



INSTALLATION AND SERVICING

IMAX XTRA EL 320-620kW

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal.

For the very latest copy of literature for specification and maintenance practices visit our website www.idealcommercialboilers.com where you can download the relevant information in PDF format.



GENERAL

Table 1 Performance Data

Boiler			320	395	470	545	620
Boiler output (non-condensing) Mean 70°C	Max	kW	298.4	368.3	438.6	508.6	578.2
	Min	kW	58.9	72.6	85.2	100.7	114.9
Boiler output (condensing) Mean 40°C	Max	kW	323.1	399.5	475.8	552.7	628.9
	Min	kW	66.7	80.5	95.6	113.0	127.6
Boiler Input Max Rate	Net	kW	304.8	376.2	447.6	519.0	590.0
	Gross	kW	338.3	417.5	496.8	576.0	654.8
Boiler Input Min Rate	Net	kW	61	75.2	89.5	103.8	118
	Gross	kW	67.7	83.5	99.3	115.2	131
Maximum Gas Rate		m³/h	32.2	39.8	47.4	54.9	62.2
Approx. flue gas volume 80/60°C i.e. non-condensing	@ Max. Rate	m³/h	472.6	583.3	694.0	804.7	914.8
	@ Min. Rate	m³/h	95.2	117.4	139.6	162.0	184.2
Approx. flue gas temps 50/30°C	@ Max. Rate	°C	43				
	@ Min. Rate	°C	31				
Approx. flue gas temps 80/60°C	@ Max. Rate	°C	63				
	@ Min. Rate	°C	50				
Max. Flue Resistance		Pa	100				
Flue Gas CO ₂ G20/LNG	@ Max Rate	%	9.5				
	@ Min. Rate	%	9.0				
Maximum Flue Temperature		°C	100				
NOx with O ₂ = 0%		mg/kWh	<40				
		Class	6				
Boiler Efficiency Full Load 80/60°C		%	97.9	97.9	98	98	98
Boiler Efficiency Part Load		%	109.7	109.7	109.8	109.8	109.8
Boiler Efficiency Full Load 50/30°C		%	106	106.2	106.3	106.5	106.6
Seasonal Boiler Efficiency (Building Regs L2)		Gross %	96.8	96.8	96.9	96.9	97

Table 2 General Data

Boiler			320	395	470	545	620
Gas Supply Pressure		mbar	20				
Gas Supply Connection		R (in BSP)	2"				
Flow Connection			3" - DN80 - PN6				
Max. Flow Temperature		°C	90				
Return Connection			3" - DN80 - PN6				
Hydraulic Resistance @ ΔT 20°C		mbar	98	96	94	93	92
Max System Pressure		bar (psi)	6 (87)				
Boiler Electrical Supply			230v - 50Hz				
Boiler Fuse Rating		A	7				
Power Consumption (Boiler Only)		W	610	592	670	625	770
Power Consumption - Standby (Boiler Only)		W	4				
Air Inlet Ø		mm	200				
Flue Size Ø		mm	250				
Condensate Drain		mm	21.5				
Noise Power Levels		dBA	< 60				
Boiler Weight (Packaged)		kg (lb)	467 (1029.56)	501 (1104.52)	529 (1166.25)	557 (1227.97)	578 (1274.27)
Boiler Weight (Unpackaged Dry)		kg (lb)	417 (919.33)	451 (994.28)	479 (1056.01)	507 (1117.74)	528 (1164.04)
Water content		litres (gal)	47.3 (10.4)	53.3 (11.7)	59.3 (13)	65.3 (14.4)	75.3 (16.6)

* Electricity supply and Fuse rating for pumps etc. refer to manufacturer's instructions.

Note.

Natural gas consumption is calculated using a calorific value of 37.8MJ/m³ (1038Btu/ft³) gross or 34 MJ/m³ (910 Btu/ft³) nett at 15°C and 1013.25 mbar.

- a. For l/s, divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m³)
- b. For ft³/h, divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft³).
- c. For Btu's, multiply gross heat input (kW) by 3412 (Btu).

HEALTH & SAFETY DOCUMENT NO. 635

The electricity at work regulations, 1989. The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

IMPORTANT. These appliances are CE certified for safety and performance. It is, therefore, important that no external control devices, e.g. flue dampers, economisers etc., are directly connected to these appliances unless covered by these Installation and Servicing Instructions or as otherwise recommended by **Ideal Boilers** in writing. If in doubt please enquire.

Any direct connection of a control device not approved by **Ideal Boilers** could invalidate the certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above regulations.

CAUTION. To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

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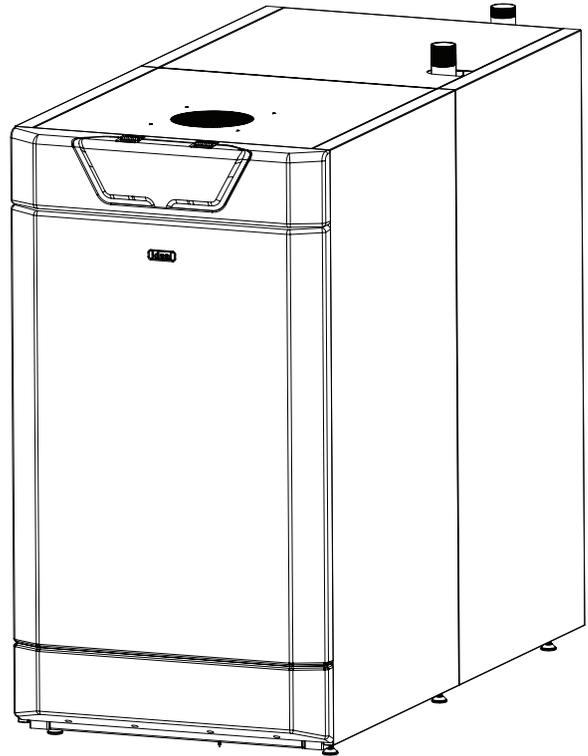
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IMAX XTRA EL

320, 395, 470, 545, 620

Natural Gas only

Destination Countries: GB, IE



Key to symbols

- GB = United Kingdom (Countries of destination)
- IE = Ireland (Countries of destination)
- PMS = Maximum operating pressure of water
- B23 = An appliance intended to be connected to a flue which evacuates the products of combustion to the outside of the room containing the boiler. The combustion air is drawn directly from the room. The fan is up stream of the combustion chamber.
- C53 = A room sealed appliance which is connected via its separate ducts to two terminals that may terminate in zones of different pressure.

- C63 = A room sealed appliance intended to be connected to a separately approved and marketed system for the supply of combustion air and discharge of combustion products.
 The fan is up stream of the combustion chamber.
 Condensate flow from the flue is not permitted back into the appliance.
 The maximum allowable temperature of incoming combustion air for C63 type flue is 40°C.
 Terminals for the supply of combustion air and for evacuation of combustion products shall not be installed on opposite walls of the building.
 The maximum allowable re-circulation rate is 10%.

NOTE TO THE INSTALLER: COMPLETE THE COMMISSIONING REPORT AND LEAVE THESE INSTRUCTIONS WITH APPLIANCE

GENERAL

INTRODUCTION

The IMAX XTRA EL boilers are fully automatically controlled, floor standing, fanned, high efficiency condensing appliances.

The comprehensive boiler controls built into the appliance include:

- Volt free 'alarm' contacts (lockout)
- Volt free 'boiler run' contacts
- Burner hours run meters
- System temperatures

The boilers can draw their combustion air from the room or via ducting from outside.

Through a sophisticated control system combined with premix burner technology and an aluminium heat exchanger, the boilers are capable of high operating efficiencies and low emissions.

These boilers are certified to meet the requirements of the EC Gas Appliance Directive, Boiler Efficiency Directive, EMC, Low Voltage Directive and Energy Related Products Directive.

OPTIONAL EXTRA KITS

- **Modulating Sequencer Kit**
 - **DHW Tank Kit (used with modulating Sequencer)**
 - **Plant Room Sensor Kit (used with modulating Sequencer)**
 - **6 Zone Expansion Kit (used with modulating Sequencer)**
- **Programmable Room Thermostat Kit** (for use with boiler & modulating Sequencer)
- **Programmable Room Thermostat Kit** (for use with boiler only)
- **Outside Sensor Kit**
- **DHW Tank Sensor Kit**
- **Safety Interlock Kit**
- **BACNet Gateway Kit**
- **LONWorks Gateway Kit**
- **MODBus Gateway Kit**
- **Remote Access Kit**
- **Pump Kit**
- **Sealed System Services Flow Manifold Kit**
- **Inlet Air Filter Kit**
- **Condensate Pump Kit**
- **Room Sealed Air Duct Kit**

SAFETY

Current Gas Safety (Installation and Use) Regulations or rules in force

The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force.

In GB, the installation must be carried out by a GAS SAFE Registered Installer or in IE by a competent person. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety (Installation and Use) Regulations
- The appropriate Building Regulations either The Building Regulations, The Building Regulations (Scotland), Building Regulations (Northern Ireland).
- The Water Fittings Regulations or Water byelaws in Scotland.
- The Current I.E.E. Wiring Regulations.

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

In IE, the installation must be carried out by a Competent Person and installed in accordance with the current Building Regulations and reference should be made to the current ETCl rules for electrical installation.

The boilers have been tested and certified by BSI to EN 15502 for use with Natural Gas.

Detailed recommendations are contained in the following

Standards and Codes of Practice:

BS. 5854	Flue and flue Structures in Buildings.
BS. 6644	Installation of gas fired hot water boilers of rated inputs between 70kW and 1.8MW (net) (2nd and 3rd family gases).
BS. 6880	Low temperature hot water heating systems of output greater than 45kW. Part 1 Fundamental and design considerations. Part 2 Selection of equipment. Part 3 Installation, commissioning and maintenance.
IGE/UP/1	Soundness testing and purging of industrial and commercial gas installations.
IGE/UP/2	Gas installation pipework, boosters and compressors on industrial and commercial premises.
IGE/UP/10	Installation of gas appliances in industrial and commercial premises.

SAFE HANDLING OF SUBSTANCES

No asbestos, mercury or CFCs are included in any part of the boiler or its manufacture.

FOUNDATION / LOCATION OF BOILER

The boiler must stand on a floor which must be flat, level and of a suitable load bearing capacity to support the weight of the boiler (when filled with water) and any ancillary equipment.

Ideally the boiler should be placed on a plinth exceeding the plan area of the boiler by 75mm on each side and at least 100mm high.

The boiler must not be fitted outside.

GAS SUPPLY

The local gas supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas. An existing service pipe must NOT be used without prior consultation with the local gas supplier.

A gas meter can only be connected by the local gas supplier or by a registered GAS SAFE engineer or in IE by a competent person.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the rate of gas supply required. A minimum working gas pressure of 15mbar MUST be available at the boiler inlet for Natural gas.

Do not use pipes of smaller size than the boiler inlet gas connection.

The complete installation MUST be tested for gas soundness and purged in accordance with the appropriate standards.

Gas Boosters

A gas booster is required if the gas pressure available at the boiler is lower than that required by the boiler manufacturer to attain the flow rate for maximum burner input rating.

Location of the booster requires careful consideration but should preferably be closer to the burner rather than the gas meter. Ventilation should also be considered to ensure that ambient temperatures do not exceed designed recommendations. Further guidance is provided in IGE/UP/2.

FLUE INSTALLATION

IMPORTANT. It is the responsibility of the installer to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance **MUST** be isolated from the gas supply and labelled as 'unsafe' until corrective action can be taken.

Terminal Position

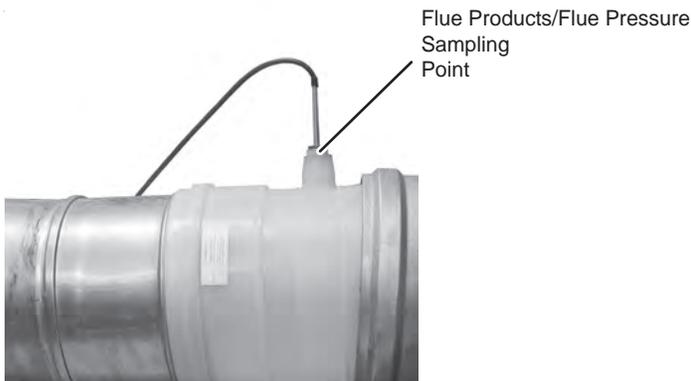
Due to the high efficiency of the boilers pluming will occur. Vertical termination is recommended and terminal positions which could cause problems should be avoided. Particular care should be taken in the case of large output boiler installations, and complying with the requirements of the Clean Air Act.

The flue must be installed in accordance with the appropriate Building Regulations and standards listed on page 4 and in compliance with BS6644. In IE refer to I.S.820:2000.

FLUE SYSTEM DESIGN

Due to the high efficiency of these boilers, the flue gas temperatures are low and the buoyancy in the stack will be relatively small. The boiler is supplied with an integral fan which is fully matched to the boiler in each case to provide correct combustion air flow and overcome the flue resistance.

The power of this fan is such that there is a large reserve of pressure available to overcome a significant length of flue without affecting the combustion performance of the boiler. The maximum & minimum pressure available measured at the base of the flue to overcome combined flue and air resistance is 100Pa (max) and -10Pa (min) for all model sizes. The pressure should be checked at maximum heat input to ensure this maximum pressure is not exceeded. Care should be taken with tall flue systems to ensure excess buoyancy is not created. A negative pressure must not be created at the boiler flue outlet.



Boiler Size	320	395	470	545	620
Flue Pressure (max) Pa	100				
Flue Pressure (min) Pa	-10				

The addition of elbows and their positions in the flue and the terminal will have a significant effect on the maximum flue length. Consult with your flue supplier for detailed design work.

IMPORTANT NOTE.

If combustion air is drawn from within the boiler room, ensure no dust or airborne debris can be ingested into the appliance. Dusty concrete flooring should be sealed to reduce the presence of dust. Ideally where possible duct the air supply into the boiler room from a clean source outside the boiler room/building.

If the air filter accessory is fitted the 100Pa / -10Pa pressure requirement must be checked at maximum heat input with the filter fitted.

Material

With no requirement for buoyancy to discharge flue products and with low flue gas temperatures, single wall flues are suitable for most installations. Care should still be taken to maintain compliance with building regulations and relevant standards.

Care should also be taken in the selection of flue terminals as these tend to accentuate the formation of a plume and could freeze in cold weather conditions.

Care should be taken to ensure the specification of the chimney is suitable for the application by reference to the manufacturer's literature.

WATER CIRCULATION SYSTEM

The boiler is suitable for connection to a sealed heating system or an open vented system.

A circulation pump **MUST** be connected to the boiler, see below.

The boiler **MUST NOT** be used for direct hot water supply. The hot water storage cylinder **MUST** be of the indirect type.

Single feed, indirect cylinders are not recommended and **MUST NOT** be used on sealed systems.

The appliances are **NOT** suitable for gravity central heating nor are they suitable for the provision of gravity domestic hot water.

The hot water cylinder and ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing - particularly where pipes run through roof spaces and ventilated underfloor spaces.

The boiler must be vented. There must be no low points between the boiler flow connection and a system vent point, which should be positioned as close as practically possible to the boiler flow connection.

Draining taps **MUST** be located in accessible positions, which permit the draining of the whole system - including the boiler and hot water storage vessel. They should be at least 1/2" BSP nominal size and be in accordance with BS. 2879. Do not use the boiler drain tap to drain the system as this can induce sludge into the heat exchanger.

The central heating system should be in accordance with the relevant standards listed on page 4.

Once the burner has extinguished the boiler requires a 2 minute pump overrun to dissipate the residual heat. In order to allow this a 2 minute pump overrun is incorporated into the boiler control.

An external pump must be connected or controlled by the boiler, however if it is directly connected it must not exceed 1.3A inductive load, if it does then a relay or contactor must be used.

GENERAL

When sizing pumps, reference should be made to the Hydraulic Resistance Table on page 7 which show the boiler resistance against flow rates, to achieve the required temperature differential. A Pump Kit is available as an optional extra.

Flow rates for common systems using either 11°C or 20°C temperature differentials are given in the table below.

Boiler Output (kW)	Water flow rate temp. difference 11°C (20°F)		Water flow rate temp. difference 20°C (36°F)	
	l/s	m ³ /h	l/s	m ³ /h
320	6.9	24.7	3.8	13.7
395	8.6	30.9	4.7	17.0
470	10.2	36.8	5.6	20.2
545	11.8	42.6	6.5	23.5
620	13.5	48.8	7.4	26.7

Note.

- *With the boiler firing at maximum rate, the temperature differential should not be less than 10°C. High flow rates required for lower temperature differentials could lead to erosion of the heat exchanger water ways.*
- *With the boiler firing at minimum rate, the temperature differential should not be greater than 35°C. Lower flow rates generating higher temperature differentials will lead to lock out of the boiler.*
- *The lower the return temperature to the boiler, the higher the efficiency. At return temperatures of 55°C and below, the difference becomes marked because the water in the flue gases starts to condense, releasing its latent heat.*

In installations where all radiators have been provided with thermostatic radiator valves, it is essential that water circulation through the boiler is guaranteed. A mixing header will perform this task. Alternatively this can be best achieved by means of a differential pressure valve, which is installed in a bypass between the flow and return pipes. The bypass should be fitted at least 6m from the boiler, and should be capable of allowing a minimum flow rate to achieve a temperature differential of no greater than 35°C at minimum rate.

WATER TREATMENT

These boilers incorporate an ALUMINIUM heat exchanger.

IMPORTANT. The application of any other treatment to this product may render the guarantee of **Ideal Boilers** INVALID.

Ideal Boilers recommend Water Treatment in accordance with Guidance Notes on Water Treatment in Central Heating Systems.

If water treatment is used **Ideal Boilers** recommend only the use of SCALEMASTER SM-1 PRO, FERNOX, MBI, ADEY MC1, SENTINEL X100 or CALMAG CM100 inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

In hard water areas where mains water can exceed 200ppm Total Hardness (as defined by BS 7593:2006 Table 2) a scale reducing device should be fitted into the boiler cold supply within the requirements of the local water company. The use of artificially softened water, however, is not permitted.

Ideal Boilers recommend the use of Fernox Quantomat, Sentinel Combiguard, Calmag CalPhos I scale reducing devices or Scalemaster In-line Scale Inhibitor branded Ideal, which must be used in accordance with the manufacturers' instructions.

Notes.

1. *It is most important that the correct concentration of the water treatment products is maintained in accordance with the manufacturers' instructions.*

2. *If the boiler is installed in an existing system any unsuitable additives MUST be removed by thorough cleansing.*
3. *In hard water areas, treatment to prevent lime scale may be necessary - however the use of artificially softened water is NOT permitted.*
4. *Under no circumstances should the boiler be fired before the system has been thoroughly flushed.*

For further information contact:

Fernox Alent Plc
Forsyth Road, Sheerwater, Woking, Surrey GU21 5RZ
+44 (0) 8706 015000

Sentinel Performance Solutions
7560 Daresbury Park, Daresbury,
Warrington, Cheshire WA4 4BS
Tel: 0800 389 4670

Scalemaster Water Treatment Products
Emerald Way, Stone, Staffordshire ST15 0SR
Tel: +44 (0) 1785 811636

Calmag Ltd.
Riverview Buildings, Bradford Road, Riddlesden, Keighley,
West Yorkshire BD20 5JH
Tel: +44 (0) 1535 210320

Adey Professional Heating Solutions
Gloucester Road, Cheltenham GL51 8NR
Tel: +44 (0) 1242 546700

ELECTRICAL SUPPLY

WARNING. This appliance must be earthed.

Wiring external to the appliance MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations which apply. For Ireland reference should be made to the current ETCI rules for electrical installations.

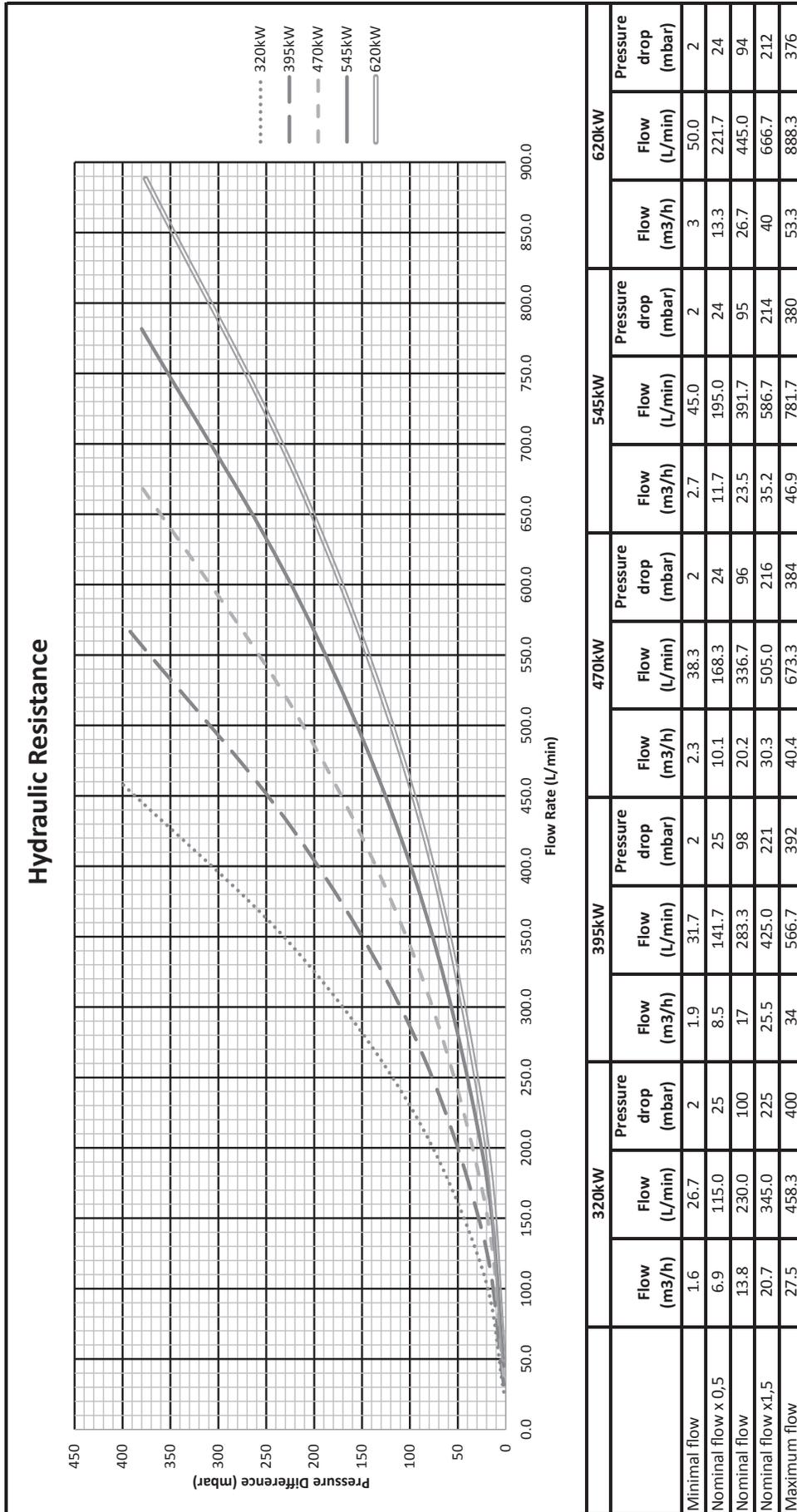
The point of connection to the mains should be readily accessible and adjacent to the boiler.

CONDENSATE DRAIN

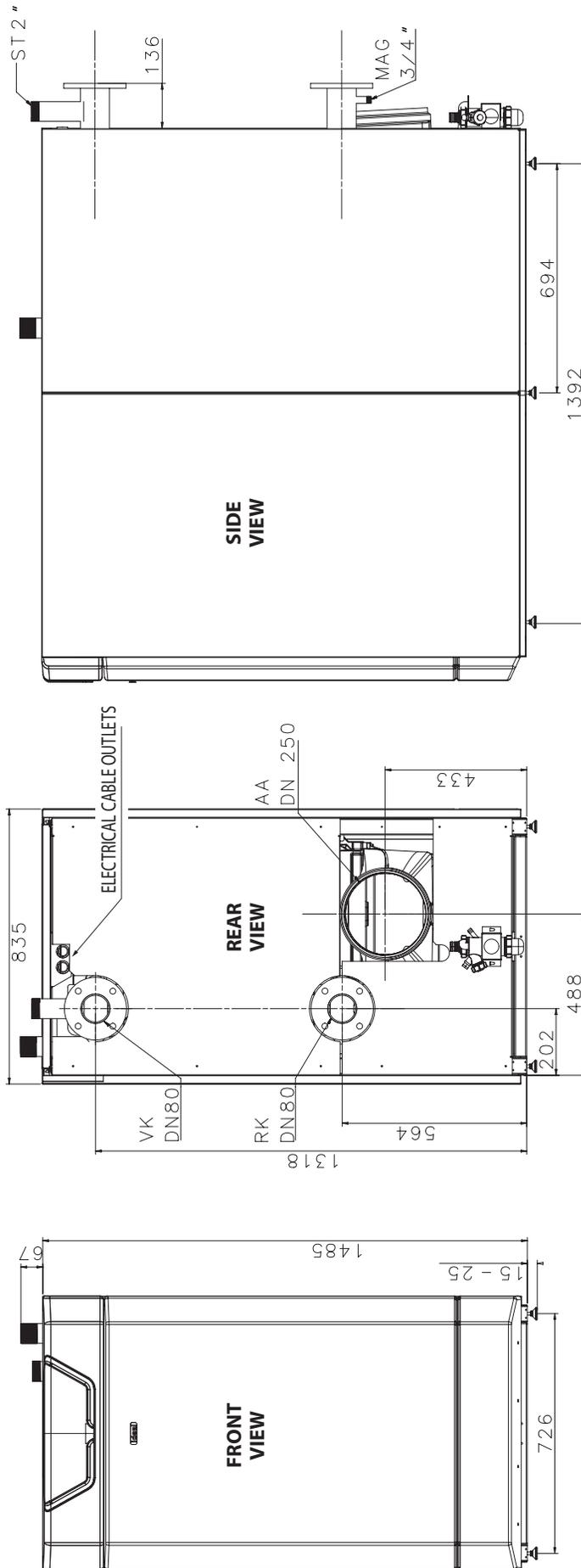
A condensate drain is provided on the boiler. This drain must be connected to a drainage point on site. All pipework and fittings in the condensate drainage system MUST be made of plastic - no other materials may be used.

IMPORTANT. Any external runs must be insulated to avoid freezing in cold weather causing blocking.

HYDRAULIC RESISTANCE

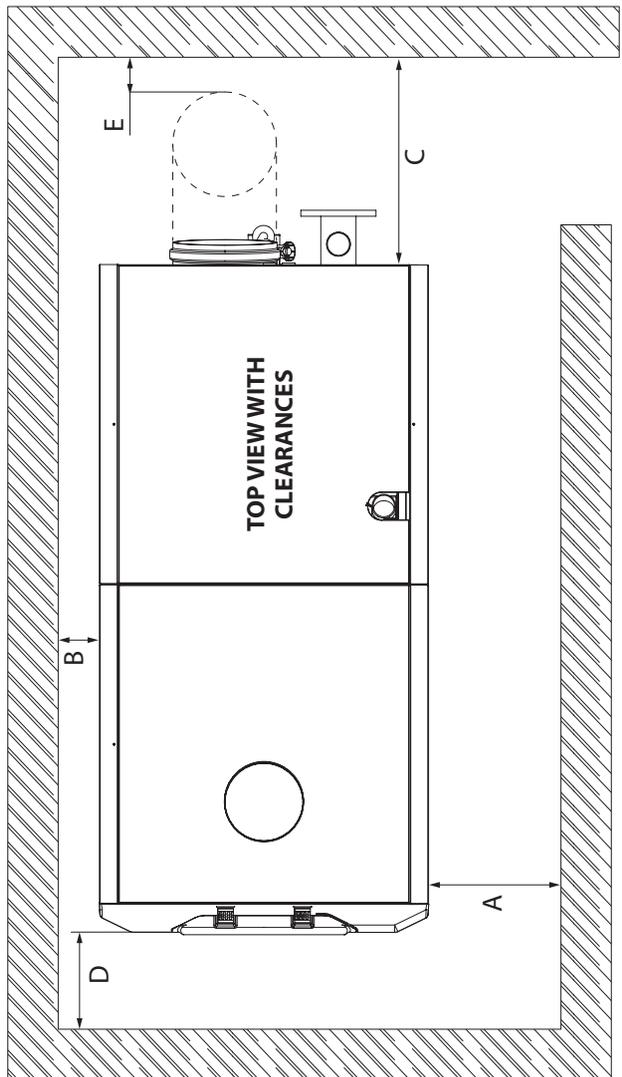
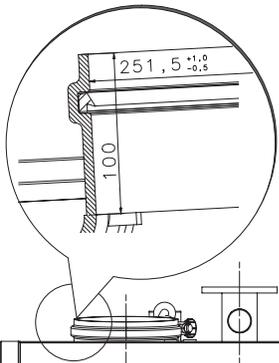
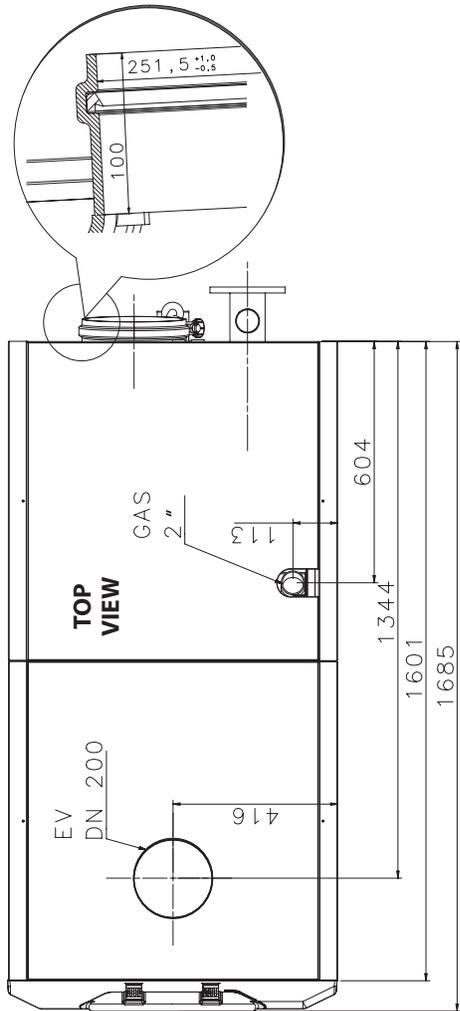


1 BOILER DIMENSIONS AND CLEARANCES



All dimensions in mm unless otherwise stated

2 BOILER DIMENSIONS AND CLEARANCES..... CONT'D



Dimension	Minimum	Recommended
A	700	1000
B	150	400
C*	-	-
D	700	1000
E*	150	400
TOP	700	1000

*This clearance dimension applies independently of the installed flue system

All dimensions in mm unless otherwise stated

3 VENTILATION

The ventilation requirements of these boilers are dependant on the type of flue system used, and their heat input. All vents must be permanent with no means of closing, and positioned to avoid accidental obstructions by blocking or flooding.

Detailed reference should be made to BS. 6644 for inputs between 70kW and 1.8MW (net). In IE refer to the current edition of I.S.820. The following notes are for general guidance only:

Dust contamination in the combustion air may cause blockage of the burner slots. Unless the boiler room provides a dust free environment then direct connection of the air intake via ducting to clean outside air should be used.

The temperature within a boiler room shall not exceed 25°C within 100 mm of the floor, 32°C at mid height and 40°C within 100 mm of the ceiling.

IMPORTANT NOTE.

If combustion air is drawn from within the boiler room, ensure no dust or airborne debris can be ingested into the appliance. Dusty concrete flooring should be sealed to reduce the presence of dust. Ideally where possible duct the air supply into the boiler room from a clean source outside the boiler room/building.

Open Flued Installations

If ventilation is to be provided by means of permanent high and low vents communicating direct with outside air, then reference can be made to the sizes below. For other ventilation options refer to BS. 6644. In IE refer to the current edition of I.S.820.

Required area (cm²) per kW of total rated input (net)

	Boiler Room	Enclosure
Low level (inlet)	4	10
High level (outlet)	2	5

Note: Where a boiler installation is to operate in summer months (e.g. DHW) additional ventilation requirements are stated, if operating for more than 50% of time (refer to BS6644).

4 SEALED SYSTEM REQUIREMENTS

Working pressure 6 bar maximum.

Particular reference should be made to BS. 6644 and Guidance note PM5 "Automatically controlled steam and hot water boilers" published by the Health and Safety Executive.

The information and guidance given below is not intended to override any requirements of either of the above publications or the requirements of the local authority, gas or water undertakings.

In general commercial closed pressurised systems are provided with either manual or automatic water make up.

In both instances it will be necessary to fit automatic controls intended to protect the boiler, circulating system and ancillary equipment by shutting down the boiler plant if a potentially hazardous situation should arise.

Examples of such situations are low water level and operating pressure or excessive pressure within the system. Depending on circumstances, controls will need to be either manual or automatic reset. In the event of a shutdown both visual and audible alarms may be necessary.

Expansion vessels used must comply with BS. 4814 and must be sized on the basis of the total system volume and initial charge pressure.

Initial minimum charge pressure should not be less than 1.0 bar (15psi) and must take account of the static head and specification of the pressurising equipment. The maximum water temperatures permissible at the point of minimum pressure in the system are specified in BSEN 61508.

When make up water is not provided automatically it will be necessary to fit controls which shut down the plant in the event of the maximum system pressure approaching to within 0.35bar (5psi) of the safety valve setting.

Other British Standards applicable to commercial sealed systems are:

- BS. 6880: Part 2
- BS. 1212
- BS. 6281: Part 1
- BS. 6282: Part 1
- BS. 6283: Part 4

IMPORTANT; If a sealed system is required please ensure a maximum flow temperature of 90°C is not exceeded.

5 OPEN VENTED SYSTEM REQUIREMENTS

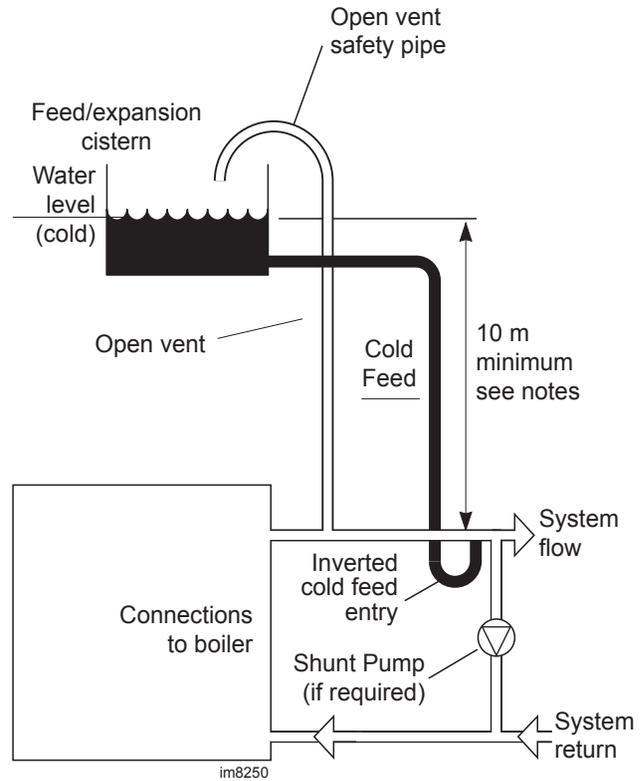
Detail reference should be made to the appropriate standards listed on page 4.

The information and guidance given below is not intended to override any requirements of the above publications or the requirements of the local authority, gas or water undertakings.

The vertical distance between the pump and feed/expansion cistern **MUST** comply with the pump manufacturer's minimum requirements, to avoid cavitation. Should these conditions not apply either lower the pump position or raise the cistern above the minimum requirement specified by **Ideal Boilers**. The isolation valves should be fitted as close to the pump as possible.

The information provided is based on the following assumptions:

1. An independent open vent/safety pipe connection is made immediately after the system flow pipe connection.
2. An independent cold feed/expansion pipe connection is made immediately after the open vent/safety pipe connection.
3. The maximum flow rate through the boiler is based on a temperature difference of 20°C at full boiler output.
4. The boiler is at the highest point of circulation in the system. Systems designed to rise above the boiler flow tapings will automatically require a minimum static head higher than that shown.
5. The position of the open vent/safety pipe above the expansion cistern water level is given as a guide only. The final position will depend upon the particular characteristics of the system. Pumping over of water into the expansion cistern must be avoided.
6. Both open vent/safety pipe and cold feed/expansion pipes must be of adequate diameter to suit the output of the boiler. Refer to Tables below and BS 6644:2005.



Note.

This diagram does not show safety valves, water flow switches, etc. necessary for the safe operation of the system.

Open Vent Pipe Sizes

Open vent pipe size is determined using:

$$A = 3.5 \times Q_R$$

When:

- Q_R is heat input in kW
- A is area in mm²

Cold Feed Pipe Sizes

A minimum pipe size for the cold feed should be 50mm (bore) or 2" (DN).

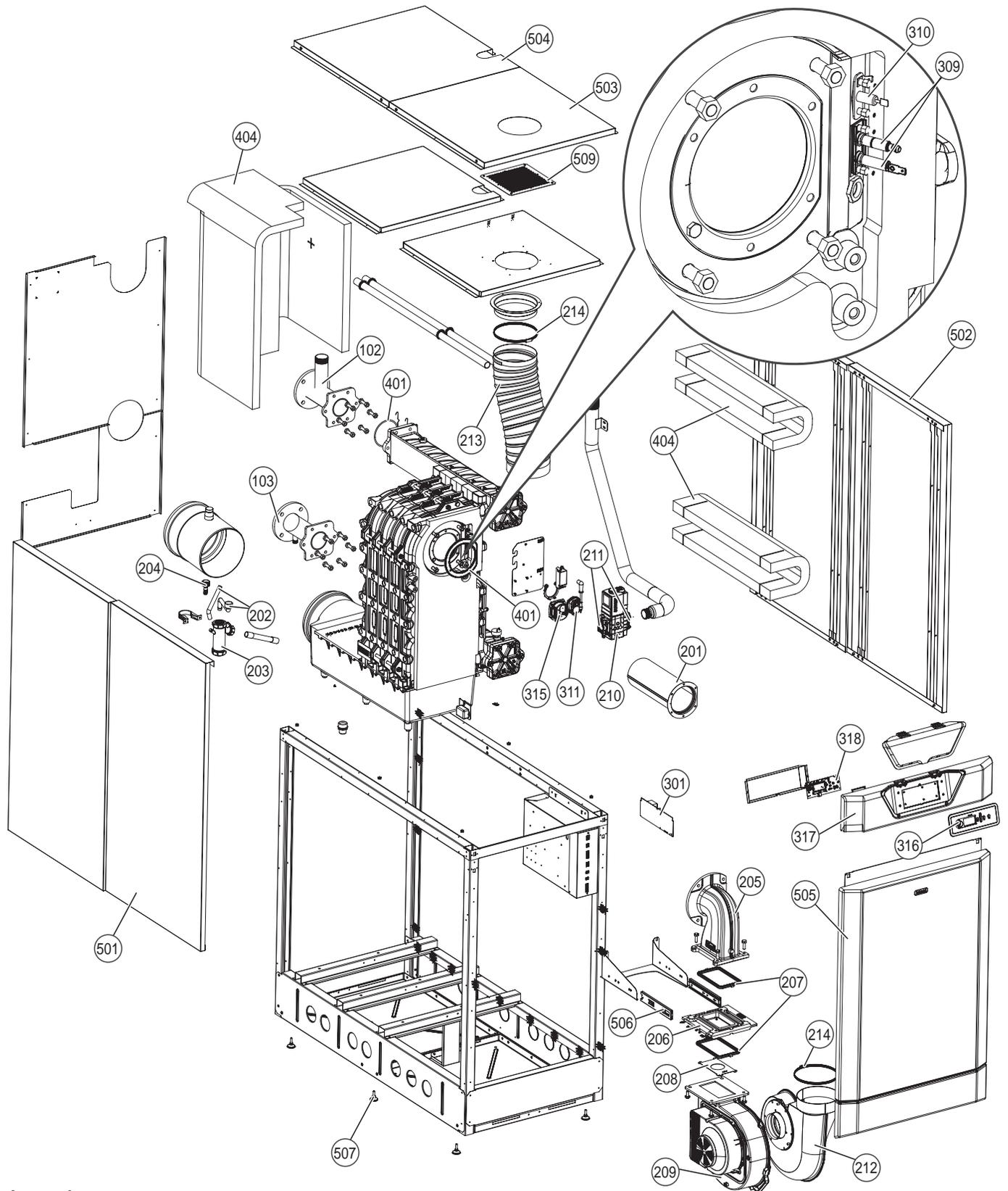
Note; Steel pipe sizes complying with medium or heavy quilting or BS 1387.

IMPORTANT: If an open vented system is required please ensure a maximum flow temperature of 80°C is not exceeded.

INSTALLATION

6 BOILER ASSEMBLY - Exploded View

Note that item numbers are linked to the spares list



Legend

102 Flow Manifold	208 Restrictor Plate	310 Ionisation Electrode	501 Side Panel - LH
103 Return Manifold	209 Blower	311 Air Pressure Switch	502 Side Panel - RH
201 Burner	210 Gas Valve	315 Air Pressure Switch (Kroms)	503 Top Front Outer Panel
202 Condensate Hose	211 Gas Valve Shutter Pack	316 Buttons & Potentiometer Knob	504 Top Rear Outer Panel
203 Condensate Trap	212 Whirlwind Kit	317 Pod - CUI	505 Front Panel
204 Hose Adaptor	213 Air Inlet Ducting	318 PCB - CUI	506 Accuride
205 Burner Hood	214 Air Inlet Strapping	401 Heat Engine Gasket Kit	507 Levelling Feet x 6
206 Interface Piece	301 PCB	404 Insulation	509 Grille
207 Seal Interface Plate x2	309 Ignition Electrode		

7 TRANSPORTING & POSITIONING THE BOILER

CAUTION: Risk of injury through carrying heavy loads.

- Only transport the boiler by means of a crane / hoist, forklift truck or transport rollers.
- Only trained authorised personnel may undertake the handling (E.g. by forklift truck) or lifting by means of a crane/hoist.
- Observe safety instructions relating to the lifting of heavy loads (e.g. by means of a crane/hoist)
- Wear personal safety equipment (e.g. safety boots and protective gloves).
- Protect the boiler against slippage by means of a transport strap.

NOTICE: Boiler damage through impact.

The standard delivery of the boiler includes components that are susceptible to impact damage.

- Protect all components against impact influences when transporting the boiler.
- Observe the transport instructions on the packaging.

The boiler may be transported to the place of installation by crane/hoist, forklift truck or pallet truck, ensuring safe practice at all times. Where possible, transport the boiler to the installation location in its shipping packaging to protect it from contamination and damage.

1. Take the boiler to the plant room via crane/hoist, forklift truck or pallet truck*.
(*If using pallet truck refer to diagram below.)
2. To remove the appliance from the pallet, packaging and panels **MUST** be removed and stored safely.
3. Remove the two screws securing the boiler to the pallet (CL front and rear).
4. Slide the unit off the pallet. At this point it can be put on transport rollers if necessary.
5. Position the boiler for installation and using a spirit level check the appliance is level to ensure no air pockets can collect in the boiler and the condensate can fully drain.
6. If the floor is not level, fit the six adjustable feet provided in the hardware pack and adjust to level the boiler. To fit the feet raise one end of the boiler and support the frame with suitable timber. Raise the other end in the same way. Fit the adjustable feet and secure.

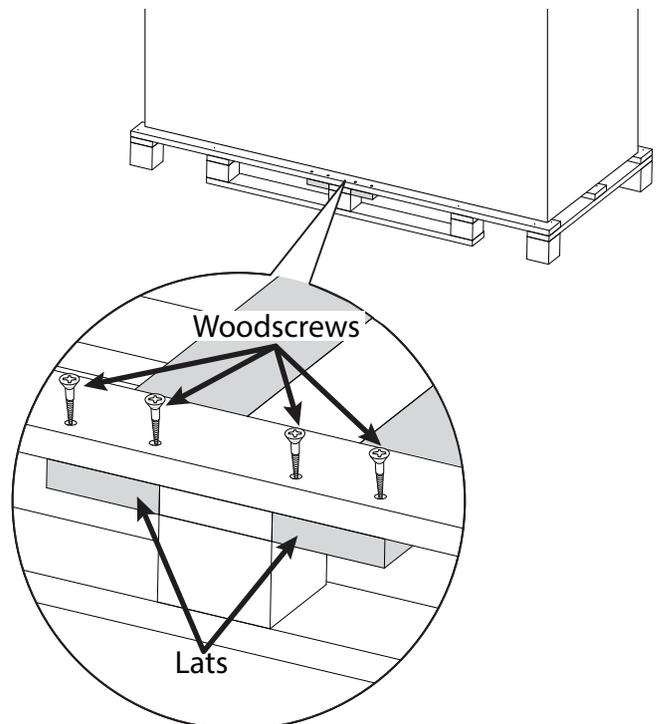
Note. To remove front and side panels refer to Frame 36.

NOTE. Transporting via pallet truck (side loading)

If the appliance is required to be transported by a pallet truck from the side, it may be necessary (depending on the type of truck) to remove the two wooden lats in the middle of the pallet to aid access.

1. Remove the 4 wood screws at the side of the appliance.
2. Remove the 4 wood screws on the opposite side of the appliance.
3. Remove the 2 wooden lats.

This will now be suitable for side loading onto a pallet truck.



INSTALLATION

INSTALLATION

8 FITMENT OF FLOW AND RETURN MANIFOLD

1. Remove front panel (refer to Frame 36) and remove hardware pack.
2. To allow fitting of the manifold extensions, remove the rear panel upper and lower by removing the 10 securing screws.
3. To fit the flow manifold extension fit the O ring seal into the recess in the rear of the flow manifold.
4. Align the flow manifold extension with the 2" BSP branch vertically upwards.
5. Insert the 6 bolts supplied in the hardware pack and fit the securing nuts. Tighten sequentially.

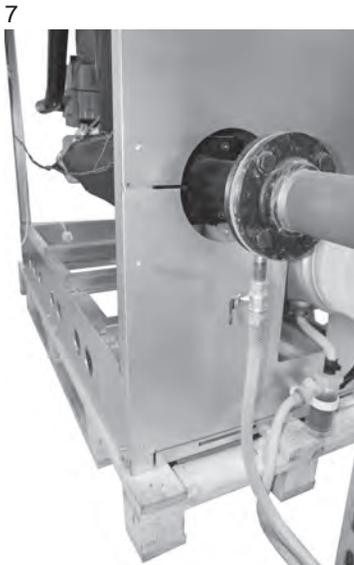
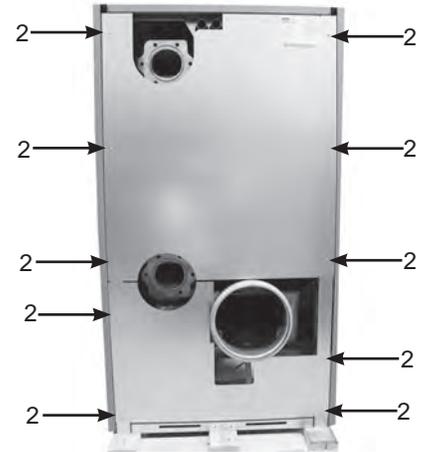
Note.

If fitting the sealed system optional kit, please refer to the instructions supplied with the kit. If the kit is not being fitted, the 2" BSP branch must be capped off as shown in image 3.

6. The flange joint is DN80 PN6. A suitable mating flange with bolts and gaskets must be fitted to the system pipework for connection.
7. To fit the return manifold extension follow the instructions above with the exception of the 3/4" BSP branch which must be aligned vertically downwards.

Note. *The 3/4" BSP branch may be used to fit a drain point. If this is not required the 3/4" BSP branch must be capped off.*

8. Once the extensions have been fitted the insulation supplied in the hardware pack must be fitted. The insulation must be secured using the wire clips supplied in the hardware pack picture.



Note. This flow manifold is fitted at the top of the appliance.

9 FLUE / AIR DUCT INSTALLATION

FLUE

When fitting the flue to the flue socket take care not to disturb the lip seal which must be present.

The flue should be supported in such a way as not to place a load on the flue socket.

IMPORTANT NOTE.

Unless the flue is manufactured from aluminium the condensate from the flue must be collected and drained before entering the sump of the boiler. See page 5 for details on flue system design.

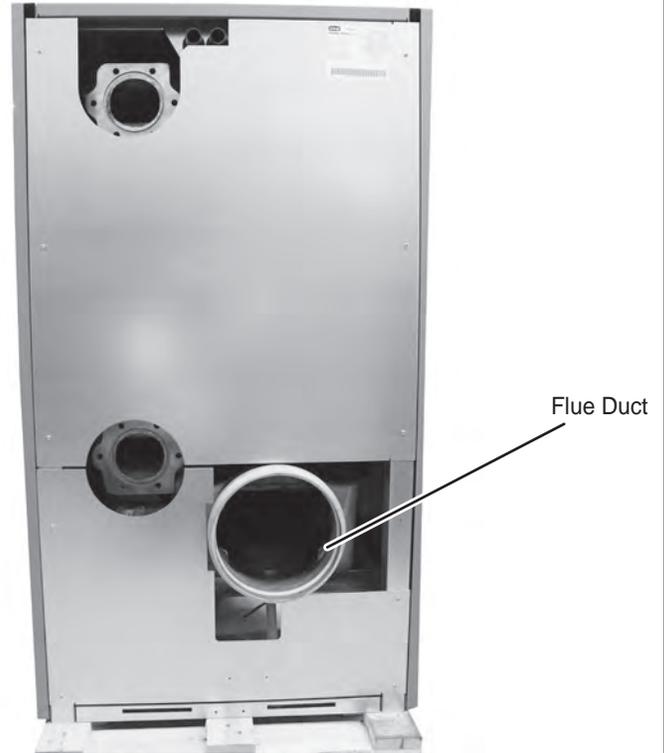
The flue adaptor supplied must be fitted & the condensate drain must be connected.

FITMENT OF THE FLUE ADAPTOR

To fit the flue adaptor apply the lubricant provided with the flue adaptor in the hardware pack around the spigot or male end of the adaptor. Offer up the adaptor with the open drain point pointing vertically downwards and push the adaptor fully home into the socket.

AIR DUCT

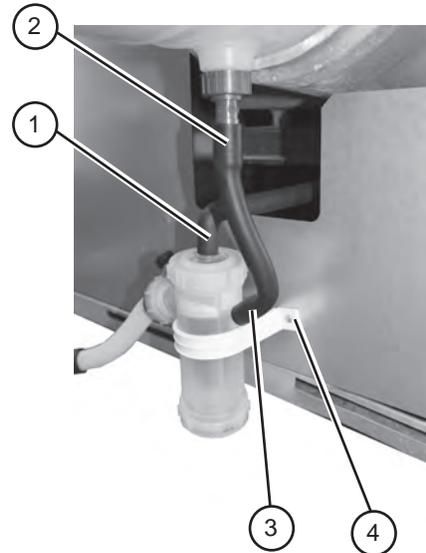
If it is necessary to duct the air inlet from outside, the optional air duct kit must be purchased. Instructions for installation are provided with the kit.



10 CONDENSATE DRAIN

The condensate drain must be connected to the condensate drain points at the sump outlet and the flue adaptor. The condensate drain outlet must be connected to a drainage point, preferably within the building.

1. Ensure the pipe is fully located into the condensate trap.
2. Ensure the pipe is located at least half way onto the flue adaptor drain point.
3. Ensure the pipe is fully located onto the condensate trap and held in place with the clip provided.
4. The condensate trap must be secured with the bracket using the 2 screws



11 FROST PROTECTION

The boiler has built into its control system the facility to protect the boiler only against freezing.

If the boiler flow temperature T_1 , falls below 5°C the pump and burner run until the temperature exceeds 19°C.

Central heating systems fitted wholly inside the building do not normally require frost protections as the building acts as a 'storage heater' and can normally be left at least 24 hours

without frost damage. However, if parts of the pipework run outside the building or if the boiler will be left off for more than a day or so, then a frost thermostat should be wired into the system, see Frame 28.

INSTALLATION

12 GAS CONNECTIONS

The boiler gas supply pipe is terminated in a 2" BSP male taper connection on the top RHS of the appliance.

A minimum working gas pressure of 15mbar (6" w.g.) must be available at the boiler inlet with the boiler firing.

Fit a gas supply pipe NOT LESS THAN 2" BSP to the boiler. Refer to Frame 2.

It is recommended that an isolation valve be fitted as close to the boiler as possible.

Pressure drop from appliance inlet to gas valve inlet test point

		320	395	470	545	620
Max Rate	(mbar)	0.6	0.5	1.0	1.5	1.5
Min Rate	(mbar)	0	0	0	0	0

13 ELECTRICAL CONNECTIONS

Warning. This appliance MUST be efficiently earthed.

A mains supply of 230V 50Hz @ 7A is required. The supply wiring MUST be suitable for mains voltage.

Connection should be made in a way that allows complete isolation of the electrical supply - such as a double pole switch, having a 3mm (1/8") contact separation in both poles serving only the boiler and system controls. The means of isolation must be accessible to the user after installation.

When making mains electrical connections to the boiler it is important that the wires are prepared in such a way that the earth conductor is longer than the current carrying conductors, such that if the cord anchorage should slip the current carrying conductors become taut before the earthing conductor.

Two plastic conduit tubes are provided, to allow routing from the installation connections on the front of the boiler to the rear egress point.

One conduit should be used for 230V mains wires and one for SELV wiring.

14 EXTERNAL WIRING

External wiring MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations. For Ireland reference should be made to the current ETCI rules for electrical installations.

For wiring external controls to the boiler, reference should be made to the systems wiring diagram supplied by the relevant manufacturer in conjunction with the connection diagram shown in Frame 17.

Difficulty in wiring should not arise, providing the following directions are observed:

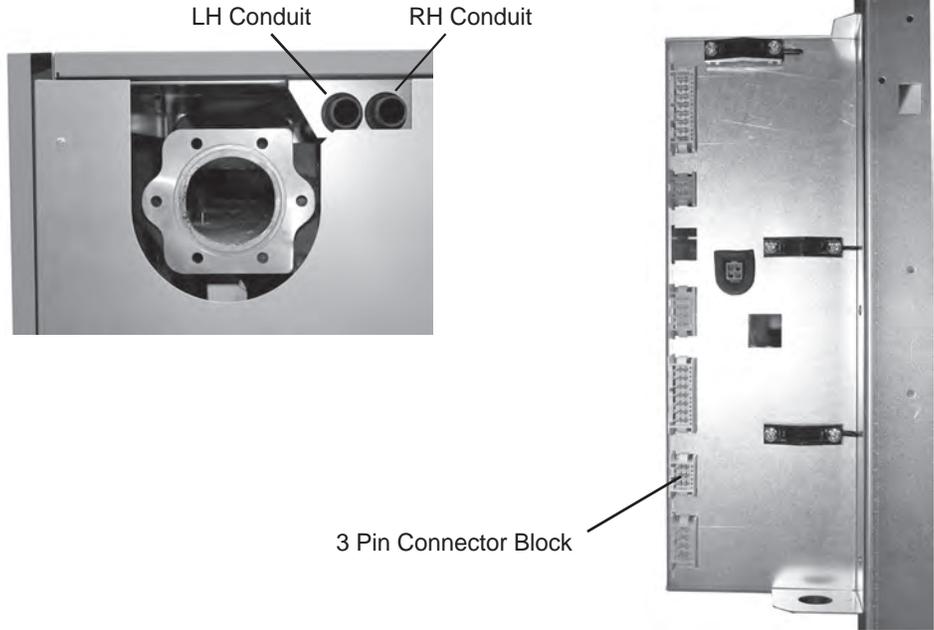
1. The appliance must be wired with a permanent live supply. External controls should NOT be wired in series with this mains input. Controlling the mains input in this way will prevent the pump over-run sequence and may cause damage to the heat exchanger.
2. 230V AC outputs are provided and may be used to control pumps or valves as required. They may also be used to provide status signals into any external BMS. The function of these outputs can be set in order to meet the function required by the system.
3. 230V AC inputs are provided to enable the following demands.
 - Two heating demand inputs.
 - One Heating and One Hot water demand input.
4. SELV inputs are provided to enable the following demands:
 - Volts free input (OpenTherm)
 - 0-10V input
 - Outside Sensor
 - Hot water tank thermistor
5. An OpenTherm control Bus is provided to enable control and monitoring of the boiler by:
 - Modulating sequencer Kit
 - OpenTherm Room Control
 - OpenTherm Compatible BMS
 - OpenTherm Gateway
 - BACNET
 - MODBUS
 - LONWORKS
6. Volts free contacts are provided for the following:
 - Burner On
 - Fault
7. An optional outside temperature sensor may be fitted for outside weather compensation. See Frame 17 for connection details.
8. A Safety Interlock Kit may be fitted to the boiler if required.

15 MAINS AND CONTROL WIRING

Remove the two securing screws from the left hand side of the Installer connection cover.

From the rear of the appliance, feed the wiring for the electrical supply and controls into the two wiring conduits. All mains voltage cabling must be fitted using the LH conduit as seen from the rear. All extra low voltage cables must be fitted using the RH conduit.

The 230VAC electrical supply is connected to the 3 pin connector block. Refer to diagram in Frame 17. All cables must be retained in the cable clamps or glands provided.



16 SEQUENCER CONTROL OF MULTIPLE BOILERS

In installations where the heat load is greater than the boiler capacity an ideal solution is to use multiple boiler arrangements.

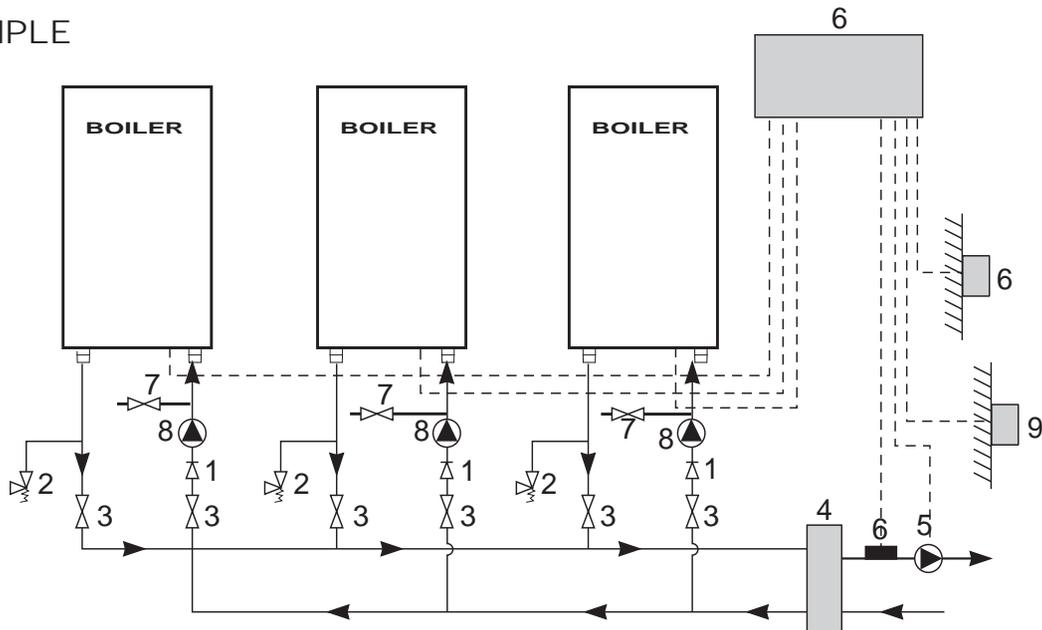
The ideal way to control a multiple boiler installation is with our modulating sequencer.

See below a typical installation example with our modulating sequencer kit. This device is capable of controlling up to 5 boilers. Additional kits are required for greater than this up to a maximum of 20 boilers.

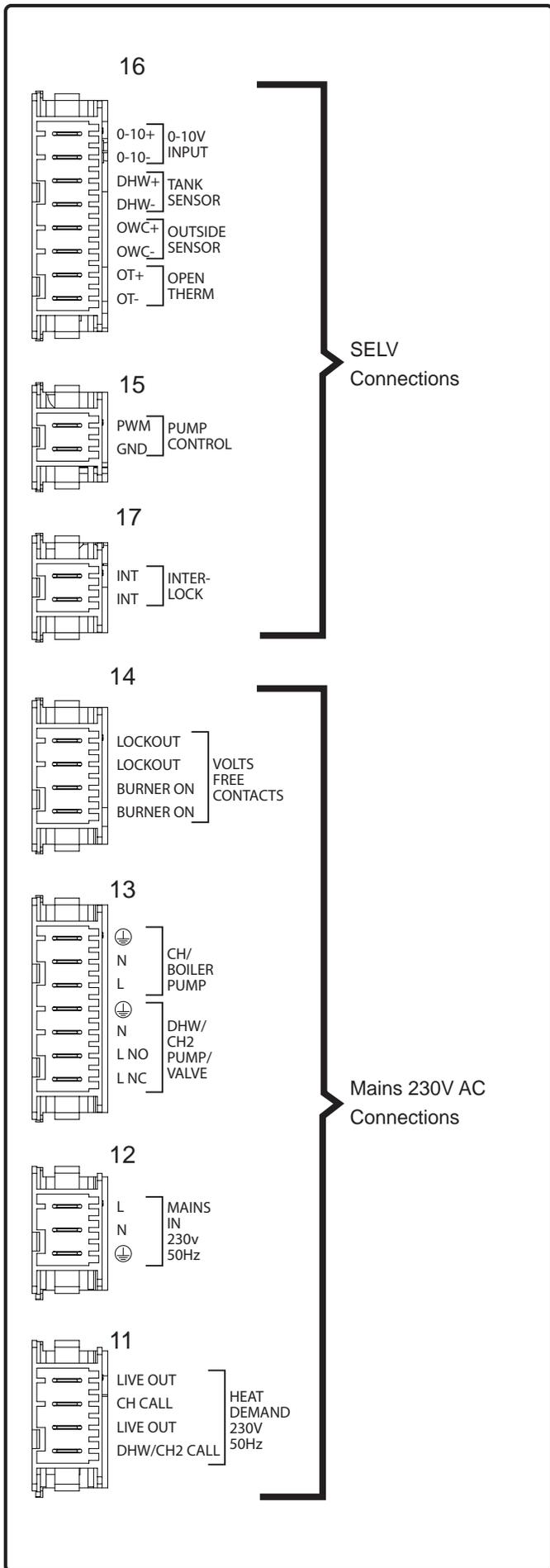
Legend

- | | |
|--|----------------|
| 1. Non-return valve | 7. Drain cock |
| 2. Safety valve | 8. Shunt pump |
| 3. Service valve | 9. Room Sensor |
| 4. Mixing header | |
| 5. System pump | |
| 6. Modulating Sequencer kit complete with outdoor sensor and flow sensor | |

EXAMPLE



17 INSTALLER CONNECTIONS

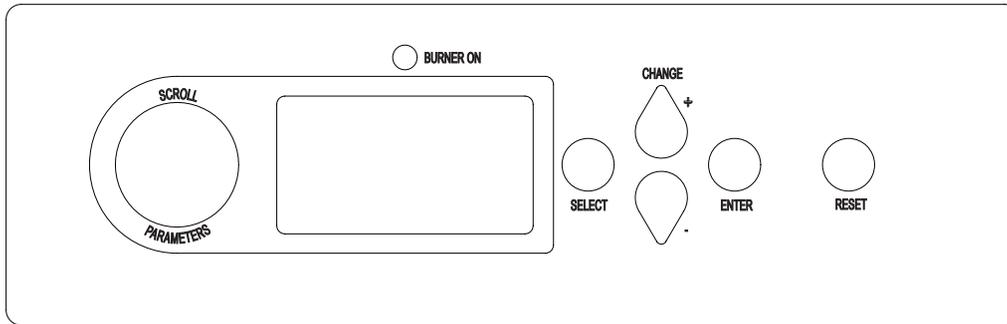


1. If a Pump is to be run directly from the boiler and the electrical current draw is 1.3A inductive or less then the pump can be connected directly into the CH Pump or DHW Pump connections, as appropriate. If the current draw is more than this then an external relay or contactor should be operated by the CH Pump or DHW Pump connection, with the external contact then powering the pump.
2. The Lockout Volt Free Relay contacts will close 4 minutes after a Fault occurs.
3. The Burner On Volt Free Relay contacts will close when the Burner is on.
4. Only Ideal Outside Sensor and DHW Tank Sensor kits should be connected to the boiler.
5. The External Interlock connection is only used in conjunction with the External Interlock Kit. This can be configured for 230V or 24V operation.
6. The Volts Free contacts can also be used for 230V or 24V signalling circuits.

INSTALLATION

INSTALLATION

19 BASIC CONTROLS DISPLAY



IMAX XTRA EL USER INTERFACE

Mains On

When the mains to the boiler is switched on a screen similar to the following will be displayed.

Ideal	
Initialising	Please Wait
U/I PCB	441.01
Pri' PCB	01.AB Nat Gas

Standby Mode

If the boiler has been switched to Standby Mode the following screen will be displayed
No Boiler operation will take place with this setting. See Frame 21 to change to Summer or Winter setting.

Standby Mode	
For Central Heating	
select Winter Mode	
For Hot Water	
select Summer or Winter	

Summer Mode

If the boiler has been switched to Summer Mode a screen similar to the following will be displayed (line 5 may vary depending on setup).
Domestic Hot Water operation will take place with this setting but Central Heating will not.
See Frame 21 to enable Central Heating by changing to Winter setting

Summer Mode	
For Central Heating	
select Winter Mode	
No Hot Water Demand	
Switched Live	Off

Winter Mode

If there is no current Heat Demand a screen similar to the following will be displayed (line 5 may vary depending on setup).
Line 5 indicates "Switched Live" or "OpenTherm" or "0-10V" depending on which controls are connected to the boiler.

Winter Mode	
No Central Heating	
Demand	
No Hot Water Demand	
Switched Live	Off

Domestic Hot Water Mode (DHW Thermostat)

If there is an ongoing Domestic Hot Water Demand using a DHW Thermostat, screens similar to the following will be displayed
Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler.
Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
Burner Power and Flow Temperature will vary as the boiler operates.

Hot Water	
DHW Switched Live On	
Burner On	
DHW Thermostat	
Flow Temp	80°C



Hot Water	
Burner Power	100%
Burner On	
DHW Thermostat	
Flow Temp	80°C

Domestic Hot Water Mode (DHW Thermistor)

If there is an ongoing Domestic Hot Water Demand using a DHW Thermistor, screens similar to the following will be displayed.
Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler.
Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)
Burner Power and Hot Water Temp' will vary as the boiler operates.
See Frame 21 for adjusting DHW Setpoint
See Frame 21 for configuring the boiler to use a DHW Thermistor.

Hot Water	
OpenTherm Mode	
Burner On	
DHW Setpoint	65°C
Hot Water Temp'	65°C



Hot Water	
Burner Power	100%
Burner On	
DHW Setpoint	65°C
Hot Water Temp'	65°C

continued

20 BASIC CONTROLS DISPLAY CONTINUED.....

Central Heating Mode

If there is an ongoing Central Heating Demand screens similar to the following will be displayed.
 Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
 Outside temperature will only be shown if an outside sensor is connected to the boiler.
 Burner Power and Flow Temp will vary as the boiler operates
 See Frame 25 for adjusting Flow Setpoint.

Central Heating	
CH Switched Live On	
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C



Central Heating	
Burner Power	100%
Outside Temp'	10°C
Flow Setpoint	80°C
Flow Temp	80°C

Boiler Frost Protection Mode

If the boiler flow temperature drops below 5°C screens similar to the following will be displayed.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
 Outside temperature will only be shown if an outside sensor is connected to the boiler.
 Burner Power and Flow Temp will vary as the boiler operates.

Boiler Frost Protect	
Burner Power	100%
Burner On	
Frost Setpoint	5°C
Flow Temp	80°C



Boiler Frost Protect	
Burner Power	100%
Outside Temp'	10°C
Frost Setpoint	5°C
Flow Temp	80°C

System Frost Protection Mode

If an Outside Sensor is fitted and the Outside Temperature drops below the system frost protection temperature setpoint a screen similar to the following will be displayed.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)
 Flow Temperature and Outside Temperature will vary as the boiler operates.
 See Frame 25 for adjusting the system frost protection temperature setpoint.

System Frost Protect	
Flow Temp	80°C
Burner On	
Frost Setpoint	-10°C
Outside Temp'	10°C

Cylinder Frost Protection Mode

If a Domestic Hot Water Thermistor is connected to the boiler and the DHW temperature drops below 5°C a screen similar to the following will be displayed.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
 Burner Power, Hot Water Temp' and Outside Temp' will vary as the boiler operates.
 Outside temperature will only be shown if an outside sensor is connected to the boiler.

Cylinder Frost Protect	
Burner Power	100%
Burner On	
Frost Setpoint	5°C
Hot Water Temp'	4°C



Cylinder Frost Protect	
Burner Power	100%
Outside Temp'	10°C
Frost Setpoint	5°C
Hot Water Temp'	4°C

0-10V Capacity Operating Mode

If 0-10V Capacity operation is ongoing screens similar to the following will be displayed.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
 Flow Temp' and Burner Power will vary as the boiler operates
 0-10V Input and Burner Setpoint Target will vary as the external Building Management System controls them.
 See Frame 23 for configuring the boiler for 0-10V Capacity Operation.

0-10V Operation	
0-10V Input =	10.0V
Burner On	
Burner Setpoint Target	100%
Flow Temp	80°C



0-10V Operation	
Burner Power	100%
Burner On	
Burner Setpoint Target	100%
Flow Temp	80°C

0-10V Temperature Operating Mode

If 0-10V Temperature operation is ongoing screens similar to the following will be displayed.
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun).
 Flow Temp and Burner Power will vary as the boiler operates
 0-10V Input and Flow Setpoint will vary as the external Building Management System controls them.
 See Frame 23 for configuring the boiler for 0-10V Temperature Operation.

0-10V Operation	
0-10V Input =	10.0V
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C



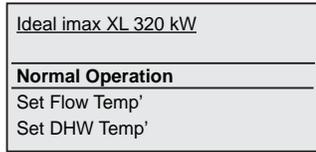
0-10V Operation	
Burner Power	100%
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C

continued

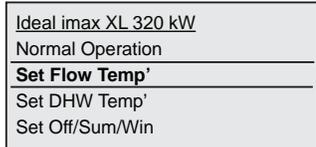
21 IMAX XTRA EL USER INTERFACE - BASIC OPERATING INSTRUCTIONS

SETTING FLOW TEMPERATURE

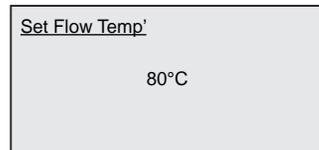
Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.



Rotate the KNOB clockwise until a screen similar to the following is displayed



Press SELECT and a screen similar to the following will be displayed



Press + and - to change to the required setting and then press ENTER to store.

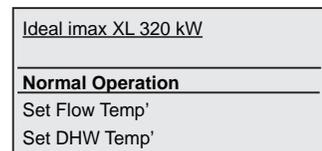
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

SETTING DOMESTIC HOT WATER TEMPERATURE

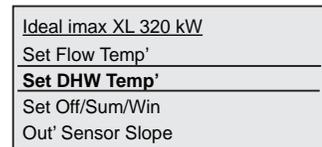
Note that DHW Temperature can only be set if a DHW Thermistor has been connected to the boiler and the boiler configured for its use. Without a DHW thermistor the flow temperature for the DHW switched live input will be controlled to the DHW Temperature Setpoint +4°C.

Press SELECT and a screen similar to the following will be displayed.

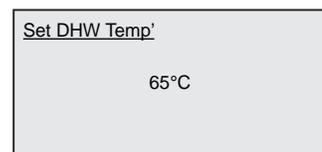
The kW output number in the 1st line will vary depending on the maximum output of the boiler.



Rotate the KNOB clockwise until a screen similar to the following is displayed



Press SELECT and a screen similar to the following will be displayed



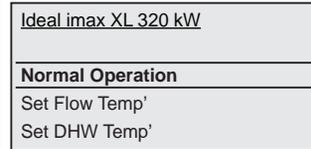
Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

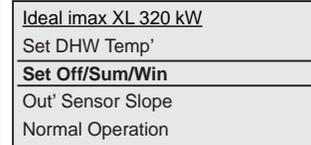
SETTING SUMMER, WINTER AND STANDBY OPERATION

Note that Standby Mode will disable Domestic Hot Water and Central Heating, Summer Mode will disable Central Heating.

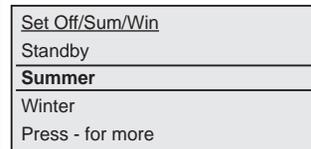
Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.



Rotate KNOB clockwise until a screen similar to following is displayed



Press SELECT and a screen similar to the following will be displayed



Press + and - to change to required setting, press ENTER to store.

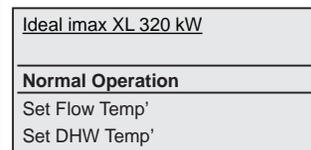
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

SETTING THE OUTSIDE SENSOR SLOPE

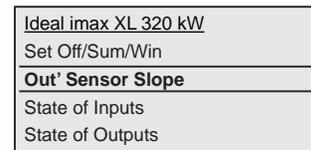
Note that an Outside Sensor must be fitted to the boiler for this feature to be active (this will be detected automatically).

Press SELECT and a screen similar to the following will be displayed.

The kW output number in the 1st line will vary depending on the maximum output of the boiler.



Rotate KNOB clockwise until a screen similar to the following is displayed



Press SELECT and a screen similar to the following will be displayed



Note that a higher number gives a higher room temperature and a lower number gives a lower room temperature.

Press + and - to change to required setting, press ENTER to store.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

continued

22 IMAX XTRA EL USER INTERFACE - BASIC OPERATING INSTRUCTIONS CONTINUED...

VIEWING THE STATE OF THE BOILER INPUTS

Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.

<u>Ideal imax XL 320 kW</u>
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until a screen similar to the following is displayed

<u>Ideal imax XL 320 kW</u>
Out' Sensor Slope
State of Inputs
State of Outputs
Fault History

Press SELECT and a screen similar to the following will be displayed

<u>State of Inputs</u>	
Flow Temp'	80°C
Return Temp'	60°C
HX Temperature	70°C
Press - for more	

The state of the inputs will vary as the boiler operates.

Press SELECT to exit this option.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

VIEWING THE STATE OF THE BOILER OUTPUTS

Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.

<u>Ideal imax XL 320 kW</u>
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until a screen similar to the following is displayed.

<u>Ideal imax XL 320 kW</u>
State of Inputs
State of Outputs
Fault History
Show Hours Run

Press SELECT and a screen similar to the following will be displayed.

<u>State of Outputs</u>	
Boiler Pump	On
DHW Pump/Valve	Off
Fan	3000rpm
Press - for more	

The state of the outputs will vary as the boiler operates.

Press SELECT to exit this option.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

VIEWING THE FAULT HISTORY OF THE BOILER

Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.

<u>Ideal imax XL 320 kW</u>
Normal Operation
Set flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until a screen similar to the following is displayed

<u>Ideal imax XL 320 kW</u>
State of Outputs
Fault History
Show Hours Run
Normal Operation

Press SELECT and a screen similar to the following will be displayed

<u>Fault History: Max 10</u>
Fault 1 [Latest]
Ignition Lockout [16]
23 days ago
Press - for more

The Fault History will vary depending on the operation of the boiler.

Press SELECT to exit this option.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

VIEWING THE BOILER HOURS RUN

Press SELECT and a screen similar to the following will be displayed
The kW output number in the 1st line will vary depending on the maximum output of the boiler.

<u>Ideal imax XL 320 kW</u>
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until a screen similar to following is displayed.

<u>Ideal imax XL 320 kW</u>
Fault History
Show Hours Run
Normal Operation

Press SELECT and a screen similar to the following will be displayed.

<u>Show Hours Run</u>
Total Hours 20 h
Flame On 10 h

The times will vary depending on the operation of the boiler.

Press SELECT to exit this option.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

continued

INSTALLATION

23 IMAX XTRA EL USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS

SETTING TO 0-10V

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

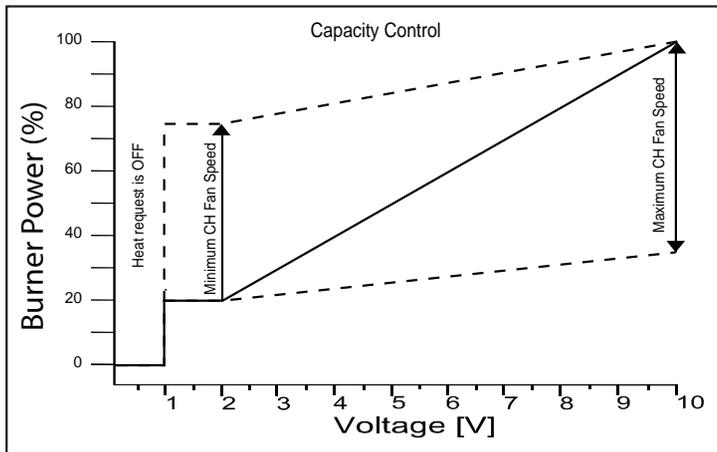
Installer Mode
Show Hours Run
Set to 0-10V Input
Set Night Setback
DHW Pump / Valve

Press SELECT and the following screen will be displayed

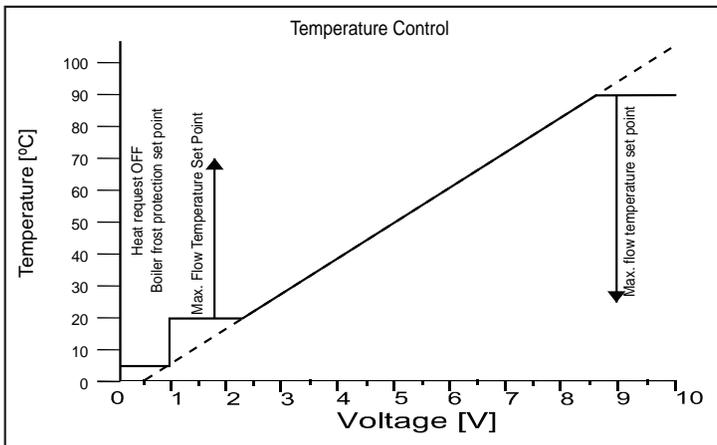
Set to 0-10V Input
0-10V Off
0-10V Capacity
0-10V Temperature

Press + and - to change to the required setting and then press ENTER to store.
 Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

0-10V Capacity Control is governed by the following relationship



0-10V Temperature Control is governed by the following relationship



continued

24 IMAX XTRA EL USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED....

ENABLING NIGHT SETBACK

Note- Night Setback is only operational if Outside Sensor has been connected
When Night Setback is enabled the boiler will run at the normal flow temp. during CH Demand and reduced temperature when no demand.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set to 0-10V Input
Set Night Setback
DHW Pump / Valve
Set Booster

Press SELECT and the following screen will be displayed

Set Night Setback
On
Off

Press + and - to change to required setting and then press ENTER to store
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

ENABLING VALVE POWER OPEN/VALVE POWER CLOSED/SHUNT PUMP

The boiler default setting is that the CH Pump output will only be On for a CH Demand and the DHW Pump output will only be on for a DHW Demand. This can be changed so that the CH Pump output controls the system pump and the DHW Pump output operates a Valve (power open or power shut) This can also be changed so that the CH Pump output controls a system pump and the DHW Pump output controls a shunt pump.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed (Installer mode is not permanently on).

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Night Setback
DHW Pump/Valve
Set Booster
CH/DHW Priority

Press SELECT and the following screen will be displayed

DHW Pump/Valve
Pump
Valve Power Open
Press - for more

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

DHW BOOSTER FUNCTION

Note- Booster Function is only operational if Outside Sensor has been connected.

If Booster function is enabled and CH Demand is ongoing for more than 10 minutes then the Flow Temp. target is increased by 10°C
When the Burner switches off the temperature is reset.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
DHW Pump / Valve
Set Booster
CH/DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

Set Booster
On
Off

Press + and - to change to required setting then press ENTER to store
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

CHANGING 2ND SWITCHED LIVE INPUT BETWEEN DHW & CH

To change the 2nd switched live input from DHW operation (factory default) to CH operation, press SELECT and then hold + and - down together for more than 5s and the following screen will be displayed:

Installer Mode
Normal Operation
Set Stat 1 Temp
Set Stat 2 Temp

Rotate the 1st stat clockwise until the following screen is displayed

Installer Mode
Set Booster
2nd SL DHW / CH
CH / DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

2nd SL DHW / CH
DHW
CH2, Priority = SL2
CH2, Priority = SL1

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

continued

25 IMAX XTRA EL USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS

Note: if this menu option is not displayed then the "2nd sL DHW/CH2" menu option has been set for CH. CH Priority can be set from the "2nd sL DHW/CH2" menu option or the 2nd sL can be reconfigured for DHW operation.

CHANGING CH / DHW PRIORITY

The boiler default setting is DHW which always has priority ahead of CH. It is possible to change this so CH always has priority ahead of DHW or the boiler alternates between DHW and CH every 10 mins. Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Booster
CH/DHW Priority
Set Max Flow Temp'
Set Min Flow Temp'

Press SELECT and the following screen will be displayed

CH/DHW Priority
Priority = DHW
Priority = CH
Priority = Equal

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

CHANGING THE MAXIMUM FLOW TEMPERATURE SETPOINT

Boiler default setting is that maximum flow temperature setpoint is 82°C. This feature limits the maximum flow temperature that can be set in the Basic Operating Mode.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
CH/DHW Priority
Set Max Flow Temp'
Set Min Flow Temp'
Sys Frost Protect

Press SELECT and the following screen will be displayed

Set Max Flow Temp'
90°C

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

CHANGING THE MINIMUM FLOW TEMPERATURE SETPOINT

Boiler default setting is that minimum flow temperature setpoint is 30°C. This feature limits the minimum flow temperature that can be set in the Basic Operating Mode.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Max Flow Temp'
Set Min Flow Temp'
Sys Frost Protect
Soft Start Time

Press SELECT and the following screen will be displayed

Set Max Flow Temp'
30°C

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

CHANGING THE SYSTEM FROST PROTECTION TEMP. SETPOINT

Note that System Frost Protection Function is only operational if an Outside Sensor has been connected.

The CH pump is switched on if the Outside Temp. is less than the System Frost Protection Temp.

The CH pump is switched off if the Outside Temp. is more than the System Frost Protection Temp. +5°C.

The boiler default setting is that the system frost protection temp. setpoint is -2°C.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Min Flow Temp'
Sys Frost Protect
Soft Start Time
O/S Room Temp'

Press SELECT and the following screen will be displayed

Sys Frost Protect
-10°C

Press + and - to change to required setting, press ENTER to store. Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

continued

26 IMAX XTRA EL USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED

CHANGING THE SOFT START TIME

The Soft Start Time is the time for which the boiler will run at the ignition rate after a flame is detected.

This feature helps make the boiler fully compatible with the CH/DHW system. The default Soft Start time is 5s.

Care should be taken in adjusting this feature as system noise and/or boiler lockout could occur.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Sys Frost Protect
Soft Start Time
O/S Room Temp'
DHW Sensor

Press SELECT and the following screen will be displayed

Soft Start Time
120s

Press + and - to change to required setting then press ENTER to store. Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

Note that the minimum setpoint after adjustment is 60s. The recommended minimum is 120s.

CHANGING THE NOMINAL ROOM TEMPERATURE ACHIEVED DURING OUTSIDE SENSOR OPERATION (O/S ROOM TEMP')

Note that the O/S Room Temp' Function is only operational if an Outside Sensor has been connected.

The O/S Room Temp' is the notional room temperature that the boiler will try to achieve under Weather Compensation operation. The default O/S Room Temp' is 20°C.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Soft Start Time
O/S Room Temp'
DHW Sensor
Factory Settings

Press SELECT and the following screen will be displayed

O/S Room Temp'
20°C

Press + and - to change to required setting, press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

ENABLING THE DOMESTIC HOT WATER THERMISTOR

The default is for a DHW Heat Demand to be indicated by a DHW Thermostat providing a 230V input to the DHW Switched Live. Instead a DHW Thermistor, available as a kit from Ideal, can be connected to the DHW Thermistor input.

Rotate the KNOB clockwise until the following screen is displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
O/S Room Temp'
DHW Sensor
Factory Settings
Anti-Legion Temp'

Press SELECT and the following screen will be displayed

DHW Sensor
Heating Only
DHW Thermistor
DHW Switched Live

Press + and - to change to the required setting and then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

continued

27 IMAX XTRA EL USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED....

REVERTING TO FACTORY SETTINGS

Press SELECT, hold + and - together for more than 5s, the following screen will be displayed

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
DHW Sensor
Factory Settings
Anti-Legion Temp'
Anti-Legion Enable

Press SELECT and the following screen will be displayed

Factory Settings
Reset?

Press ENTER and a screen similar to the following will be displayed

Factory Settings
Are you sure?
Press Enter to Reset
Press Select not to
Reset

Press ENTER and a screen similar to the following will be displayed

Factory Settings
Reset?

Press Select then Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

CHANGING THE ANTI-LEGIONELLA TEMPERATURE

Note Anti-Legionella Temp. Function is only operational if a DHW Thermistor has been connected.
Care should be taken reducing this temp. as unsafe conditions could result.
Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed.

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Factory Settings
Anti-Legion Temp'
Anti-Legion Enable
BUS Address

Press SELECT and the following screen will be displayed

Anti-Legion Temp'
70°C

Press + and - to change to required setting, press ENTER to store.
Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

DISABLING THE ANTI-LEGIONELLA FUNCTION

Note that the Anti-Legionella Temperature Function is only operational if a Domestic Hot Water Thermistor has been connected.
Care should be taken in disabling this function as an unsafe condition could result.

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

Installer Mode
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Anti-Legion Temp'
Anti-Legion Enable
BUS Address
Flame/Damper

Press SELECT and the following screen will be displayed

Anti-Legion Enable
On
Off

Press + and - to change to required setting then press ENTER to store.

Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

28 IMAX XTRA EL WITH EXTERNAL CONTROLS VIA SWITCHED LIVE, 0-10V INPUT OR OPENTHERM

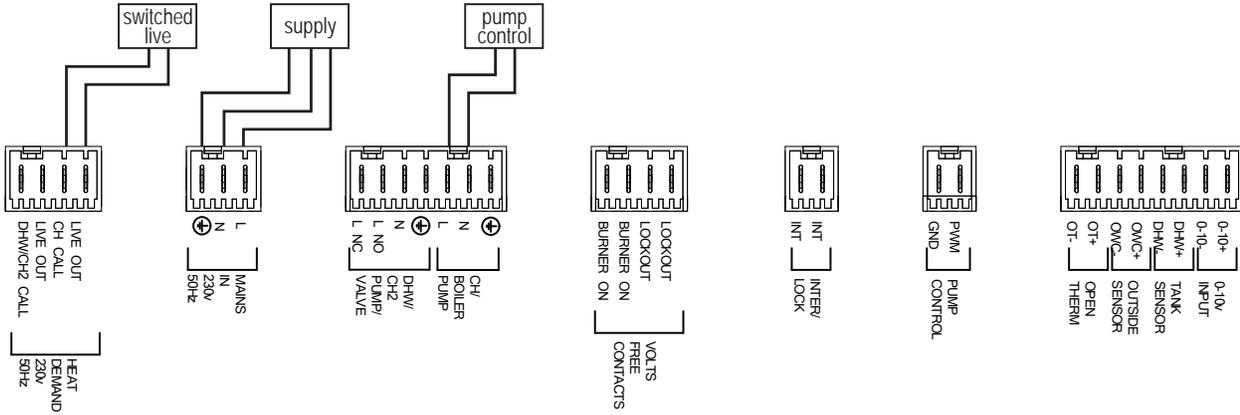
Note that the boiler requires a 2 minute pump overrun period.
The boiler warranty will be invalid if this is not provided.

It is recommended that the pump overrun functionality is achieved by connecting the pump or pump control to the boiler CH Pump connections (see diagram), although this functionality can be replicated with external controls (for example a Building Management System).

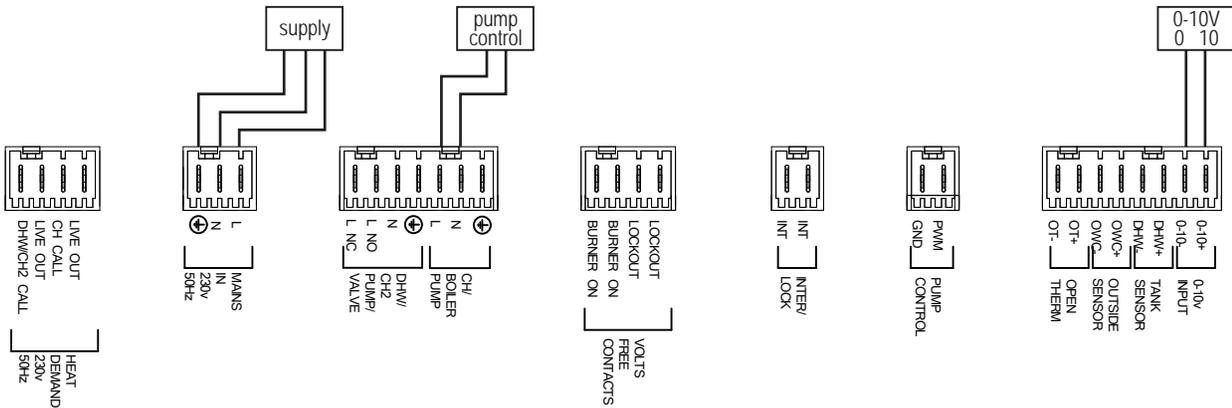
If the CH Pump connection is used and the electrical current draw is 1.3A inductive or less then the pump may be connected directly into the CH Pump connection.

If the current draw is more than this then an external relay or contactor should be operated by the CH Pump connection, with the external relay then powering the pump.

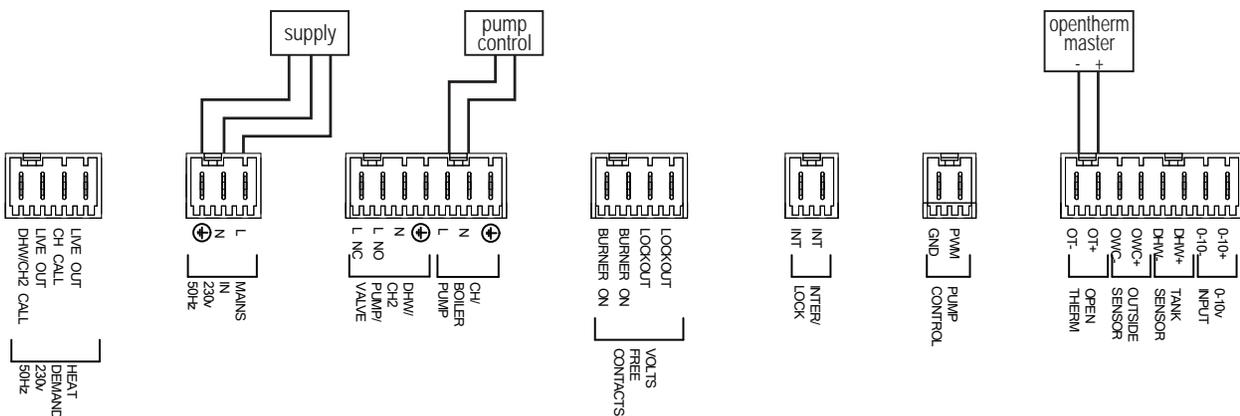
EXTERNAL CONTROLS - VIA SWITCHED LIVE



EXTERNAL CONTROLS - VIA 0-10V INPUT



EXTERNAL CONTROLS - VIA OPENTHERM



INSTALLATION

29 COMMISSIONING AND TESTING

A. ELECTRICAL INSTALLATION

1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable meter.
3. From turning the power on the fan will run for 4.5mins if in standby mode.

B. GAS INSTALLATION

1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and then purged in accordance with the recommendations of the relevant standards listed on page 4, by the installer.

In IE refer to I.S.813:2002.

Pressure drop from appliance inlet to gas valve inlet test point

		320	395	470	545	620
Max Rate	(mbar)	0.6	0.5	1.0	1.5	1.5
Min Rate	(mbar)	0	0	0	0	0

Note. Minimum GAS inlet pressure of 15 mbar

WARNING. Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and DO NOT SMOKE.

30 INITIAL LIGHTING

1. Check that the system has been filled and the boiler is not air locked - air in the boiler could damage the heat exchanger.
2. Check that all the drain cocks are closed and any valves in the flow and return are open.
3. Check that the GAS SERVICE COCK IS ON.
4. Fill the condensate trap with water before putting the unit into operation (see Frame 49 for condensate trap removal).
5. Check the indication on the pressure gauge. If the system pressure is less than 1 bar the installation should be filled up first.
6. Switch the electricity supply ON and check that all the external controls are calling for heat. Check boiler is set for winter operation - see IMAX XTRA EL user interface basic operating instructions.
7. The boiler will commence the ignition sequence. If after 5 attempts the boiler has failed to light then it will lock out. Press the reset button to restart the ignition sequence.
8. Fit a flue sampling probe on the flue adapter after ignition, refer to Page 5.
9. Operate the boiler at max rate for 10 mins (refer to Table 1) and check the gas rate if a meter is available. This should be at least 90% of the nominal. (Refer to Frame 35).
10. Check the CO₂% level at max, referring to Table below. Then check the CO₂% level at min.

IMAX XTRA EL ~ Flue CO ₂ % measurements (hot condition)					
	320	395	470	545	620
Max Rate* (100%)	9.5% (±0.5%)				
Min Rate* (20%)	9.0% (±0.5%)				

* When testing Max & Min Rates; Ensure the controls display shows 100% or 20% burner power respectively.

ADJUSTING THE CO₂%

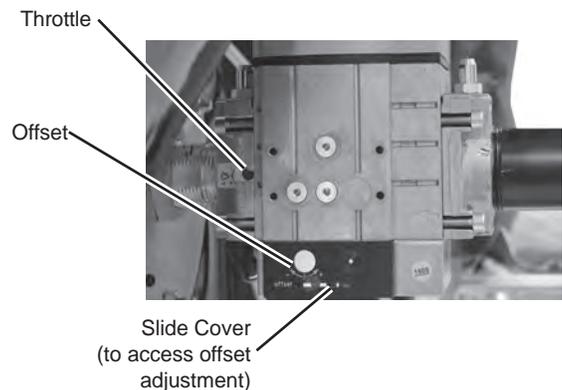
Note. Turning the Throttle and Offset anti clockwise will increase the CO₂.
Turning the Throttle and Offset clockwise will decrease the CO₂.

If the CO₂% is outside of these limits, the gas valve needs to be adjusted. If the max CO₂ % needs adjustment, this is altered by the throttle screw on the front of the gas valve.

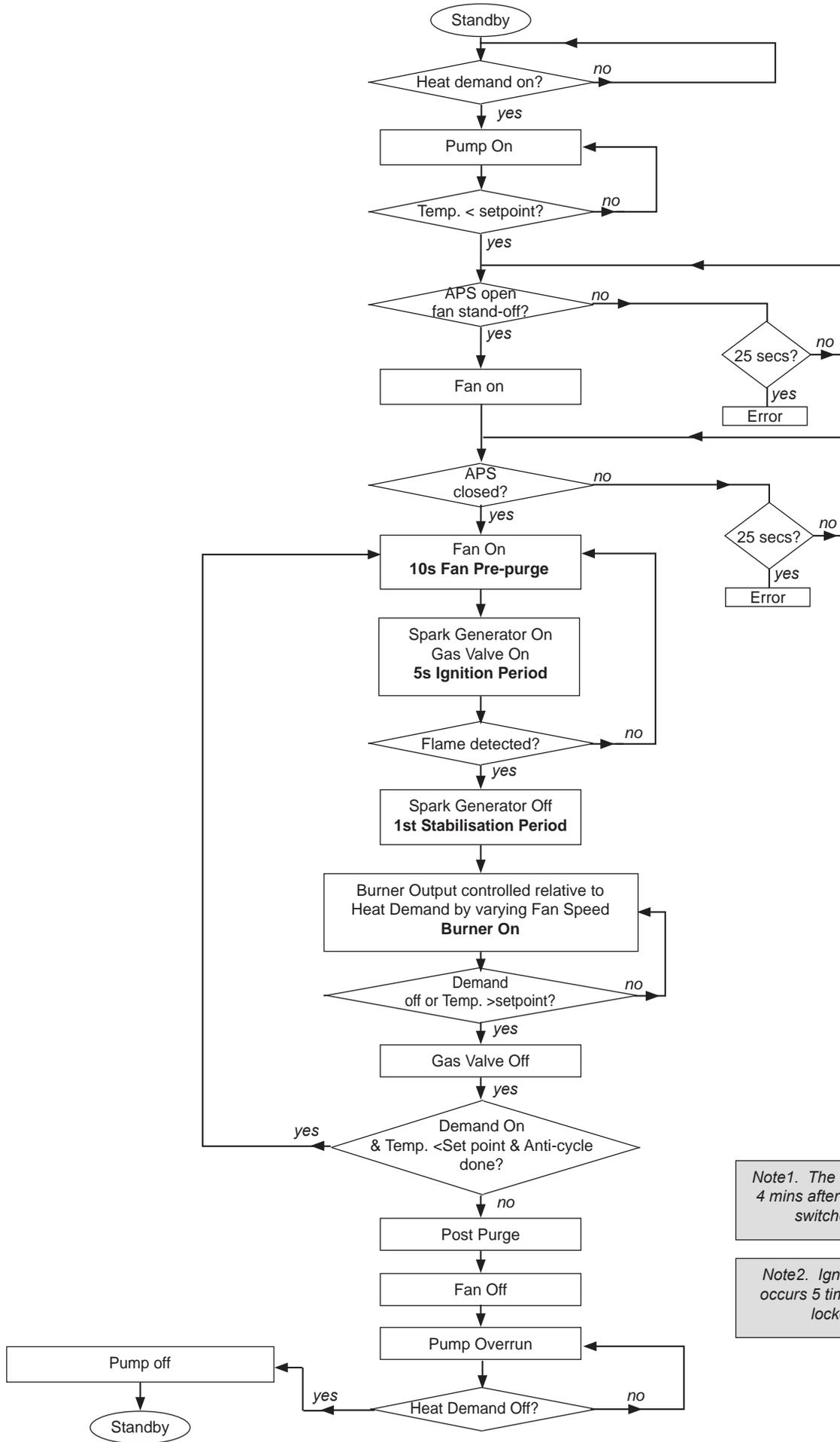
If the min CO₂% need adjustment, this is altered by the offset screw. When making CO₂ adjustments, the max must be checked or adjusted BEFORE checking and if necessary adjusting the min CO₂.

Once the CO₂ has been set, check the CO/CO₂ ratio. This must not exceed 0.004. If the CO/CO₂ ratio is above 0.004 and the CO₂ levels at max and min are correct, switch off the appliance and contact Ideal Boilers.

Refer to Frame 35, Servicing Schedule.



31 OPERATING SEQUENCE



Note1. The fan runs for 4 mins after the burner switches off

Note2. Ignition cycle occurs 5 times before lockout

32 GENERAL CHECKS

Make the following checks for correct operation.

1. The correct operation of ANY secondary system controls should be proved. Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.
2. Water circulation system;
 - a. With the system HOT examine all water connections for soundness.
 - b. With the system still HOT, turn off the gas, water and electricity supplies to the boiler and drain down to complete the flushing process.
 - c. Refill and vent the system, clear all air locks and again check for water soundness.
 - d. Balance the system.
3. Check the condensate drain for leaks and check it is discharging correctly.
4. Finally set the controls to the User's requirements.

Note. *If an optional programmer kit is fitted then refer to the instructions supplied with the kit.*

33 HANDING OVER

ROUTINE OPERATION

Draw the attention of the boiler owner or his representative to the User Guide. Give a practical demonstration of the lighting and shutting down of the boiler.

Describe the function of the boiler and system controls and show how they are adjusted and used.

Hand these Installation and Servicing/User's Instructions and to the customer and request him to keep them in a safe place for ready reference. For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance to the appropriate standard.

IMPORTANT. Point out to the owner that the boiler must have regular maintenance and cleaning, at least annually, in order to ensure reliable and efficient operation. Regular attention

will also prolong the life of the boiler and should preferably be performed at the end of the heating season.

After installation and commissioning please complete the Commissioning Sheet, at the rear of this book, before handover to the customer. For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S. 813:2002.

Recommend that a contract for this work should be made with the regional gas authority or a Gas Safe Registered Engineer. In IE servicing work must be carried out by a competent person.

34 SAFETY

It is the law that any service work must be carried out by a Gas Safe Registered Engineer. In IE service work must be carried out by a competent person.

WARNING. Always turn off the gas supply at the gas service cock, and switch off and disconnect the electricity supply to the appliance and any external controls before servicing or replacing components.

To replace parts in the water circuit, it will be necessary to isolate the water and drain the boiler.

NOTE.

When the burner switch is in the off position the boiler control module remains live.

IMPORTANT.

After completing the servicing or replacement of components always:

- Test for gas soundness.

- Check the water system is correctly filled and free of air. Air in the boiler could cause damage to the heat exchanger.
- Check the jacket front panel is correctly fitted. Fit the controls cover in place.
- With the system hot examine all water connections for soundness.
- Check the gas rate and measure the combustion CO/CO₂ content. The CO/CO₂ ratio of the flue gas should not be greater than 0.004 ratio and the CO₂ should match the values given in Frame 30.
- Carry out functional checks as appropriate.
- Ensure the boiler has adequate ventilation for any gas remaining within unisolated pipework.

Note. *When undertaking any servicing or replacement of parts it is essential that any gasket or seal is checked for signs of wear or damage and is replaced as necessary.*

35 SERVICING SCHEDULE

To ensure the continued safe and efficient operation of the appliance it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage but should be carried out at least annually.

Ideal Boilers does not accept any liability resulting from the use of unauthorised parts or the repair and servicing of appliances not carried out in accordance with the Company's recommendations and specifications.

Note.

Some aluminium oxide build-up within the heat exchanger assembly is quite normal with this type of condensing boiler. Though removal and cleaning is recommended annually, the heat exchanger, sump and condensate trap must be inspected and cleaned after a maximum of 2 years operation.

1. Light the boiler and carry out function checks, noting any operational faults.
2. Run the boiler for 10 minutes and then check the gas consumption rate. Refer to procedure opposite on how to force the burner to maximum rate.
3. Connect a suitable gas analyser to the sampling point fitted in the flue adapter. For correct boiler operation the CO/CO₂ ratio of the flue gas should not be greater than 0.004 ratio and the CO₂ values should match those in table 1. If this is the case the gas input is at least 90% of the nominal.
4. Remove and clean the burner. Refer to Frame 38.
5. Inspect the heat exchanger through the burner opening. If there are signs of aluminium oxide build up, spray water down the flueways. Refer to Frame 38.
6. Remove the sump cover and scrape out any deposits. Refer to Frame 41.
7. Remove the condensate trap and flush through with water. Refer to Frame 42.
8. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
9. Remove the gas valve filter and check that there is no debris. Clean or replace as necessary. Refer to Frame 40.
10. Whilst burner is removed, ensure spark gap between electrodes is 5mm (±1mm).
11. After completion of servicing refer to Frame 34 for reference to final safety checks.
12. Complete the service record in the Rear of this book.

Note.

When undertaking any servicing or replacement of parts it is essential that any gasket or seal is checked for signs of wear or damage and is replaced as necessary.

SETTING TO FIXED OUTPUTS

Ensure that there is a current CH demand to the boiler (e.g. the CH Switched Live is on).

Ensure that there is sufficient heating load on the boiler to allow it to run at maximum rate.

Wait until the boiler is at 100% then press SELECT and the following screen will be displayed.

The kW output number in the 1st line will vary depending on the maximum output of the boiler.

Ideal imax XL 320 kW
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until the following screen is displayed

Ideal imax XL 320 kW
Set DHW Temp'
Set Off/Sum/Win
Out' Sensor Slope
State of Inputs

Press SELECT and the following screen will be displayed

Set Off/Sum/Win
Summer
Winter
Minimum
Press - for more

Press + and - until the following screen is displayed.

Set Off/Sum/Win
Minimum
Maximum
Press - for more

Press ENTER and the boiler will go to Maximum Rate for 5 minutes. Operation will be automatically reset at the end of 5 minutes.

To set to minimum, repeat the above selecting "minimum" setting.

36 CASING REMOVAL

TO REMOVE FRONT AND SIDE PANELS

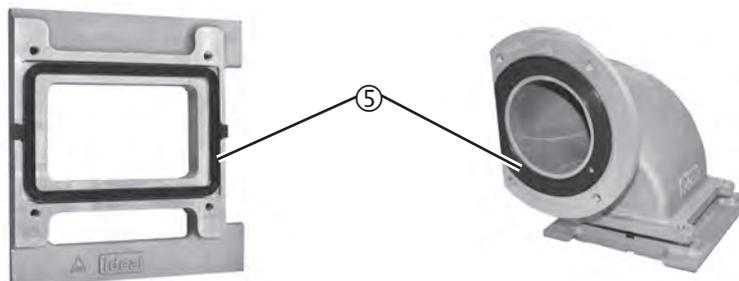
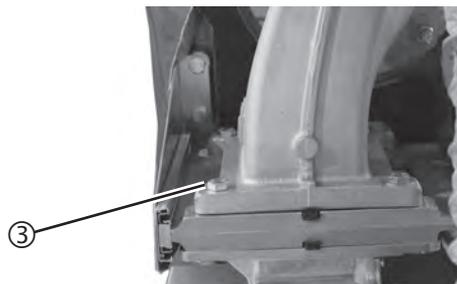
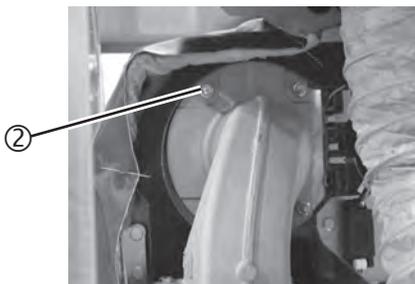
1. Refer to frame 34
2. Lift the control pod upwards to disengage. This can then be located in the raised position using the location hooks.
3. Remove the 2 securing screws from the front panel.
4. Angle the front panel forward and lift to disengage the panel and remove.
5. Slide the front side panel forward and lift to disengage from the fixing locations
6. Slide the rear side panel forward and lift to disengage from the fixing locations.
7. Repeat steps 5 and 6 to remove the remaining side panels.
8. Re-fit in reverse order.



Note; only the two front side panels have noise dampening insulation fitted

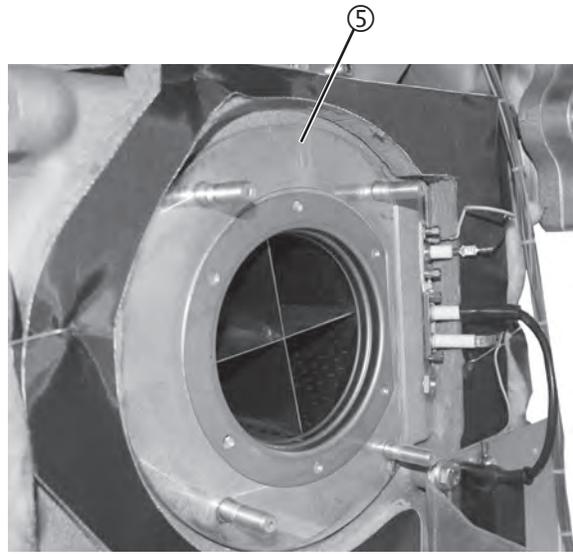
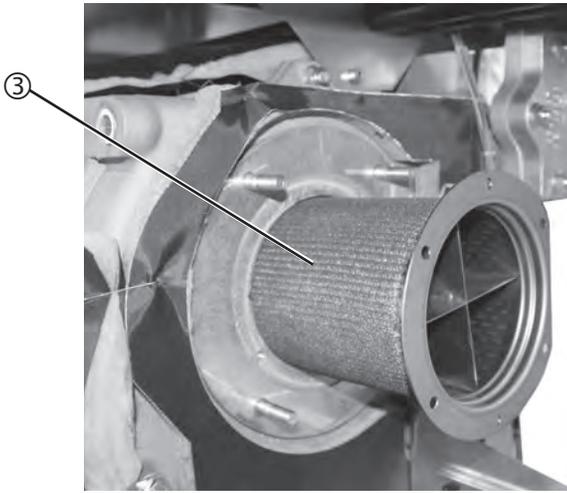
37 REMOVAL OF BURNER MANIFOLD

1. Refer to Frames 34 & 36.
2. Remove the four nuts securing the burner hood elbow to the heat exchanger.
3. Remove the four bolts securing the burner hood elbow to the interface plate.
4. Lift the burner hood elbow and carefully clear the heat exchanger studs.
5. To Refit: Inspect the sealing gaskets for damage and replace as necessary.
6. Align the burner head elbow and engage the studs on the heat exchanger.
7. Loosely fit the four securing bolts to locate the elbow on the interface plate.
8. Loosely fit the four securing nuts to the heat exchanger studs.
9. With all fixings in position, tighten in sequence to ensure the burner hood elbow is correctly secured on the interface plate and the heat exchanger.
10. Check for any leakage on all seals.



38 BURNER REMOVAL / CLEANING OF BURNER & HEAT EXCHANGER

1. Refer to Frame 34.
2. Refer to Frames 36 & 37 for removal of burner manifold.
3. Draw the burner out of the heat exchanger.
4. The burner can be cleaned using compressed air or a vacuum. The metal fibre outer surface must not be brushed. If the burner is showing signs of damage it must be replaced.
5. Re-assemble in reverse order replacing any seals/ gaskets which show signs of wear. When refitting, ensure the burner is correctly engaged so the burner flange fits flush into the recess.
6. Refer to Frame 34 for final safety checks.



With the burner removed the heat exchanger may now be cleaned. To remove any debris flush the heat exchanger with water, if possible from a pressurised supply, taking care to protect any electrical components against moisture. Ensure the heat exchanger is fully flushed.



39 IGNITION / DETECTION ELECTRODE TESTING / REPLACEMENT

Refer to Frame 34 & 36.

IGNITION PROBE

1. Disconnect the lead from the spark generator and the earth lead from the ignition probe assembly.
2. Remove the two nuts securing the ignition probe assembly.
3. Withdraw the probe assembly carefully.
4. To refit, carefully insert the probe assembly engaging the securing stud.
5. Replace the two nuts and tighten. Re-connect the earth lead and the spark generator lead.

IONISATION PROBE

6. Disconnect the wire from the ionisation probe. Disconnect the earth lead from the ionisation probe assembly.
7. Remove the two nuts securing the probe assembly.
8. Remove the ring tag earth connection.
9. Withdraw the probe assembly carefully.
10. To replace, carefully insert the probe assembly into the heat exchanger engaging the securing studs. Re-fit the ring tag earth connection. Replace the securing nuts and tighten. Refit the earth connection and the ionisation probe lead.

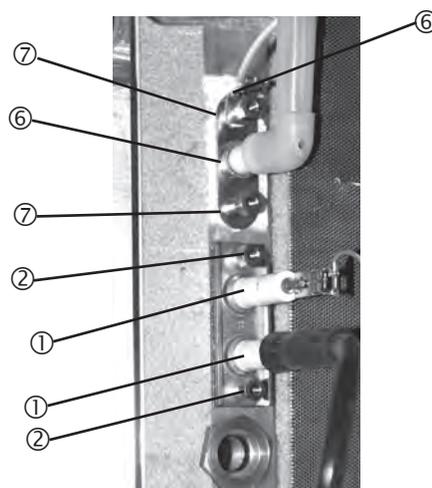
SPARK GAP

The spark gap can be measured in-situ while the burner hood and burner are removed. Ensure the spark gap is 5mm (± 1 mm).

IONISATION

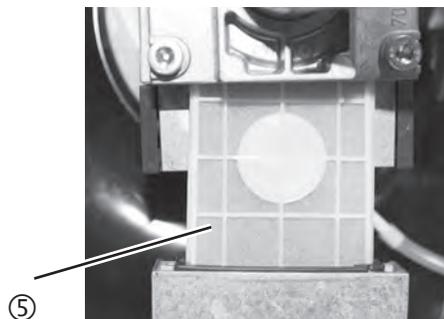
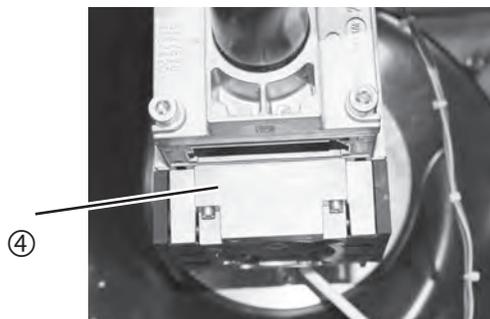
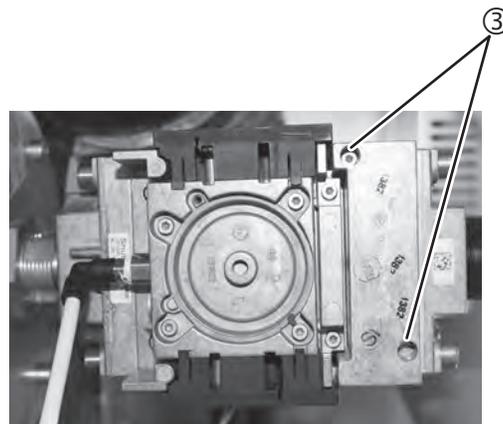
The ionisation current should be checked at min and max rate compared to the table below.

Max Rate	μA	> 8
Min Rate	μA	> 10



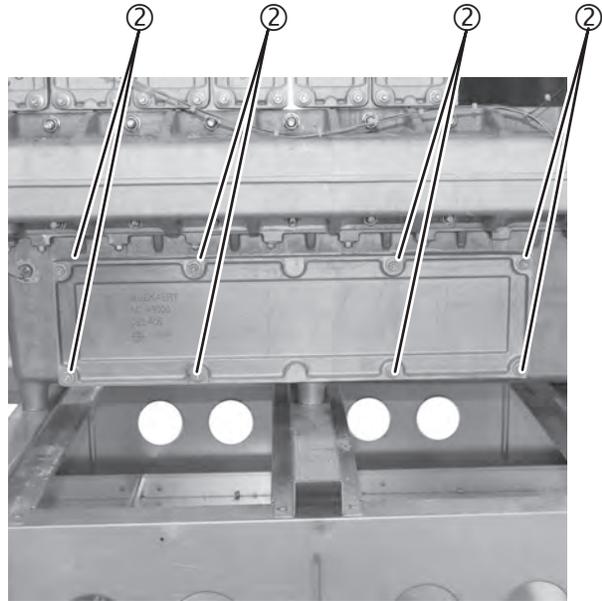
40 GAS VALVE FILTER REPLACEMENT

1. Refer to Frame 34 & 36.
2. Ensure the boiler is drained
3. Remove the two hex head screws at the bottom of the inlet side of the gas valve.
4. Remove the location section of the body.
5. Withdraw the gas valve inlet filter.
6. Examine and replace as necessary.
7. Refit in reverse order.
8. Conduct tightness test.



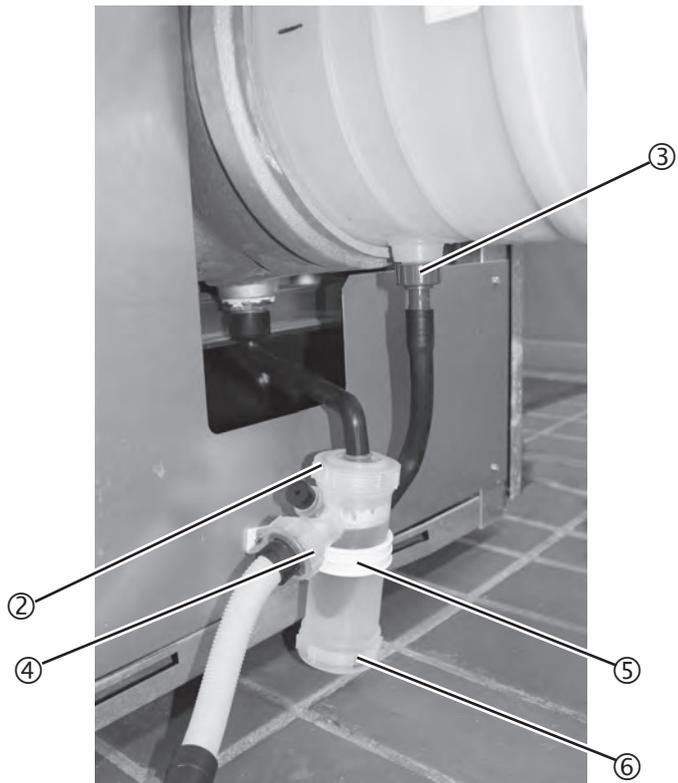
41 INSPECTING & CLEANING THE SUMP

1. Refer to Frame 34 & 36.
2. Remove the inspection cover which is secured with eight bolts.
3. Remove any debris and flush with water if necessary.
4. To re-fit the sump inspection panel inspect the o-ring seal for damage and replace if necessary.
5. Align the sump inspection cover and secure with the 8 bolts.



42 CLEANING CONDENSATE TRAP

1. Refer to Frame 34.
2. Unscrew the top fitting of the condensate trap.
3. Unscrew the fitting at the flue outlet drain point.
4. Unscrew the condensate outlet fitting.
5. Unscrew bracket and remove trap
6. Unscrew the base of the trap and drain into a bucket.
7. Remove all debris, flushing with water if necessary.
8. Re-fit the base of the trap.
9. Re-fit in reverse order.
10. Pour water into the flue sample point to ensure the condensate trap is re-filled before the unit is operated after servicing.



REPLACEMENT OF PARTS

43 REMOVAL OF FAN AND GAS VALVE ASSEMBLY

Refer to Frame 36.

Remove Air inlet duct. Refer to Frame 50.

REMOVAL OF GAS VALVE

Refer to Frame 34.

1. Disconnect all electrical connections from the fan and gas valve.
2. Disconnect all air pipe connections from the fan and gas valve.
3. Disconnect the gas valve from the gas supply pipe by removing the two rear hex head screws and loosening the two front screws at the RHS of the gas valve.
4. Remove the four nuts which retain the burner hood elbow to the heat exchanger.
5. Remove the four bolts to release the burner hood elbow from the interface plate.
6. Slide the fan and gas valve assembly forward on the interface plate.
7. Remove the three nuts retaining the gas valve assembly to the fan scroll and remove the gas valve assembly (taking care due to the weight of the gas valve).

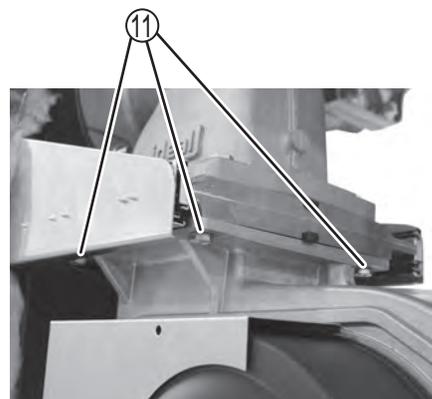
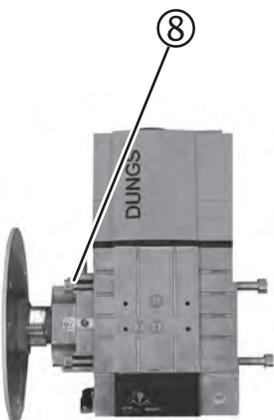
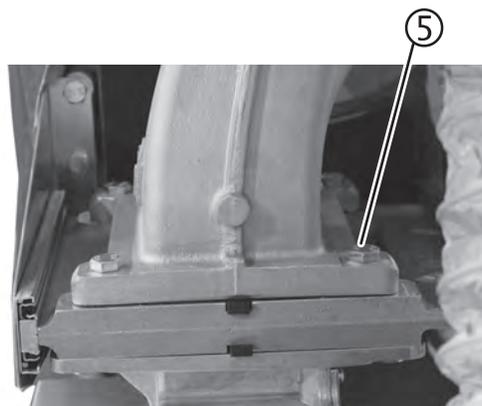
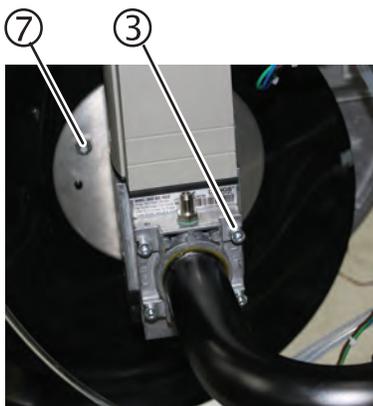
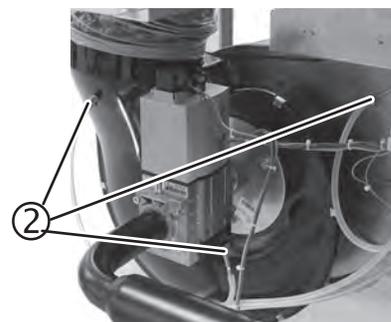
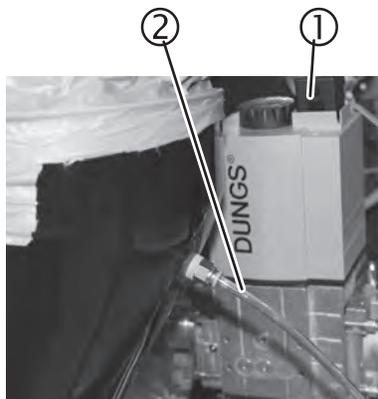
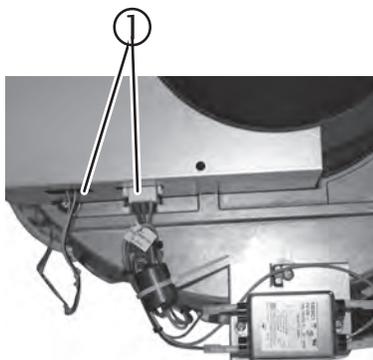
8. Remove the four screws retaining the gas valve to the mounting flange.

9. Fit the replacement valve in reverse. Refer to Frame 34.

REMOVAL OF FAN

With the gas valve removed the fan can now be removed.

10. Remove the air mixer collector by sliding it off the 3 threaded rods.
11. Slacken the two rear bolts securing the fan to the interface plate and remove the front two bolts.
12. With the interface plate partially retracted, lift the fan to release from the plate and withdraw, ensuring the motor casing does not clash with the chassis.
13. Fit the replacement fan in reverse order, ensuring the fan is pushed fully home to support the weight. Refer to Frame 34.



REPLACEMENT OF PARTS

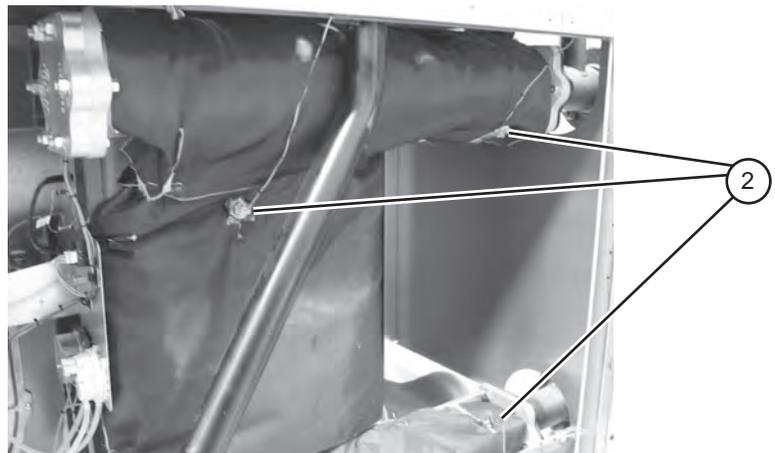
44 WATER PRESSURE SWITCH REPLACEMENT

1. Refer to Frames 34 & 36.
2. Ensure the boiler is drained down.
3. Disconnect the two wires.
4. Using a suitable size spanner on the hexagon undo the water pressure switch and remove.
5. Refit in reverse order using a suitable sealing medium.
6. Refit and vent check the water pressure switch connection for leaks.
7. Minimum system pressure is 1.0bar. 1.5bar is the recommended fill pressure.



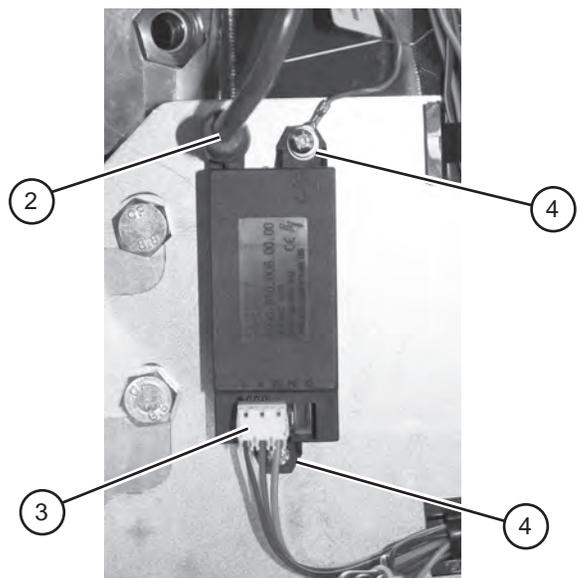
45 THERMISTOR (X3) REPLACEMENT

1. Refer to Frames 34 & 36.
2. Disconnect the 2 wires from each thermistor.
3. Using a suitable sized spanner on the hexagon undo the thermistor and remove.
4. Refit in reverse order using a suitable sealing medium.
5. Refit and vent check the thermistor for leaks.
6. Minimum system pressure is 1.0bar. 1.5bar is the recommended fill pressure.



46 SPARK GENERATOR REPLACEMENT

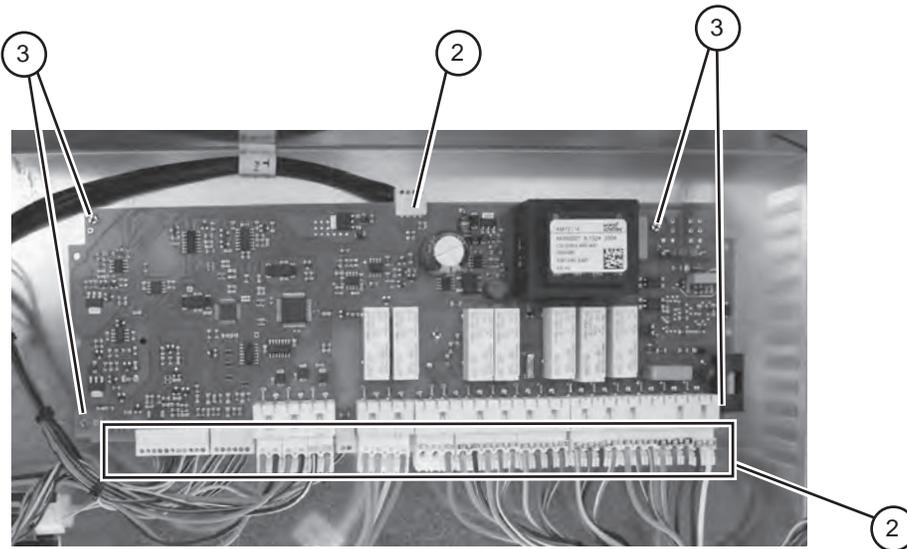
1. Refer to Frames 34 & 36.
2. Disconnect the spark generator lead from the ignition probe.
3. Disconnect the electrical supply plug.
4. Remove the two securing screws and remove the spark generator.
5. Refit in reverse order ensuring the earth lead is correctly secured.



REPLACEMENT OF PARTS

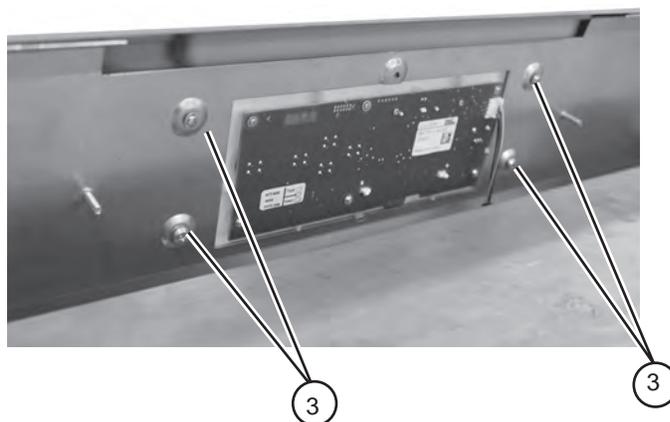
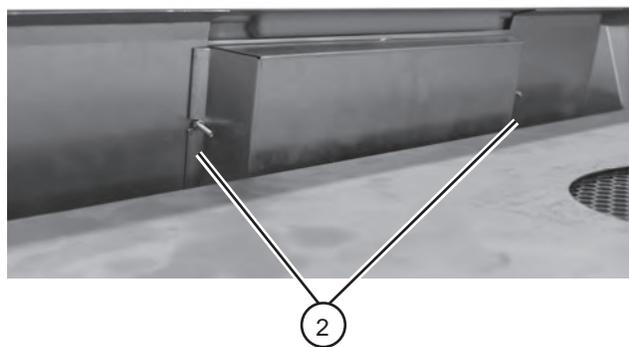
47 BOILER CONTROL PCB REPLACEMENT

1. Refer to Frames 34 & 36.
2. Remove all PCB electrical connections.
3. Remove the PCB carefully by pulling gently towards you at each mounting point.
4. Release the PCB from the mounting posts carefully and remove.
5. To refit, align the PCB with the mounting posts and push the PCB carefully to engage the mounting posts.
6. Refit the connectors relating to the wiring diagram in Frame 18.



48 USER INTERFACE REPLACEMENT

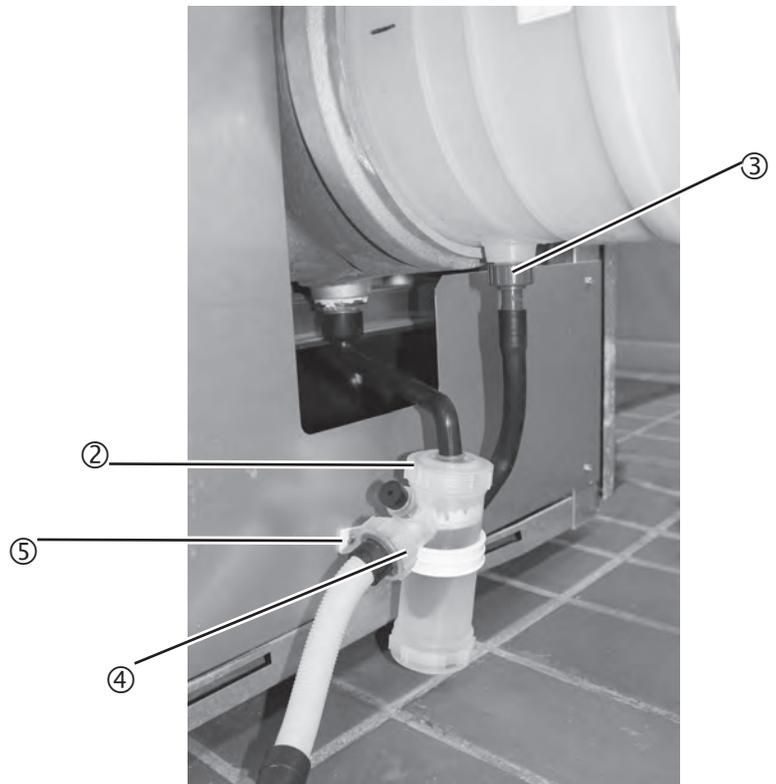
1. Refer to Frames 34 & 36.
2. Remove two nuts securing the rear cover of the user interface.
3. Remove the four screws securing the user interface to the front control pod and remove the assembly from the front of the control pod.
4. Refit in reverse order.



REPLACEMENT OF PARTS

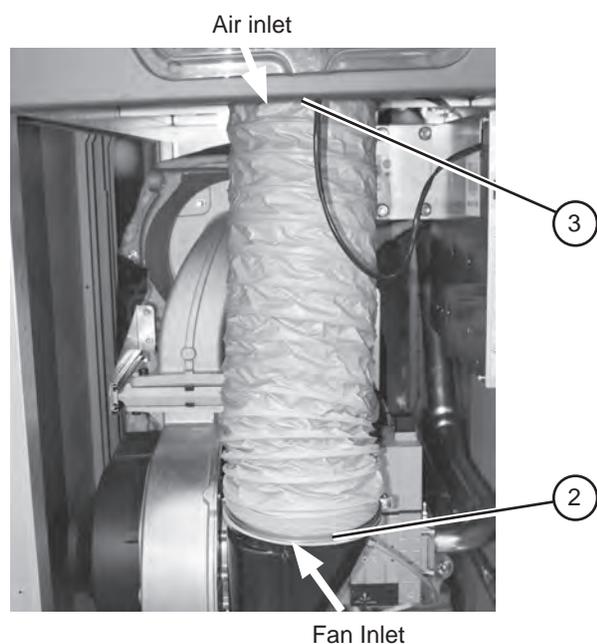
49 CONDENSATE TRAP REPLACEMENT

1. Refer to Frame 34.
2. Unscrew the top fitting of the condensate trap.
3. Unscrew the fitting at the flue outlet drain point.
4. Unscrew the condensate outlet fitting.
5. Remove the two screws holding the white retaining bracket and remove.
6. Replace condensate trap as required.
7. Re-fit in reverse order.
8. Pour water into the heat exchanger to ensure the condensate trap is re-filled before the unit is operated after servicing.



50 FLEXIBLE AIR DUCT REPLACEMENT

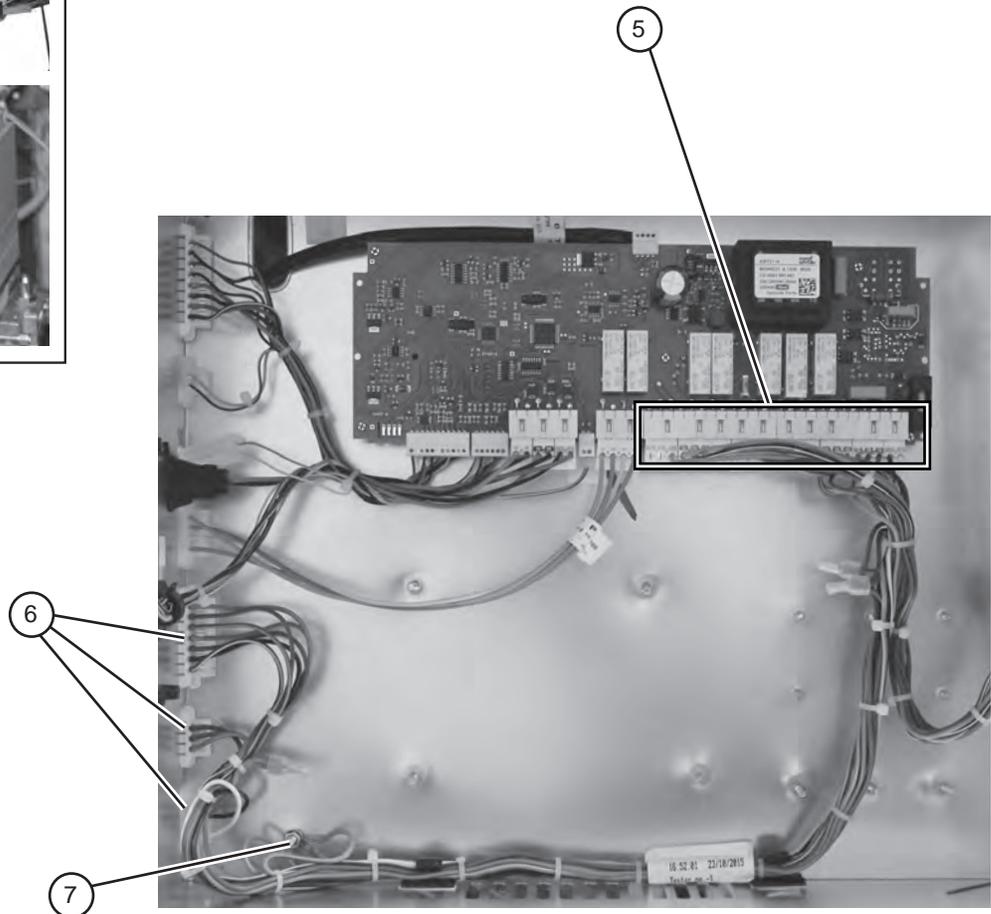
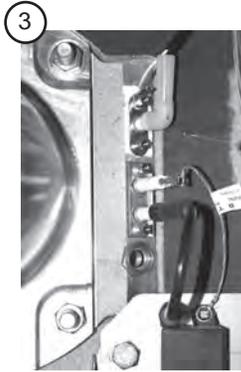
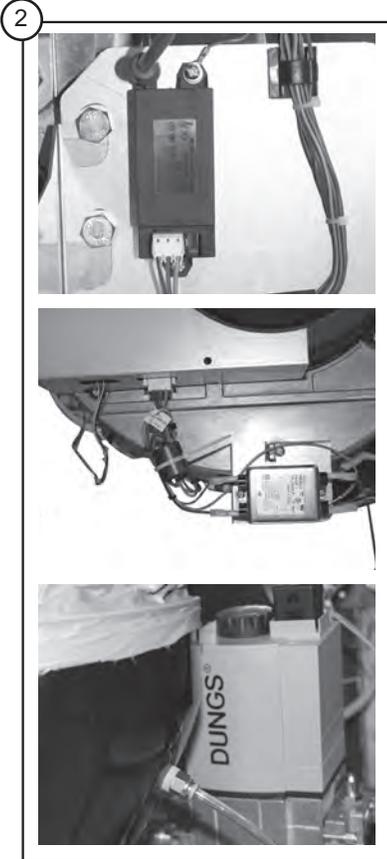
1. Refer to Frames 34 & 36.
2. Slacken the hose clip on the flexible duct at the fan inlet.
3. Slacken the hose clip on the flexible duct at the air inlet.
4. Carefully remove the flexible duct and hose clips.
5. To refit: Check the flexible duct for damage and replace as necessary.
6. Position the flexible duct over the air inlet and secure with the hose clip.
7. Position the flexible duct over the fan inlet and secure with the hose clip.



REPLACEMENT OF PARTS

51 HIGH VOLTAGE HARNESS REPLACEMENT

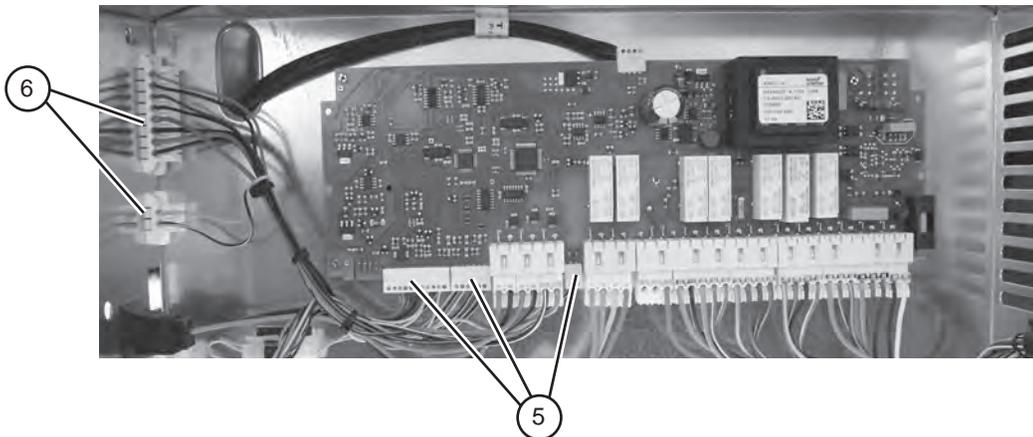
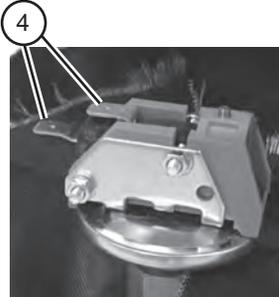
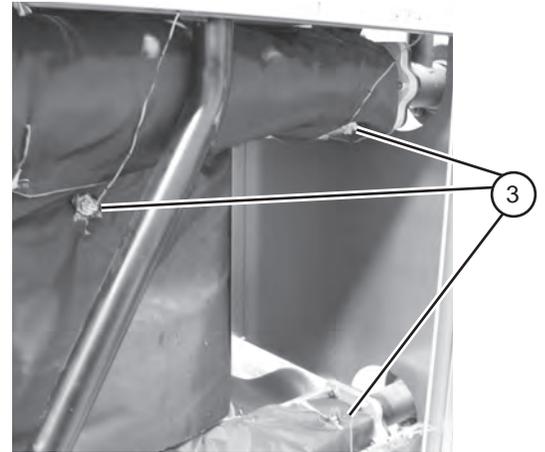
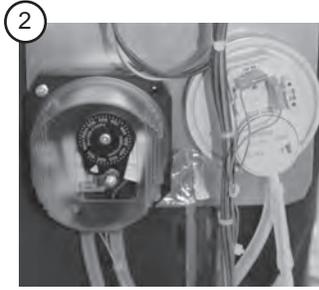
1. Refer to Frames 34 & 36.
2. Remove the mains connection from the following spark generator, fan and gas valve.
3. Disconnect the harness from the ionisation assembly lead.
4. Unclip the harness tracing the route back to the control box.
5. Remove the connectors from the PCB.
6. Remove the three bottom connectors on LHS of control box .
7. Remove the earth post nut and release the earth connections.
8. Feed the harness through the control box and remove.
9. To refit feed the new harness through the control box.
10. Fit the three bottom connections and the PCB connectors.
11. Fit the earth wires and secure with the nut.
12. Feed the harness back to the components listed above. Use clips to retain in position and connect.



REPLACEMENT OF PARTS

52 LOW VOLTAGE HARNESS REPLACEMENT

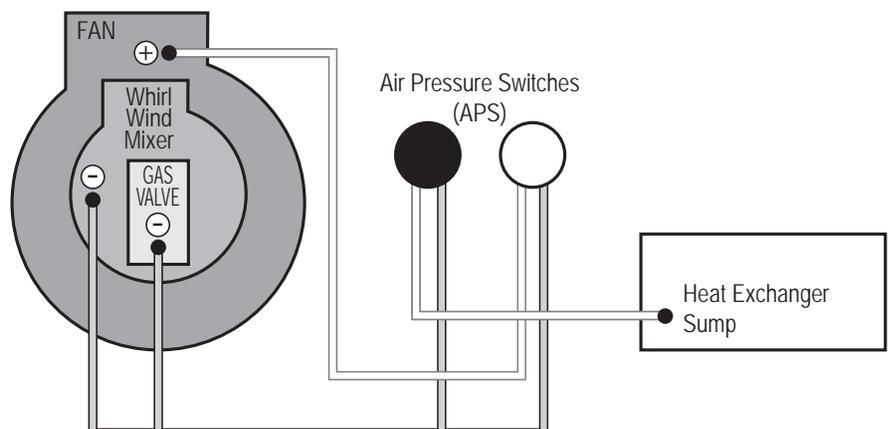
1. Refer to Frames 34 & 36.
2. Remove the connections from the two air pressure switches.
3. Remove the connections from the three Thermistors.
4. Remove the connections from the Water Pressure Switch.
5. Remove the connectors from the PCB.
6. Remove the top two connectors on LHS of control box.
7. Feed the harness back through the control box and remove.
8. To refit, feed the new harness through the control box and fit the top two LHS connectors.
9. Feed the harness back to the components listed above using the retaining clips and connect.



53 REPLACEMENT OF AIR PRESSURE SWITCH TUBES

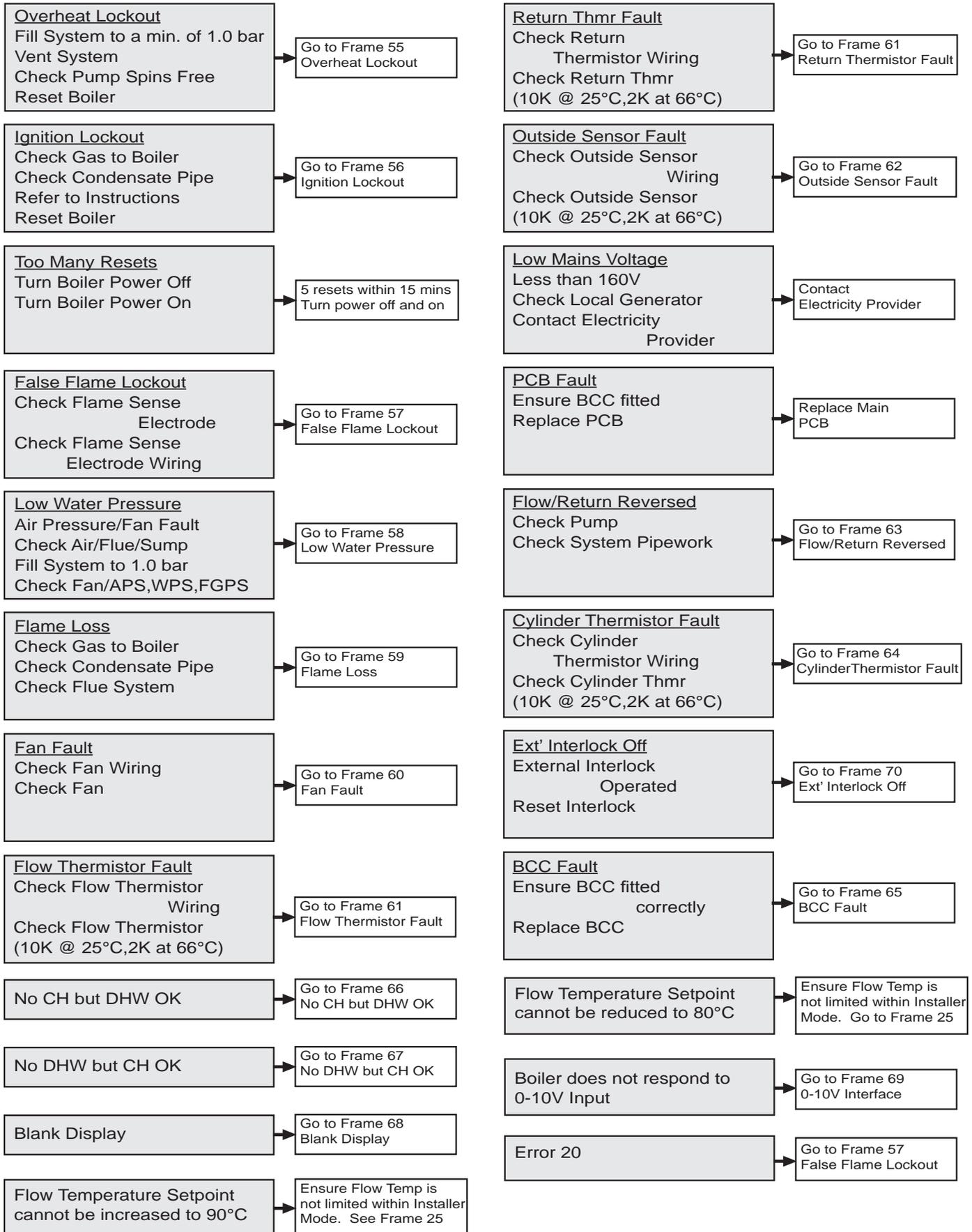
1. Refer to Frames 34 & 36.
2. Disconnect the two tubes from the faulty APS.
3. Disconnect the electrical connections from the faulty APS, taking note of their positions.
4. Unscrew the APS from the bracket.
5. Replace faulty APS with new component. If variable APS is being replaced, ensure switching pressure is set for correct boiler size as per table shown.
6. Re-connect tubes and electrical connections, ensuring pipes are fitted the same as diagram shown.

Boiler Size (kW)	Sump Outlet Air Pressure Setting (Pa)
320	200Pa
395	200Pa
470	300Pa
545	300Pa
620	400Pa



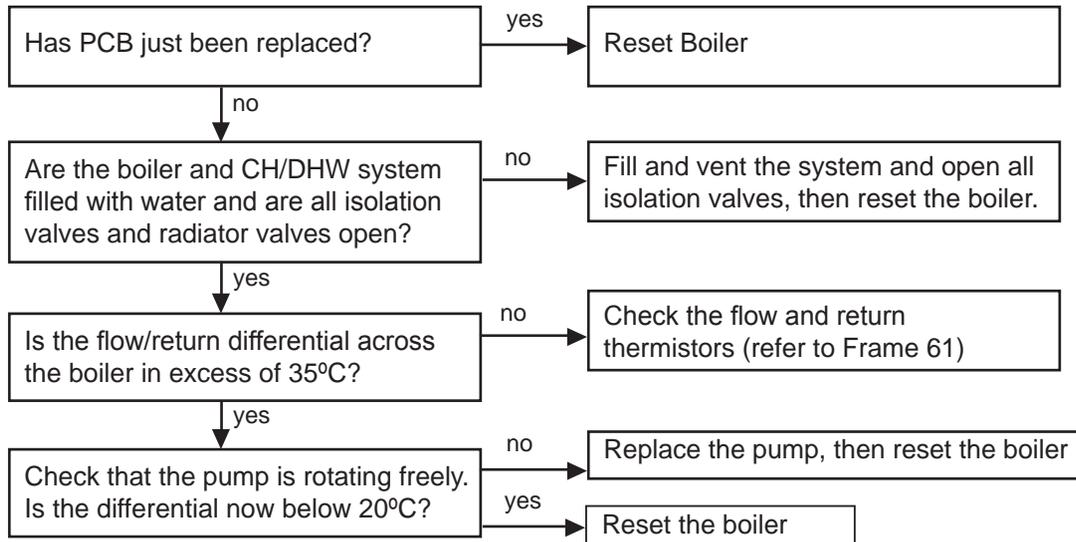
FAULT FINDING

54 FAULT FINDING CHART - MAIN MENU

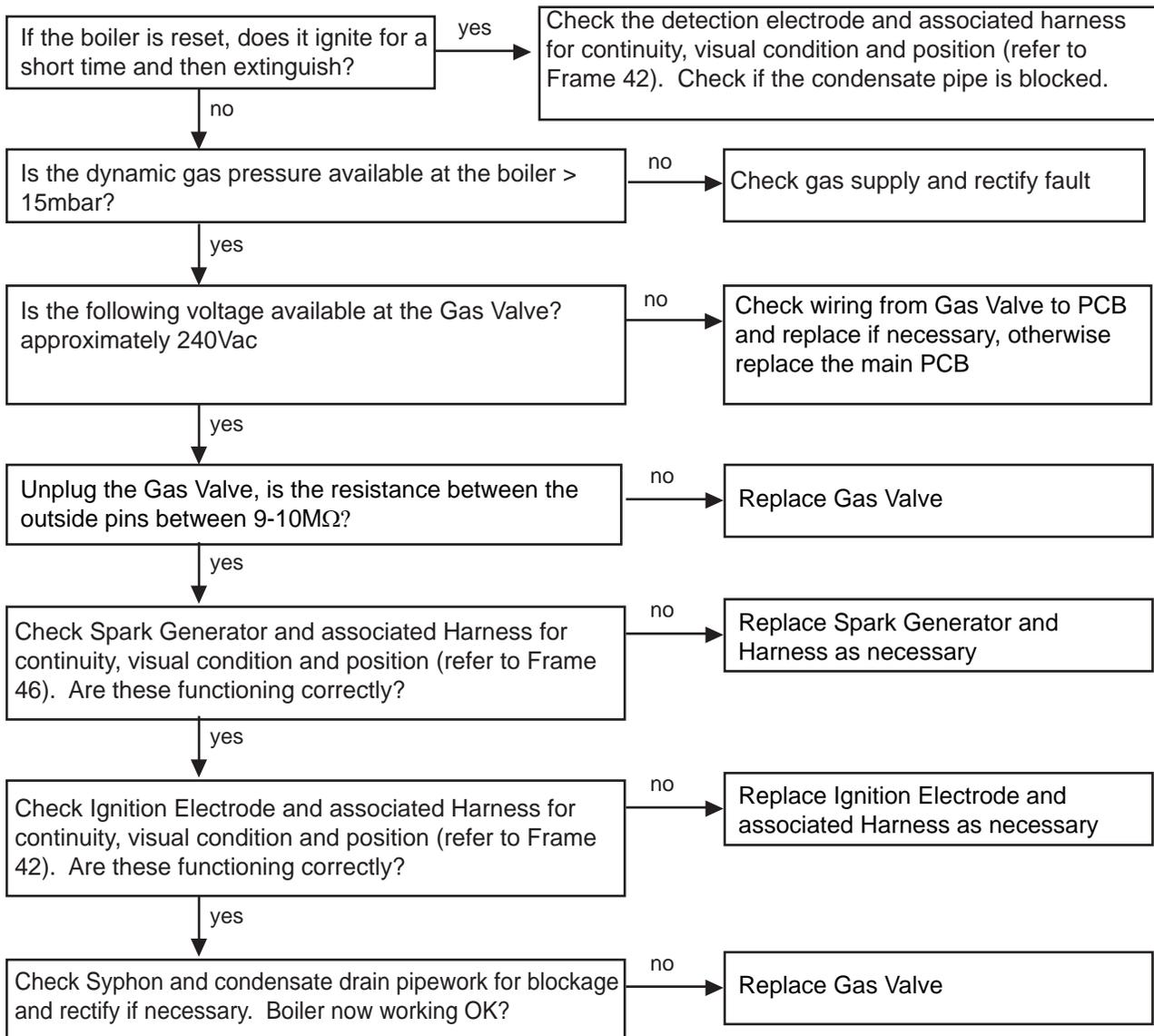


FAULT FINDING

55 OVERHEAT LOCKOUT

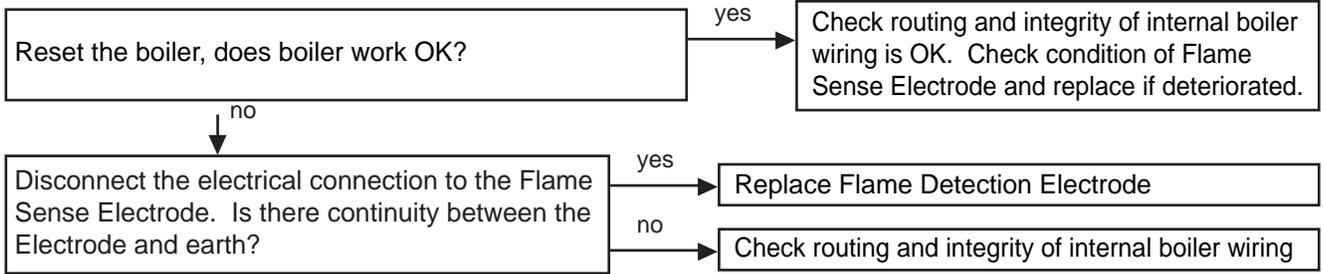


56 IGNITION LOCKOUT

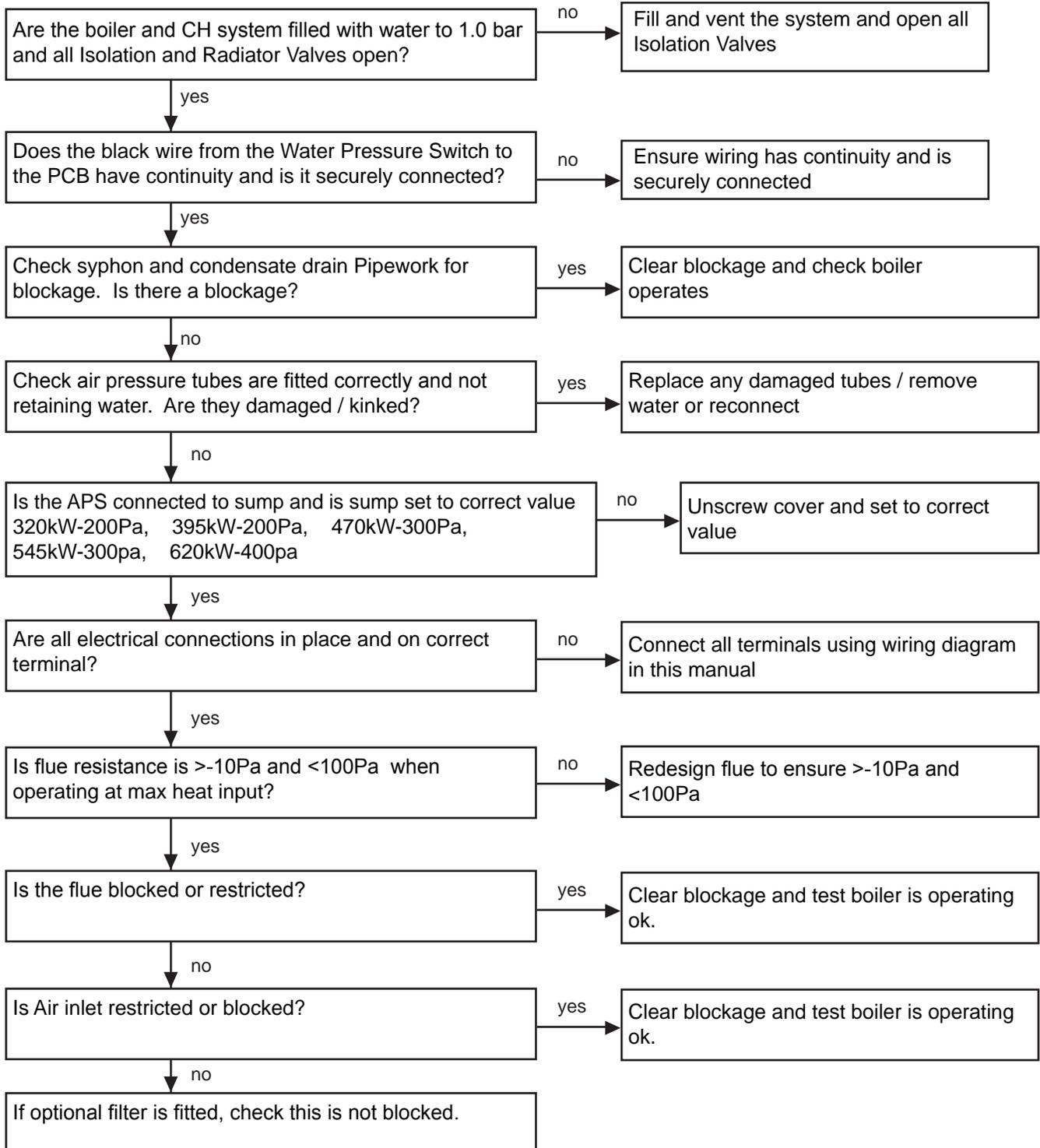


FAULT FINDING

57 FALSE FLAME LOCKOUT / ERROR 20

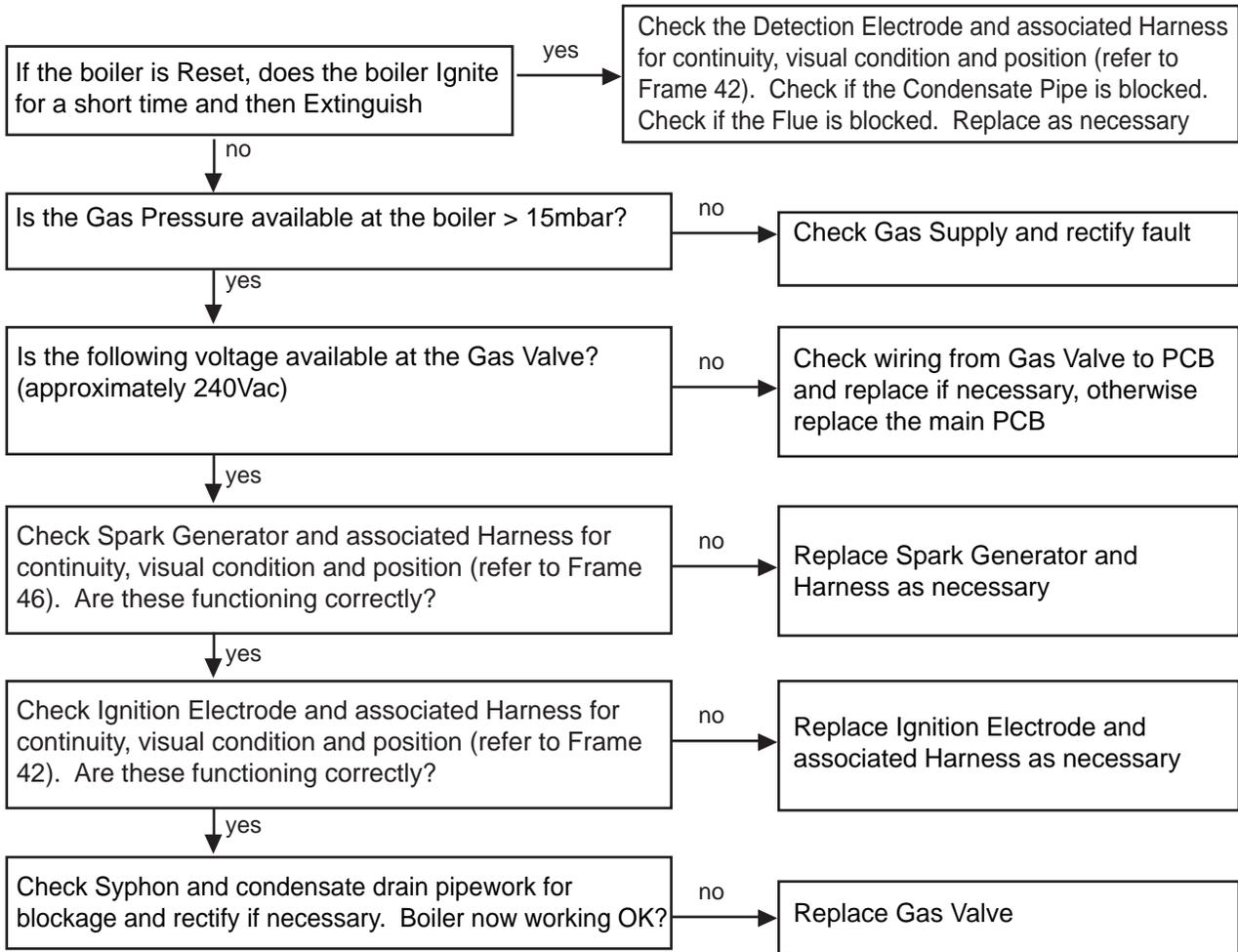


58 LOW WATER PRESSURE / AIR PRESSURE SWITCH / BLOCKED CONDENSATE

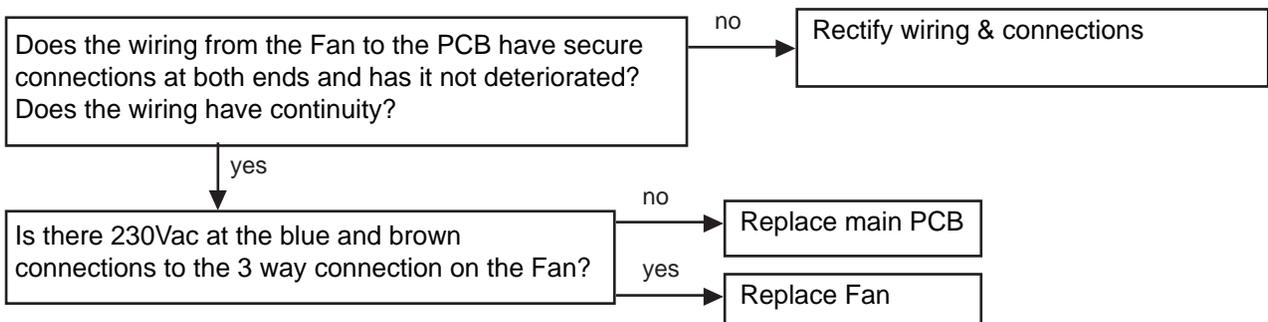


FAULT FINDING

59 FLAME LOSS

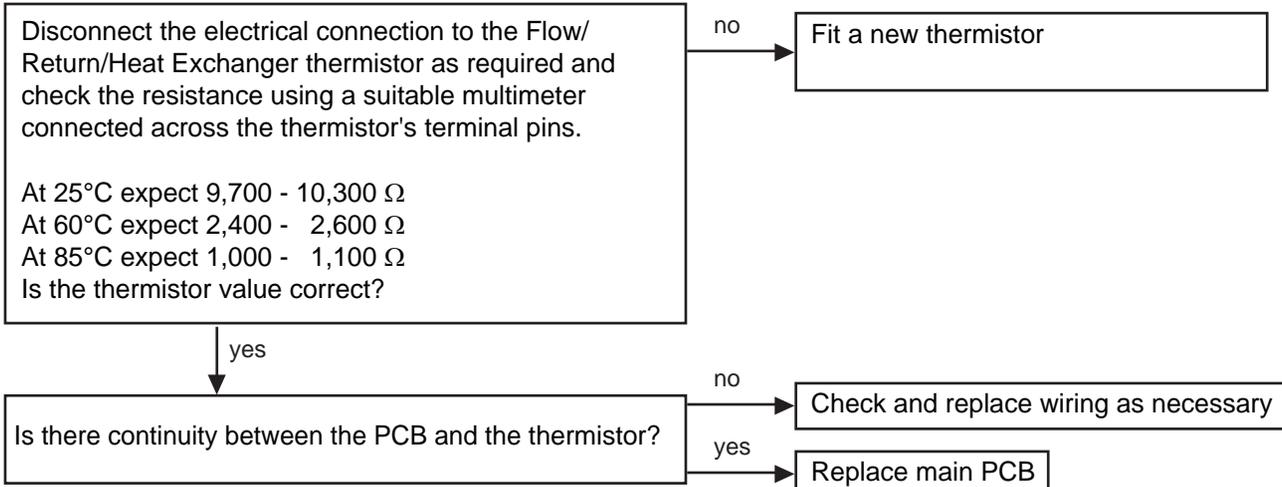


60 FAN FAULT

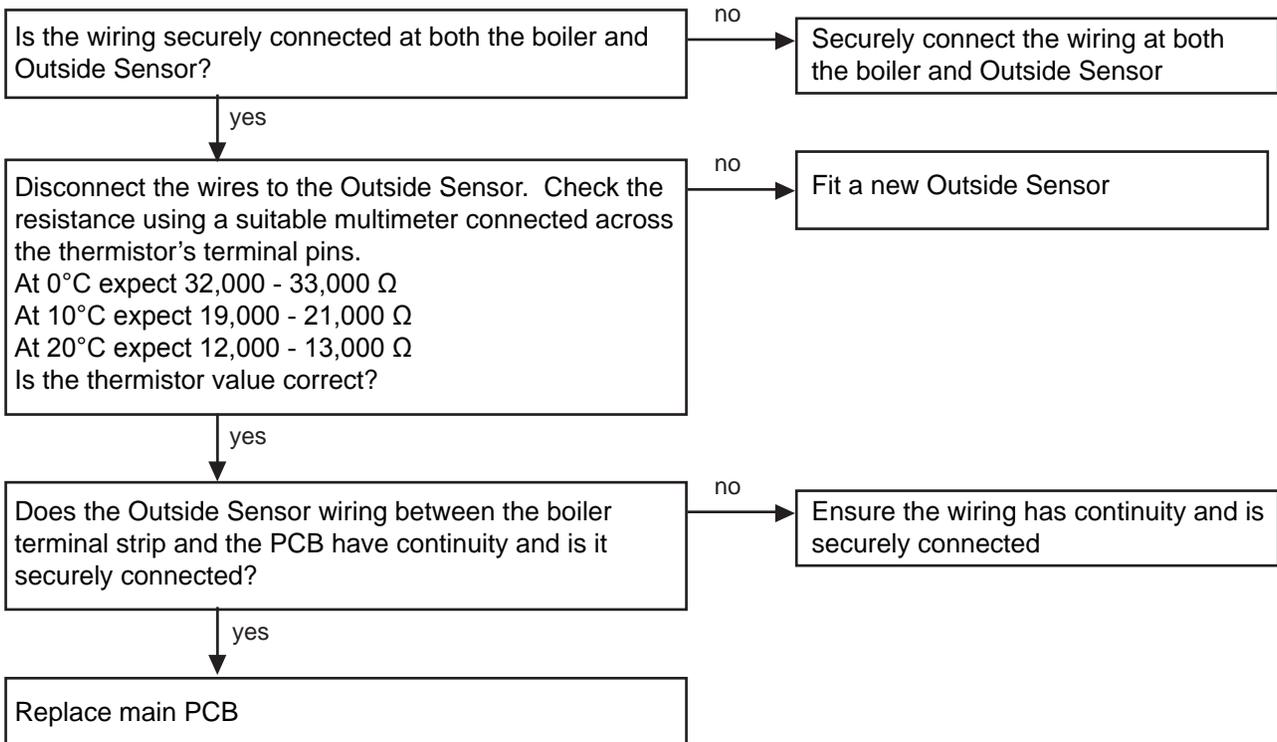


FAULT FINDING

61 THERMISTOR FAULT

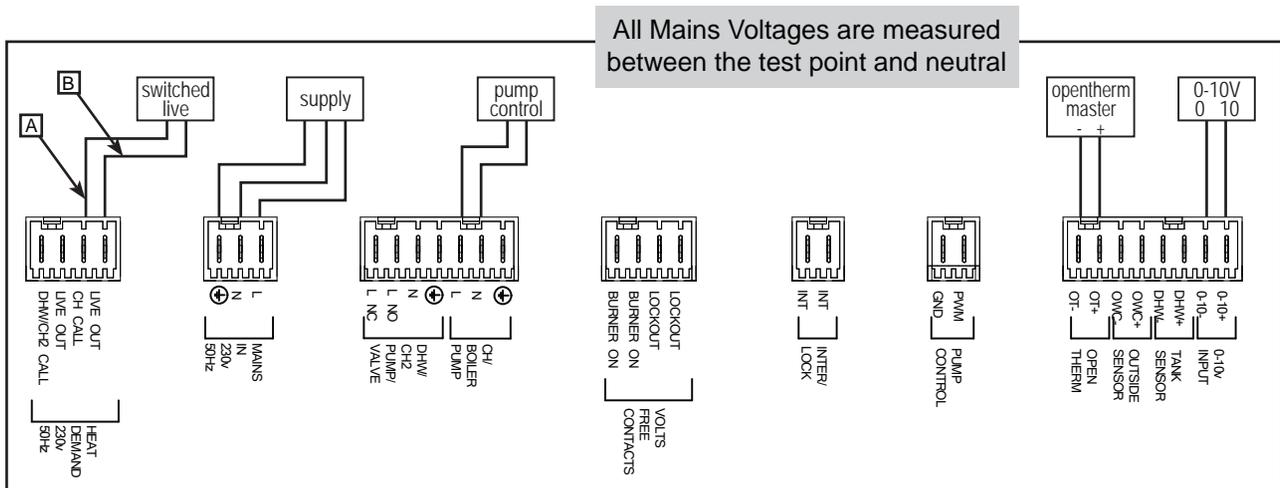
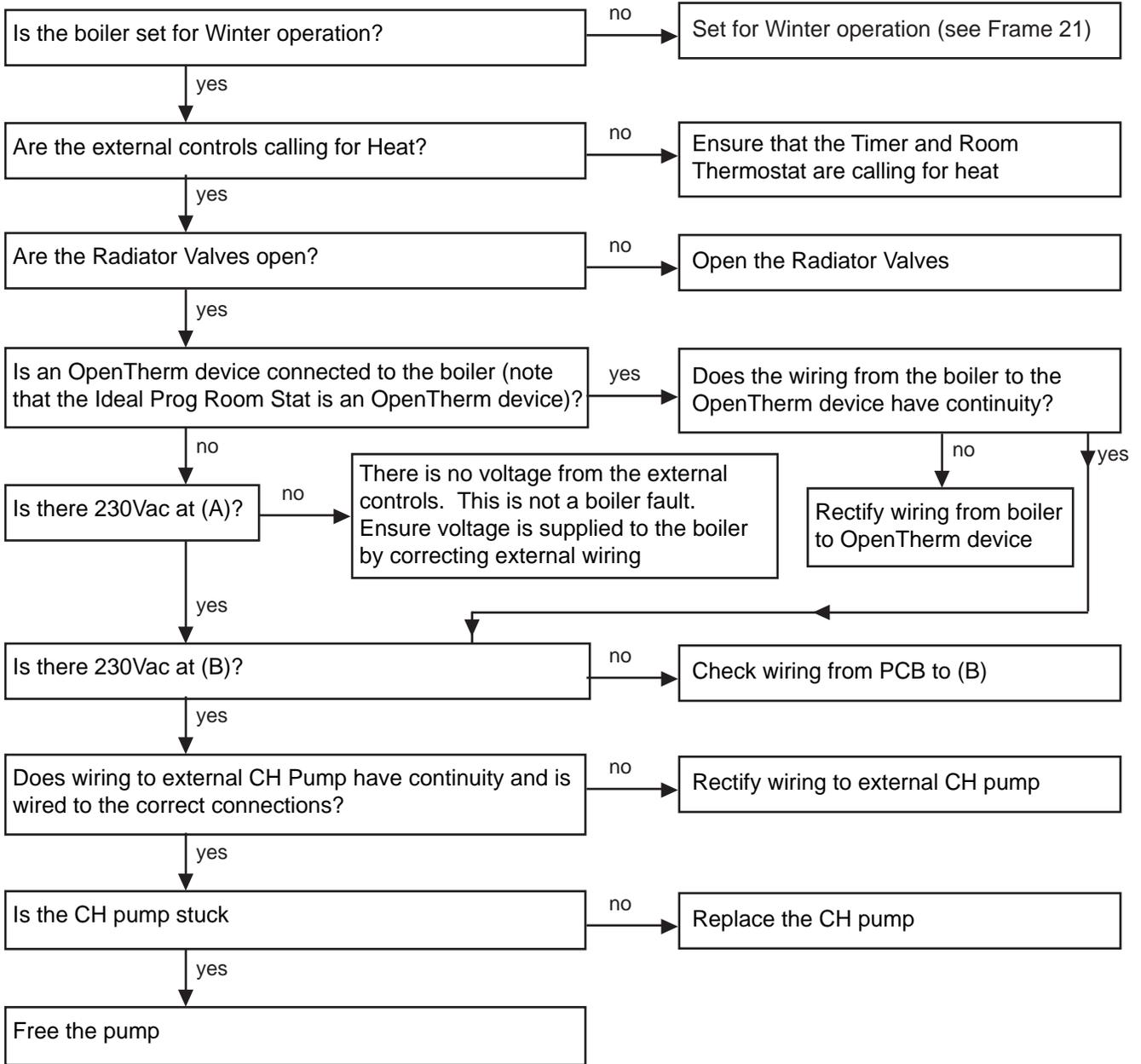


62 OUTSIDE SENSOR FAULT



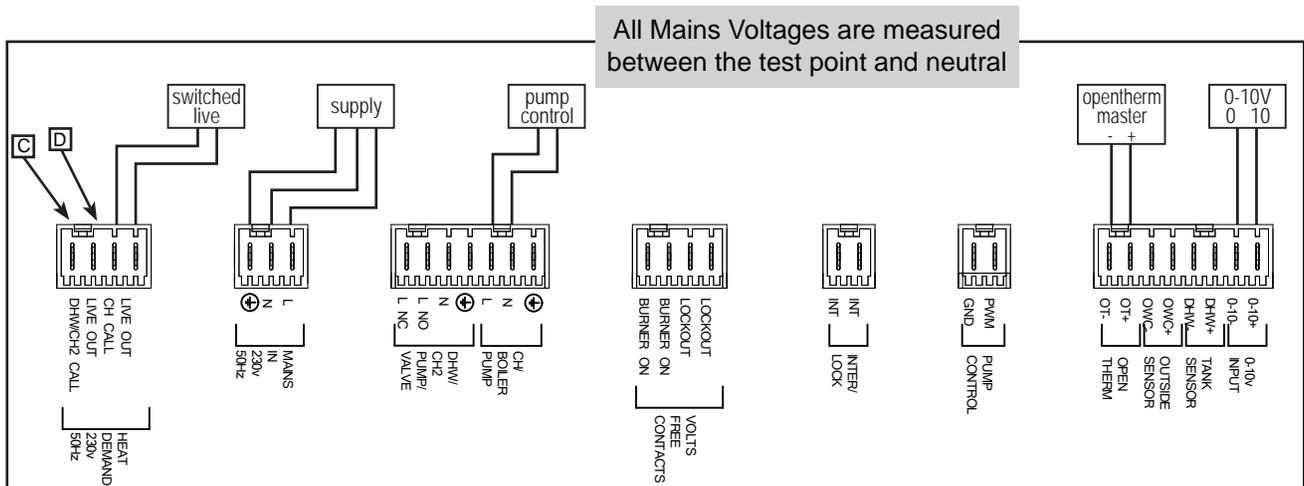
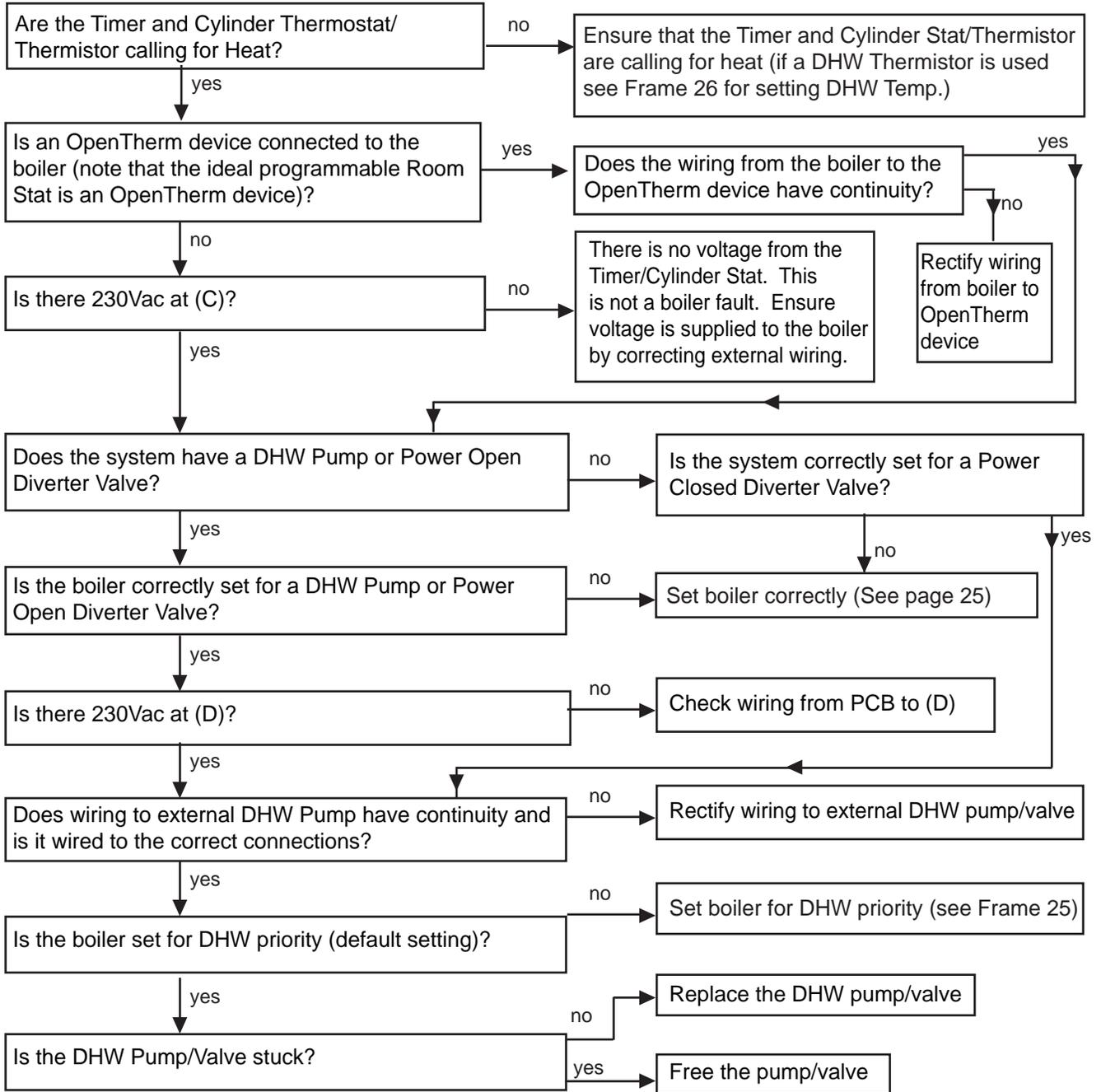
FAULT FINDING

66 NO CH BUT DHW OK



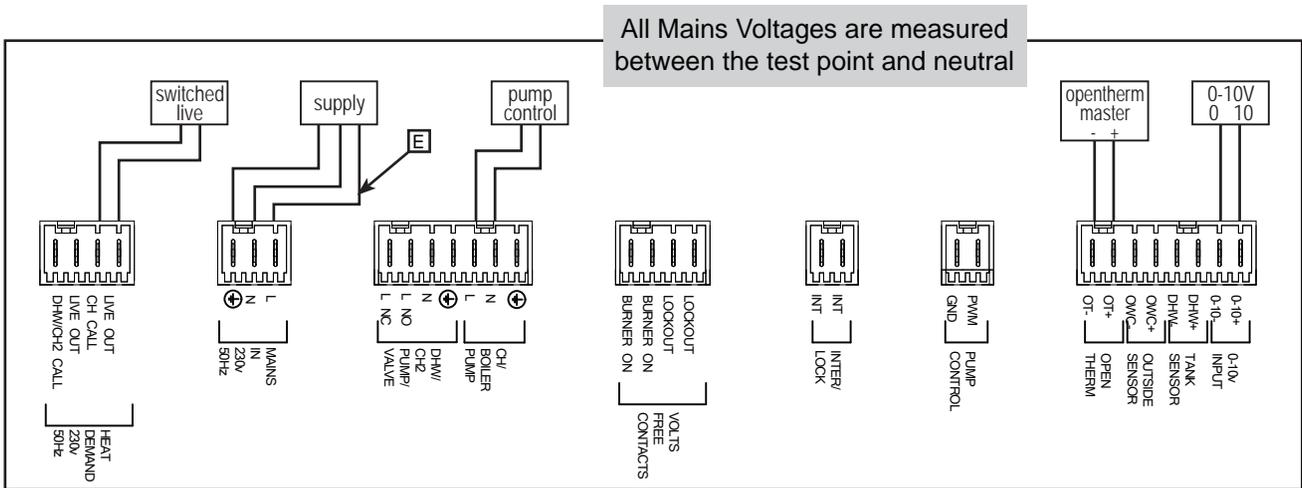
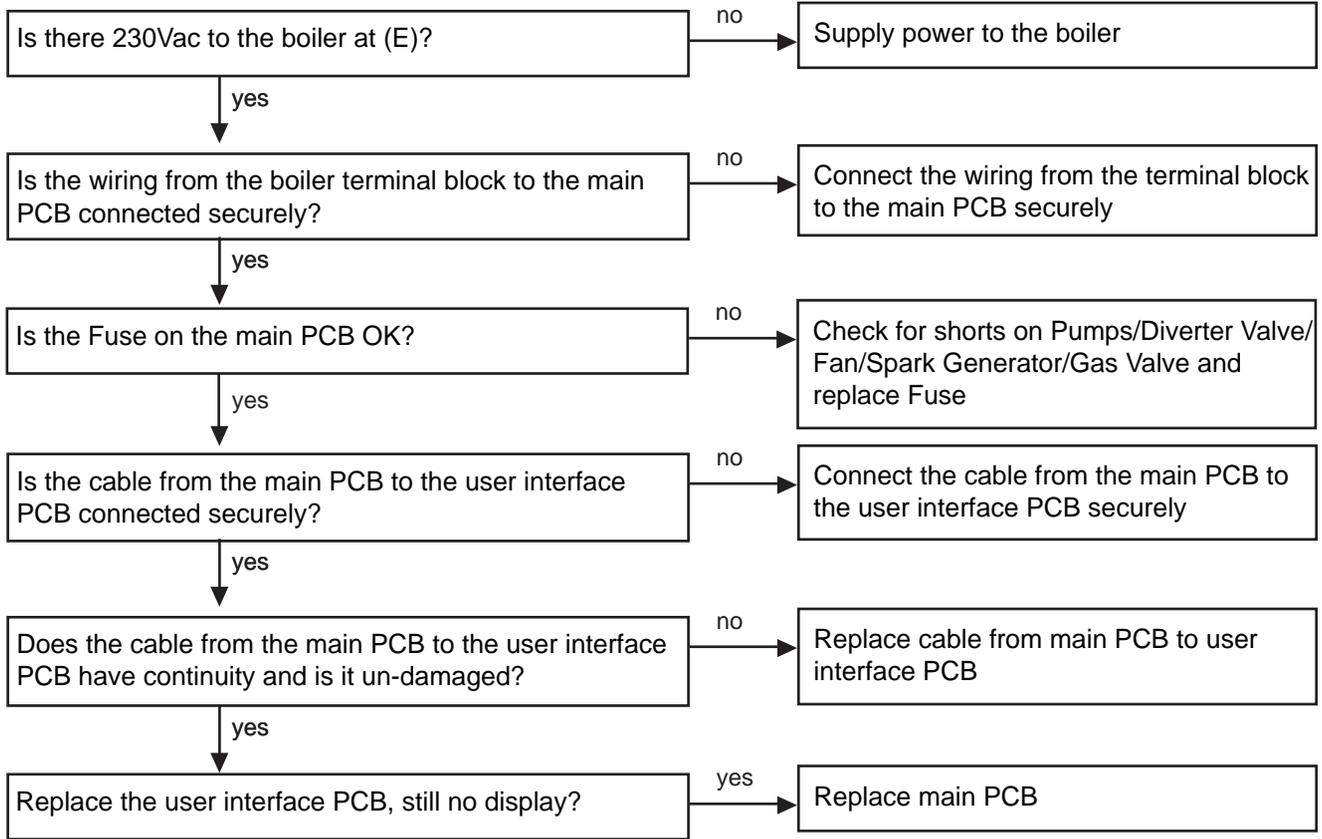
FAULT FINDING

67 NO DHW BUT CH OK

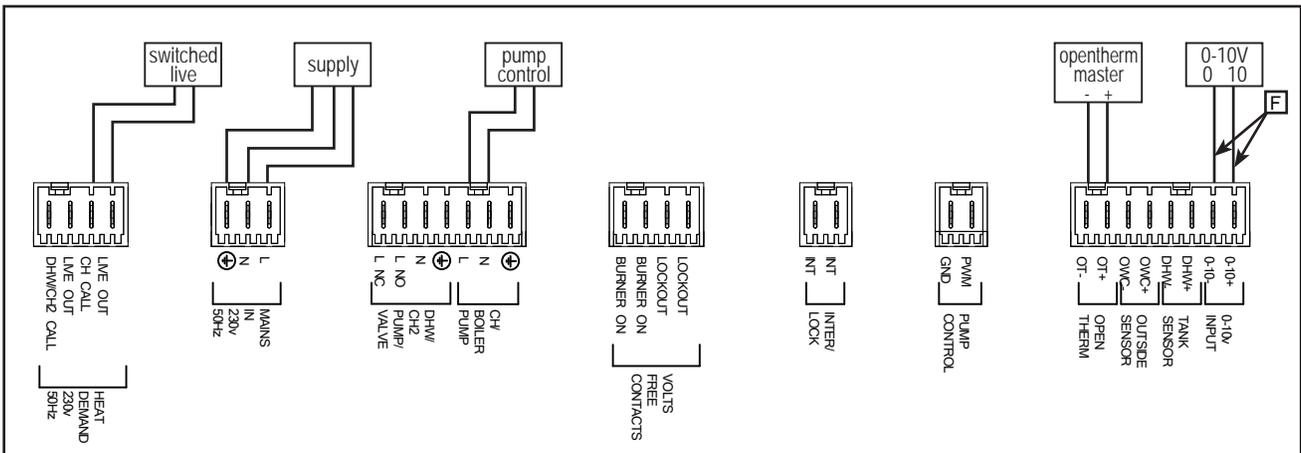
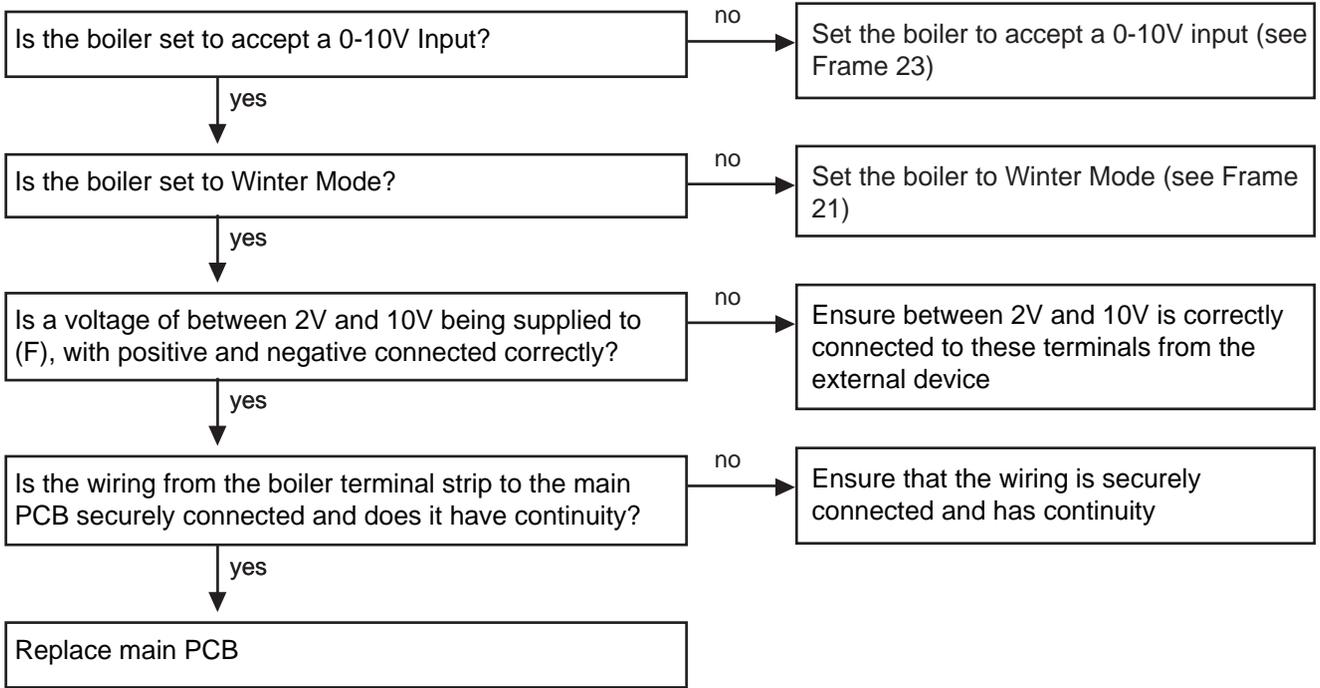


FAULT FINDING

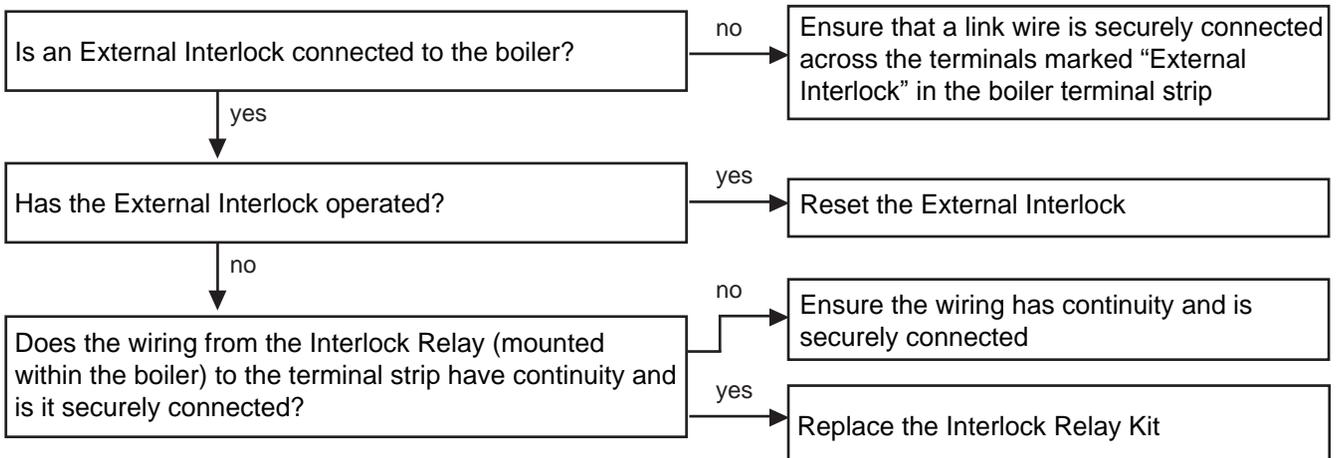
68 NO DISPLAY



69 0-10V INTERFACE



70 EXTERNAL INTERLOCK OFF



SPARE PARTS

When replacing any part on this appliance use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal. Failure to do so could affect safety or performance of this appliance.

Comprehensive spares parts information and details of approved Ideal Parts Distributors are available on www.idealparts.com

Our Parts team are also available to help with your Ideal Spare Parts enquiries on 01482 498665.

When calling, and to ensure we can provide you with the most accurate parts information, please ensure you have the following to hand;

- Boiler Model
- Boiler Serial Number

COMMISSIONING / SERVICE / REPAIR

Customer Name	
Site Address	
Postcode	
Contact Name:	
Tel:	

Boiler Model & Size	
Flue Type	Ideal <input type="checkbox"/> Ind Flue Specialist <input type="checkbox"/>
Is Ventilation to BS6440 (0-70kW)	YES <input type="checkbox"/> NO <input type="checkbox"/>
Is Ventilation to BS 6640 (70kW>)	YES <input type="checkbox"/> NO <input type="checkbox"/>
High Level	Mechanical <input type="checkbox"/> Natural <input type="checkbox"/>
Low Level	Mechanical <input type="checkbox"/> Natural <input type="checkbox"/>
Direct to Outside Air?	YES <input type="checkbox"/> NO <input type="checkbox"/>

Commissioning Date		
Boiler Location		
Option Kits fitted		
Open	Interlock Kit	Weather Comp
RS	Frame/Header Kit	Plume Kit
Other:		

Limit stat operation set to Factory Settings	
Yes / No	

	Boiler 1		Boiler 2		Boiler 3		Boiler 4		Boiler 5		Boiler 6	
	Serial No	Low	High	Low	High	Low	High	Low	High	Low	High	Serial No.
Gas inlet pressure (static)												
Gas manifold pressure dynamic-single boiler firing		mbar										
Gas manifold pressure dynamic-all boiler firing		mbar										
Burner pressure (if required)		mbar										
Gas rate		kW/hr										
Detection Electrode		µA										
Flue gas temperature (gross)		°C										
Ambient temperature		°C										
O ₂		%										
CO ₂		%										
CO		ppm										
CO / CO ₂ ratio												
Water flow temperature (stabilised)		°C										
Water return temperature (stabilised)		°C										
Temp. difference		°C										
Control stat operation checked and set to:		°C										
Lockout and safety functions checked		Y/N										
Flue draught max. and min. firing conditions		If applicable										
Flue back pressure (in operation)		Pa										
Flue back pressure (in stand-by mode)		Pa										
Flue checked for spillage		Y/N										
Flue damper if required		Y/N										
Condensate drain connected / syphon fitted / cleaned		Y/N										

ENGINEER'S NOTES / ADVICE / REMEDIAL ACTIONS (ALSO LIST ANY OTHER GAS APPLIANCES INSTALLED IN THE PLANT ROOM)

PLEASE ENSURE TO REGISTER YOUR WARRANTY & BOILER INSTALLATION	
Gas Safe ID number	
Warning Notice Issued (No.)	
Engineers Name (please print)	
Engineer Signature:	
Customer Signature:	

SERVICE RECORD

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

Service Provider

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

SERVICE 01		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 02		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 03		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 04		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE RECORD

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

Service Provider

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

SERVICE 05		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 06		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 07		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

SERVICE 08		Date:
Job No:		
Engineer Name:		
Company Name:		
Telephone No:		
Gas Safe Register No:		
Gas Inlet Pressure (static)	mbar	
Gas Inlet Pressure (dynamic) - 1 Boiler	mbar	
Gas Inlet Pressure (dynamic) - all Boilers	mbar	
CO ₂	%	
CO / CO ₂ Ratio	%	
Control Stat Setting	°C	
Temp. Diff	°C	
Burner Pressure (if applicable)	mbar	
Flue Gas Temp.	°C	
Ambient Temp.	°C	
Flue Draught (if applicable)	mbar	
Flue Back Pressure	pa	
Water/Other Safety inerlock proved	Y/N	
Comments:		
Signature		

Technical Training

The Ideal Technical Training Centre offers a series of first class training courses for domestic, commercial and industrial heating installers, engineers and system specifiers.
For details of courses please ring:..... 01482 498432



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Registered Office
Ideal Boilers Ltd., PO Box 103, National Avenue, Kingston Upon Hull, HU5 4JN
Tel 01482 492251 Fax 01482 448858
Registration No. London 322 137

Ideal Technical Helpline: 01482 498376
www.idealcommercialboilers.com