of slope of heating curve
- P6** - Value of parallel shift of heating curve

9 EXTERNAL PROBE

THIS MUST BE FITTED OTHERWISE BOILER WILL NOT PERFORM AT THE MAXIMUM EFFICIENCY.

9.1 INSTALLING AND CONNECTING EXTERNAL PROBE

DO NOT INSTALL EXTERNAL PROBE IN POSITIONS INDICATED BELOW:

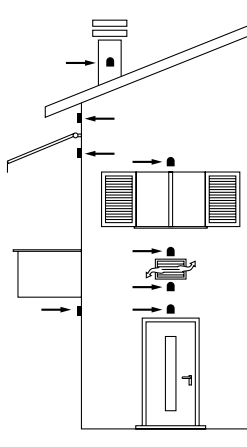


fig. 9.1-1

CORRECT INSTALLATION POSITION:

PROBE SHOULD BE INSTALLED ON A NORTH OR NORTH EAST FACING WALL AND SHELTERED FROM THE EFFECT OF THE SUN'S RAYS AND FROM OTHER HEAT SOURCES

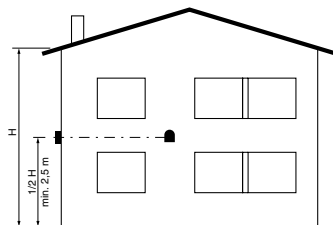


fig. 9.1-2

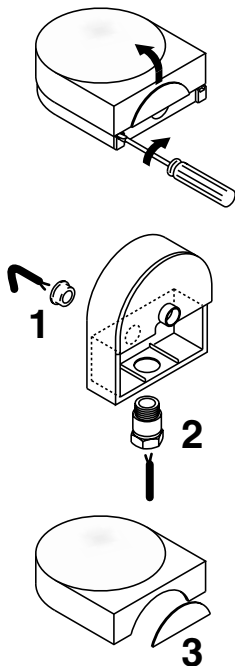


fig. 9.1-3

To mount the external probe:

- remove protective cover as shown here
- insert probe cable through hole intended to be used. We recommend mounting a rubber cable duct if the rear route is used (see ref. 1), a suitable cable holder if the lower one is used (see ref. 2); cable duct and cable holder are not supplied.

If solution 2 is used, remove the lower section the protective cover.

- connect the wires to the probe and the boiler following the wiring diagram on page 14.

9.2 SETTING HEATING CURVE

When the external probe is used, the electronic board calculates the boiler delivery temperature according to the outside temperature.

The ratio of these temperatures is summarised in the diagram in figure 9.2-1.

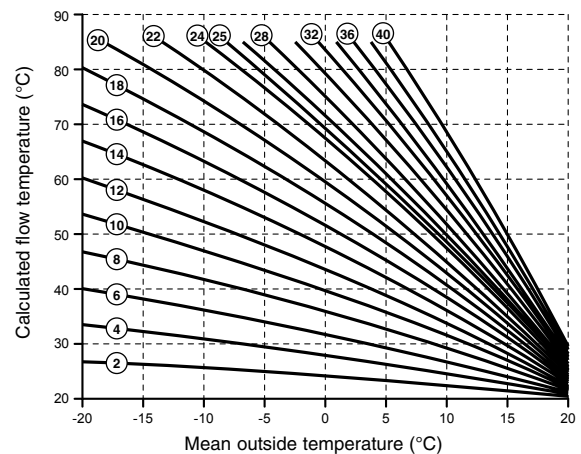


fig. 9.2-1

Ⓜ value of slope of heating curve
— heating curve

Factory-set value of slope of heating curve = 15

The most suitable curve should be chosen according to the design temperature and the type of building. To set a new curve (see "parameters that can be set" in paragraph above):

- access parameter P5
- set the preselected value
- store to set value in memory

9.3 ADJUSTING HEATING CURVE SET

In order to adjust the heating curve, parameter P6 is used. In this mode, the heating curve is shifted in parallel so as to change the delivery temperature calculated (see example in fig. 9.2-2).

To set the shift, proceed as follows (see "parameters that can be set" in paragraph above):

- access parameter P6
- set preselected value
- store set value in memory

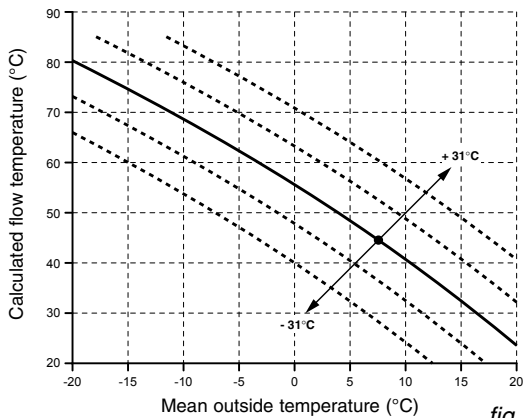


fig. 9.2-2

To make a further adjustment of the heating curve, use heating knob B.

With the knob in intermediate position, the calculated ambient temperature is 20°C.

In relation to this position, by rotating the knob a variation of ±10°C in the calculated ambient temperature is produced (see example in fig. 9.2-3).

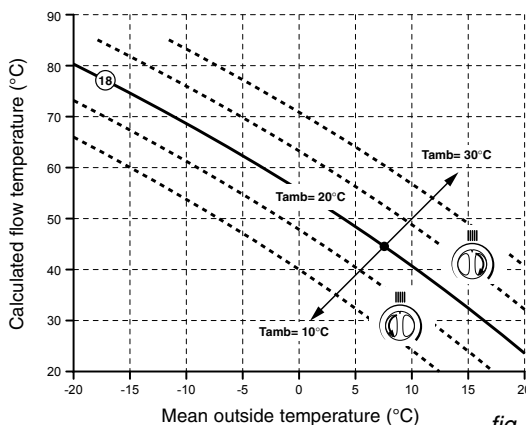


fig. 9.2-3

10 COMBUSTION ANALYSIS

THE BOILER IS ALREADY PRESET: THIS INFORMATION IS ONLY FOR CHECK ONLY

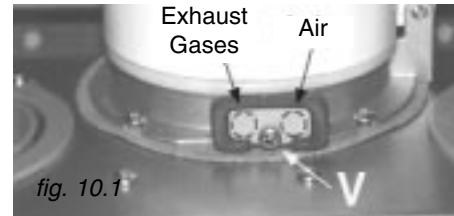
In order to perform combustion analysis, a particular function must be activated by means of the MAINTENANCE button. When this is activated, the three-way valve switches towards the system (CB models), the boiler temperature limits are inhibited and the single maximum safety temperature (85°C) remains activated. If a second mixed zone is present the set value is 55°C.



In cases of floor radiant panel systems, for CB models, in order to feed the circuit with high-temperature water, it is necessary to discharge the heat in the domestic hot-water circuit (see below). In the SP models (heating only), stop boiler operation when temperature exceeds 45°C and resume when system has cooled.

Preparations for performing analysis:

Remove screw V in figure, plate and corresponding gasket in order to access the sockets for analysis and connect the fume analyser probe therein (fig. 10-1).



Combustion analysis is carried out in heating mode; if however there is a situation in which it is difficult to use the heating system (eg. in summer or with a floor radiant panel system), it is possible to use the domestic hot water circuit by proceeding as follows:

- rotate the control panel forward (para. 5 "access to boiler")
- with a screwdriver, release the three-way valve motor M fastening spring, taking care to hold the motor in one hand (fig. 10-2)
- remove the motor, open one or more hot water taps in order to discharge the heat produced by the boiler in calibration and perform analysis, following the directions below.

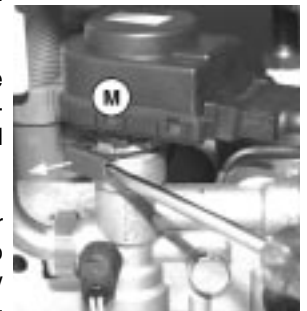
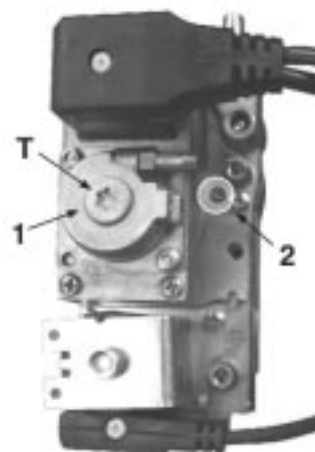


fig. 10-2

On completion of the analysis, close the taps, replace the motor, push it downwards and insert the fastening spring back in its housing.



- T - Capacity regulator closure cap
- 1 - Pressure regulator
- 2 - Capacity regulator

fig. 10-3

Analysis of maximum heat capacity:

Run the boiler in maximum operation capacity by holding down MAINTENANCE button for slightly over 7 seconds (the display changes the presentation flashing alternately the boiler delivery temperature and the number 1 00 while the fault red LED I flashes); from this moment the boiler will operate at maximum in heating mode.

Wait for the boiler to stabilise and perform combustion analysis by checking what is described below:

Nominal heat capacity		kW	28,7
Check calibrations values	natural gas G20	% vol	9,3÷9,7
CO ₂ at MAXIMUM OUTPUT	LPG G31	% vol	10,8÷11,3

If the values found are different, proceed as follows:

- Turn gas valve capacity regulator 2 (figure 10-3): clockwise to increase, anticlockwise to decrease value of CO₂ reading (*given the sensitivity of the screw, minimal adjustments will be sufficient*);
- wait several seconds until the CO₂ is stabilised, then check its value and if necessary repeat the operations.

Analysis at minimum heat capacity:

From the above situation, to run boiler operation to minimum capacity, rotate domestic hot water temperature regulation knob C anticlockwise up to end of stroke (the display changes the presentation flashing alternately boiler delivery temperature and the number 0): from this moment the boiler will operate at minimum.

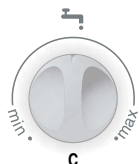


fig. 10-4

Wait for the boiler to stabilise, perform combustion analysis by checking to the settings shown below:

Minimum heat capacity		kW	5,7
Check calibrations values	natural gas G20	% vol	8,8÷9,2
CO ₂ at MINIMUM OUTPUT	LPG G31	% vol	10,4÷10,8

If the values found are different, proceed as follows:

- Turn gas valve pressure regulator 1 (figure 10-3): clockwise to increase, anticlockwise to decrease value of CO₂ read (*given the sensitivity of the screw, minimal adjustments will be sufficient*);
- wait several seconds until the CO₂ is stabilised, then check its value and if necessary repeat the operations.

On completion of calibration, recheck CO₂ values at maximum output.

If the values found remain between the limits shown in the table, no further calibration must be made.

After these operations, it is advisable to check the gas capacity at the meter, following the directions stated in the table of technical details.

N.B.: After completing the checks, the boiler must be returned manually to normal operation by holding down MAINTENANCE button for approximately 2 seconds.

10.1 CONVERSION FROM NATURAL GAS TO PROPANE OR VICE VERSA (WITH KITGPL02)

To convert boiler FROM NATURAL GAS TO PROPANE GAS, proceed as follows:

- disconnect voltage to appliance
- close gas tap
- access internal parts in sealed chamber (see para. 5 “access to boiler”)



fig. 10.1-1

- unscrew ring nut A shown in figure and loosen threaded connection
- insert capacity reducer B as shown in figure below

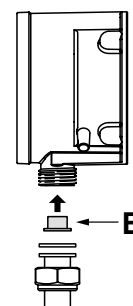


fig. 10.1-2

- check condition of gasket and, if necessary replace it.
- reconnect gas pipe and open gas tap
- reconnect voltage to appliance
- start boiler, check tightness of gas pipe and make gas valve calibration, observing the figures given in the tables shown in the paragraph above.
- refit the cover of the sealed chamber and the other parts of the boiler covering
- replace the gas identification plate showing new settings

To convert the boiler FROM LPG GAS TO NATURAL GAS, proceed as described above and remove capacity reducer B.

11 ADJUSTING MAXIMUM HEAT CAPACITY OF THE BOILER IN HEATING FUNCTION

The boiler is modulating in type, and therefore the capacity of the boiler does not need adjustment since it self regulates in an optimum way in terms of heat required, detected by means of the appliance's temperature sensors.

12 CHECKING BOILER SAFETY EQUIPMENT

To check the boiler's safety equipment the MAINTENANCE button is used.

By holding it down for around 4 seconds, the letters SF and the boiler delivery temperature appear alternately on the display. From this moment, the appliance will operate at the maximum capacity set in heating function (see paragraph above) until boiler safety devices come into operation (boiler goes into fault, red LED I on).

To reset operation, hold RESET button down for around three seconds.

13 USEFUL TIPS

In order to guarantee production of domestic hot water at all times, do not turn off the boiler but use the room thermostat (or timer thermostat) or deactivate the heating by pressing the MODE button (LED F goes out). This will ensure that the antiseize function and other functions designed for the appliance safety and comfort still operate.

Note: the boiler's main exchanger is made of aluminium alloy. Only use additives in the water circuit with this type of material.

If the system is to remain off for long periods at temperatures below zero, it is advisable to drain off the water. This operation is essential if there are no anti-freeze additives in the system.

14 TEMPORARY FAILURE AND FAULT WITH APPLIANCE

TEMPORARY FAILURE

Temporary failures are due to some operating parameters being momentarily exceeded and are different from those of faults in that manual reset by means of the RESET button is not necessary.

Temporary failure is indicated by the alternating flashing of the LEDS °C and bar.

If the operating conditions return to normal figures, the appliance is reset and resumes normal operation, otherwise the status of the fault is checked (LED I on).

The resetting of the functions may be automatic or may require the operator to do it, depending on the case. For example, if the system pressure falls below the minimum figure (see para. 7.3), once restored, the boiler resumes its functions.

FAULT WITH THE APPLIANCE

When an operating irregularity occurs, the boiler stops and goes into "fault", displaying this condition by the red LED I going on and the LED °C and bar alternately flashing. Numbers appear on the display representing the fault code (see below).

An attempt may be made to reset the operation by holding

down the RESET button for around 2 seconds, after which the boiler performs a self-diagnostic cycle and possible restart; if the fault persists, call your local installer or service engineer.

FAULT/TEMPORARY FAILURE CODE DISPLAY

A fault or temporary failure is indicated by a three-figure code appearing on the display. Two of them can be presented on the display and then the code is indicated, showing alternatively the first figure and then the other two (eg. for the code 154, the display will be shown indicating first 1 and then 54).

The display is also accompanied by the alternate flashing of the LEDS °C and bar.

This display is repeated twice followed by an interval of around 7 seconds in which the delivery temperature is indicated.

The code and delivery temperature are displayed in turn continuously.

14.1 IDENTIFICATION CODES OF THE IRREGULARITIES CAUSING A TEMPORARY FAILURE OR FAULT

They indicate the type of irregularity by means of a three-figure number

CODE	CAUSE	EFFECT / REMEDY
1 11	Delivery T°C > Max T°C permitted	burner turned off, circulator in post-circulation
1 19	Boiler water pressure too low (in SB models only)	Restore pressure by following directions in para. 7.3
1 33	does not light or show flame	attempt to restart boiler; after three attempts goes to 'fault'
1 54	Return T°C > delivery T°C or difference in temperature between delivery and return too high or boiler temperature increase too rapid	boiler turned off, circulator in post-circulation
1 64	No water circulation in boiler	-Air in system; blow it out (para. 7.1) -Circulator blocked; follow directions in para. 7.2

14.2 LIST OF FAILURE OR FAULT CODES

Code	Description
10	Short-circuit of external probe
20	Delivery probe: Display 20 alternating to oo = probe short-circuit Display 20 alternating to -- = probe disconnected
28	Incorrect setting made by means of remote control QAA73 (fume probe, not used)
40	Return probe: If display in b1 = oo : probe short-circuit If display in b1 = -- : probe disconnected
50	DHW probe: boiler does not produce domestic hot water (CB mod. and SB mod. with boiler unit with NTC sensor) Display domestic hot water temperature (see use of SELECT button in para.8.2); If display = oo : probe short-circuit If display = -- : probe disconnected
61	Disturbances in remote control
62	Line or remote control breakdown
78	Incorrect configuration of pressure sensor
81	Bus line short-circuit or disconnected (not used)
82	Incompatible LPB address (not used)
91	Fault inside board
92	Fault inside board
100	Incorrect configuration of clocks in connection with RVA (not used)
110	Fault due to overtemperature
111	Temporary failure due to overtemperature
119	Boiler water pressure too low (for SB models only)
133	No flame after end of safety time (repeats attempt to light three times then goes to fault)
134	Flame disappears during operation
135	Fan malfunction
140	Incorrect setting of segment in connection with RVA (not used)
148	Incompatibility of parts in connection via LPB (not used)
151	Fault inside board
152	Incompatible setting of parameter values (not used)
153	Manually activated safety fault (reset boiler by holding down RESET button for two seconds)
154	Return temperature higher than delivery temperature or boiler temperature increase too rapid
160	Fan does not reach required speed
161	Fan exceeds maximum speed set
164	No water circulation in boiler (for CB models only)

15 EXAMPLES OF INSTALLATION

OPTIMA CB AND SB MOD.

SINGLE HEATING CIRCUIT CONNECTION WITH AMBIENT THERMOSTAT OR QAA73 PROGRAMMER

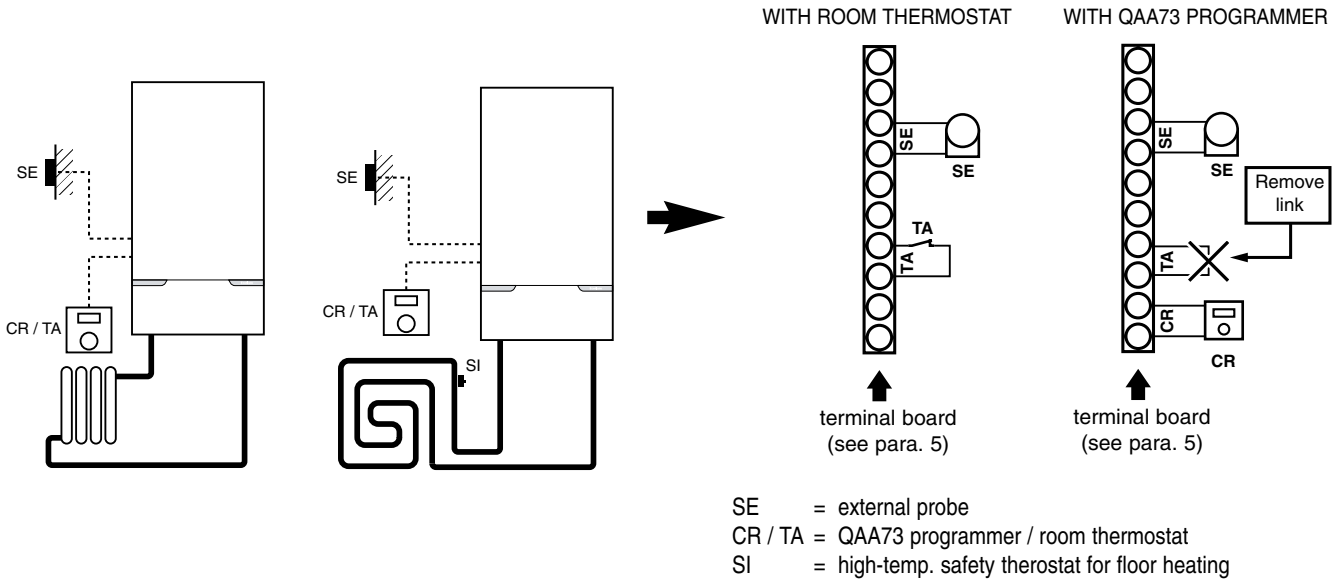


fig. 15-1

OPTIMA SB MOD.

SINGLE HEATING CIRCUIT CONNECTION WITH ROOM THERMOSTAT OR QAA73 PROGRAMMER AND AN EXTERNAL TANK FOR DOMESTIC HOT WATER PRODUCTION

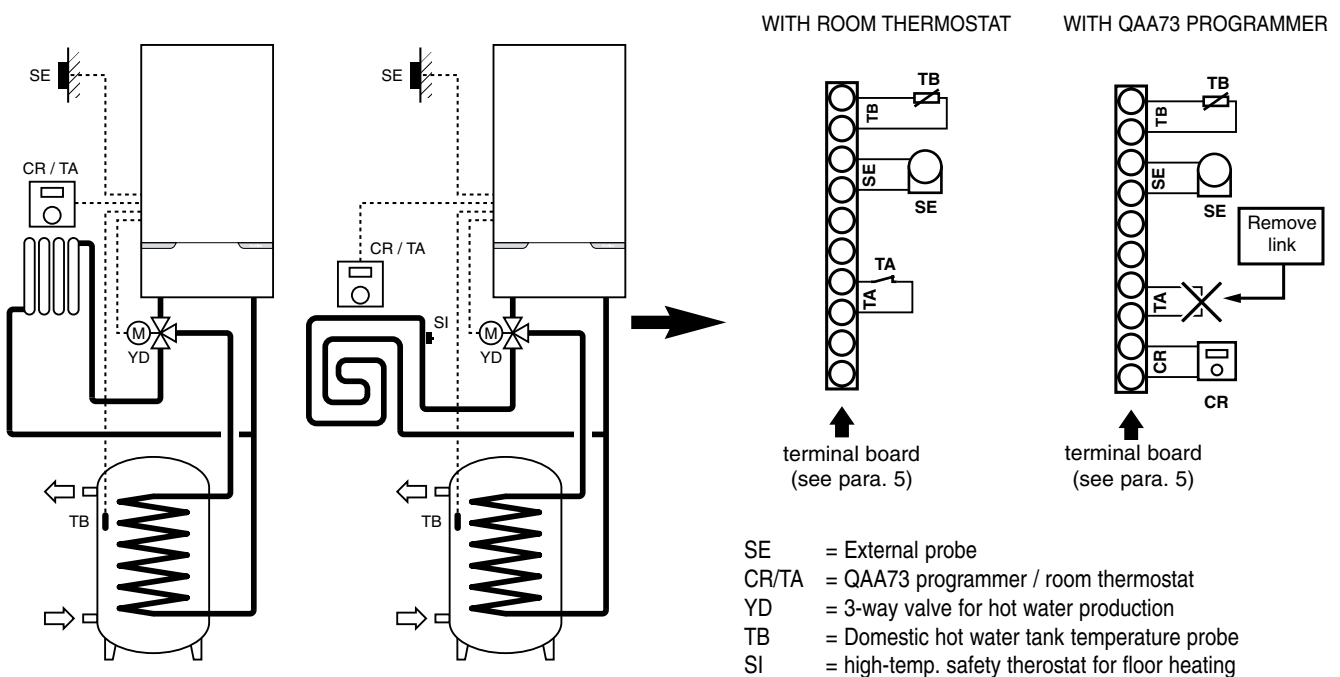


fig. 15-2

16 ACCESSORIES

QAA73 PROGRAMMER

cod. E1226/92

Modern remote control, according to weekly and hourly setting (with yearly date setting), which has functions of monitoring boiler and programming, zone sensor, alarm indicators and advanced diagnostics.



fig. 16-1

NATURAL GAS TO PROPANE CONVERSION KIT

cod. KITGPL02

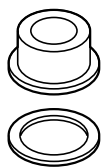


fig. 16-2

17 SERVICING THE BOILER

Annual Servicing

For reasons of safety and economy, it is recommended that the boiler is serviced annually.

Servicing must be performed by a competent person.

Ensure that the boiler is cool

Ensure that both the gas and electrical supplies to the boiler are isolated.

Caution:

All gaskets removed must be checked and possibly replaced if they are damaged or worn.

ACCESS TO BOILER

To access internal parts of the boiler, proceed as follows:

- isolate electrical supply to boiler
- open boiler front control box cover
- remove upper screws A from front cover
- gently lift up cover and pull towards you.



fig. 17-1

To access inside of sealed chamber, remove screws D and take off front panel D1.



fig. 17-2

When replacing front panel D1, first attach the top side of panel on to sealed chamber and then move panel into position and replace screws.

- remove screws V1 and V2 that hold control panel in position (fig. 17-3)
- to lower control panel completely lift up front control box cover until it is supported on the control panel and then lower both panels together (fig. 17-4)



fig. 17-3

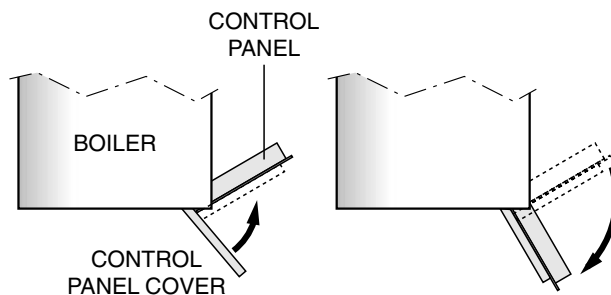


fig. 17-4

- Gently push the left-hand side of the sealed chamber until it detaches

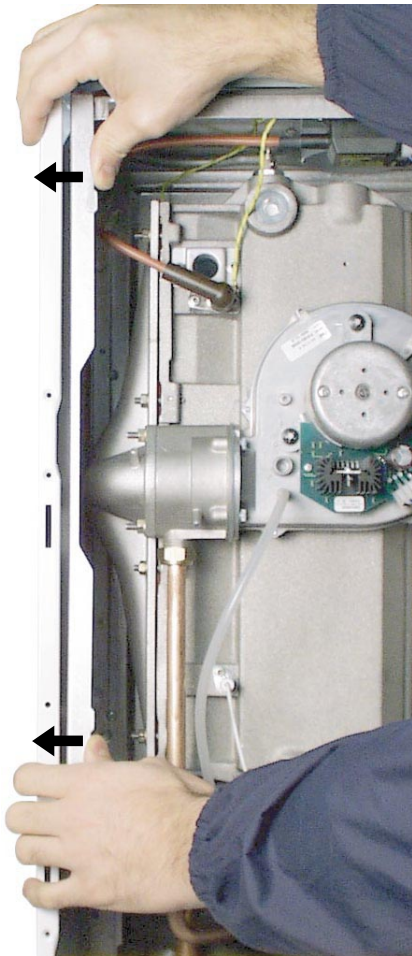


fig. 17-5

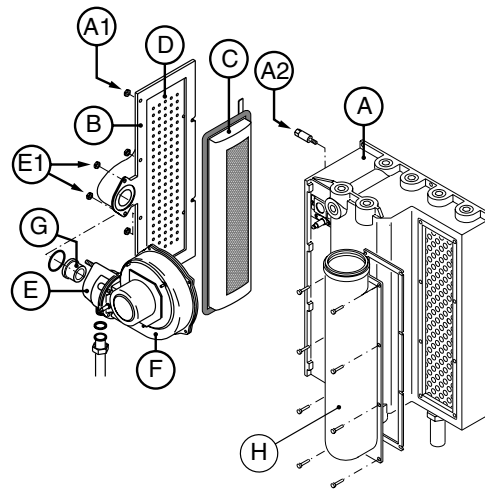


fig. 17-6

- Distributor D is fixed to conveyor B; if necessary, distributor can be removed and cleaned (fig. 17-7);
- Remove screws F1, remove mixer G from fan and clean it inside, using a brush or compressed air (fig. 17-8).

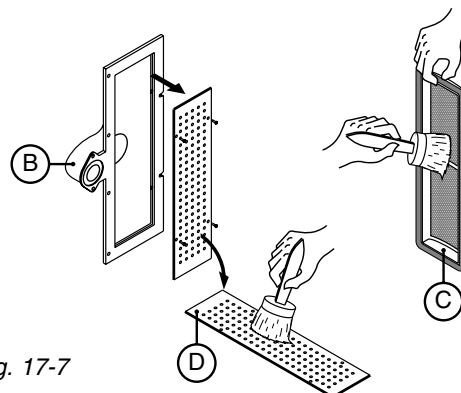


fig. 17-7

BOILER SHELL MAINTENANCE

- Remove pneumatic and electrical fan connections and disconnect gas pipe.
- Remove nuts E1, unthread MIXER (E) - FAN (F) unit (fig. 17-6).
- Extract internal choke G and inspect O-ring; with the aid of a brush or compressed air, clean the choke (fig. 17-6).
- Remove nuts A1, loosen nuts A2, remove conveyor B and extract burner C (fig. 17-6).
- With the aid of a brush, clean burner as shown in fig. 17-7; take care not to damage outside of burner.

- If it is deemed necessary, clean fan F with a brush.. **To prevent dust possibly infiltrating the fan motor bearing, it is advisable NOT TO USE compressed air.**

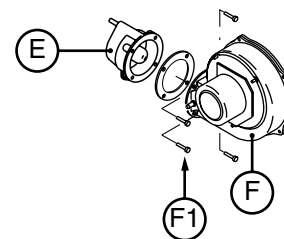
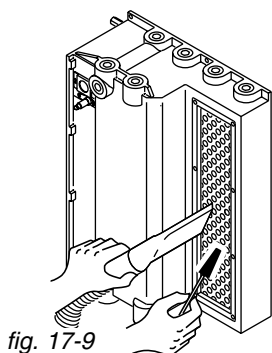


fig. 17-8

- Remove flue H from boiler shell (fig. 17-6) and with the aid of a brush and vacuum cleaner, clean between the exchange rungs (fig. 17-9)



When the parts are replaced, take care to reinsert them in the correct order; pay special attention to inserting the choke correctly in the mixer (the side recess of the choke should match the mixer guide, see fig 17-10).

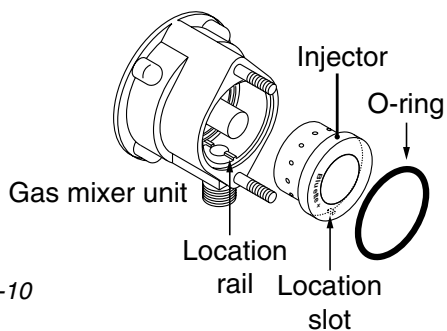


fig. 17-10

MAINTENANCE OF CONDENSATION DRAIN SIPHON

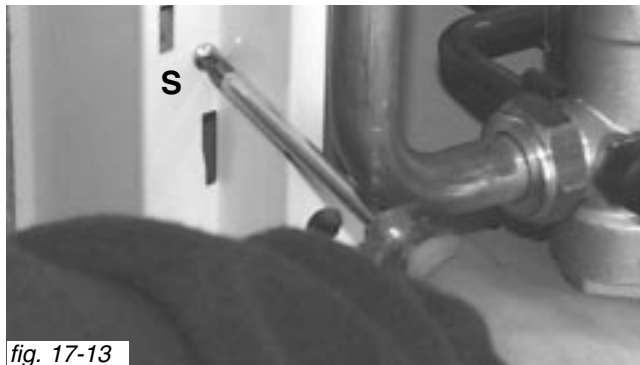
- remove connection of condensation drain from sealed chamber



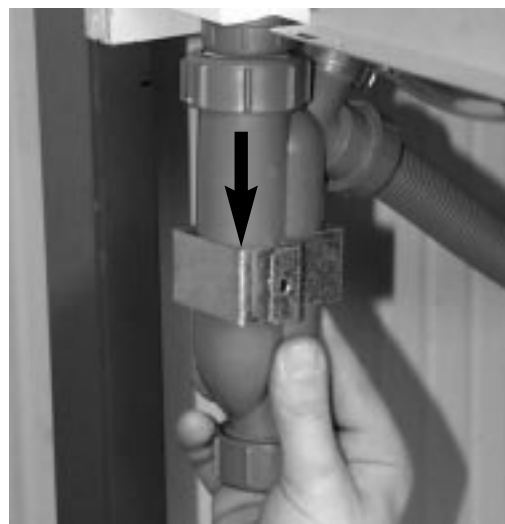
- remove siphon load pipe from boiler drain cock



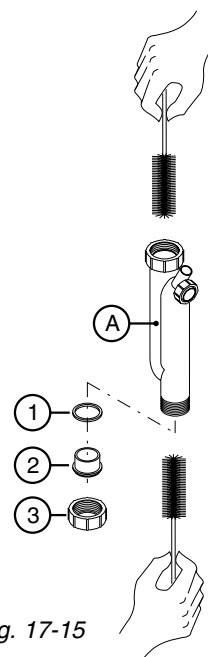
- unscrew fixing screw S from siphon support clamp



- extract siphon from bottom of boiler

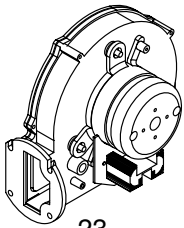


- When siphon has been removed, undo parts 1, 2 and 3 (fig. 17-15); check that in cap 2 there are no deposits, and if necessary remove them. With a brush clean siphon channels.

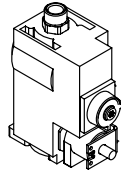


18 SHORT PARTS LIST

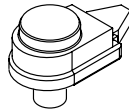
OPTIMA CB



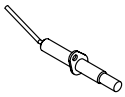
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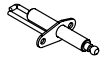
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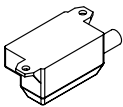
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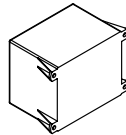
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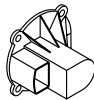
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61



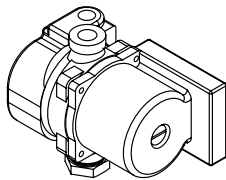
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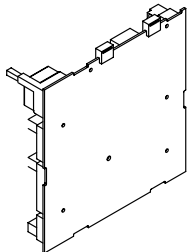
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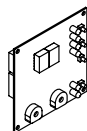
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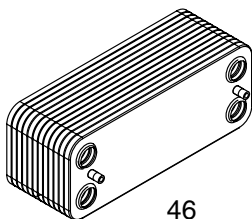
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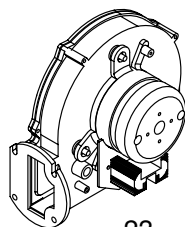


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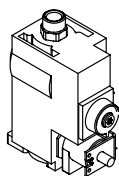
SHORT PARTS LIST

POS.	DESCRIPTION	CODE
10	BOILER BOARD	A160/1
12	USER BOARD	A161
16	TRANSFORMER	CFE01001
19	IGNITION ELECTRODE	BFE01019
21	DETECTION ELECTRODE	BFE01064
23	CENTRIFUGE FAN	W150/4
32	IMMERSION SENSOR	S300/1
36	CIRCULATOR	P158
37	AUTOMATIC ESCAPE VALVE	G207/1
39	WATER GAUGE	G603/3
40	GAS VALVE UNIT	GRVAL001
41	CIRCULATOR CONSENSUS DIFFERENTIAL PRESSURE GAUGE	L998099
45	ACTUATOR	M227
46	HEAT EXCHANGER	G1325/4
49	DOMESTIC WATER DIFFERENTIAL PRESSURE GAUGE	CFM01043
61	IGNITION TRANSFORMER	T134
00	EXTERNAL PROBE	S736/1

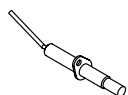
OPTIMA SB



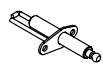
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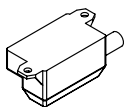
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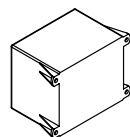
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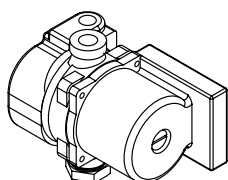
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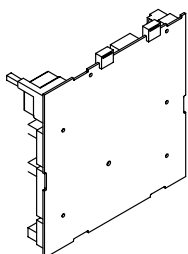
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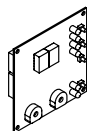
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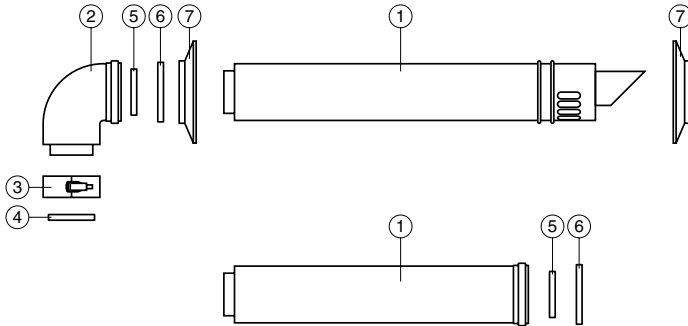
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SHORT PARTS LIST

POS.	DESCRIPTION	CODE
10	BOILER BOARD	A160/1
12	USER BOARD	A161
16	TRANSFORMER	CFE01001
19	IGNITION ELECTRODE	BFE01019
20	ELECTRODE GASKET	CFG01009
21	DETECTION ELECTRODE	BFE01064
23	CENTRIFUGE FAN	W150/4
32	SENSOR	S300/1
35	CIRCULATOR	P158
35/1	AUTOMATIC ESCAPE VALVE	G207/1
36	MINIMUM PRESSURE GAUGE	Q122
38	WATER GAUGE	G603/3
39	GAS VALVE UNIT	GRVAL001
56	IGNITION TRANSFORMER	T134
00	EXTERNAL PROBE	S736/1

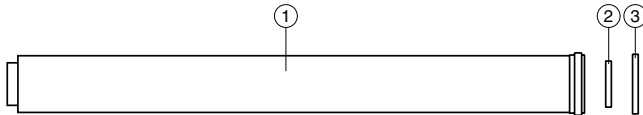
19 BALANCED FLUE KITS

5010 - HORIZONTAL BALANCED FLUE KIT



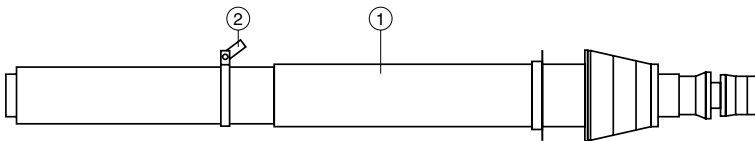
Item	Part No.	Description	Qty
1	510021	terminal	1
2	510023	90° concentric bend	1
3	510031	clamp with seal	1
4	510029	ø60mm seal (Black)	1
5	510027	ø60mm seal (Blue)	2
6	510028	ø100mm seal	2
7	510033	Wall seal	2
8	510026	500mm concentric flue pipe	1

5011 - 1000mm CONCENTRIC FLUE PIPE



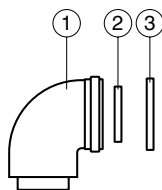
Item	Part No.	Description	Qty
1	510025	1000mm concentric flue pipe	1
2	510027	ø60mm seal (Blue)	1
3	510028	ø100mm seal	1

5012 - VERTICAL BALANCED FLUE KIT



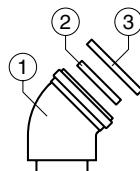
Item	Part No.	Description	Qty
1	510022	terminal with cap	1
2	510032	wall clamp	1

5013 - 90° CONCENTRIC BEND



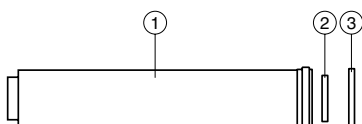
Item	Part No.	Description	Qty
1	510023	90° concentric bend	1
2	510027	ø60mm seal (Blue)	1
3	510028	ø100mm seal	1

5014 - 45° CONCENTRIC BEND



Item	Part No.	Description	Qty
1	510024	45° concentric bend	1
2	510027	ø60mm seal (Blue)	1
3	510028	ø100mm seal	1

5015 - 500mm CONCENTRIC FLUE PIPE



Item	Part No.	Description	Qty
1	510026	500mm concentric flue pipe	1
2	510027	ø60mm seal (Blue)	1
3	510028	ø100mm seal	1



By Appointment to H.M. Queen Elizabeth
The Queen Mother
Manufacturers of Domestic Boilers

Guarantee

Our service division will repair or replace free of charge any defect or component that is due to faulty material or workmanship, provided that such a defect occurs within the guarantee period:

- 1 Our service division is notified promptly of any defects. Under the terms of guarantee the appliance must be made available for service during normal working hours Monday to Friday (weekend work not accepted).
- 2 The Flue Kit is installed in accordance with these instructions.
- 3 The guarantee does not apply if the Flue Kit is repaired or modified by any person other than a member of your service division. The guarantee does not cover misuse or improper installation.

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