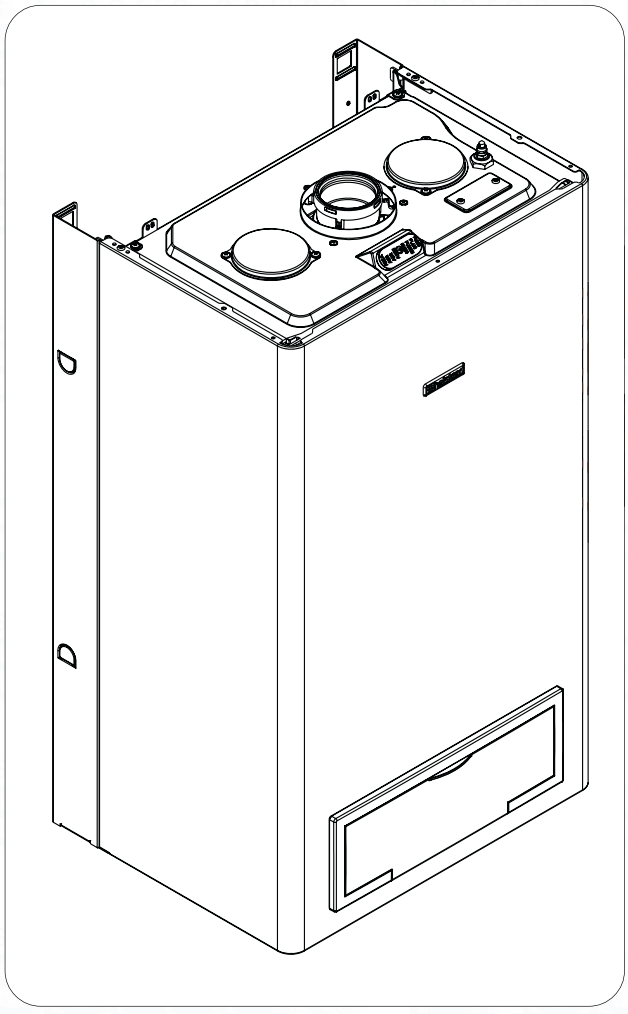
iHeat 25c
iHeat 30c
iHeat 35c

Combination Condensing Boilers



Installation and Servicing Instructions

These instructions should be left with the user

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0.0 Contents

Introduction		Page
1.1	Description	4

Design principles & operating sequence		Page
2.1	Principle components	5
2.2	Mode of operation (at rest)	5
2.3	Mode of operation (heating)	5
2.4	Mode of operation (Hot water)	6
2.5	Safety devices	6

Technical data		Page
3.1	Central heating	7
3.2	Domestic hot water	7
3.3	Gas pressures	7
3.4	Expansion vessel	7
3.5	Dimensions	7
3.6	Clearances	7
3.7	Connections	7
3.8	Electrical	7
3.9	Flue details (concentric)	7
3.9A	Flue details (twin pipes)	7
3.10	Efficiency	7
3.11	Emissions	7
3.12	Pump duty	8

General requirements (UK)		Page
4.1	Related documents	9
4.2	Location of appliance	9
4.3	Gas supply	10
4.4	Flue system	10
4.5	Air supply	10
4.6	Water circulation	10
4.7	Electrical supply	11
4.8	Mounting on a combustible surface	12
4.9	Timber framed buildings	12
4.10	Inhibitors	12
4.11	Showers	12

General requirements (EIRE)		Page
4A.1	Related documents	12
4A.2	Location of appliance	12
4A.3	Gas supply	12
4A.4	Flue system	12
4A.5	Air supply	13
4A.6	Water circulation	13
4A.7	Electrical supply	14
4A.8	Mounting on a combustible surface	14
4A.9	Timber framed buildings	14
4A.10	Inhibitors	14
4A.11	Showers	14
4A.12	Declaration of conformity	14

Installation		Page
5.1	Boiler dimensions	15
5.2	Tap rail	15
5.3	Clearances	16
5.4	Boiler flue ring	17
5.5	Delivery	18
5.6	Contents	18
5.7	Unpacking	18
5.8	Preparation for mounting the appliance	18
5.9	Fitting the flue	18
5.10	Concentric air/flue duct specifications	18
5.11	Flue template	18
5.12	Kit A + Telescopic Horizontal Wall Terminal	18
5.13	Kit B Vertical Concentric Flue Terminal	18
5.14	Offset Vertical Flue Terminal	20
5.15	Kit C Horizontal Anti-Plume Flue Kit	20
5.16	Plume Diverter Terminal Kit	20
5.17	Kit D External Vertical Flue	20
5.18	Kit E Chimney Flue Liner Kit	21
5.19	Kit F: Twin Flue System	21
5.20	Flue lengths	22
5.21	Additional Concentric Flue Kits	22
5.22	Connecting the gas and water kit	23
5.23	Electrical connections	24

Commissioning		Page
6.1	Gas supply installation	25
6.2	The heating system	25
6.3	Initial filling of the system	25
6.4	Initial flushing of the system	25
6.5	Pre-operation checks	26
6.6	Initial lighting	26
6.7	Checking gas pressure & combustion analysis	26
6.8	Final flushing of the heating system	26
6.9	Setting the boiler operating temperature	26
6.10	Setting the system design pressure	26
6.11	Regulating the central heating system	26
6.12	Inlet pressure and gas rate checks	27
6.13	Final checks	27
6.14	Instructing the user	27

Servicing		Page
7.1	General	28
7.2	Routine annual servicing	28
7.3	Replacement of components	28
7.4	Component removal procedure	29
7.5	Pump assembly	29
7.6	Safety valve	29
7.7	Lower automatic air release valves	29
7.8	Water pressure switch	30
7.9	Primary thermistor	30
7.10	Return thermistor	30
7.11	Printed circuit board	30
7.12	Gas valve	30
7.13	Electrodes and condense sensor	31
7.14	Flue fan & mixer	31
7.15	Burner	31
7.16	Main heat exchanger	31
7.17	Automatic by-pass	32
7.18	Expansion vessel	32
7.19	Condense trap removal	32
7.20	Flue collector removal	32
7.21	Integral time switch	33

Checks, adjustments and fault finding		Page
8.1	Checking appliance operation	34
8.2	Appliance modes of operation	34
8.3	Appliance fan speed	36
8.4	Checking the CO_2 & adjusting the valve	37
8.5	Combustion analysis test	38
8.6	Checking the expansion vessel	38
8.7	External faults	38
8.8	Electrical checks	38
8.9	Fault finding	39
8.10	Boiler configuration	39
8.11	Fault codes	40
8.12	Component values and characteristics	40

Wiring diagrams		Page
9.1	External wiring	41
9.2	External wiring limitations	41
9.3	Typical control applications	41
9.4	Other devices	41
9.5	Mechanical clock	41
9.9	Wiring diagram	42

Exploded diagrams		Page
10.1	Table 1	43
10.2	Table 2	44
10.3	Table 3	45
10.4	Table 4	46
10.5	Table 5	47

L.P.G. instructions		Page
11.1	Related documents	48
11.2	Technical data	48
11.3	Converting the appliance gas type	48
11.4	Gas supply	48
11.5	Gas supply installation	48
11.6	Checking the CO and CO2 flue gas level	48
11.7	Appliance fan speed	49
	Benchmark	50-51

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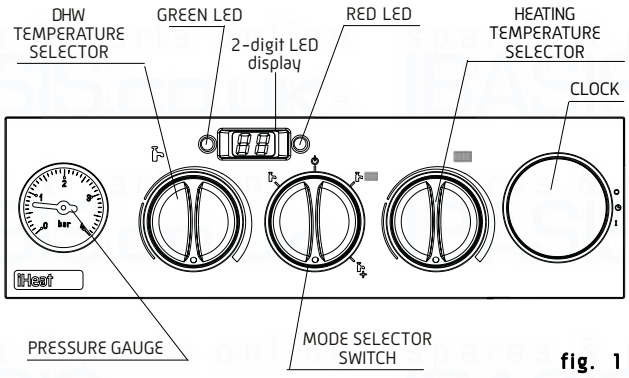


fig. 1

Hot water only	Select this position if you want the boiler to supply hot water only (no heating)
Boiler at OFF/standby	Select this position when you want the boiler to be switched off for short periods (days) or if the boiler requires to be reset (refer to users handbook)
Heating & hot water	Select this position when you want the boiler to respond to a heating request from the time-clock/programmer
Heating & hot water with pre-heat	Select this position when you want the boiler to respond to a heating request from the time-clock/programmer (comfort) and you want the domestic hot water to be pre-heated
DHW temperature selector	Move the selector clockwise to increase the hot water outlet temperature, or counter-clockwise to reduce the temperature
Heating temperature selector	Move the selector clockwise to increase the heating outlet temperature, or counter-clockwise to reduce the temperature
2-digit LED display	Displays the current outlet temperature of the boiler. During a fault condition, the appropriate fault code will be displayed (refere to the users handbook for instructions regarding fault codes)
Green LED lit	Boiler is working/responding to a heating/hot water request
Red LED lit	Boiler has identified a fault and has failed-safe. Refer to users handbook for instructions on how to reset
Pressure gauge	Ensure the system pressure is set correctly (minimum 0.5-bar)

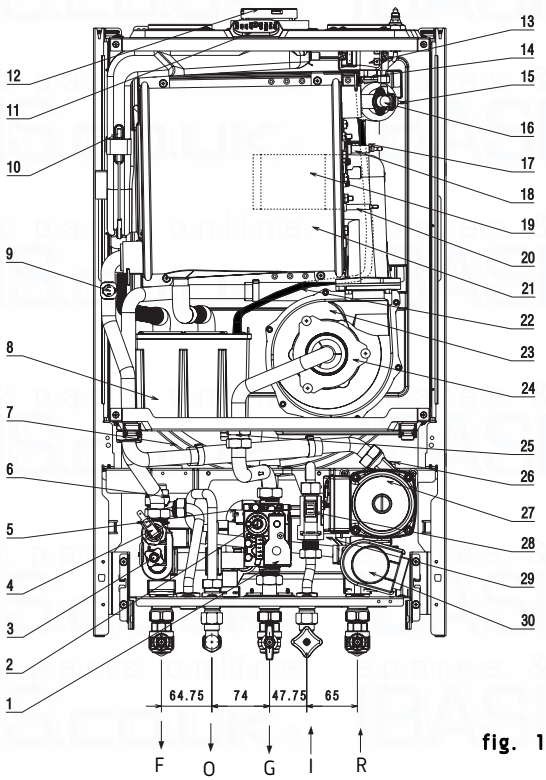


fig. 1A

1.0 Introduction

1.1 Description

The **iHeat** is approved for use with B23-C13-C33-C53-C63 type flue applications.

These appliances are designed for use with a sealed system only; consequently they are not intended for use on open vented systems.

This booklet is an integral part of the appliance. It is therefore necessary to ensure that the booklet is handed to the person responsible for the property in which the appliance is located/installed. A replacement copy can be obtained from customer services.

The **iHeat** comprises a range of high-efficiency combination boilers with outputs to DHW of 25kW, 30kW, and 35kW respectively. These appliances – by design – incorporate electronic ignition, circulating pump, expansion vessel, safety valve, pressure gauge and automatic by-pass.

The **iHeat** range is produced as room sealed, category II2H3P appliances, suitable for internal wall mounting applications only. Each appliance is provided with a fan powered flue outlet with an annular co-axial combustion air intake that can be rotated – horizontally – through 360 degrees for various horizontal or vertical applications.

1	Gas valve
2	Modulator coil
3	Discharge valve
4	Pressure switch
5	Domestic hot water sensor
6	Safety valve
7	Expansion vessel
8	Condense trap
9	Return sensor
10	Fumes thermostat
11	Flue gas analysis test point
12	Flue outlet & air intake
13	Ignition transformer
14	Top AAV
15	Flow sensor
16	High limit thermostat
17	Sensing Electrode
18	Spark Electrode
19	Cylindric Burner
20	Condensate level sensor
21	Main heat exchanger
22	Top AAV pipe
23	Fan assembly
24	Mixer
25	Injecteur
25	Bottom auto air vent (AAV)
26	Pump
27	DHW flow switch
28	Domestic hot water heat exchanger
29	Three porte valve actuator

F	Heating flow connection
O	Hot water outlet
G	Gas connection
R	Heating return connection
I	Cold water inlet

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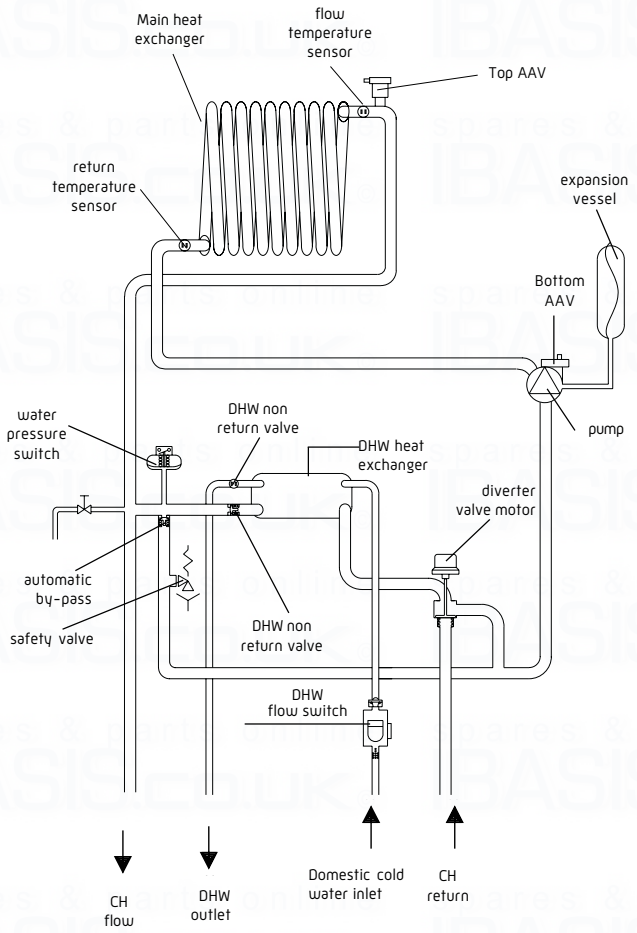


fig. 2

2.0 Design principles and operating sequence

2.1 Principle Components

- A fully integrated electronic control board featuring electronic temperature control, anti-cycle control, pump over-run, self-diagnostic fault indicator, full air/gas modulation.
- Radial aluminium heat exchanger.
- Electronic ignition with flame supervision
- Integral high-head pump
- Fan
- Expansion vessel
- Water pressure switch
- Condensate level sensor
- Pressure gauge

2.2 Mode of operation (at rest)

When the appliance is at rest and there are no requests for heating or hot water, the following functions are active:

- Frost-protection system – the frost-protection system protects the appliance against the risk of frost damage both for CH and DHW. For CH line, if the main temperature falls to 6°C, the appliance will function on minimum power until the temperature on main reaches 35°C.

Moreover if the DHW temperature falls to 4°C, the appliance will function on minimum power until the temperature on main reaches 55°C.

- Anti-block function – the anti-block function enables the pump and divertor valve actuator to be energised for short periods, when the appliance has been inactive for more than 24-hours.

2.3 Mode of operation (Heating)

When there is a request for heat via the time clock and/ or any external control, the pump and fan are started, the fan speed will modulate until the correct signal voltage is received at the control PCB. At this point an ignition sequence is enabled.

Ignition is sensed by the electronic circuit to ensure flame stability at the burner. Once successful ignition has been achieved, the electronic circuitry increases the gas rate to 75% for a period of 15 minutes. Thereafter, the boiler's output will either be increase to maximum or modulate to suit the set requirement.

When the appliance reaches the desired temperature the burner will shut down and the boiler will perform a three-minute anti-cycle (timer delay).
When the request for heat has been satisfied the appliance pump and fan may continue to operate to dissipate any residual heat within the appliance.

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2.0 Design principles and operating sequence

2.4 Mode of operation (Hot water)

When there is a request for DHW via a hot water outlet or tap, the pump and fan are started, the fan speed will modulate until the correct signal voltage is received at the control PCB. At this point an ignition sequence is enabled.

Ignition is sensed by the electronic circuit to ensure flame stability at the burner. Once successful ignition has been achieved, the electronic circuitry increases the gas rate to maximum or will modulate output to stabilise the temperature.

In the event of the appliance exceeding the desired temperature (set point) the burner will shut down until the temperature drops. When the request for DHW has been satisfied the appliance pump and fan may continue to operate to dissipate any residual heat within the appliance.

2.5 Safety Devices

When the appliance is in use, safe operation is ensured by:

- A water pressure switch that monitors system water pressure and will de-activate the pump, fan, and burner should the system water pressure drop below the rated tolerance.
- Fan speed sensor to ensure safe operation of the burner.
- A high limit thermostat that over-rides the temperature control circuit to prevent or interrupt the operation of the burner.
- Flame sensor that will shut down the burner when no flame signal is detected.
- A sensor that interrupts the operation of the appliance if the condense pipe becomes blocked.
- A safety valve which releases excess pressure from the primary circuit.

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3.0 Technical Data

3.1 Central Heating	25c	30c	35c
Heat input (kW)	20	25	30
Maximum heat output (kW) 60/80°C	19.6	24.45	29.31
Minimum heat output (kW) 60/80°C	5.9	6.9	6.84
Maximum heat output (kW) 30/50°C	21.00	26.30	31.83
Minimum heat output (kW) 30/50°C	6.40	7.47	7.41
Minimum working pressure		0.5 bar	
Maximum working pressure		2.7 bar	
Minimum flow rate		350 l/h	
3.2 Domestic Hot Water	**25c**	**30c**	**35c**
Heat input (kW)	25	30	34.6
Flow Rate: ΔT35°C	10.3 l/pm	12.3 l/pm	14.2 l/pm
Maximum inlet pressure		6.0 bar	
Minimum inlet pressure		0.15 bar	
Minimum flow rate		2.0 l/min	
3.3 Gas Pressures	**25c**	**30c**	**35c**
Inlet pressure (G20)		20.0 mbar	
Heating maximum gas rate (m^3/hr)	2.12	2.64	3.17
DHW maximum gas rate (m^3/hr)	2.64	3.17	3.65
Minimum gas rate (m^3/hr)	0.63	0.74	0.74
Injector size (mm)	6.7	6.7	7.0
3.4 Expansion Vessel	**25c**	**30c**	**35c**
Capacity	8-litres	10-litres	10-litres
Maximum system volume	76-litres	91-litres	91-litres
Pre-charge pressure		1.0 bar	
3.5 Dimensions	**25c**	**30c**	**35c**
Height (mm)	780	780	780
Width (mm)	400	450	450
Depth (mm)	358	358	358
Dry weight (kg)	40	43	45
3.6 Clearances		**iHeat Range**	
Sides		12mm	
Top		150mm from casing or 25mm above flue elbow (whichever is applicable)	
Bottom		150mm	
Front		600mm	
3.7 Connections		**iHeat Range**	
Flow & return		22mm	
Gas		15mm	
DHW hot & cold		15mm	
Safety valve		15mm	
Condense		21mm	
3.8 Electrical	**25c**	**30c**	**35c**
Power consumption (Watts)	150W	150W	150W
Voltage (V/Hz)		230/50	
Internal fuse		3.15A T (for PCB) - 3.15A F (for connections block)	
External fuse		3A	
3.9 Flue Details (concentric)	**25c**	**30c**	**35c**
Maximum horizontal flue length (60/100mm)	7.8m	7.8m	7.8m
Maximum vertical flue length (60/100mm)	8.8m	8.8m	8.8m
Maximum horizontal flue length (80/125mm)	20m	20m	20m
Maximum vertical flue length (80/125mm)	25m	25m	25m
3.9A Flue Details (twin pipes)	**25c**	**30c**	**35c**
Maximum horizontal flue length (80mm/80mm)	40m/40m	35m/35m	35m/35m
Maximum vertical flue length (80mm/80mm)	40m/40m	35m/35m	35m/35m
3.10 Efficiency	**25c**	**30c**	**35c**
SEDBUK (%)	90.3	90.2	90.1
3.11 Emissions	**25c**	**30c**	**35c**
CO_2 @ maximum output (%)	8.8-9.2	8.8-9.2	8.8-9.2
CO_2 @ minimum output (%)	8.8-9.2	8.8-9.2	8.8-9.2
CO/CO_2 ratio @ maximum output	0.002 to 1	0.002 to 1	0.002 to 1
CO/CO_2 ratio @ minimum output	0.0004 to 1	0.0004 to 1	0.0004 to 1
CO @ maximum output (p.p.m.*)	less than 170	less than 200	less than 220
CO @ minimum output (p.p.m.*)	less than 50	less than 30	less than 20
NOx @ maximum output (mg/kWh)	105.9	105.9	88.3
NOx @ minimum output (mg/kWh)	61.8	61.8	70.6
NOx rating	class 5	class 5	class 5

*** p.p.m. = parts per million**

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3.0 Technical Data

3.12 Pump duty

Fig. 3 shows the flow-rate available – after allowing for pressure loss through the appliance – for system requirements. When using this graph, apply only the pressure loss of the system. The graph is based on a 20°C temperature differential.

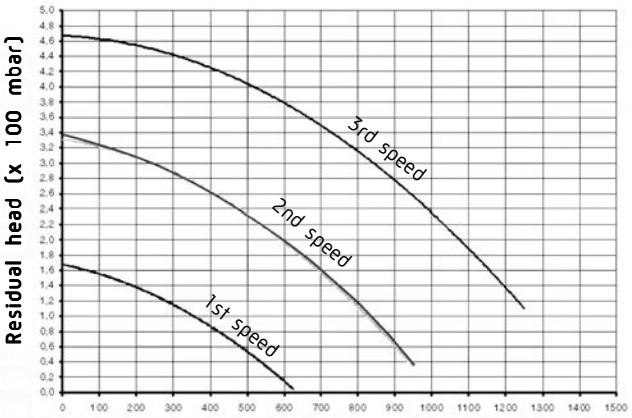
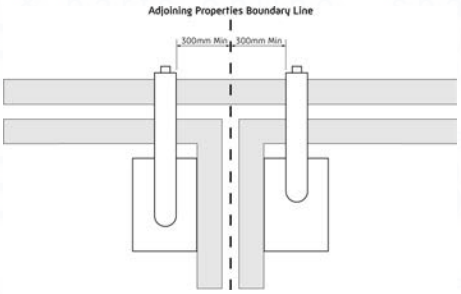


Fig. 3



NOTE: The minimum distance from a flue terminal to a boundary line is 300mm.
If fitting a plume diverter kit, the air inlet should be a minimum of 100mm from any opening windows or doors.

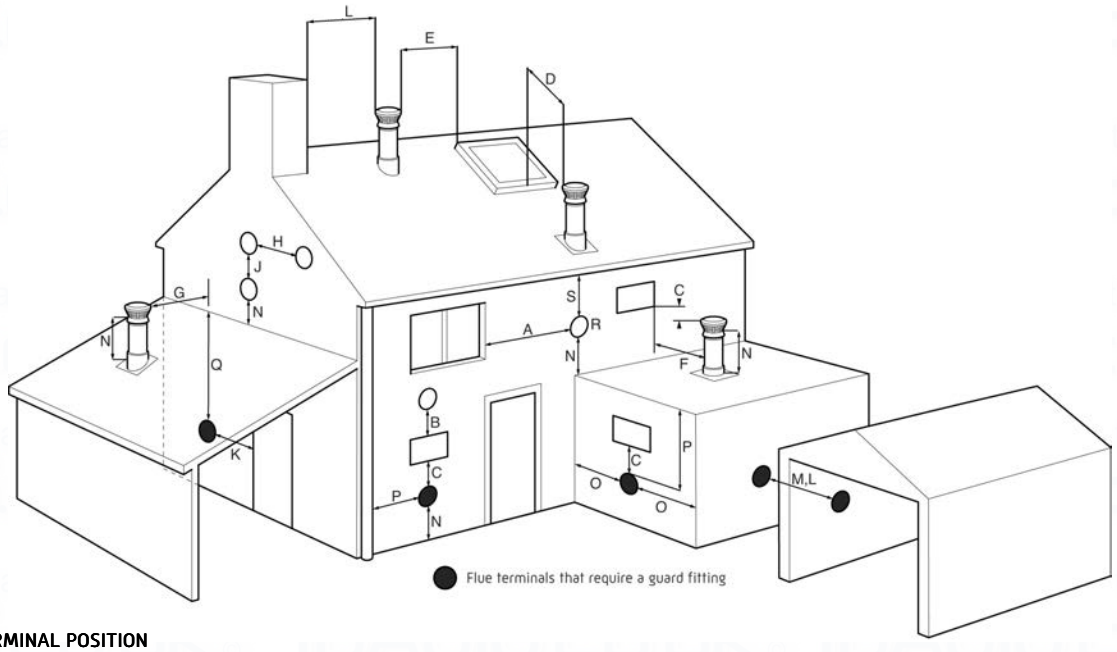


Fig. 4

TERMINAL POSITION

Position	Description	Minimum Distance (mm)
A	Horizontally to an opening, air brick, opening window	300
B	Above an opening, air brick, opening window etc.	300
C	Below an opening, air brick, opening window etc.	300
D	Below windows or openings on pitched roofs	2000
E	Adjacent to windows or openings on pitched and flat roofs	600
F	From an adjacent opening window (vertical only)	1000
G	From an adjacent wall to flue (vertical only)	300
H	Horizontally from a terminal on the same wall	300
J	Vertically from a terminal on the same wall	1500
K	From an opening in a carport (e.g. door, window) into the dwelling	1200
L	From a terminal facing a terminal (horizontal flue)	1200
L	From a terminal facing a terminal (vertical flue)	600
M	From a surface or boundary line facing a terminal	600
N	Above ground, roof or balcony level	300
O	From an internal or external corner	300
P	From a vertical drain pipe or soil pipe	25
Q	Below balconies or car port roof	25
R	Below eaves	25
S	Below gutters, soil pipes or drain pipes	25

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4.0 General requirements (UK)

4.1 Related documents

This appliance must be installed by a competent person in accordance with the Gas Safety (Installation & Use) Regulations.

The installation of this boiler must be in accordance with the relevant requirements of the Gas Safety (Installation & Use) Regulations, the local building regulations, the current I.E.E. wiring regulations, the bylaws of the local water undertaking, the Building Standards (Scotland) Regulation and Building Standards (Northern Ireland) Regulations.

It should be in accordance also with any relevant requirements of the local authority and the relevant recommendations of the following British Standard Codes of Practice.

4.2 Location of appliance

The appliance may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. wiring regulations, and in Scotland, the electrical provisions of the Building Regulations, with respect to the installation of the appliance in a room or internal space containing a bath or shower.

When an appliance is installed in a room or internal space containing a bath or shower, the appliance or any control pertaining to it must not be within reach of a person using the bath or shower.

The location chosen for the appliance must permit the provision of a safe and satisfactory flue and termination. The location must also permit an adequate air supply for combustion purposes and an adequate space for servicing and air circulation around the appliance. Where the installation of the appliance will be in an unusual location special procedures may be necessary, BS 6798 gives detailed guidance on this aspect.

A compartment used to enclose the appliance must be designed and constructed specifically for this purpose. An existing compartment/cupboard may be utilised provided that it is modified to suit.

Details of essential features of compartment/cupboard design including airing cupboard installations are given in BS 6798. This appliance is not suitable for external installation.

Codes of Practice - refer to the most recent version

In GB the following Codes of Practice apply:

Standard	Scope
BS 7967	Carbon monoxide in dwelling and the combustion performance of gas fired appliances.
BS 7967-2	guide for using electronic portable combustion gas analyser in the measurement of carbon monoxide and the determination of combustion performance.
BS 7967-3	guide for responding to measurements obtained from electronic portable combustion gas analyser.
BS 7967-4	Guide for using electronic portable combustion gas analyser as part of the process of servicing and maintenance of gas appliances.
BS 6891	Gas installation
BS 5546	Installation of hot water supplies for domestic purposes
BS 5449	Forced circulation hot water systems
BS 6798	Installation of gas fired hot water boilers
BS 5440	Part 1 Flues
BS 5440	Part 2 Ventilation
BS 7074	Expansion vessels and ancillary equipment for sealed water systems
BS 7593	Treatment of water in domestic hot water central heating systems

In IE the following Codes of Practice apply:

Standard	Scope
I.S. 813	Domestic Gas Installation

The following standards give valuable additional information;

BS 5546	Installation of hot water supplies for domestic purposes
BS 5449	Forced circulation hot water systems
BS 7074	Expansion vessels and ancillary equipment for sealed water systems
BS 7593	Treatment of water in domestic hot water central heating systems

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4.0 General requirements (UK)

4.3 Gas supply

The gas meter – as supplied by the gas supplier – must be checked to ensure that it is of adequate size to deal with the maximum rated input of all the appliances that it serves. Installation pipes must be fitted in accordance with BS 6891.

Pipe work from the meter to the appliance must be of adequate size. Pipes of a smaller size than the appliance gas inlet connection must not be used. The installation must be tested for soundness in accordance with BS6891.

If the gas supply serves more than one appliance, it must be ensured that an adequate supply is maintained to each appliance when they are in use at the same time.

4.4 Flue System

The terminal should be located where the dispersal of combustion products is not impeded and with due regard for the damage and discoloration that may occur to building products located nearby. The terminal must not be located in a place where it is likely to cause a nuisance (see fig. 4).

In cold and/or humid weather, water vapour will condense on leaving the terminal; the effect of such pluming must be considered.

If installed less than 2m above a pavement or platform to which people have access (including balconies or flat roofs) the terminal must be protected by a guard of durable material.

The guard must be fitted centrally over the terminal. Refer to BS 5440 Part 1, when the terminal is 0.5 metres (or less) below plastic guttering or 1 metre (or less) below painted eaves.

4.5 Air supply

The following notes are intended for general guidance only. This appliance is a room-sealed, fan-flued boiler, consequently it does not require a permanent air vent for combustion air supply. When installed in a cupboard or compartment, ventilation for cooling purposes is also not required.

4.6 Water circulation

Detailed recommendations are given in BS 5449 Part 1 and BS 6798. The following notes are for general guidance only.

4.6.1 Pipe work

It is recommended that copper tubing to BS 2871 Part 1 is used in conjunction with soldered capillary joints. Where possible pipes should have a gradient to ensure air is carried naturally to air release points and that water flows naturally to drain cocks.

Except where providing useful heat, pipes should be insulated to avoid heat loss and in particular to avoid the possibility of freezing. Particular attention should be paid to pipes passing through ventilated areas such as under floors, loft space and void areas.

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4.0 General requirements (UK)

4.6.2 Automatic by-pass

The appliance has a built-in automatic by-pass, consequently there is no requirement for an external by-pass, however the design of the system should be such that it prevents boiler 'cycling'.

4.6.3 Drain cocks

These must be located in accessible positions to facilitate draining of the appliance and all water pipes connected to the appliance. The drain cocks must be manufactured in accordance with BS 2879.

4.6.4 Air release points

These must be positioned at the highest points in the system where air is likely to be trapped. They should be used to expel trapped air and allow complete filling of the system.

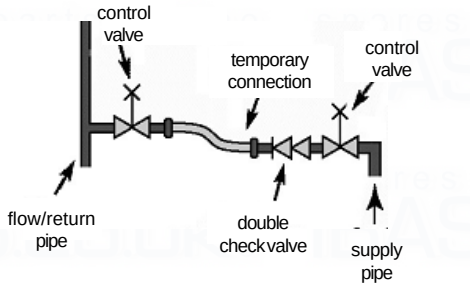
4.6.5 Expansion Vessel

The appliance has an integral expansion vessel to accommodate the increased volume of water when the system is heated. It can accept up to 8 (25c) or 10 (30c & 35c) litres of expansion from within the system, generally this is sufficient, however if the system has an unusually high water content, it may be necessary to provide additional expansion capacity (see 7.18).

4.6.6 Filling point

A method for initial filling of the system and replacing water lost during servicing etc. directly from the mains supply, is required (see fig. 5). This method of filling complies with the local water authority regulations.

fig.5



4.6.7 Low pressure Sealed System

An alternative method of filling the system would be from an independent make-up vessel or tank mounted in a position at least 1 metre above the highest point in the system and at least 5 metres above the boiler (see fig. 5A).

The cold feed from the make-up vessel or tank must be fitted with an approved non-return valve and stopcock for isolation purposes. The feed pipe should be connected to the return pipe as close to the boiler as possible.

4.6.8 Frequent Filling

Frequent filling or venting of the system may be indicative of a leak. Care should be taken during the installation of the appliance to ensure all aspects of the system are capable of withstanding pressures up to at least 3 bar.

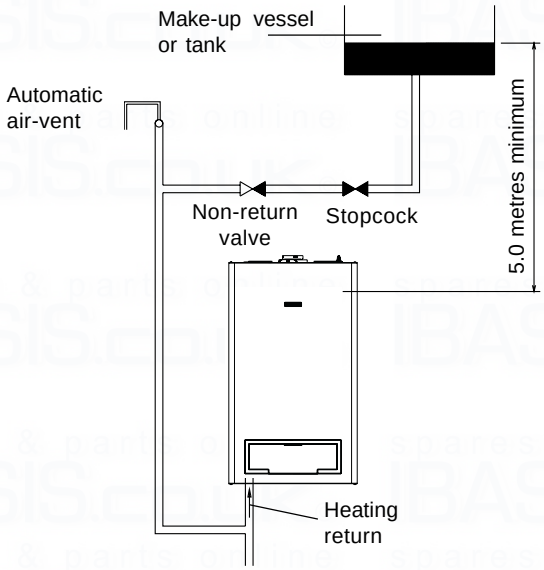


fig.5A

4.7 Electrical supply

The appliance is supplied for operation on 230V @ 50Hz electrical supply; it must be protected with a 3-amp fuse. The method of connection to the mains electricity supply must allow for complete isolation from the supply. The preferred method is by using a double-pole switch with a contact separation of at least 3,5mm (3° high-voltage category). The switch must only supply the appliance and its corresponding controls, i.e. time clock, room thermostat, etc. Alternatively an un-switched shuttered socket with a fused 3-pin plug both complying with BS 1363 is acceptable.

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4.0 General requirements (UK)

4.8 Mounting on a Combustible Surface

If the appliance is to be fitted on a wall of combustible material, a sheet of fireproof material must protect the wall.

4.9 Timber Framed Buildings

If the appliance is to be fitted in a timber framed building, it should be fitted in accordance with the Institute of Gas Engineers publication (IGE/UP/7) 'Guide for Gas Installations in Timber Frame Buildings'.

4.10 Inhibitors

It is recommend that an inhibitor – suitable for use with copper and aluminium heat exchangers – is used to protect the boiler and system from the effects of corrosion and/or electrolytic action. The inhibitor must be administered in strict accordance with the manufacturers instructions*.

*Water treatment of the complete heating system – including the boiler – should be carried out in accordance with BS 7593 and the Domestic Water Treatment Association's (DWTA) code of practice.

4.11 Showers

If the appliance is intended for use with a shower, the shower must be thermostatically controlled and be suitable for use with a combination boiler.

4.0 General requirements (EIRE)

This appliance must be installed by a competent person in accordance with and defined by, the Standard Specification (Domestic Gas Installations) Declaration (I.S. 813).

4A.1 Related documents

The installation of this boiler must be in accordance with the relevant requirements of the local building regulations, the current ETCI National Rules for Electrical Installations and the bylaws of the local water undertaking.

It should be in accordance also with any relevant requirements of the local and/or district authority.

4A.2 Location of appliance

The appliance may be installed in any room or internal space, although particular attention is drawn to the requirements of the current ETCI National Rules for Electrical Installations, and I.S. 813, Annex K.

When an appliance is installed in a room or internal space containing a bath or shower, the appliance or any control pertaining to it must not be within reach of a person using the bath or shower.

The location chosen for the appliance must permit the provision of a safe and satisfactory flue and termination. The location must also permit an adequate air supply for combustion purposes and an adequate space for servicing and air circulation around the appliance. Where the installation of the appliance will be in an unusual location special procedures may be necessary, refer to I.S. 813 for detailed guidance on this aspect.

A compartment used to enclose the appliance must be designed and constructed specifically for this purpose. An existing compartment/cupboard may be utilised provided that it is modified to suit.

This appliance is not suitable for external installation.

4A.3 Gas supply

The gas meter – as supplied by the gas supplier – must be checked to ensure that it is of adequate size to deal with the maximum rated input of all the appliances that it serves. Installation pipes must be fitted in accordance with I.S. 813.

Pipe work from the meter to the appliance must be of adequate size. Pipes of a smaller size than the appliance gas inlet connection must not be used. The installation must be tested for soundness in accordance with I.S. 813.

If the gas supply serves more than one appliance, it must be ensured that an adequate supply is maintained to each appliance when they are in use at the same time.

4A.4 Flue system

The terminal should be located where the dispersal of combustion products is not impeded and with due regard for the damage and discoloration that may occur to building products located nearby. The terminal must not be located in a place where it is likely to cause a nuisance (see I.S. 813).

In cold and/or humid weather, water vapour will condense on leaving the terminal; the effect of such pluming must be considered.

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4.0 General requirements (EIRE)

If installed less than 2m above a pavement or platform to which people have access (including balconies or flat roofs) the terminal must be protected by a guard of durable material. The guard must be fitted centrally over the terminal. Refer to I.S. 813, when the terminal is 0.5 metres (or less) below plastic guttering or 1 metre (or less) below painted eaves.

4A.5 Air supply

The following notes are intended for general guidance only.

This appliance is a room-sealed, fan-flued boiler, consequently it does not require a permanent air vent for combustion air supply.

When installed in a cupboard or compartment, ventilation for cooling purposes is also not required.

4A.6 Water circulation

Specific recommendations are given in I.S. 813. The following notes are for general guidance only.

4A.6.1 Pipework

It is recommended that copper tubing be used in conjunction with soldered capillary joints.

Where possible pipes should have a gradient to ensure air is carried naturally to air release points and that water flows naturally to drain cocks.

Except where providing useful heat, pipes should be insulated to avoid heat loss and in particular to avoid the possibility of freezing. Particular attention should be paid to pipes passing through ventilated areas such as under floors, loft space and void areas.

4A.6.2 Automatic by-pass

The appliance has a built-in automatic by-pass, consequently there is no requirement for an external by-pass, however the design of the system should be such that it prevents boiler 'cycling'.

4A.6.3 Drain cocks

These must be located in accessible positions to facilitate draining of the appliance and all water pipes connected to the appliance.

4A.6.4 Air release points

These must be positioned at the highest points in the system where air is likely to be trapped. They should be used to expel trapped air and allow complete filling of the system.

4A.6.5 Expansion vessel

The appliance has an integral expansion vessel to accommodate the increased volume of water when the system is heated. It can accept up to 8 (iHeat25c) or 10 (iHeat30c & iHeat30c) litres of expansion from within the system, generally this is sufficient, however if the system has an unusually high water content, it may be necessary to provide additional expansion capacity (see 7.18).

4A.6.6 Filling point

A method for initial filling of the system and replacing water lost during servicing etc. directly from the mains supply, is required (see fig. 5). This method of filling complies with the local water authority regulations.

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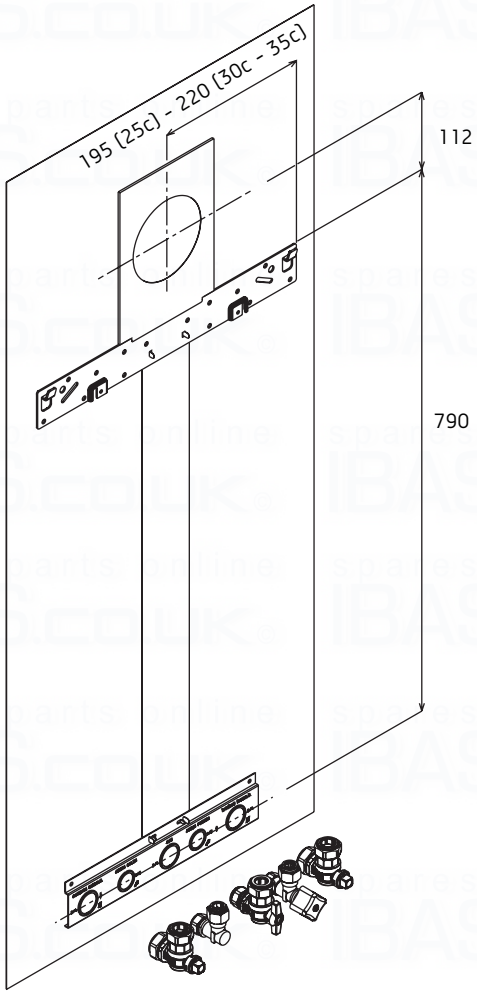


fig. 6

4.0 General requirements (EIRE)

4A.6.7 Low pressure sealed system

An alternative method of filling the system would be from an independent make-up vessel or tank mounted in a position at least 1 metre above the highest point in the system and at least 5 metres above the boiler (see fig. 5A). The cold feed from the make-up vessel or tank must be fitted with an approved non-return valve and stopcock for isolation purposes. The feed pipe should be connected to the return pipe as close to the boiler as possible.

4A.6.8 Frequent filling

Frequent filling or venting of the system may be indicative of a leak. Care should be taken during the installation of the appliance to ensure all aspects of the system are capable of withstanding pressures up to at least 3 bar.

4A.7 Electrical supply

The appliance is supplied for operation on 230V @ 50Hz electrical supply; it must be protected with a 3-amp fuse. The method of connection to the mains electricity supply must allow for complete isolation from the supply. The preferred method is by using a double-pole switch with a contact separation of at least 3,5 mm (3° high-voltage category). The switch must only supply the appliance and its corresponding controls, i.e. time clock, room thermostat, etc.

4A.8 Mounting on a combustible surface

If the appliance is to be fitted on a wall of combustible material, a sheet of fireproof material must protect the wall.

4A.9 Timber framed buildings

If the appliance is to be fitted in a timber framed building, it should be fitted in accordance with I.S. 813 and local Building Regulations.

The Institute of Gas Engineers publication (IGE/UP/7) 'Guide for Gas Installations in Timber Frame Buildings' gives specific advice on this type of installation.

4A.10 Inhibitors

We recommend that an inhibitor – suitable for use with aluminium heat exchangers – is used to protect the boiler and system from the effects of corrosion and/or electrolytic action. The inhibitor must be administered in strict accordance with the manufacturers instructions*.

*Water treatment of the complete heating system – including the boiler – should be carried out in accordance with I.S. 813 and the Domestic Water Treatment Association's (DWTA) code of practice.

4A.11 Showers

If the appliance is intended for use with a shower, the shower must be thermostatically controlled and be suitable for use with a combination boiler.

4A.12 Declaration of conformity

A Declaration of Conformity (as defined in I.S. 813) must be provided on completion of the installation.

A copy of the declaration must be given to the responsible person and also to the gas supplier if required.

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5.0 Installation

5.1 Boiler dimensions fig. 7

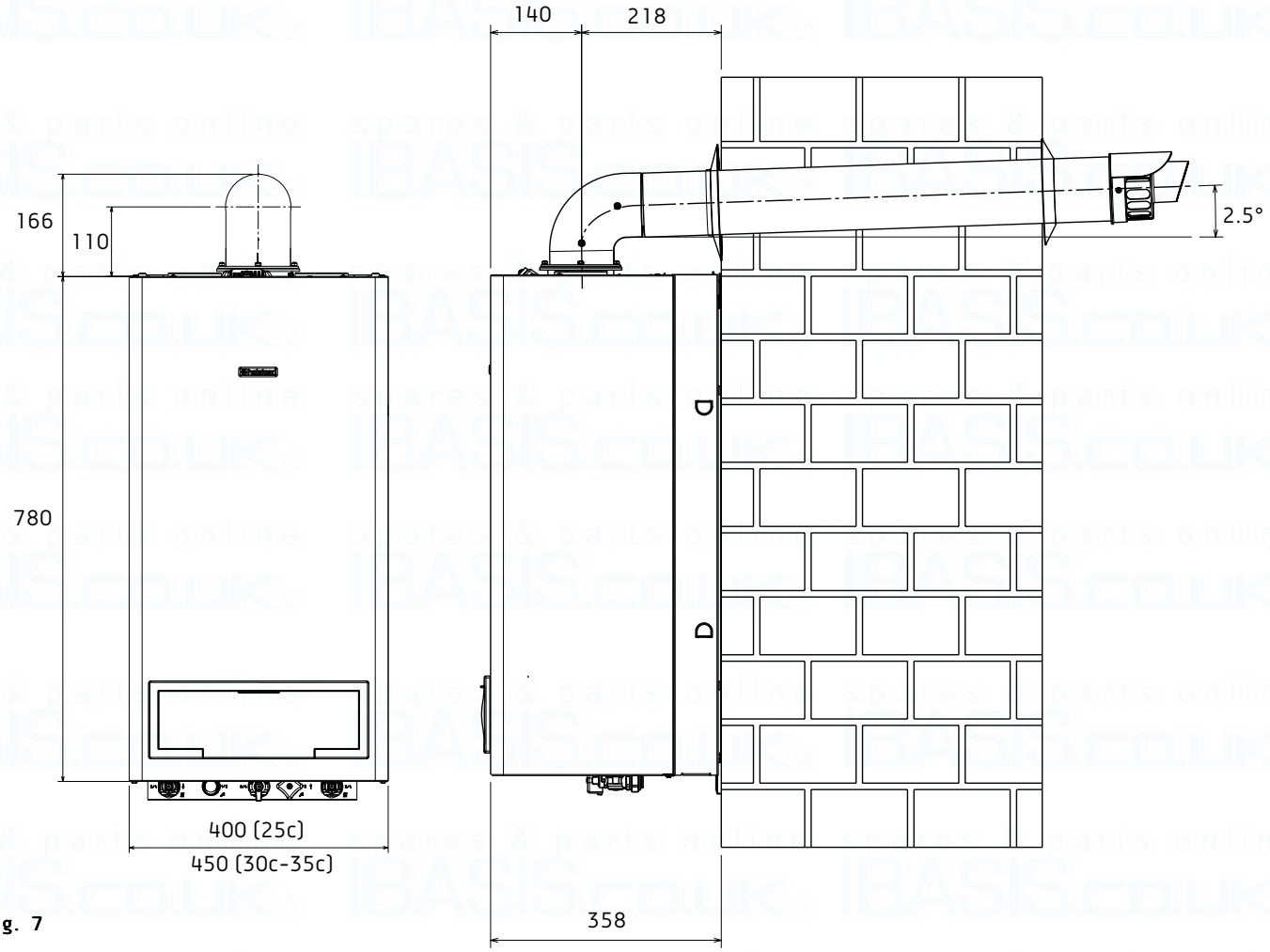


fig. 7

5.2 Tap rail fig. 8

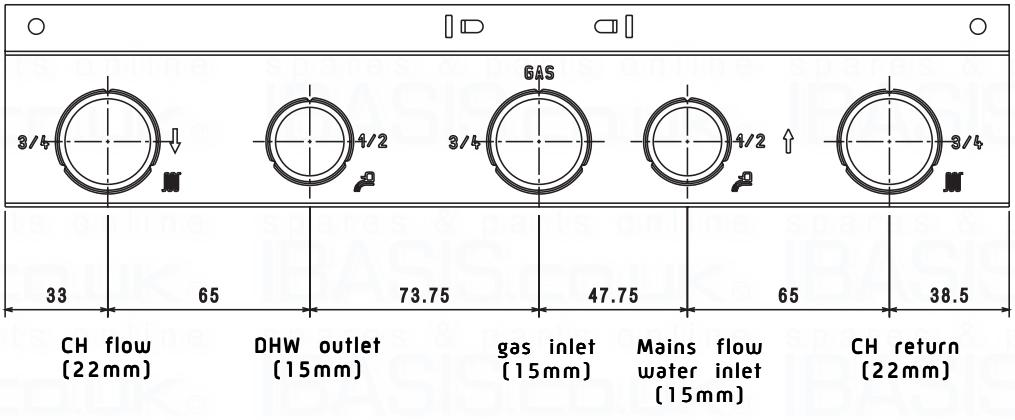


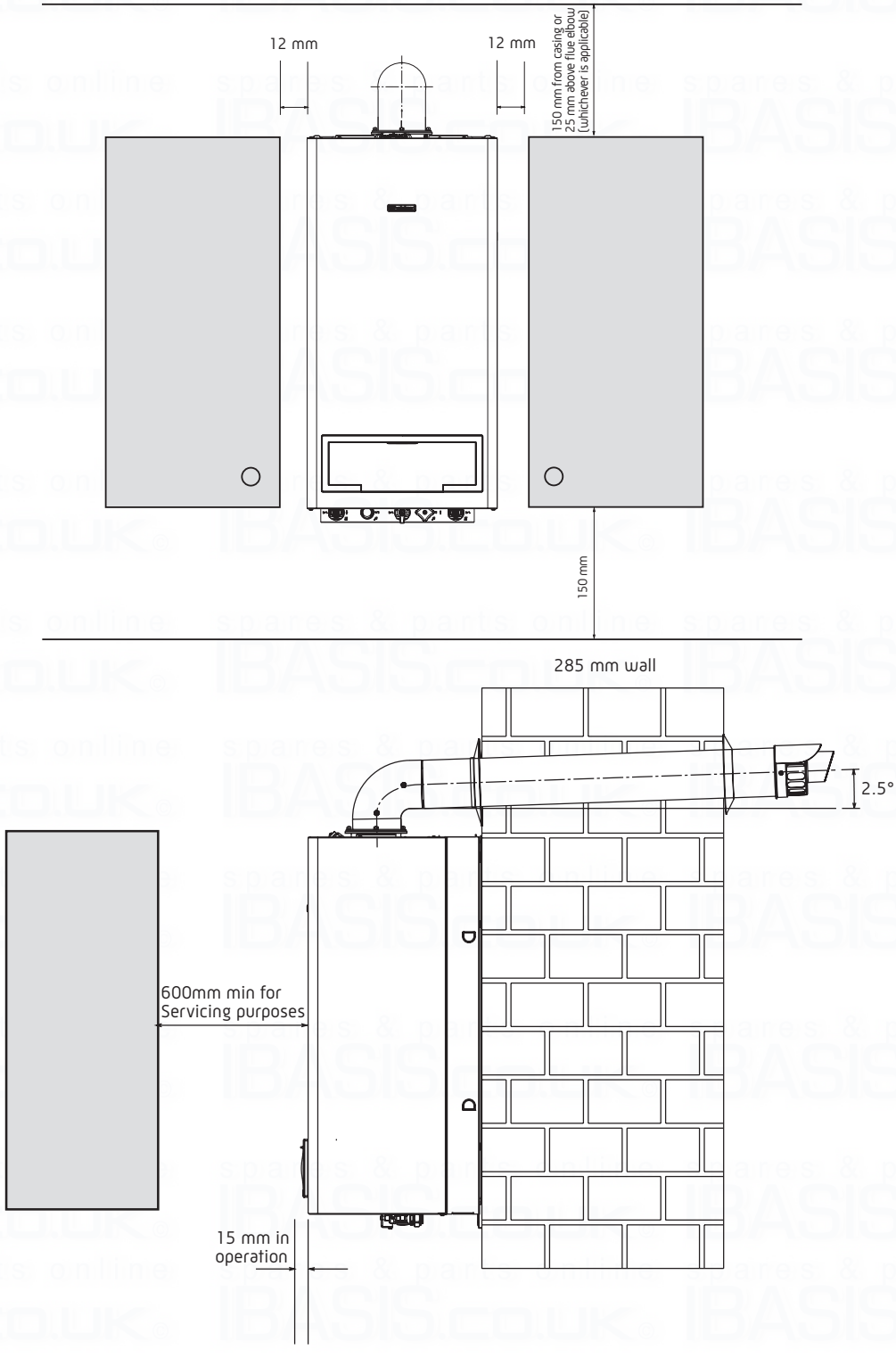
fig. 8

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fig. 9

5.3 Clearances fig 9

1. A flat vertical area is required for the installation of the boiler
2. These dimensions include the necessary clearance around the boiler for case removal, spanner access and air movement. Additional clearances may be required for the passage of pipes around local obstructions such as joists running parallel to the front face of the boiler.



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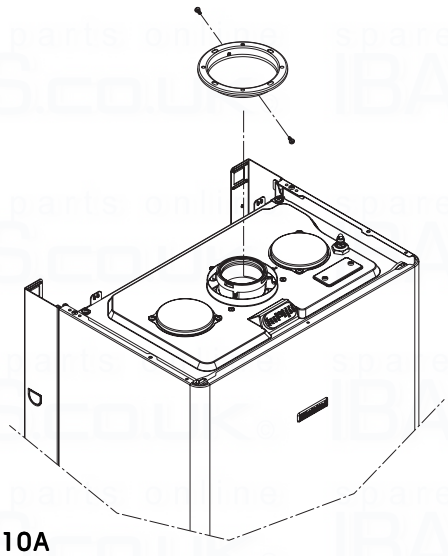


fig. 10A

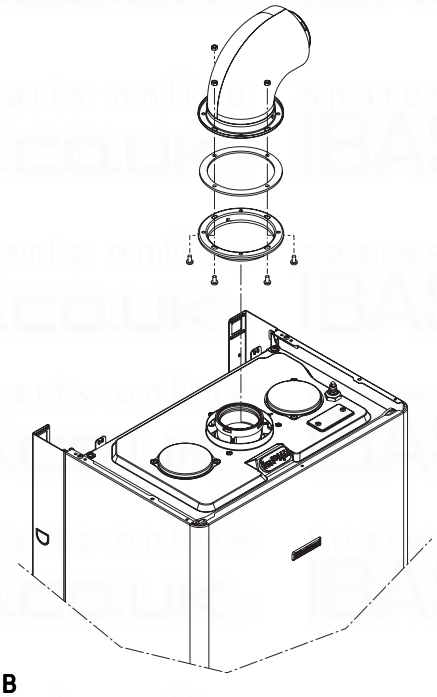


fig. 10B

5.4 Boiler flue ring

Attention: this component must be used on all concentric horizontal or vertical installations

The boiler flue spigot adaptor is fit to the appliance. The spigot adaptor enables the standard Halstead horizontal flue terminal to be rotated through 360° in any direction.

Kit content:

Spigot adaptor 100 mm	Qty. 1 - fitted
Sealing gasket	Qty. 1 - inside manual envelop
Screws and nuts	Qty. 1 - inside manual envelop

Instructions for the installation

The installation must be carried out by suitably qualified personnel and in accordance with the appliance installation instructions.

Before attempting any operation on the appliance, move the selector switch to the OFF position and isolate the appliance from the electrical supply.

To connect the (flue spigot) adaptor to the boiler:

- remove the adaptor from the boiler (fig. 10A)
- Positioning the vertical flue section or flue bend over the spigot adaptor and insert the gasket (supplied) between the flanges of the adaptor and the corresponding flue component (vertical flue section or bend).
- Secure/tighten the adaptor to the corresponding flue component using the M5 screws and nuts (supplied) (fig. 10B).
- Connect the assembly (adaptor & flue component) to the appliance flue spigot (outlet), ensuring that the inner – 60mm – pipe is fully inserted into the corresponding outlet of the appliance.
- **NOTE**: in the case of a 90°/45° bend, ensure that the bend is rotated to the correct (final) position.
- Refit the adaptor to the appliance flue spigot and secure it in position with 2-screws previously removed, into the holes.

ENSURE

- That the components are properly secured and that the seal is correctly made
- The maximum flue length is not exceeded.
- On completion of the installation, re-check to ensure that the entire flue system is secure and sealed.

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5.5 Delivery

Due to the weight of the appliance it may be necessary for two people to lift and attach the appliance to its mounting. The appliance is contained within a heavy-duty cardboard carton. Lay the carton on the floor with the writing the correct way up.

5.6 Contents

Contained within the carton is:

- the boiler
- the wall bracket
- 60/100 carton flue template
- an accessories pack containing appliance service connections and washers
- the instruction pack containing the installation & servicing instructions, user instructions, guarantee registration card, a 3-amp fuse and screws-gasket for flue ring.

5.7 Unpacking

At the top of the carton pull both sides open – do not use a knife – unfold the rest of the carton from around the appliance, carefully remove all protective packaging from the appliance and lay the accessories etc. to one side. Protective gloves should be used to lift the appliance, the appliance back-frame should be used for lifting points.

5.8 Preparation for mounting the appliance

The appliance should be mounted on a smooth, vertical, non-combustible surface, which must be capable of supporting the full weight of the appliance. Care should be exercised when determining the position of the appliance with respect to hidden obstructions such as pipes, cables, etc.

When the position of the appliance has been decided – using the template supplied – carefully mark the position of the wall-mounting bracket and flue-hole (Fig. 6).

5.9 Fitting the flue

The top flue outlet permits both horizontal and vertical flue applications to be considered.

5.0 Installation

5.10 Concentric air/flue duct specifications

The iHeat boilers can be installed to a number of different concentric flue systems. The different flue applications as shown in Fig. 10C are available as kits usually comprising the connecting parts to the appliance and end terminal. Flue extension ducts and extension elbows are available as accessories.

5.11 Flue template (fig. 6)

Template for telescopic horizontal wall terminal is available with the boiler. Positioning the template on the boiler bracket. Drill the wall according template for the telescopic flue kit.

5.12 Kit A + Telescopic Horizontal Wall Terminal (C13) - Part No. 956120

Traditional concentric flue system, Fig. 10D, with a maximum length of 10000mm. The flanged flue elbow is designed with a 3° slope towards the appliance so that the condensate can easily drain off. It has to be considered that for every metre horizontal flue length the terminal exit centreline is approx. 45 mm higher than the elbow's centreline.

The standard telescopic terminal is 615mm max length and 430mm min length, but can be cut to a minimum flue length of 250mm, which is suitable for single, 100mm (4"), brick walls.

5.13 Kit B Vertical Concentric Flue Terminal (C33) - HBL Part 956081

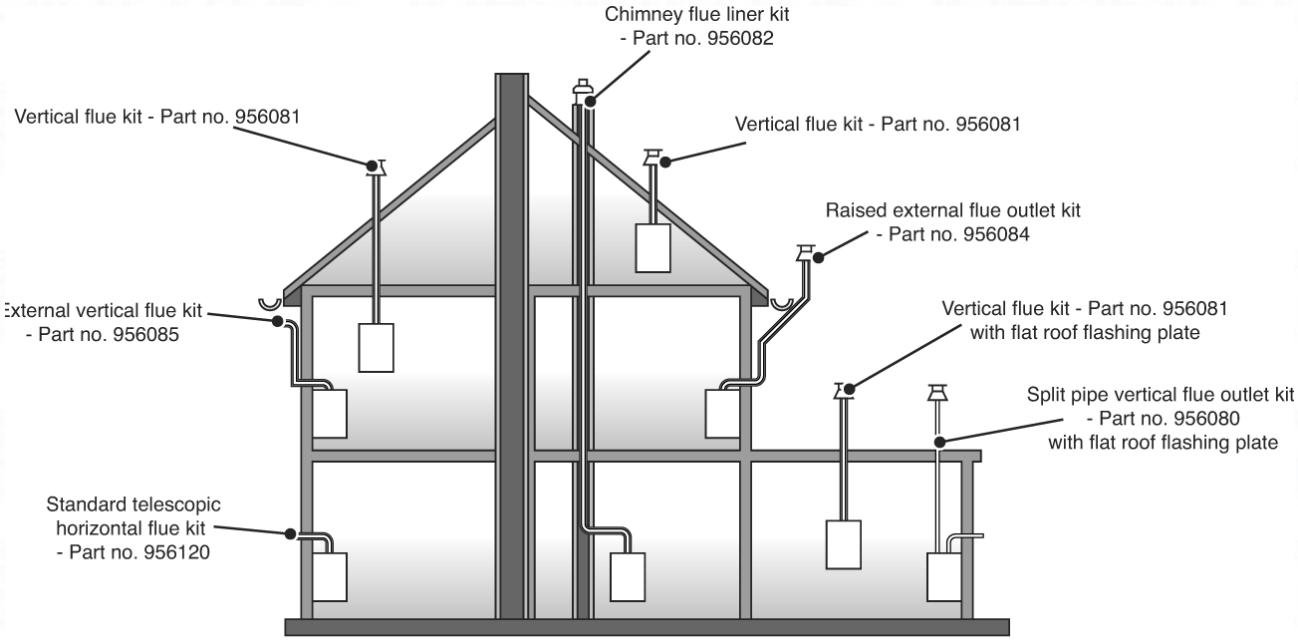
Standard concentric (60/100) vertical flue application, Fig. 10E-10F, through roof attics with a maximum length of 12000mm.

The kit comprises of the roof terminal, flashing kit, vertical adaptor with sampling point and bracket.

The maximum length is measured from the top of the appliance casing to the underside of the air cowl.

For installation details refer to the flue kit instructions.

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Flue system application

fig. 10C

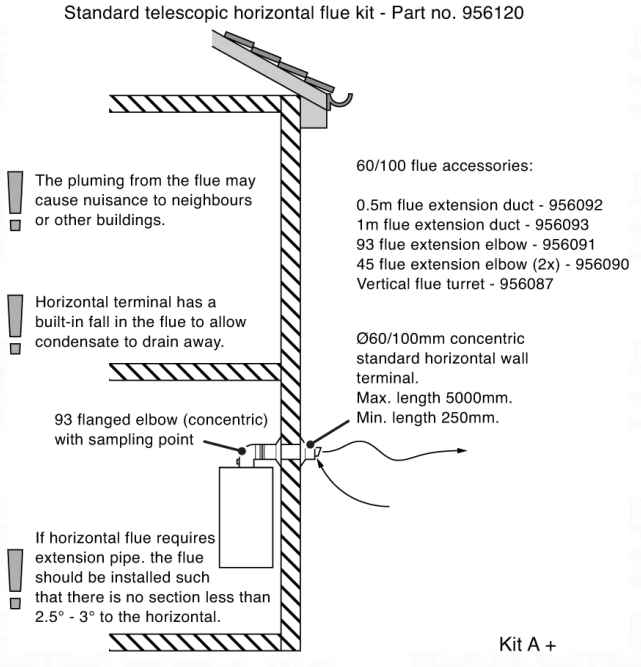


fig. 10D

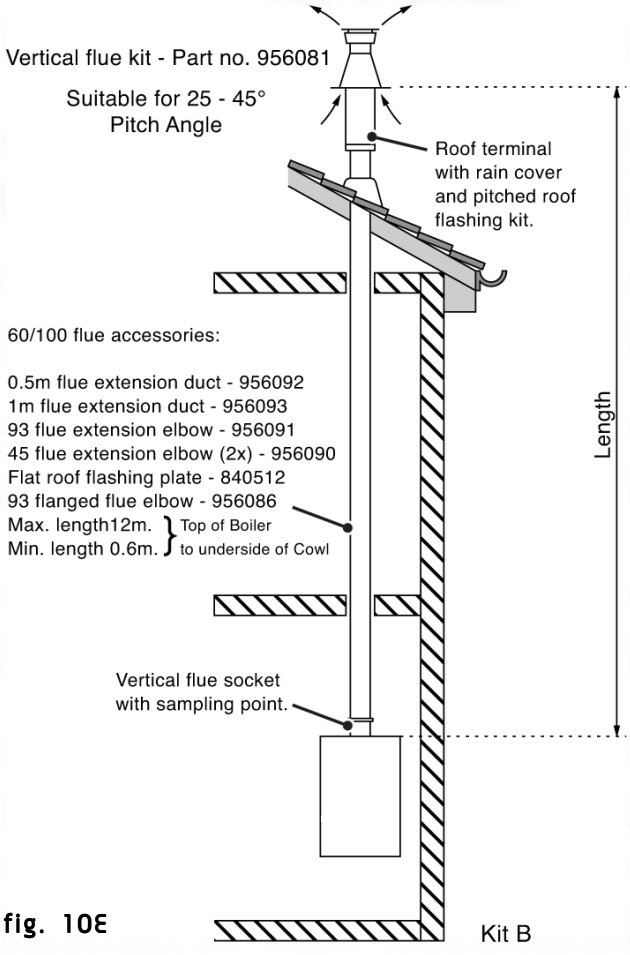


fig. 10E

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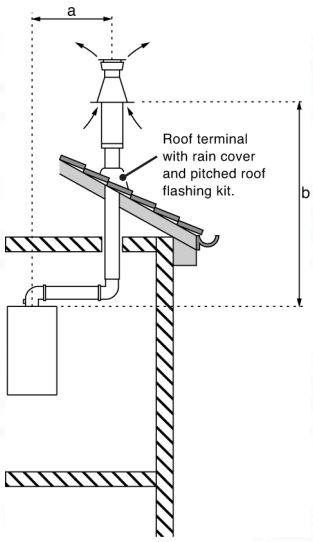


fig. 10F

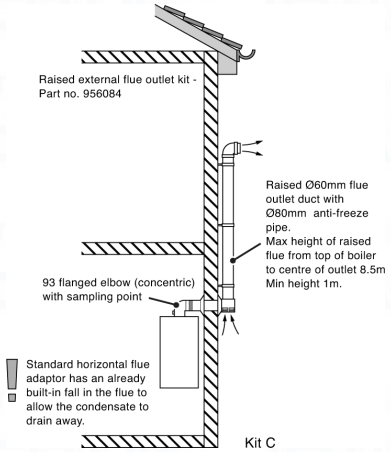


fig. 10G

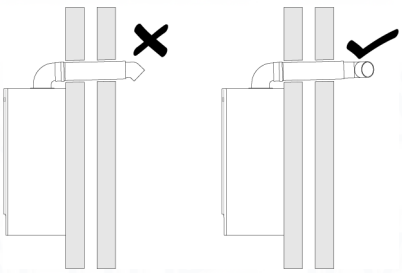


fig. 10H

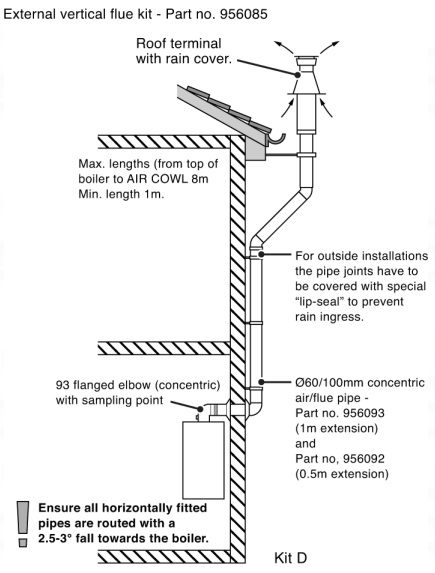


fig. 10I

5.0 Installation

5.14 Offset Vertical Flue Terminal (fig. 10F)

(C33) - HBL Part 000000

'a' measured from boiler flue outlet centre line to the centre line of the extension elbow.
'b' measured from the top of the boiler to the underside of the air cowl.
Maximum allowable length of a + b = 6800mm

5.15 Kit C Horizontal Anti-Plume Flue Kit (fig.10G)

(C13) - Part No. 956084

If the standard horizontal terminal is likely to cause nuisance to a neighbour or buildings, because of excess pluming, then this particular flue kit raises the flue gas outlet point to a higher elevation with the minimum amount of changes. The flue gas duct is teed-off from the concentric part and covered by an 80mm outer tube to protect the flue duct from freezing. The air in-take remains at the lower level (see Fig. 10G).
If choosing this option then the external flue duct length should be taken into account when calculating equivalent flue length.
For installation details refer to the flue kit instructions.
Dimensions from vertical terminals to opening windows should be in line with Fig. 4.

5.16 Plume Diverter Terminal Kit (fig. 10H)

Part No. 956103

(For use with Standard horizontal telescopic flue kit - Part no. 956120 - only).
This kit is provided to assist in fitting a condensing boiler with reduced clearances when fitted in good practice according to the Guide to Condensing Boiler Installation published by DEFRA/HMSO.
This kit allows the boiler flue outlet to be directed to the left or to the right only.

5.17 Kit D External Vertical Flue (fig. 10I)

(C33) - Part no. 956085

Suitable for installations if the appliance cannot be repositioned and where other horizontal flue options may cause some nuisance to neighbours or buildings. The flue kit contains some additional 45° elbows and extension ducts as well as a special wall bracket to pass the guttering (see Fig. 10I). The concentric flue will be routed vertically alongside the outside wall to above the roofline. Special seals are required to prevent rainwater penetrating the pipe joints.
For installation details refer to the flue kit instructions.

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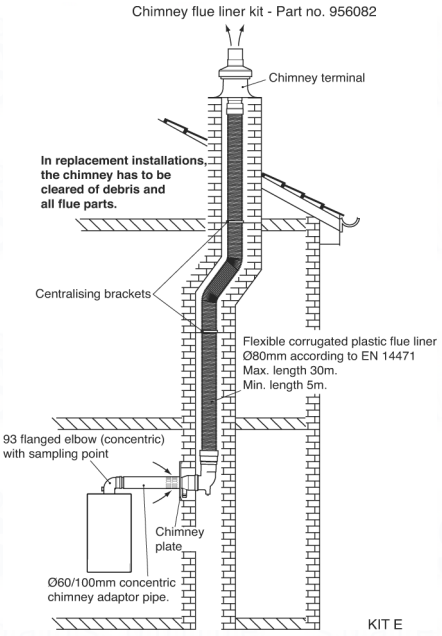


fig. 10J

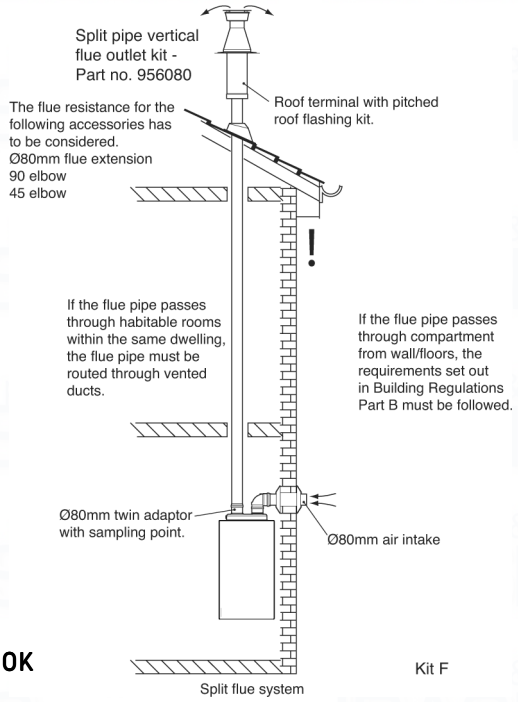


fig. 10K

5.0 Installation

5.18 Kit E Chimney Flue Liner Kit (fig. 10J)

(B23) - Part no. 956082

This kit is suitable for open flue application in accordance with BS5440 where a room sealed flue installation is impractical.

The kit comprises of a flue adaptor from the appliance to the chimney, a flexible plastic flue liner with connection parts and chimney terminal (see Fig. 10J). Where an open flue system is used, then an air vent must be provided in the same room or internal space as the flue duct air inlet. For installation details refer to the flue kit instructions.

Maximum flue resistive length = 30m.

A flue system can be built up from the components detailed in the table, but the total flue resistance must not exceed the maximum stated.

5.19 Kit F: Twin Flue System (fig. 10K)

(C53) - Part no. 956080

This flue system kit is designed for installations where the air intake position is different than the flue duct exit point. The kit comprises of a twin adaptor from which the air intake is taken from the adjacent outside wall (see Figure opposite) and the flue duct is routed vertically through the roof.

It has to be noted that the flue duct is under pressure when the appliance is in operation and the duct can leak poisonous carbon monoxide if the duct components are not correctly assembled. It is not recommended to route the flue duct through living space areas, i.e. bedrooms, living rooms etc.

For installation details refer to the instructions provided with the twin flued kit.

For C53 flue systems the terminal for the supply of combustion air and for the evacuation of combustion products shall not be installed on opposite walls of the building.

Maximum flue lenght resistance permitted for a twin flued system = 35m

Flue Component	Flue Resistance (Pa)	Part Number
Twin Flue Adaptor (required)	9.5	-
Air Inlet Terminal (required)	3	-
Chimney Terminal (required)	0.5	-
80 mm dia straight duct 1 metre	1	956101
80 mm dia straight duct 2 metre	2	956102
90° Elbow (80/80)	8	956100
45° Elbow (80/80)	4	956099
A flue system can be built up from the components detailed in the table, but the total flue resistance must not exceed the maximum stated.		

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5.0 Installation

5.20 Flue lengths

For equivalent flues length refer to technical data table.

Length supplied in standard kit - horizontal		815mm
Length supplied in standard kit - vertical (available in 10m, 20m an 30m length)		N/A
Flexitube must be purchased as an accessory to complete the kit (see below)		
Flexitube min length		5m
Flexitube max length		30m
Accessories		
Description	Part No.	Equivalent Length
Horizontal - 60/100 Accessories		
Flue extension duct - 500mm	956092	450mm
Flue extension duct - 1000mm (incl. 1 x support bracket)	956093	950mm
93° extension elbow	956091	1550mm
45° extension elbow (pair)	956090	775mm
Air inlet duct - included in kit	N/A	N/A
Straight adaptor (60/80) - included in kit	N/A	N/A
91.5° adaptor elbow (80/80) - included in kit	N/A	N/A
Support bracket - 100mm	840517	N/A
93° flanged elbow - included in kit	956082	N/A
Vertical turret socket	956087	N/A
Vertical - Accessories		
Flexi tube - 10m	956110	10m
Flexi tube - 20m	956111	20m
Flexi tube - 30m	956112	30m
Straight duct (80) - included in kit	N/A	N/A
Chimney terminal - included in kit	N/A	N/A

Note: Equivalent length information only required for coaxial flue parts.
The corrugated (Flexi tube) flue parts are fixed and all parts are required for every application.

5.21 Additional Concentric Flue Kits

The following additional concentric kits are available as optional extras.

Flue Extension Ducts - 1000 mm and 500 mm long, (each duct extends the flue length by up to 950 mm and 450 mm respectively).

93° Extension Elbow - Allows an additional bend in the flue, and has an 'equivalent length' of 1550 mm. This elbow is mechanically different from the flanged elbow supplied as standard with the appliance, but has the same equivalent length.

45° Extension Elbow - Allows an additional bend in the flue and has an 'equivalent length' of 775 mm.

Vertical Turret Socket - For use with elevated horizontal flues and vertical terminals.

Vertical Roof Terminal - For use where an external wall is not available, or where it is desirable to route the ducts vertically.

For installation details refer to the instructions provided with the individual flue kits.

These optional kits may be used with the standard flue kits to produce an extensive range of flue options, providing that the following rules are strictly obeyed.

a) The maximum/minimum permissible length of the room sealed flue system are specified on technical data. The 'equivalent' flue length must not exceed the maximum values stated.

b) The standard terminal must be fitted horizontally; horizontal ducts must have a continuous fall towards the appliance of 1.5° to 3°. This ensures condensate runs back into the appliance from the flue system. The vertical terminal must always be used if a vertical outlet is required.

c) The concentric flue system must use either a flanged elbow or a vertical flue turret socket at the entry/exit to the appliance.

d) All joints must be correctly made and secured in accordance with the installation instructions. When cutting ducts, avoid swarf, uneven and sharp edges to maintain duct integrity.
Refer to Fig.10C to determine which option kits are required before commencing the installation. Instructions for installing the appliance with a horizontal flue and straight extension ducts are included in the main text of these instructions.

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5.0 Installation

5.22 Connecting the gas and water kit

The appliance is supplied with an accessory pack that includes service valves. The service valves are of the compression type. The accessories pack contains sealing washers etc., for use with the service valves.

When connecting pipe work to the valves, tighten the compression end first then insert the sealing washers before tightening the valve to the appliance.

NOTE

It will be necessary to hold the valve with one spanner whilst tightening with another.

A - flow
B - DHW outlet
C - gas
D - DHW inlet
E - return

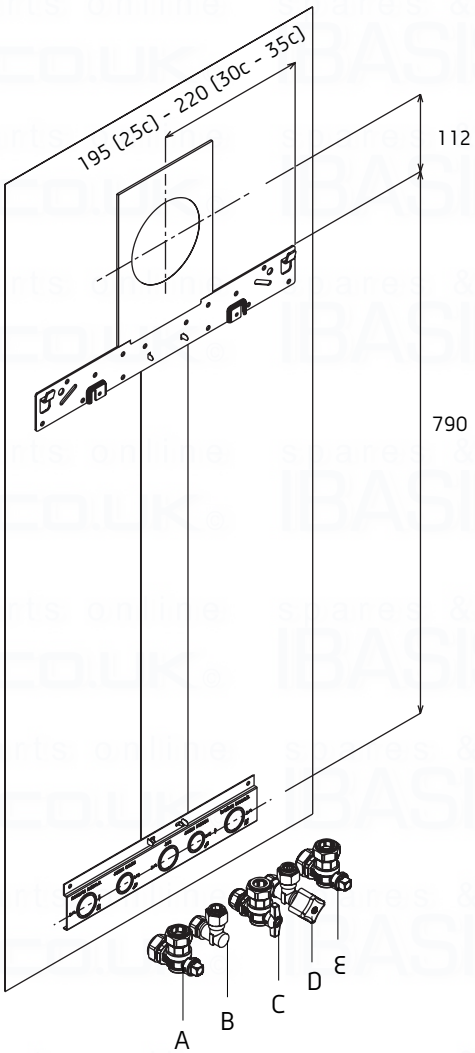


fig. 11

5.22.1 GAS (fig. 11)

The appliance is supplied with a 15mm service valve, connect a 15mm pipe to the inlet of the valve and tighten both nuts.

NOTE

It will be necessary to calculate the diameter of the gas supply pipe to ensure the appliance has an adequate supply of gas.

5.22.2 Flow & Return (fig. 11)

The appliance is supplied with 22mm service valves for the flow and return connections, connect a 22mm pipe to the inlet of each valve and tighten both nuts.

NOTE

Depending on system requirements, it may necessary to increase the size of the flow & return pipe work after the service valve connections.

5.22.3 Cold water inlet (fig. 11)

The appliance is supplied with a 15mm combined stopcock, connect a 15mm pipe to the outlet connection and tighten both nuts.

5.22.4 Hot Water outlet (fig. 11)

The appliance is supplied with a 15mm outlet connection, connect a 15mm pipe to the outlet connection and tighten both nuts.

5.22.5 Safety Valve

Connect a safety valve connection pipe to the safety valve outlet. Connect a discharge pipe to the other end of the safety valve connection pipe and tighten. The discharge pipe must have a continuous fall away from the appliance to outside and allow any water to drain away thereby eliminating the possibility of freezing. The discharge pipe must terminate in a position where any water – possibly boiling – discharges safely without causing damage or injury, but is still visible.

5.22.6 Condense pipe

During normal operation the boiler produces condense which is collected in a trap located in the lower part of the boiler. A flexible pipe (condense outlet pipe) is connected to the outlet of the trap. The flexible pipe must be connected to a plastic waste pipe only. The plastic waste pipe must have a minimum of a 3° fall towards the drain. Any external run of pipe should be insulated to prevent the risk of freezing.

CONNECTING THE CONDENSATE OUTLET

Gently pull the condense outlet pipe down from its location inside the boiler until approximately 100mm protrudes from the underside of the boiler. Connect a suitable plastic (not copper) pipe (no less than 20mm diameter) to the outlet pipe and ensure it discharges in accordance with building regulations or other rules in force.

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5.0 Installation

5.23 Electrical connections

The electrical supply must be as specified in section 4.7/ 4A.7. A qualified electrician should connect the electrical supply to the appliance. If controls – external to the appliance – are required, a competent person must undertake the design of any external electrical circuits, please refer to section 8 for detailed instructions. **ANY EXTERNAL CONTROL OR WIRING MUST BE SERVED FROM THE SAME ISOLATOR AS THAT OF THE APPLIANCE.**

The supply cable from the isolator to the appliance must be 3-core flexible sized 0.75mm to BS 6500 or equivalent. Wiring to the appliance must be rated for operation in contact with surfaces up to 90°C.

5.23.1 Casing removal (fig. 12)

To gain internal access to the appliance you must first remove the casing, proceed as outlined below:

- remove the screws (B) located on the underside of the casing.
- lift the casing upward to disengage it from the top locating hooks and then remove.
- store the casing and screws (B) safely until required. Re-fit in the reverse order.

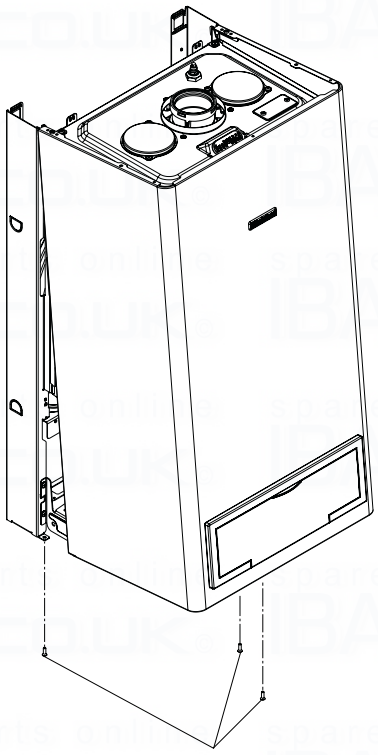


fig. 12

5.23.2 Appliance terminal block

The appliance terminal block is located on the rear of the control fascia. Remove the casing as described in 5.23.1. Gently pull the control panel forwards and down. Locate the terminal block cover (fig. 13).

NOTE

The appliance comes with a factory fitted link ('TA') to allow basic operation of the boiler via the mode selector switch. If it is anticipated that external controls will be required please refer to the wiring diagrams in section 8 for more detailed information.

5.23.3 Connecting the mains (230V) input (fig. 14)

Unhook and remove the terminal block cover (230V). Pass the cable through the cable anchorage point. Connect the supply cable wires (LIVE, NEUTRAL, & EARTH) to their corresponding terminals (L, N, & E) on the appliance – high voltage – terminal block. When connecting the EARTH wire, ensure that it's left slightly longer that the others, this will prevent strain on the EARTH wire should the cable become taut. Do not remove the link wire unless additional external controls are to be fitted (see section 8). The securing screw on the cable anchorage should now be tightened. This must be done before the terminal block cover is re-fitted in its position.

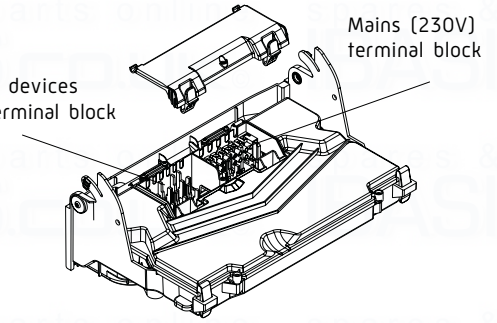


fig. 13

NOTE

It is the installer's responsibility to ensure that the appliance is properly Earthed. the manufacturer cannot be held responsible for any damages or injuries caused as a result of incorrect Earth wiring.

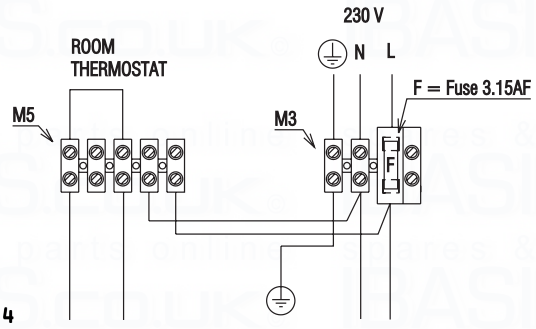


fig. 14

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6.0 Commissioning

6.1 Gas Supply Installation

Inspect the entire installation including the gas meter, test for soundness and purge. Refer to BS 6891 for specific instruction.

6.2 The Heating System

The appliance contains components that may become damaged or rendered inoperable by oils and/or debris that are residual from the installation of the system, consequently it is essential that the system be flushed in accordance with the following instructions.

6.3 Initial Filling of the System

Ensure both flow and return service valves are open, remove appliance casing as described in 5.23.1, identify the automatic air release valves (AAV) and loosen the dust cap/s by turning the cap anti-clockwise one full turn.

Ensure all manual air release valves located on the heating system are closed. Connect the filling loop as shown in fig. 5, slowly proceed to fill the system by firstly opening the inlet valve connected to the flow pipe, and then turning the lever on the fill valve, to the open position. As water enters the system the pressure gauge will begin to rise. Once the gauge has reached 1 BAR close both valves and begin venting all manual air release valves, starting at the lowest first. It may be necessary to go back and top-up the pressure until the entire system has been filled. Inspect the system for water soundness, rectifying any leaks.

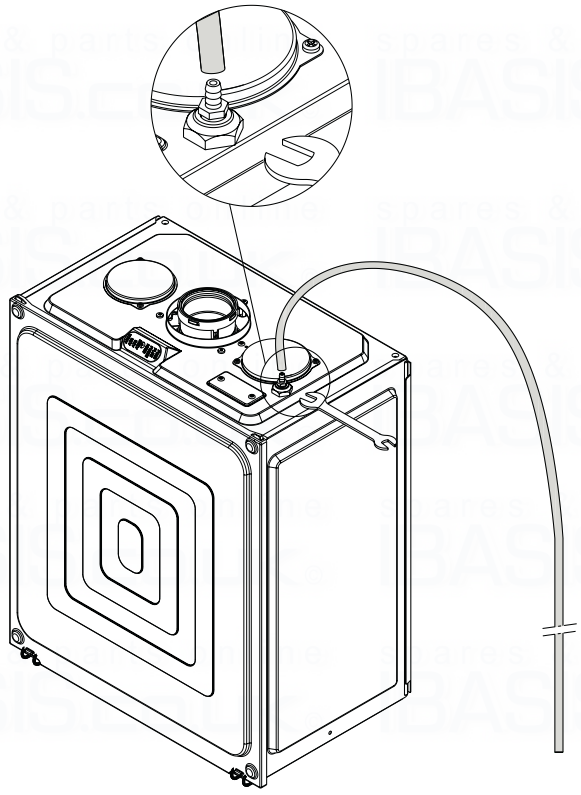


fig. 15

6.3.1 Manual air release (fig. 15)

When the boiler has been filled for the first time or the system has been drained and refilled, it will be necessary to release any air that may have become trapped within the appliance heat exchanger. Slacken the bleed screw until water is released and then close.

IMPORTANT, THERE ARE NO OTHER MANUAL AIR RELEASE VALVES LOCATED ON THE APPLIANCE.

6.4 Initial flushing of the system

The whole of the heating system must be flushed both cold and hot as detailed in 6.8. Open all radiator or heating valves and the appliance flow & return service valve. Drain the boiler and system from the lowest points. Open the drain valve full bore to remove any installation debris from the boiler prior to lighting. Refill the boiler and heating system as described in 6.3.

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6.5 Pre-Operation Checks

Before attempting the initial lighting of the appliance, the following checks must be carried out:

- ensure all gas service valves from the meter to the appliance are open and the supply pipe has been properly purged;
- ensure the proper electrical checks have been carried out, (see 8.8) particularly continuity, polarity and resistance to earth;
- ensure the 3 AMP fuse – supplied with the appliance – has been fitted;
- ensure the system has been filled, vented and the pressure set to 1 BAR;
- ensure the flue system has been fitted properly and in accordance with the instructions;
- ensure all appliance service valves are open.

6.6 Initial Lighting

Ensure the electrical supply to the appliance is switched on. Ensure any external controls are switched to an 'ON' position and are calling for heat.

Move the selector switch to the ON position, the appliance will now operate as described in 2.2. Should the appliance fail to ignite, refer to 6.6 and/or section 8 (mode of operation, parameter setting & faultfinding).

6.7 Checking Gas Pressure and Combustion Analysis

The appliance is factory set and requires no additional adjustment once installed. However to satisfy the requirements of GSIUR 26/9, it will be necessary to gas rate the appliance using the gas meter that serves the appliance.

If the installation does not include a gas meter (for example LPG) and there are no means by which to calculate the gas rate, then a combustion analysis test must be carried out in accordance with BS 7967 (UK) to ensure the appliance is left working safely and correctly.

Additionally, if the gas valve has been adjusted, replaced, or the appliance has been converted for use with another gas type, then it becomes necessary to carry out a combustion analysis/check to ensure that correct combustion is occurring.

If there are no means to gas rate the appliance and/or carry out a combustion analysis check, then it will not be possible to complete the commissioning procedure.

Details on how to carry out the combustion analysis can be found in section 8.

IMPORTANT

It's imperative that a sufficient dynamic – gas – pressure is maintained at all times. Should the dynamic gas pressure fall below an acceptable level, the appliance may malfunction or sustain damage.

6.8 Final Flushing of the heating system

The system shall be flushed in accordance with BS 7593. Should a cleanser be used, it must be suitable for Aluminium heat exchangers. It shall be from a reputable manufacturer and shall be administered in strict accordance with the manufacturers' instructions and the DWTA code of practice.

6.0 Commissioning

NOTE

Chemicals used to cleanse the system and/or inhibit corrosion must be pH neutral, i.e. they should ensure that the level of the pH in the system water remains neutral. Premature failure of certain components can occur if the level of pH in the system water is out-with normal levels.

6.8.1 Inhibitors

See Section 4 "General Requirements".

6.9 Setting the flow outlet temperature

The flow outlet temperature can be adjusted between 40 °C - 80 °C for standard CH system and between 20 °C - 45 °C for under-floor systems by using the Heating thermostat knob (see fig.1).

6.9.1 Setting the DHW outlet temperature

The DHW outlet temperature can be adjusted between 35 °C - 60 °C via the DHW thermostat knob (see fig.1).

6.10 Setting the system design pressure

The design pressure should be a minimum of 0.5 BAR and a maximum of 1.5 BAR. The actual reading should ideally be 1 BAR plus the equivalent height in metres (0.1 BAR = 1 metre) to the highest point in the system above the base of the appliance (up to the maximum of 1.5 BAR total).

N.B. The safety valve is set to lift at 3 BAR/30 metres/45 psig. To lower the system pressure to the required value, drain off some water from the appliance drain valve until the required figure registers on the pressure gauge (see fig. 1).

6.11 Regulating the central heating system

Fully open all radiator and circuit valves and run the appliance for both heating and hot water until heated water is circulating. If conditions are warm remove any thermostatic heads. Adjust radiator return valves and any branch circuit return valves until the individual return temperatures are correct and are approximately equal.

6.11.1 Regutating the DHW flow-rate

The appliance is fitted with a flow rate restrictor that limits the maximum flow rate that can be drawn through the appliance.

The restrictor eliminates the need to manually adjust the DHW flow rate. However if it is felt necessary to further increase or decrease the available flow rate, spare restrictors are included in the accessory pack.

The spare flow rate restrictors can be fitted to either increase or decrease the maximum flow rate. The tables overleaf denote the size of restrictor fitted and the spare restrictors supplied in the accessory pack. Each restrictor is colour-coded to enable identification.

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6.0 Commissioning

6.11.2 Changing the flow-rate restrictor

Refer to 7.20.1 for detailed instruction on changing the flow restrictor.

Flow restrictors table

iHeat 25c		
9-litres	10-litres	11-litres
(Orange)	(Blue)	(Beige)
Spare	Fitted	Spare
	iHeat 30c	
11-litres	12-litres	13-litres
(Beige)	(Red)	(Olive)
Spare	Fitted	Spare
	iHeat 35c	
13-litres	14-litres	15-litres
(Olive)		
Spare	Fitted	spare

6.12 Inlet pressure and Gas rate checks

With the boiler firing at maximum gas rate check that the inlet perssure at the appliance is 19mbar +/- 1mbar when measured at the inlet pressure test point.
Check the maximum and minimum gas rate at the gas meter according to section 3.3 using a stopwatch.

6.13 Final checks

- ENSURE ALL TEST NIPPLES ON THE APPLIANCE GAS VALVE ARE TIGHT AND CHECKED FOR SOUNDNESS.
- ENSURE THE APPLIANCE FLUE SYSTEM IS FITTED CORRECTLY AND IS PROPERLY SECURED.
- ENSURE ALL PIPE WORK IS RE-CHECKED FOR SOUNDNESS.
- RE-FIT APPLIANCE CASING.
- COMPLETE BENCHMARK CHECKLIST.

Complete details of the boiler, controls, installation and commissioning in the Benchmark checklist at the back of this book. It is important that the Benchmark checklist is correctly completed and handed to the user. Failure to install and commission the appliance to the manufacturers instructions may invalidate the warranty.

6.14 Instructing the user

Hand over all documentation supplied with this appliance – including these instructions – and explain the importance of keeping them in a safe place.

Explain to the user how to isolate the appliance from the gas, water and electricity supplies and the locations of all drain points. Show the user how to operate the appliance and any associated controls correctly.

Show the user the location of the filling valve and how to top-up the system pressure correctly and show the location of all manual air release points.

Explain to the user how to turn off the appliance for both long and short periods and advise on the necessary precautions to prevent frost damage.

Explain to the user that for continued safe and efficient operation, the appliance must be serviced annually by a competent person.

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7.0 Servicing instructions

7.1 General

To ensure the continued safe and efficient operation of the appliance, it is recommended that it is checked and serviced at regular intervals. To ensure correct and safe operation of the appliance, it is essential that any worn or failed component be replaced only with a genuine spare part.

It should be remembered that although certain generic components may look similar, they will be specific to an individual appliance or product range. Use of non-genuine spare parts could invalidate your warranty and may pose a potential safety hazard. The frequency of servicing will depend upon the particular installation conditions, but in general, once per year should be sufficient. It is the law that any servicing work is carried out by competent person such as a engineer, an approved service agent, British Gas, CORGI registered personnel or other suitably qualified personnel. The following instructions apply to the appliance and its controls, but it should be remembered that the central heating and the domestic hot water systems would also require attention from time to time.

7.2 Routine annual servicing

- Check the operation of the appliance and ensure it functions as described in section 8.
- Compare the performance of the appliance with its design specification. The cause of any noticeable deterioration should be identified and rectified without delay.
- Thoroughly inspect the appliance for signs of damage or deterioration especially the flue system and the electrical apparatus.
- Check and adjust – if necessary – all burner pressure settings (see 8.4).
- Check and adjust – if necessary – the system design pressure (see 6.10).
- Carry out an analysis of the flue gases (see 8.5), and visually check the condition of the entire flue assembly.
- Compare the results with the appliance design specification. Any deterioration in performance must be identified and rectified without delay.
- Check that the burner and main heat exchanger are clean and free from any debris or obstruction.
- Check and clean – if necessary – the condense trap to ensure correct operation.

7.3 Replacement of components

Although it is anticipated that this appliance will give years of reliable, trouble free service, the life span of components will be determined by factors such as operating conditions and usage. Should the appliance develop a fault, the fault finding section will assist in determining which component is malfunctioning.

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7.0 Servicing instructions

7.4 Component removal procedure

To remove a component, access to the interior of the appliance is essential. Isolate the appliance from the electrical supply and remove the fuse. And when necessary, close all service valves on the appliance, remove the appliance casing as described in section 5.23.1 and drain the water content from the appliance via the drain valve. Ensure some water absorbent cloths are available to catch any residual water that may drip from the appliance or removed component. Undertake a complete commissioning check as detailed in section 6, after replacing any component.

ALWAYS TEST FOR GAS SOUNDNESS IF ANY GAS CARRYING COMPONENTS HAVE BEEN REMOVED OR DISTURBED.

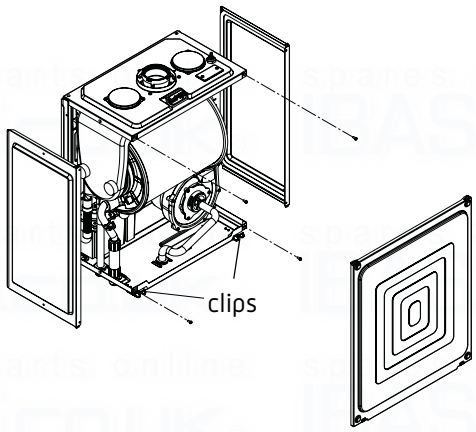


fig. 16

7.4.1 Air box front cover removal (fig. 16)

Locate the two clips and remove air box front cover. If it's necessary to remove the air box side cover, locate and remove the 4 securing screws.

7.5 Pump assembly (fig. 17)

Carry out component removal procedure as described in 7.4. Disconnect the flow pipe from the combustion chamber connection, slacken the pipe at the hydraulic assembly and swing/rotate clear of the pump assembly (C).

Disconnect and remove the pump outlet pipe from the pump assembly/combustion chamber connection.

Remove the expansion pipe locking pin from the top of the pump assembly and withdraw the flexible pipe. Locate and remove the pressure gauge securing pin (D1) and disconnect the pressure gauge from the pump assembly. Disconnect the electrical wiring from the pump's electrical connection point (E). Locate and remove the 2 securing screws (A) at the rear of the pump assembly. Remove locking pin (F) from pump base and lift pump assembly clear of the hydraulic manifold. The pump assembly can now be removed from the appliance. Replace carefully in the reverse order.

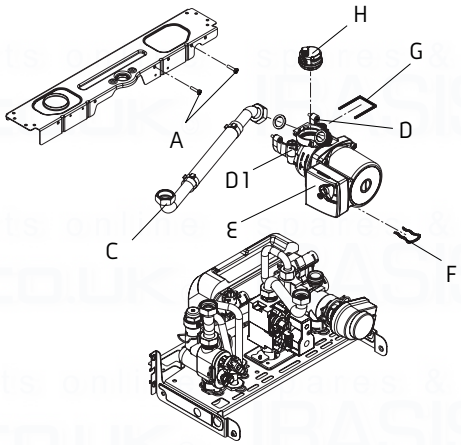


fig. 17

7.6 Safety valve (fig. 18)

Carry out component removal procedure as described in 7.4. Disconnect the outlet pipe (A) from the safety valve, remove safety valve locking pin (B) from the hydraulic manifold. Replace in the reverse order.

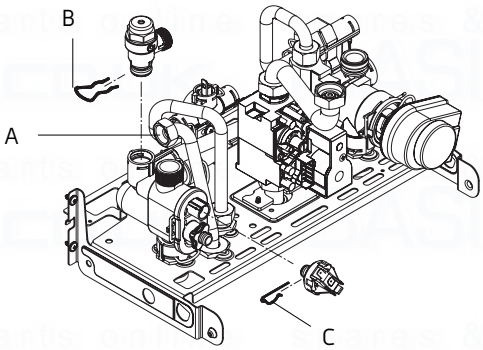


fig. 18

7.7 Lower automatic air release valve (fig. 17)

Carry out component removal procedure as described in 7.4. Remove the expansion pipe locking pin (D) from the pump assembly and remove the expansion pipe. Locate and remove the AAV locking pin (G) from the pump assembly and remove the AAV assembly (H). Replace in the reverse order.

7.7.1 Top automatic air release valve (fig. 19)

Carry out component removal procedure as described in 7.4. Remove the drain pipe. Unscrew the top AAV. Replace in the reverse order. Loctite or similar should be used as a thread sealant for the AAV.

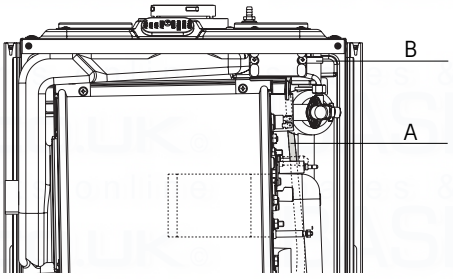


fig. 19

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7.0 Servicing instructions

7.8 Water pressure switch (fig. 18)

Carry out component removal procedure as described in 7.4. Locate and remove the locking pin (C) from the water pressure switch. Remove the wiring. Carefully withdraw the switch. Replace in the reverse order.

7.9 Primary thermistor (fig. 1A)

Carry out component removal procedure as described in 7.4. Unclip and remove the air chamber front cover. Unclip the primary thermistor from the flow outlet pipe. Disconnect thermistor electrical plug. Replace in the reverse order.

7.10 Return thermistor (fig. 1A)

Carry out component removal procedure as described in 7.4. Unclip and remove the air chamber front cover. Unclip the return thermistor from the return inlet pipe. Disconnect thermistor electrical plug. Replace in the reverse order.

7.11 Printed circuit board (fig. 20)

Carry out component removal procedure as described in 7.4. Pull the control fascia forward and lower it. Push the clips **(A)** which secure the PCB cover, remove cover, after carefully taking note of all wiring connections and jumper tag configuration. Unhook and remove connection block **(B)**. Disconnect all wiring from the PCB, locate and remove the PCB securing screws, remove the required PCB. Replace in the reverse order ensuring that the position of the 3 control knobs are correctly aligned with the respective potentiometers on the PCB.

Ensure that the correct jumper tag configuration has been respected. It will be necessary to check the functioning of the PCB is set for the correct boiler type/application.

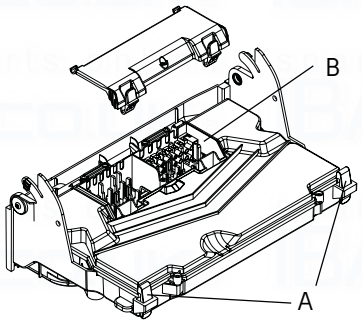


fig. 20

7.12 Gas Valve (fig. 21)

Carry out component removal procedure as described in 7.4. The gas valve must be changed as complete unit. Disconnect the electrical plug and leads from the gas valve, slacken and unscrew gas valve inlet and outlet connections. **Please note,** the sealing washers (B) must be discarded and replaced with new sealing washers. Disconnect the compensation pipe (C). Locate and remove gas valve retaining screws (D) on the underside of the boiler if required, the gas valve can now be removed. Replace in the reverse order. Check and adjust burner pressure settings.

WARNING, A GAS SOUNDNESS CHECK MUST BE CARRIED OUT.

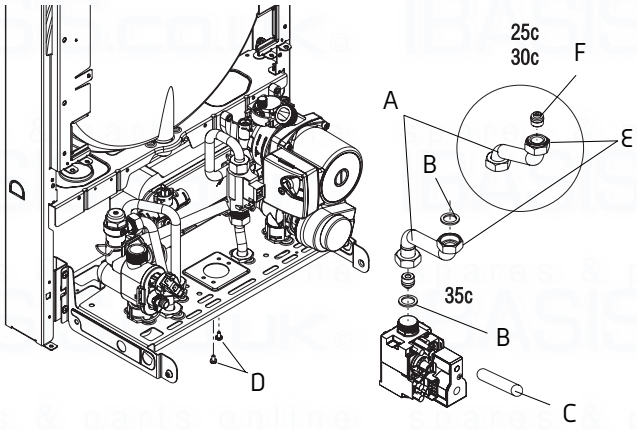


fig. 21

7.12.1 Injector (fig. 21)

Carry out component removal procedure as described in 7.4. Unscrew and remove gas pipe connections (A&E). Locate and remove the injector (F) inside the pipe. Replace in the reverse order. Check and adjust burner pressure settings.

WARNING, A GAS SOUNDNESS CHECK MUST BE CARRIED OUT.

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7.13 Electrodes & Condense sensor (fig. 22)

Carry out component removal procedure as described in 7.4. Unclip and remove the air chamber front and RH side covers. Disconnect the electrode leads and ancillary wiring from their respective connectors. Remove the retaining screws **(A)** for electrode and remove. Remove the retaining nut **(C)** for condense sensor **(D)** and remove.

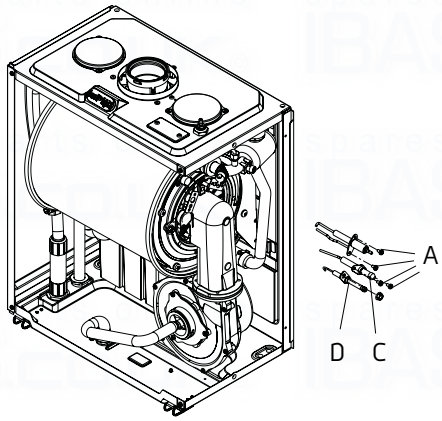


fig. 22

7.14 Flue fan & mixer (fig. 23)

Carry out component removal procedure as described in 6.4. Unclip and remove the air chamber front and the RH side covers. Slacken the gas pipe **(A)** at the air box connection and swing/rotate away from the fan assembly. Locate and remove the sense electrode. To remove the mixer **(B)** locate and remove the three screws **(C)**. To remove the fan **(D)**, disconnect the electrical connections attached to the fan, locate and remove the four screws **(E)**. Gently ease the fan from its location. Replace in the reverse order. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

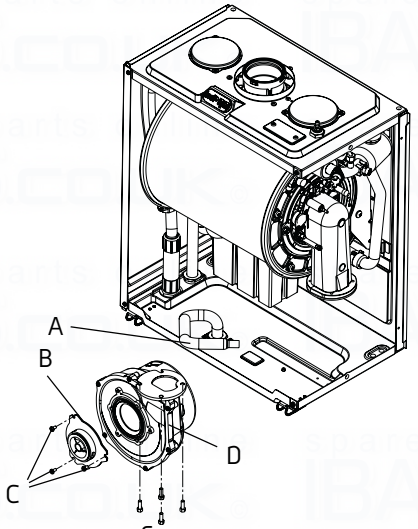


fig. 23

7.15 Burner (fig. 24)

Carry out component removal procedure as described in 7.4. Unclip and remove the air chamber front and the RH side covers. Slacken the gas pipe **(A)** at the air box connection and swing/rotate of the fan assembly. Locate and remove the 3 internal nuts **(B)** which secure the fan assembly in position **(C)** to the heat exchanger **(D)**. Disconnect the electrode leads and ancillary wiring from their respective connectors. Remove the retaining screws **(A, fig. 21)** for sensing electrode and remove. Remove the retaining nut **(C, fig. 21)** for condense sensor **(D, fig. 21)** and remove. Gently ease the fan assembly out of its location. Once the assembly has been removed, the burner **(E)** can be withdrawn from the heat engine. Ensure the seal **(F)** is in good condition, taking care to ensure it is replaced correctly. Replace in the reverse order.

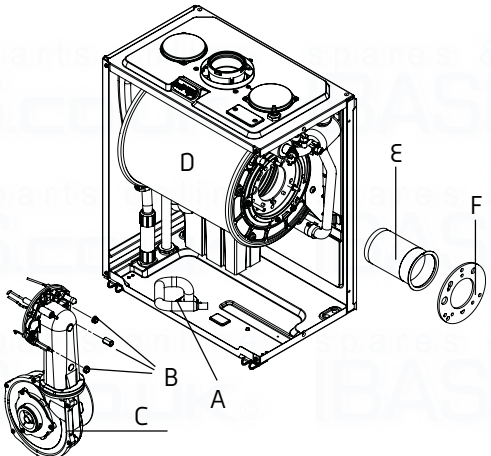


fig. 24

7.16 Main heat exchanger (fig. 25 & 26)

Carry out component removal procedure as described in 7.4. Unclip and remove the three air chamber covers (front, LH, RH sides). Disconnect all the wiring connections. **Fig. 24:** Slacken the gas pipe **(A)** at the air box connection and swing/rotate of the fan assembly. Disconnect the flow **(B)**, return **(C)** and condense connections on the heat exchanger. Locate and remove the 4-screws that secure the heat exchanger to the combustion chamber **(D)**. Move the heat exchanger to the right and disconnect it from the flue collector **(E)**. The heat exchanger can now be lifted up and withdrawn from the appliance.

Fig. 26: To remove the fan burner assembly **(A)** locate and remove the 3 external nuts **(B)**. Replace in the reverse order. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

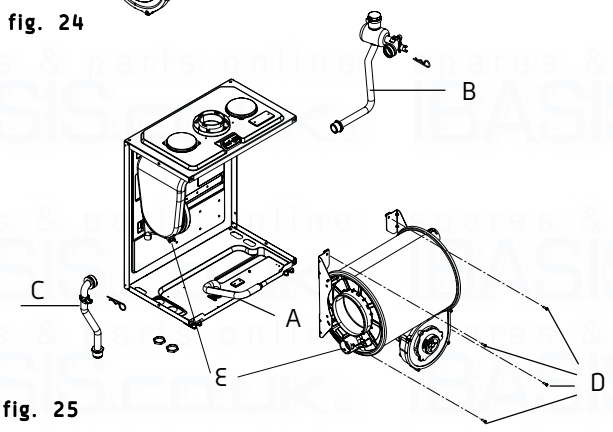


fig. 25

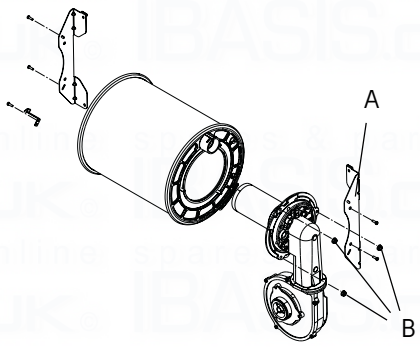


fig. 26

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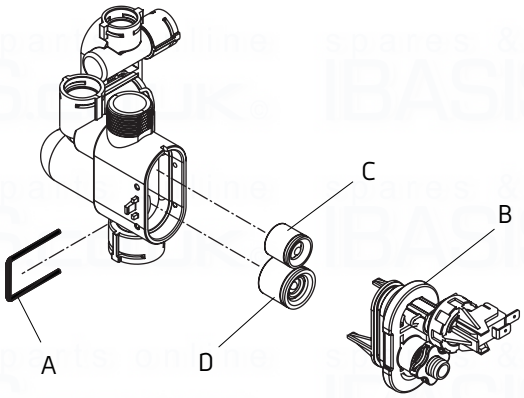


fig. 27

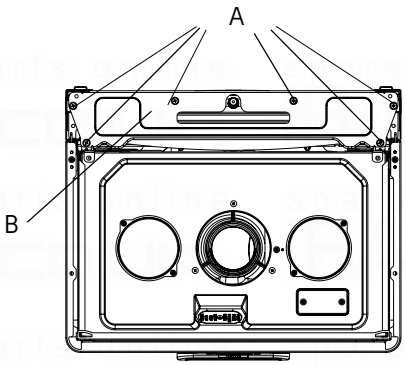


fig. 28

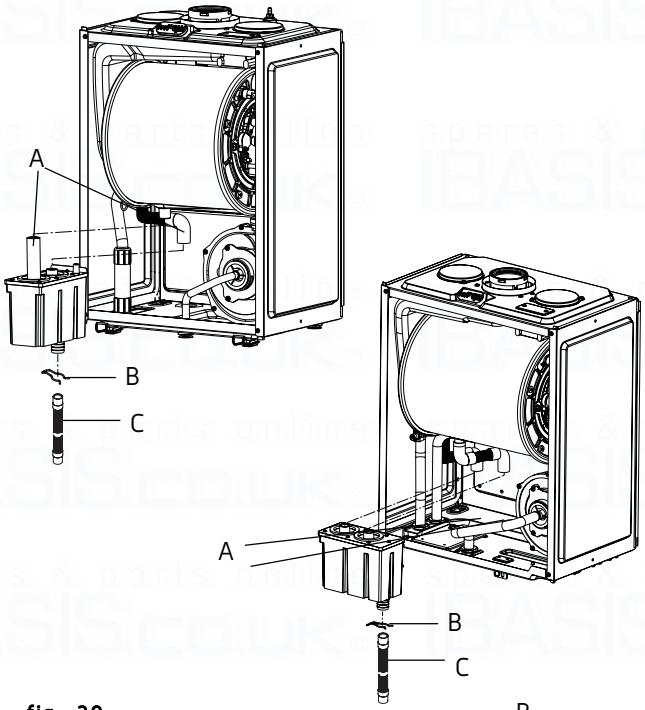


fig. 29

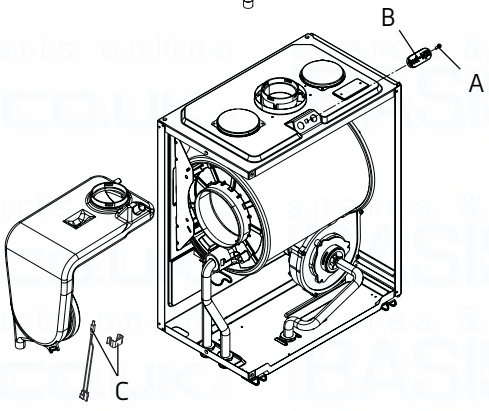


fig. 30

7.0 Servicing instructions

7.17 Automatic by-pass & DHW non-return valve (fig. 27)

Carry out component removal procedure as described in 7.4.

Remove the locking pin (A) that secures the cover (B) to the hydraulic manifold. Using a hooked piece of wire, carefully withdraw the by-pass cartridge (C) and/or DHW non-return cartridge (D). Ensure all seals are in good condition, taking care to ensure they are replaced correctly. Replace in the reverse order ensuring the cartridge is facing the correct way.

7.18 Expansion vessel (fig. 1A)

Should the removal and replacement of the expansion vessel be deemed impractical, an external expansion vessel may be fitted to the return pipe as close to the appliance as possible.

7.18.1 Expansion vessel removal (with sufficient clearance above, fig. 28)

Carry out component removal procedure as described in 7.4. Disconnect the flue from the appliance. Disconnect the expansion vessel from the flexible expansion pipe. Disconnect the flexible expansion pipe from the vessel. Unscrew the nut that secures the vessel to the lower frame. Locate and remove the 6 screws **(A)** that secure the vessel top holding plate **(B)**, remove the plate. The expansion vessel can now be removed. Replace in the reverse order. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

7.19 Condense trap removal (fig. 29)

Carry out component removal procedure as described in 7.4. Disconnect the 2 upper rubbers condense pipe **(A)**. Remove the pin **(B)** that secures the trap to the air box plate. Disconnect the lower rubber condense pipe **(C)** from the condense trap. Carefully remove the condense trap. Replace in the reverse order.

7.20 Flue collector removal (fig. 30)

Carry out component removal procedure as described in 7.4. Unclip and remove the air chamber front and left side covers. Locate and remove the screw **(A)** that secures the flue gas analysis test point cover **(B)**. Remove the clip and the fumes thermostat (**C**). Gently pull down and to the left and ease the flue collector from its location. Replace in the reverse order.

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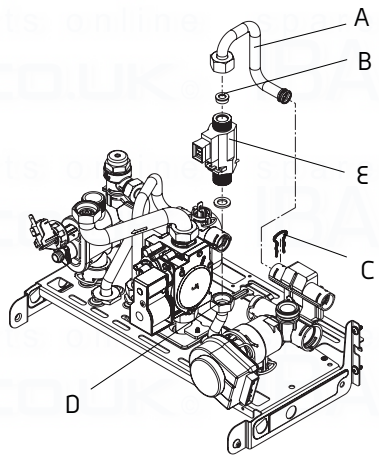


fig. 31A

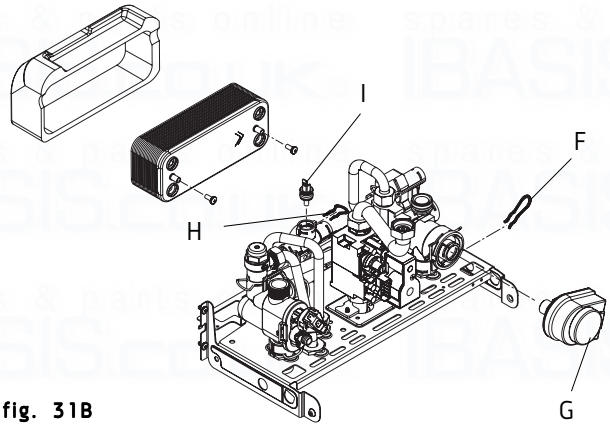


fig. 31B

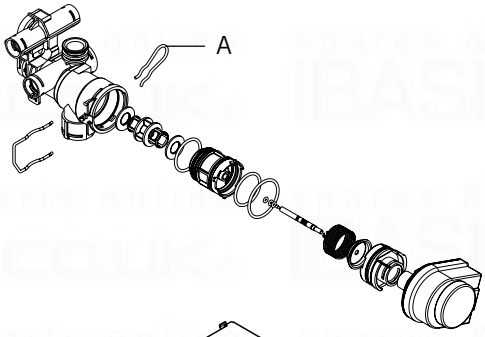


Fig. 32

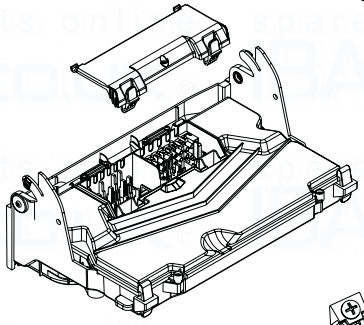


Fig. 33

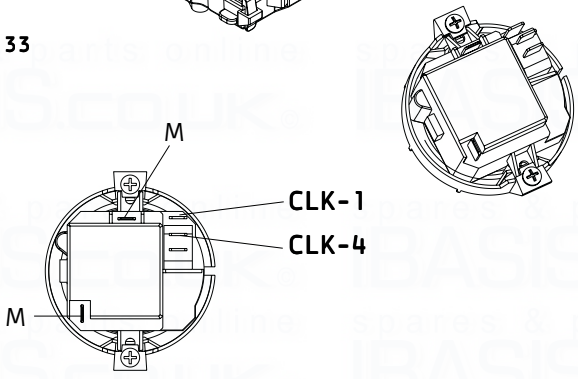


Fig. 34

7.0 Servicing instructions

7.20.1 DHW Flow Restrictor (fig. 31A)

Carry out the component removal procedure as described in 7.4.

Disconnect the cold water inlet pipe at the DHW flow switch **(A)**. Using a small screwdriver, gently ease the flow restrictor **(B)** from its seating. Replace in the reverse order. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

7.20.2 DHW Flow Switch (fig. 31A)

Carry out component removal procedure as described in 7.4.

Remove the locking pin **(C)**. Disconnect and remove the cold water inlet pipe from the DHW flow switch & DHW heat exchanger. Disconnect the wiring to the DHW flow switch. Slacken and unscrew the inlet connection. Unscrew the nut **(D)**. Lift the DHW flow switch housing from its seating. If necessary remove the locking pin **(E)** from the DHW flow switch, taking care not to lose the float contained within the housing.

Replace in the reverse order ensuring that the housing is firmly inserted onto its seating. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

7.20.3 VALVE ACTUATOR (fig. 31B)

Carry out component removal procedure as described in 7.4.

Remove the locking pin **(F)** that secures the actuator **(G)** to the heating manifold. Disconnect the electrical plug from the actuator. Replace in the reverse order.

7.20.4 DHW THERMISTOR (fig. 31B)

Carry out component removal procedure as described in 7.4.

Locate and remove the thermistor locking pin **(H)**. Gently ease the thermistor assembly **(I)** from the hydraulic manifold. Replace in the reverse order.

7.20.5 DIVERTOR VALVE ASSEMBLY (fig. 32)

Carry out component removal procedure as described in 7.4. Remove the valve actuator as described in 7.20.3. Locate and remove the locking pin **(A)** that secures the valve housing cover to the hydraulic manifold. Gently prise the valve assembly from the manifold. Replace in the reverse order ensuring that the seating assembly is inserted properly. Ensure all seals are in good condition, taking care to ensure they are replaced correctly.

7.21 INTEGRAL TIME SWITCH (if fitted)

Carry out component removal procedure as described in 7.4.

Locate and remove the PCB cover and securing screws (fig. 33-34), locate and remove the time clock retaining screws, remove time clock. Disconnect wiring after carefully taking note of all electrical connections. Replace in the reverse order.

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8.0 Checks, Adjustments and fault finding

8.1 Checking appliance operation

When carrying out any repairs or servicing to the appliance, the relevant commissioning procedure must be undertaken to ensure the continued safe operation of the appliance. Particular attention should be made to ensure gas soundness, water soundness and the electrical integrity of the appliance.

8.2 Appliance modes of operation

NOTE

There must be sufficient system water pressure (min. 0.5 bar) to ensure the water pressure switch is activated. If there is insufficient system pressure the pump and fan will be prevented from operating and the low-pressure fault code will be displayed.

The 2-digit display can show several different modes of operation:

8.2.1 Selector switch in the OFF/RESET position

When the selector switch is in the OFF/RESET position, the following functions are active.

Active functions:

- frost-protection system
- pump & fan anti-block

Standby/OFF mode



Frost protection mode active



Combustion analysis mode active



Normal heating request (example 60°C).



Normal DHW request (example 60°C).



8.2.2 ON-BOARD Functions

- **THERMOREGULATION:** when an external sensor is connected to the appliance, the electronic circuitry will automatically adjust the flow outlet temperature to suit local weather conditions in order to maintain comfort and efficiency. A specific operating curve that is most suited to the system type and geographical area can also be selected.
- **OPENTHERM +:** OT+ is a communication protocol that enables the boiler to be linked or connected to other OT+ controls. These controls have been designed to further increase fuel economy by ensuring the boiler remains in the modulation phase during any heating requests. This reduces the amount of ON/OFF periods and therefore increases fuel efficiency.
- **CO FUNCTION:** the CO function when activated, will allow the appliance to run at maximum and minimum output whilst a combustion analysis check is being carried out. Whilst the CO function is active, all other functions are disabled (minimum power operating period, anti-cycle, set-point, etc). Once enabled, the CO function will remain active for a 15-minute period, or until the function is manually deactivated
- **FROST-PROTECTION:** this function is only active when there are no requests for heating or HW. If the temperature drops below 6°C, the boiler will operate on minimum power until the temperature of the primary thermistor reaches 35°C. Thereafter the pump & fan will over-run for 30-seconds.
- **ANTI-CYCLE FUNCTION:** the anti-cycle function ensures the burner remains switched off for at least 3-minutes after the set-point hysterisis (set-point + 5-deg).
- **PUMP ANTI-BLOCK FUNCTION:** when there has been no heating or HW request for 24-hours, the anti-block cycle is activated. The pump will be activated for a period of 30-seconds.

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- **ACTUATOR ANTI-BLOCK FUNCTION:** when there has been no heating or HW request for 24-hours, the anti-block cycle is activated. The divertor valve actuator will motor briefly to the heating position, and then back to the DHW position.
- **DHW PRE-HEAT FUNCTION:** when the mode selector switch is in the DHW pre-heat position, the appliance will light periodically to maintain the temperature of the DHW heat exchanger. When the DHW thermistor and the primary thermistor fall below 35°C and 55°C respectively, the boiler will fire on minimum +25% power until the primary thermistor exceeds 55°C. Thereafter the pump will over-run for a period of 30-seconds.

8.2.3 HEATING MODE

With the selector switch in the heating & hot water position and any additional controls (time clock, programmer, room thermostat, etc.) calling for heat, the appliance will operate in the heating mode. The pump and fan will be activated via the flow temperature sensor. When the fan is sensed to be operating correctly (tacho signal), the ignition sequence commences. Ignition is sensed by the electronic circuit to ensure flame stability at the burner. Once successful ignition has been achieved, the electronic circuitry increases the gas rate to 75% for a period of 15 minutes.

The speed of the fan and therefore the output of the boiler is determined by the temperature of the water sensed by the flow temperature sensor, consequently a high temperature at the flow sensor results in a lower fan speed. As the water temperature increases, the temperature sensors – located on the flow pipe of the boiler – reduce the fan speed via the electronic circuitry. Depending on the load, either the water temperature will continue to rise until the set point is achieved or the water temperature will fall whereby fan speed will increase relative to the output required. When the boiler has reached the set point (+ hysterisis), the burner will switch off. The built-in anti-cycle device prevents the burner from re-lighting for approximately 3-minutes. When the temperature of the flow sensor falls below the set point (- hysterisis), the burner will re-light.

NOTE

If the spark/sensing electrode does not sense ignition the appliance will re-attempt ignition a further 4-times then go to lockout. When the set-point has been reached (the position of the heating temperature selector) as measured at the primary thermistor, the appliance will begin the modulation phase whereby the fan and gas valve will continuously modulate to maintain the set-point.

If the temperature continues to rise and exceeds the set-point by 5°C (hysterisis), the burner will shut down. A new ignition sequence will be enabled when the 3- minute anti-cycle has been performed and the temperature at the primary thermistor has dropped 5°C (hysterisis) below the set-point.

8.2.4 DHW MODE

With the selector switch in either the hot water only or heating & hot water position, the appliance will operate in the hot water mode whenever a DHW outlet is opened. A flow rate exceeding 2-litres per minute will activate the DHW flow switch whereupon the pump and fan will be activated via the flow temperature sensor. When the

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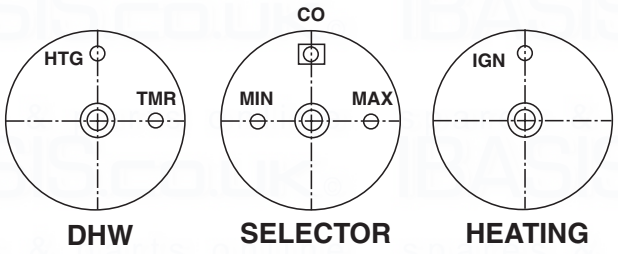


fig. 35

fan is sensed to be operating correctly (tacho signal), the ignition sequence commences. Ignition is sensed by the electronic circuitry to ensure flame stability at the burner. Once successful ignition has been achieved, the electronic circuit allows the gas rate to achieve the modulation value.

NOTE

When the request for heating and/or hot water has been satisfied, the appliance pump and fan may continue to circulate to dissipate any residual heat within the appliance.

8.3 Appliance fan speeds

The appliance fan speeds require to be checked and/or adjusted prior to making any adjustments to the gas valve or if the main PCB has been replaced.

ATTENTION

Gas type and appliance fan speed (output) **must be set** according to the specific appliance specification. The manufacturer accepts no responsibility if the gas type and/or fan speed is not correctly adjusted according to the respective appliance specification as detailed on the appliance data badge.

8.3.1 Checking/adjusting the appliance fan speeds

Move the selector switch to the OFF position and remove the 3-selector knobs.

8.3.2 Absolute max fan speed

Locate the MAX trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table 8.3.6).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

8.3.3 Absolute min fan speed

Locate the MIN trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table 8.3.6).

NOTE: thee display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

8.3.4 Ignition fan speed

Locate the IGN trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table 8.3.6).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

8.3.5 Heating fan speed

Locate the HTG trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table 8.3.6).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

8.3.6 Fan speed table

Use the following table to set the corresponding fan speeds that are relative to the appliance you are working on.

FAN SPEED (rpm) TABLE

MODEL	MAX	MIN	HTG	IGN
iHeat25c	5500	1700	4400	3700
iHeat30c	5200	1500	4500	3700
iHeat35c	6000	1400	5200	3700

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8.4 Checking the CO and CO_2 flue gas levels and adjusting the gas valve

Note: Checking the combustion values at Maximum and Minimum rate and/or adjustment of the gas valve must only be carried out using a suitably calibrated flue gas analyser.

Isolate the appliance from the electrical supply and remove the appliance casing as described in 5.23.1. Insert the analyser probe into the flue gas test point (A,B fig. 30). Restore the electrical supply to the boiler and switch the boiler to the OFF mode.

To adjust the valve you must first ensure that the fan speed potentiometers (trimmers) have been set correctly (see 8.3).

Remove the 3-selector knobs, locate and press the CO button (see fig 35). The appliance will operate in CO mode for approximately 15 minutes (see 8.2.2).

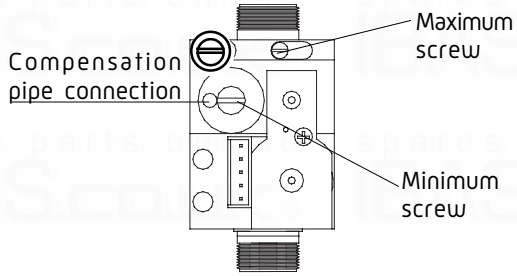


fig. 36

8.4.1 Gas Valve Maximum Setting

Locate and gently turn the HTG trimmer until the maximum value fan speed (see fan speed data table - max) is obtained and then check that the combustion readings correspond to the boiler model. (see Section 3 – Technical data)

If the flue gas readings are incorrect the maximum gas rate must be adjusted as follows.

Using a 2.5mm Allen key, very slowly turn the maximum adjustment screw (see fig 36) – clockwise to decrease anti-clockwise to increase – until the correct values are achieved.

Note: Allow time for the analyser readings to stabilize When correct readings are obtained combustion levels must be carried out at Minimum gas rate.

8.4.2 Gas Valve minimum setting

Locate and gently turn the HTG trimmer until the minimum value fan speed (see fan speed data table-min) is obtained and then check that the combustion readings correspond to the boiler model. (see Section 3 – Technical data)

If the flue gas readings are incorrect the minimum gas rate must be adjusted as follows.

Using a suitable screwdriver, very slowly turn the minimum adjustment screw (see fig 36) – clockwise to increase, anti-clockwise to decrease – until the correct combustion values are achieved.

Note: Allow time for the analyser readings to stabilize.

Important: if after adjustment of the valve the carbon monoxide (CO) or carbon dioxide (CO_2) levels are outside the range quote, than call Halstead Boilers Ltd technical helpline on 0844-3711121.

If in doubt ASK!

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8.4.3 Completion

On completion of the combustion analysis check and/or any gas valve adjustment, set the HTG trimmer to the corresponding value as detailed in the fan speed table. Refit the 3-selector knobs and move the mode selector to the OFF position. Remove the test probe from the test point and refit the sealing screw/s and/or cap.

IMPORTANT

A GAS SOUNDNESS CHECK MUST BE CARRIED OUT IF ANY GAS CARRYING COMPONENTS HAVE BEEN REMOVED, REPLACED OR DISTURBED.

8.5 Combustion analysis test

A combustion analysis check can easily be carried out on the appliance via the test points located on the top of the appliance.

- Insert the flue gas analyser probe into the flue gas test point.
- Operate the boiler in CO mode and compare the values with those shown in section 3 (Nat. Gas) or section 10 (LPG). If different adjust the gas valve according to 8.4.1, 8.4.2, & 8.4.3.

8.6 Checking the expansion vessel

Carry out the component removal procedure as described in 7.4. You must ensure that the boiler is completely drained of water. Using a suitable pressure gauge, remove dust cap on expansion vessel and check the charge pressure. The correct charge pressure should be 1.0 bar ± 0.1 bar. If the charge pressure is less, use a suitable pump to increase the charge.

NOTE

You must ensure the drain valve is in the open position whilst re-charging takes place. Replace the dust cap and carry out the relevant commissioning procedure (section 6).

Symptom	Possible cause
No display/ignition	Check wiring/check electrical supply
No hot water	Check pipe-work
No heating	Check external controls

Fault code	Possible cause
10	Check gas supply, check flue system, check polarity

8.7 External faults

Before carrying out any faultfinding or component replacement, ensure the fault is not attributable to any aspect of the installation.

8.7.1 Installation faults

8.8 Eelctrical checks

Any electrical checks must be carried out by a suitably qualified person.

8.8.1 Earth continuity test

Isolate the appliance from the electrical supply, and using a suitable multi-meter carry out a resistance test. Connect test leads between an appliance earth point and the earth wire of the appliance supply cable. The resistance should be less than 1 OHM. If the resistance is greater than 1 OHM check all earth wires and connectors for continuity and integrity.

8.8.2 Short circuit check

Isolate the appliance from the electrical supply, and using a suitable multi-meter, carry out a short circuit test between the Live & Neutral connections at the appliance terminal strip (fig. 14). Repeat above test on the Live & Earth connections at the appliance terminal strip.

NOTE

Should it be found that the fuse has failed but no fault is indicated, a detailed continuity check will be required to trace the fault. A visual inspection of components may also assist in locating the fault.

8.8.3 Polarity check

With the appliance connected to the electrical supply and using a suitable multimeter, carry out the following voltage tests:

- connect test leads between the Live & Neutral connections at the appliance terminal strip (fig.14). The meter should read approximately 230V ac. If so proceed to next stage. If not, see 8.8.4.
- connect test leads between the Live & Earth connections at the appliance terminal strip (fig. 14). The meter should read approximately 230V ac. If so proceed to next stage. If not, see 8.8.4.
- connect test leads between the Neutral & Earth connections at the appliance terminal strip (fig. 14). The meter should read approximately 0 – 15Vac. If so polarity is correct. If not, see 8.8.4.

8.8.4 Reversed polarity or supply fault

Repeat the above tests at the appliance isolator, if testing reveals correct polarity and/or supply at the isolator, re-check wiring and connections between the isolator and the appliance. If tests on the isolator also reveal reversed polarity or a supply fault, consult the local electricity supplier for advice.

8.8.5 Resistance to earth check

Isolate the appliance from the electrical supply, and using a suitable multi-meter carry out a resistance test. Connect test leads between the Live & Earth connections at the appliance terminal strip. If the meter reads other than infinity there is a fault that must be isolated, carry out a detailed continuity check to identify the location of the fault.

These series of checks must be carried out before attempting any faultfinding procedures on the appliance. On completion of any task that required the disconnection and re-connection of any electrical wiring or component, these checks must be repeated.

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8.9 Fault finding

Before attempting any faultfinding, the electrical checks as detailed in 8.8 must be carried out. Isolate the appliance from the electrical supply.

Disconnect any external controls from terminal plug M6, and insert a link-wire between the two wires at the 'TA' connections.

NOTE

Restore the electrical supply to the boiler and turn the selector switch to the on position. The boiler should now function as described in section 8.2. Should the boiler fail to respond, the internal fuses and connectors should be checked to ensure integrity and continuity. If the boiler still fails to respond, refer to the detailed faultfinding flowcharts located at the end of this section.

8.10 Boiler configuration (fig. 37)

The boiler can be configured by means of the JUMPER Tag which configuration is shown in the below:

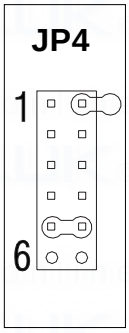


fig. 37

JP4 CONFIGURATION

- JUMPER ON POSITION 1: FLOOR HEATING (IF SET)/ STANDARD HEATING (IF NOT USED)
- JUMPER ON POSITION 2: (UNUSED)
- JUMPER ON POSITION 3: (UNUSED)
- JUMPER ON POSITION 4: (UNUSED)
- JUMPER ON POSITION 5: COMBI
- JUMPER ON POSITION 6: (UNUSED)

FOR CONFIGURATION SEE REFERENCE NUMBER (PIN1 ON PCB) AS SHOWN IN FIG. 37.

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8.11 Fault codes

When the boiler detects a temporary fault condition, the appropriate code is shown flashing on the display. If/when the fault code is final, the pump will perform a 60-second post circulation and the red LED will be illuminated.

CODE	CAUSE	ALARM TYPE	ACTION
AL10	Ignition failure, flame not sensed, condense sensor activated	Final	Reset, check appliance operation
AL20	Limit thermostat fault/fumes thermostat fault	Final	Reset, check appliance operation
AL21	External device fault (UHT/CPA)	Final	Reset, check appliance
AL26	Return temperature too high	Temporary than final	Reset, check appliance operation, check thermistor
AL28	Temperature differential inverted (return sensor temperature higher than thermistors flowsensor temperature)	Temporary than final	Reset, check pump, ensure there is sufficient circulation around heating circuit/s
AL34	Fan tacho signal fault	Final	Reset check appliance operation, check fan
AL40	Insufficient system water pressure	Final	Check/refill system pressure, reset, check appliance operation
AL41	Insufficient system water pressure	Temporary	Check/refill system pressure, check appliance operation
AL52	Internal fault	Final	Reset, check appliance operation
AL55	Jumper tag fault	Final	Check jumper tag configuration
AL60	DHW thermistor fault	Temporary	Check DHW thermistor
AL71	Primary (flow) thermistor fault	Temporary	Check primary thermistor, check wiring
AL73	Return thermistor fault	Temporary	Check return thermistor, check wiring
AL74	Over temperature due to low H_2O pressure	Final	Reset, check appliance operation, check pump, ensure there is sufficient circulation around heating circuit/s
AL79	Flow temperature too high, temperature differential too high	Temporary than final	Reset, check appliance operation, check thermistors

8.12 Component values & characteristics

COMPONENT	VALUE
Fan	230Vac
Pump	230Vac
Valve actuator (Combi only)	230Vac
Ignition transformer	230Vac
Gas valve	230Vac
Room thermostat connection	230Vac
NTC thermistor (dry contact)	10Kohm
NTC thermistor (wet contact)	10Kohm
FUNCTION	**VALUE**
Standard Heating temperature range (min – max °C)	40 - 80
Floor Heating temperature range (min – max °C)	20 - 45
DHW temperature range (min – max °C)	35 - 60
75% maximum CH time	15 min
Heating OFF hysterisis (°C)	SP + 5
Heating ON hysterisis (°C)	SP – 5
DHW OFF hysterisis (°C)	SP + 5
DHW ON hysterisis (°C)	SP + 3
Anti-cycle delay	3-min
Pump over-run	30-sec
Low output (min. output + %)	Min+25
CO function max temp. (°C)	95
CO re-light temp. (°C)	75
CO function time	15-min
Flow NTC max temp. (°C)	95
High limit thermostat (°C)	105
Burner thermostat (°C)	170
Maximum differential (°C)	35
IGNITION CONTROL	**VALUE**
Ignition attempts before L/O (lockout)	5
Re-ignition attempts after loss of flame signal	5

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9.0 Wiring diagrams

CONNECTION	MAX. LENGTH
External sensor	30-metres
Room thermostat	30-metres
OT+ connection	30-metres

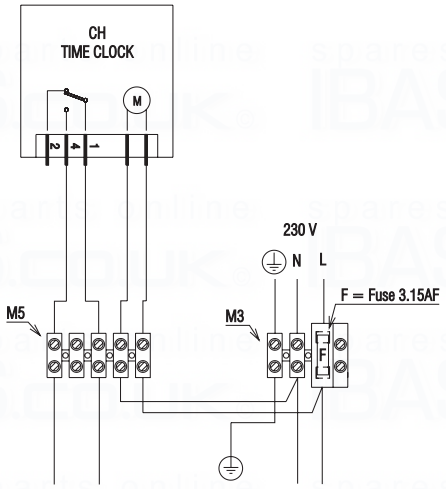


fig. 38

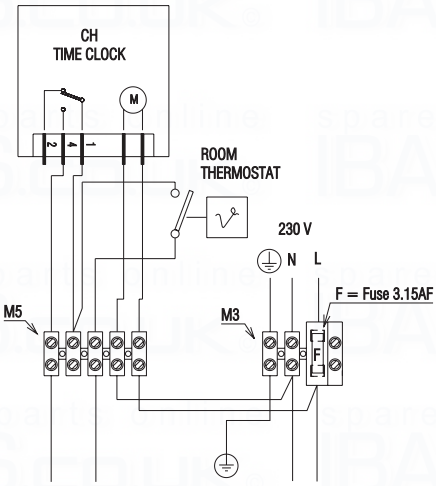
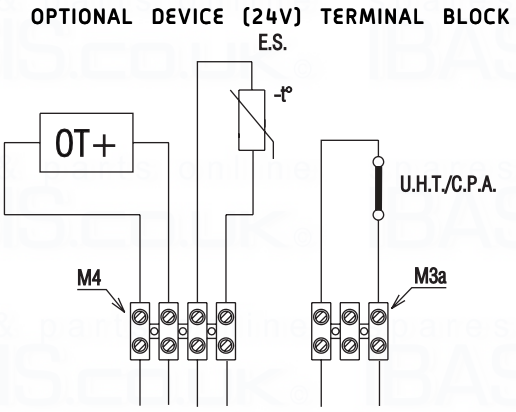


fig. 39



U.H.T. = underfloor heating thermostat
C.P.A. = condensate pump alarm
E.S. = external sensor
OT+ = opentherm + connection

fig. 40

9.1 External wiring

The appliance comes with a factory fitted (TA) link to allow basic operation of the boiler via the mode selector switch. If external controls are to be added to the system, they must be connected to the appliance as shown in the following diagrams. For advice on controls that are not featured in this book, please contact your technical on Service Helpline 0844 371 1111.

9.2 External wiring limitations

Any external wiring must remain within the limits as detailed in the table.

9.3 Typical control applications

The appliance can be used with the following controls:

- programmable room thermostats (fig. 39).
- OT+ control, please contact the technical for detailed instruction on specific OT+ controls (fig. 40).
- external sensor.

9.4 Other devices

Contact the controls manufacturer and/or your technical department should you require more specific information on the suitability of a particular control. Further guidance on the recommended practice for the installation of external controls, can be found in CHeSS – HC5/HC6 (www.energyefficiency.gov.uk).

9.5 Mechanical clock

A mechanical clock is entirely suitable for the iHeat range and eliminates the need for an external time control.

The kit is comprised of the following:

- mechanical clock
- wiring harness
- instructions

Isolate the appliance from the electrical supply and remove the clock blanking disc from the clock aperture on the boiler. Keep the screws safe, as they will be required to secure the programmer to the aperture.

Connect the spade connections of the wiring harness to the clock as shown in figure 38-39. Connect the other end of the wiring harness as detailed in figure 38-39.

Secure the clock to the clock aperture using the screws previously removed from the blanking disc.

IMPORTANT

- The boiler must always be supplied with a permanent 230V electrical supply.
- Always remove the link between TA & TA on the appliance high-voltage terminal strip whenever additional controls are connected to the appliance.
- Do not connect any controls or auxiliary equipment to the low-voltage terminal strip, other than that approved.

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9.0 Wiring diagrams

9.6 Functional diagram

NOTE: L-N-E connection is advisable

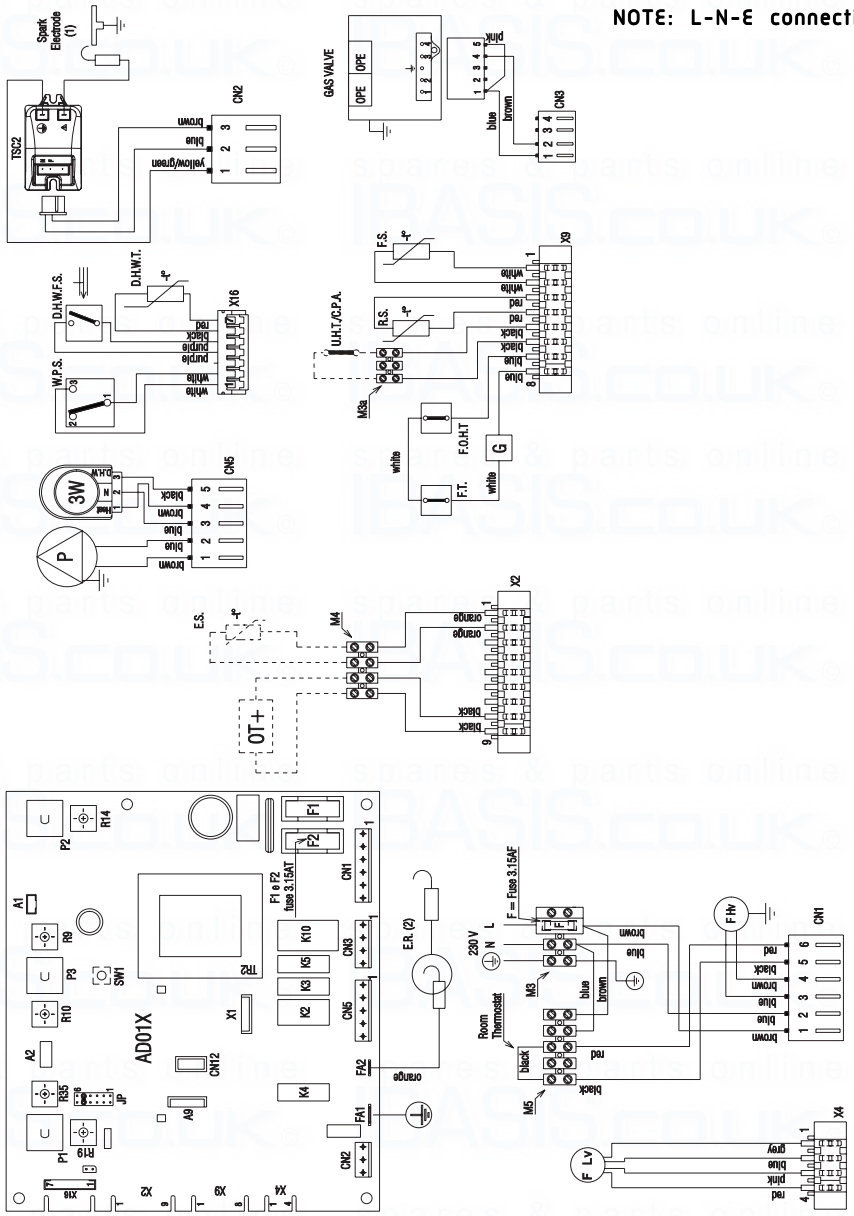


fig. 41

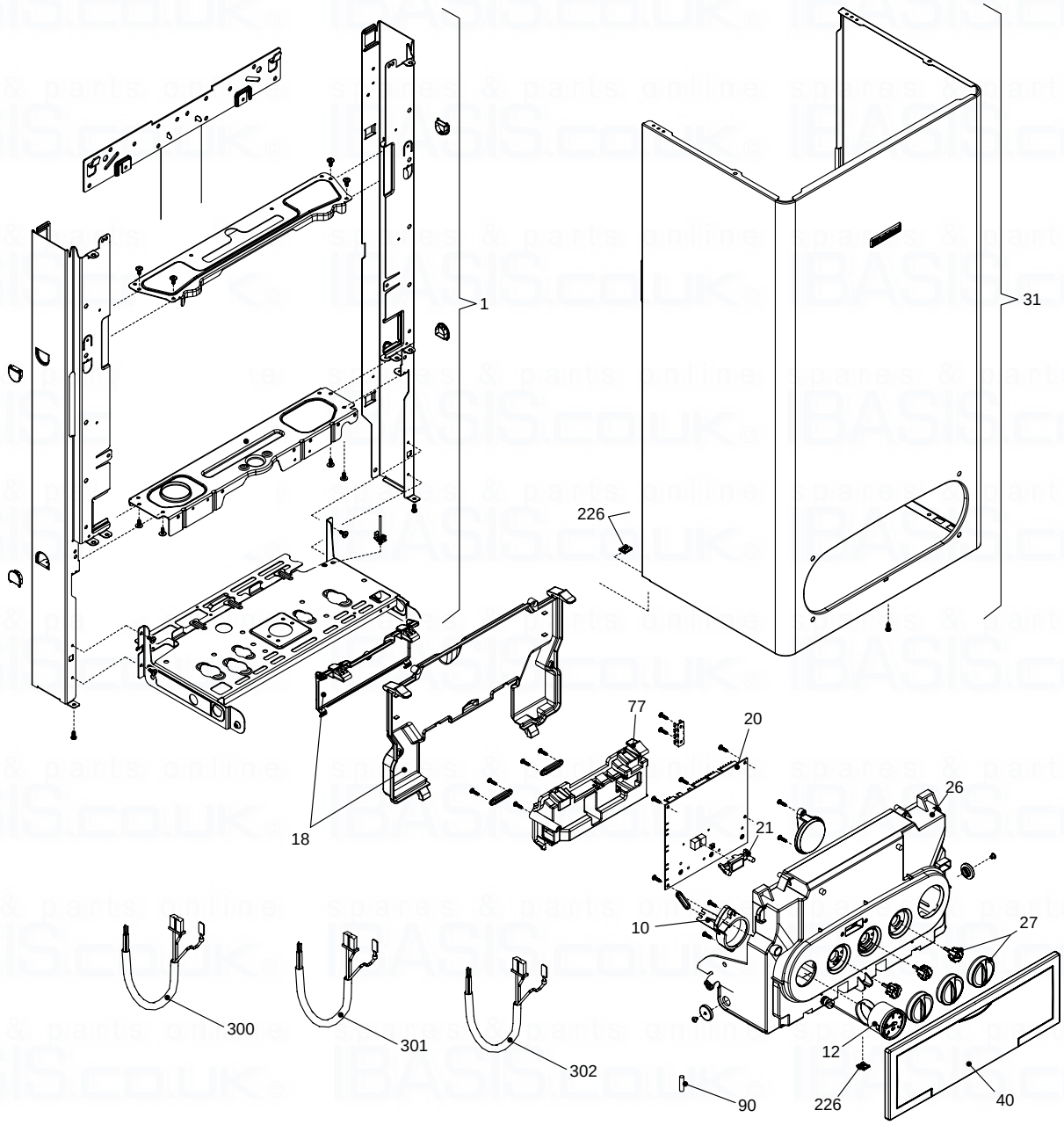
F Hv	Fan power supply 230 V
F Lv	Fan signal control
P	Pump
F	Fuse 3.15A F (fast)
F1-F2	Fuse 3.15A T (delay)
OPE	Gas valve solenoids
S.E. (1)	Spark electrode
S.E. (2)	Sense electrode
C.S.	Condensate sensor
G.V.	Gas valve
TSC2	Ignition transformer
TR2	PCB transformer
E.S	External sensor
WPS	Water pressure switch
FS	Flow thermistor (NTC)
RS	Return thermistor (NTC)
AD01X	Main PCB
CN1-CN5	Connection to PCB high voltage
X2-X16	Connection to PCB low voltage
F.O.H.T	Flow over heat thermostat
F.T	Fume thermostat
G	Cable connector

M3-M5	Terminal strip for supply in / clock / room thermostat
M3a-M4	Terminal strip for esternal sensor / condense pump / low temperature thermostat
OT+	Open therm + connection
D.H.W.F.S	Domestic hot water flow switch
D.H.W.T	Domestic hot water temperature
3W	3 way motor
JP5	For combi boiler
X1	Connector minitank (unused)
CN12	Service connector
SW1	Co button
A1	24V output to 2CH - programmer
P1	DHW potentiometer
P2	Heating potentiometer
P3	Selector switch
R9	Trimmer for maximum output
R10	Trimmer for minimum output
R14	Trimmer for ignition fan speed
R19	Trimmer for heating fan speed
R35	Trimmer thermoregulation
UHT	Underfloor heating thermostat
CPA	Condensate pump alarm

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Table 1

10.0 Exploded diagrams

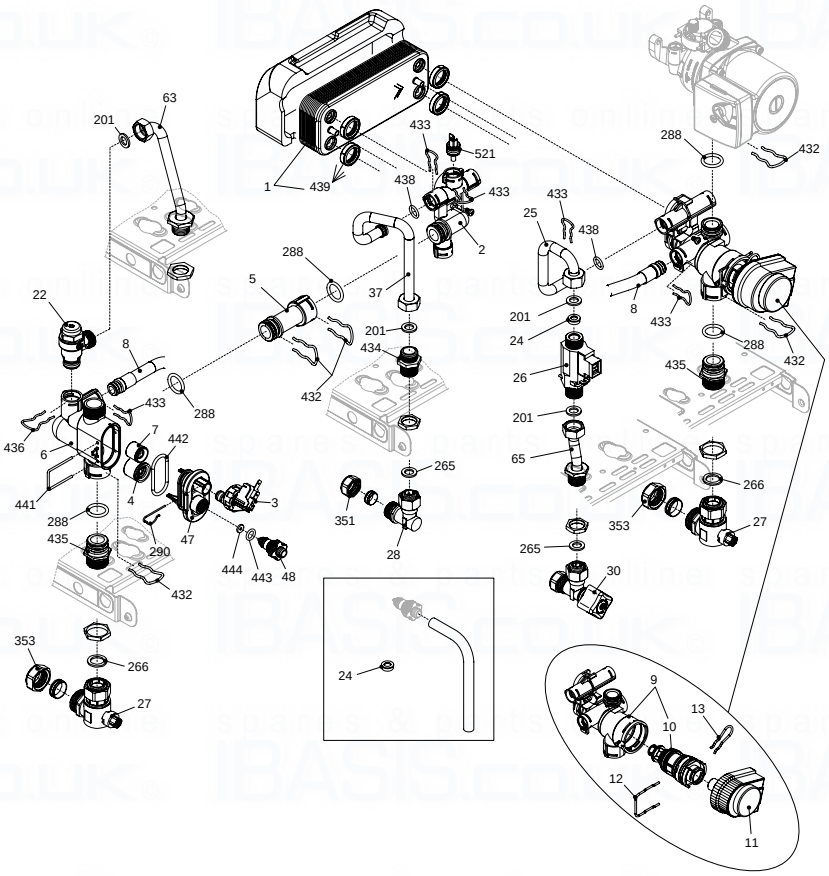


POS.	DESCRIPTION	25	30c	35c
1	Frame assembly	R01005476	R01005498	R01005498
10	Water gauge carrier	R10029105	R10029105	R10029105
12	Pressure gauge	R2564	R2564	R2564
18	Cover assembly	R10028554	R10028554	R10028554
20	Printed circuit board	20001116	20001116	20001116
21	Led light guide	R10028557	R10028557	R10028557
26	Instrumental panel	20006395	20006395	20006395
27	Knob assembly	20006234	20006234	20006234
31	Case Assembly	20004976	20006404	20006404
40	Fixing door	20006397	20006405	20006408
90	Fuse	R3478	R3478	R3478
226	Clip	R5128	R5128	R5128
300	Power wiring harness	R10028596	R10028596	R10028596
301	Low tension cable	R10029107	R10029107	R10029107
302	Wiring harness	R10028593	R10028593	R10028593

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Table 2

10.0 Exploded diagrams

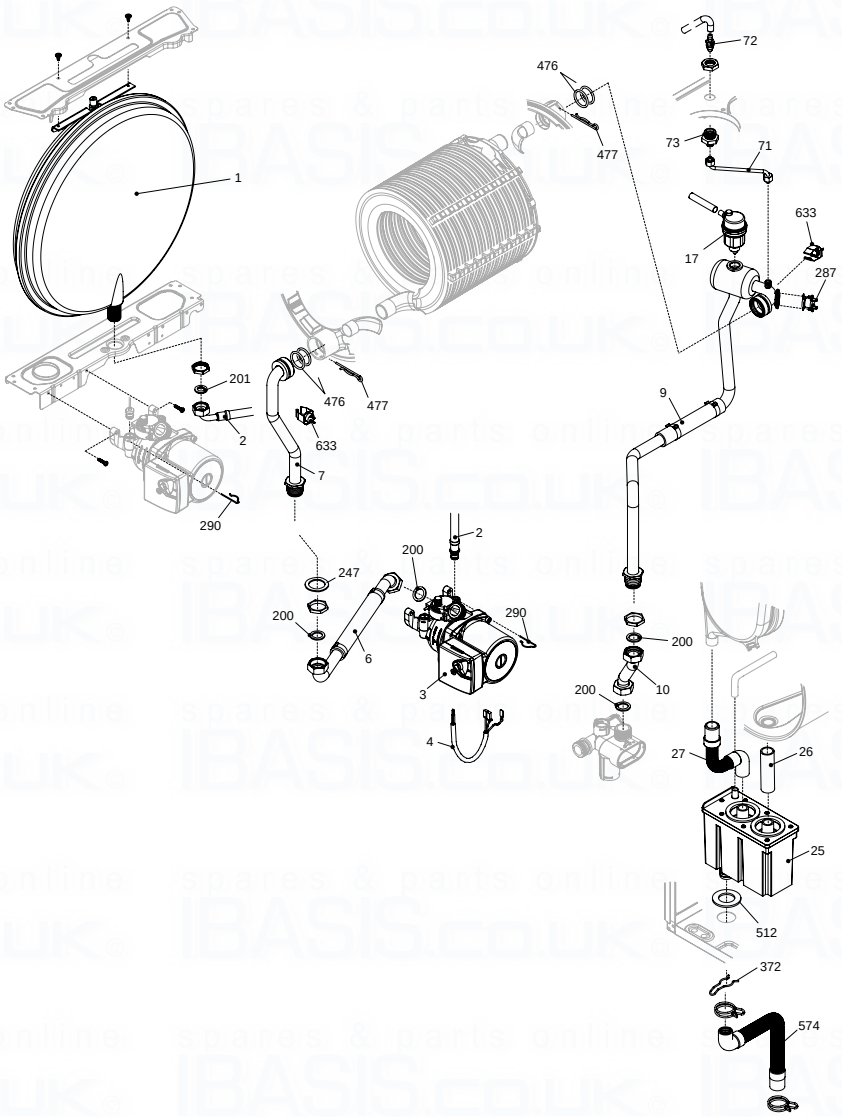


POS.	DESCRIPTION	25	30c	35c
1	Exchanger	R8036	R1957	R10024627
2	Fitting/union	R10026194	R10026194	R10026194
3	Pressure water switch	R10028141	R10028141	R10028141
4	Non return valve	R10025056	R10025056	R10025056
5	Connection	R10024647	R10024647	R10024647
6	By-pass casing	R10024642	R10024642	R10024642
7	Heating by-pass valve	R2047	R2047	R2047
8	Pipe	R10025057	R10025057	R10025057
9	3-way heating manifold and cartridge	R10026507	R10026507	R10026507
10	3 way valve cartridge	R10025305	R10025305	R10025305
11	Actuator	R10025304	R10025304	R10025304
12	Clip	R10025450	R10025450	R10025450
13	Clip	R10025449	R10025449	R10025449
22	Safety valve	R10025055	R10025055	R10025055
24	Flow governor	R10024987	R10025080	R10026041
24	Flow governor	R10026044	R10026041	R10026042
24	Flow governor	R10026045	R10026045	R10026046
25	Pipe	R10024982	R10024982	R10024982
26	Dhw actuator	R10022349	R10022349	R10022349
27	Heating cock	R1789	R1789	R1789
28	Connection	R1790	R1790	R1790
30	Water supply stop cock	R10025733	R10025733	R10025733
37	Pipe	R10024984	R10024984	R10024984
47	Cover for by-pass assembly	R10024643	R10024643	R10024643
48	Cock	R10024646	R10024646	R10024646
63	Pipe	20006396	20006396	20006396
65	Pipe	R10024983	R10024983	R10024983
201	Washer	R5026	R5026	R5026
265	Washer	R5236	R5236	R5236
266	Washer	R5237	R5237	R5237
288	Ring	R6898	R6898	R6898
290	Clip	R2165	R2165	R2165
351	Nut	R1823	R1823	R1823
353	Nut	R1824	R1824	R1824
432	Clip	R10024958	R10024958	R10024958
433	Clip	R10024986	R10024986	R10024986
434	Nipple	R10024985	R10024985	R10024985
435	Fitting/union	R10025059	R10025059	R10025059
436	Clip	R10025062	R10025062	R10025062
438	O ring	R10024988	R10024988	R10024988
439	Washer	R10025067	R10025067	R10025067
441	Clip	R10025063	R10025063	R10025063
442	O ring	R10025065	R10025065	R10025065
443	O ring	R10025064	R10025064	R10025064
444	Washer	R10025066	R10025066	R10025066
521	NTC sensor	R10027351	R10027351	R10027351

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Table 3

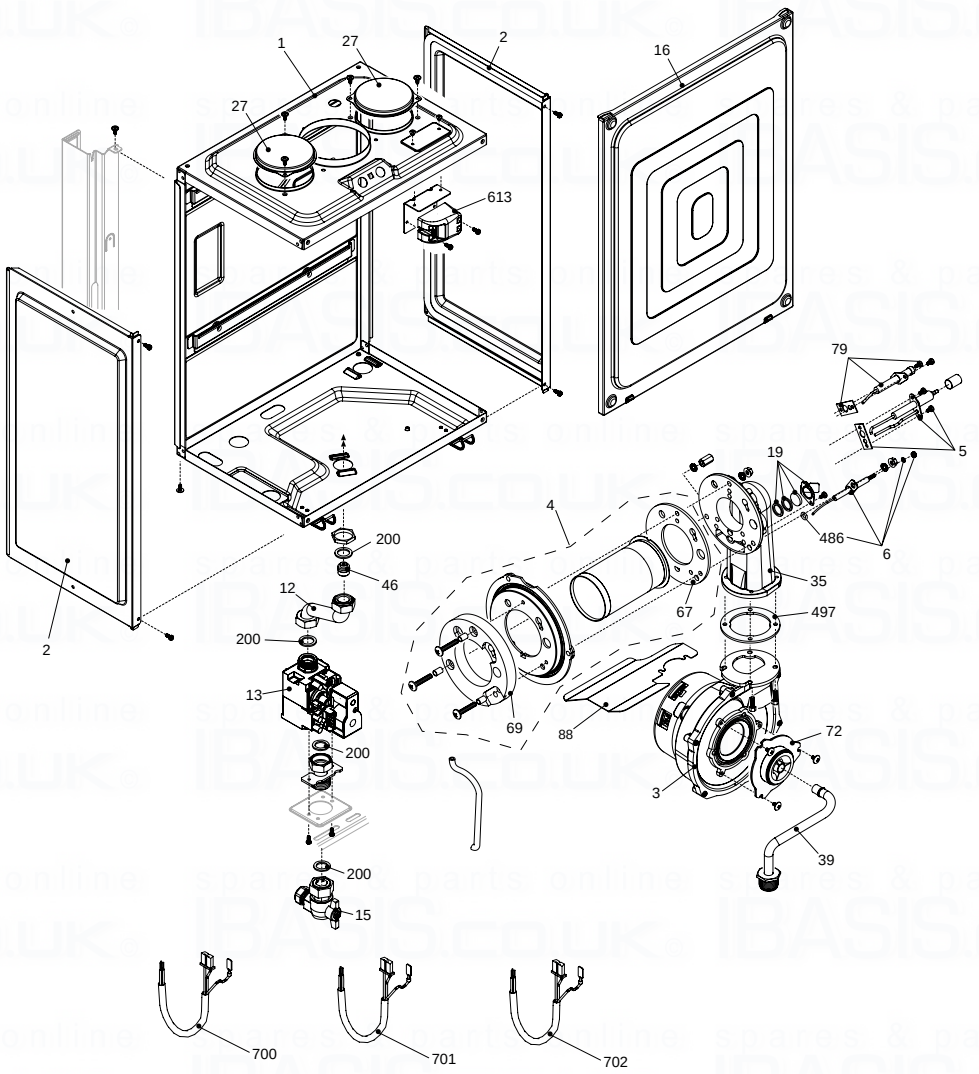
10.0 Exploded diagrams



POS.	DESCRIPTION	25	30c	35c
1	Expansion vessel	R2204	R2573	R2573
2	Pipe	R10025188	R10025188	R10025188
3	Pump	R10027571	R10027571	R10027571
4	Pump cable	R10029106	R10029106	R10029106
6	Pipe	R10027990	R10029562	R10029562
7	Pipe	R10026267	R10026267	R10026267
9	Pipe	R10029476	R10029457	R10029458
10	Pipe	R10029099	R10029563	R10029563
17	Air venting plug	R10029306	R10029306	R10029306
25	Siphon	R10028405	R10028405	R10028405
26	Flexible pipe	R10028540	R10027191	R10027191
27	Flexible pipe	R10027192	R10027192	R10027192
71	Pipe	R10028430	R10028516	R10028515
72	Venting-plug	R10023235	R10023235	R10023235
73	Cock	R10028431	R10028431	R10028431
200	Washer	R5023	R5023	R5023
201	Washer	R5026	R5026	R5026
247	Washer	R5203	R5203	R5203
287	High limit thermostat	R2258	R2258	R2258
290	Clip	R2165	R2165	R2165
324	3/8" lock nut	R2182	R2182	R2182
372	Clip	R2588	R2588	R2588
476	O ring	R10026324	R10026324	R10026324
477	Split pin	R10026269	R10026269	R10026269
512	Washer	R10027193	R10027193	R10027193
574	Flexible pipe	R10028539	R10028539	R10028539
633	Detector	20003819	20003819	20003819

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10.0 Exploded diagrams

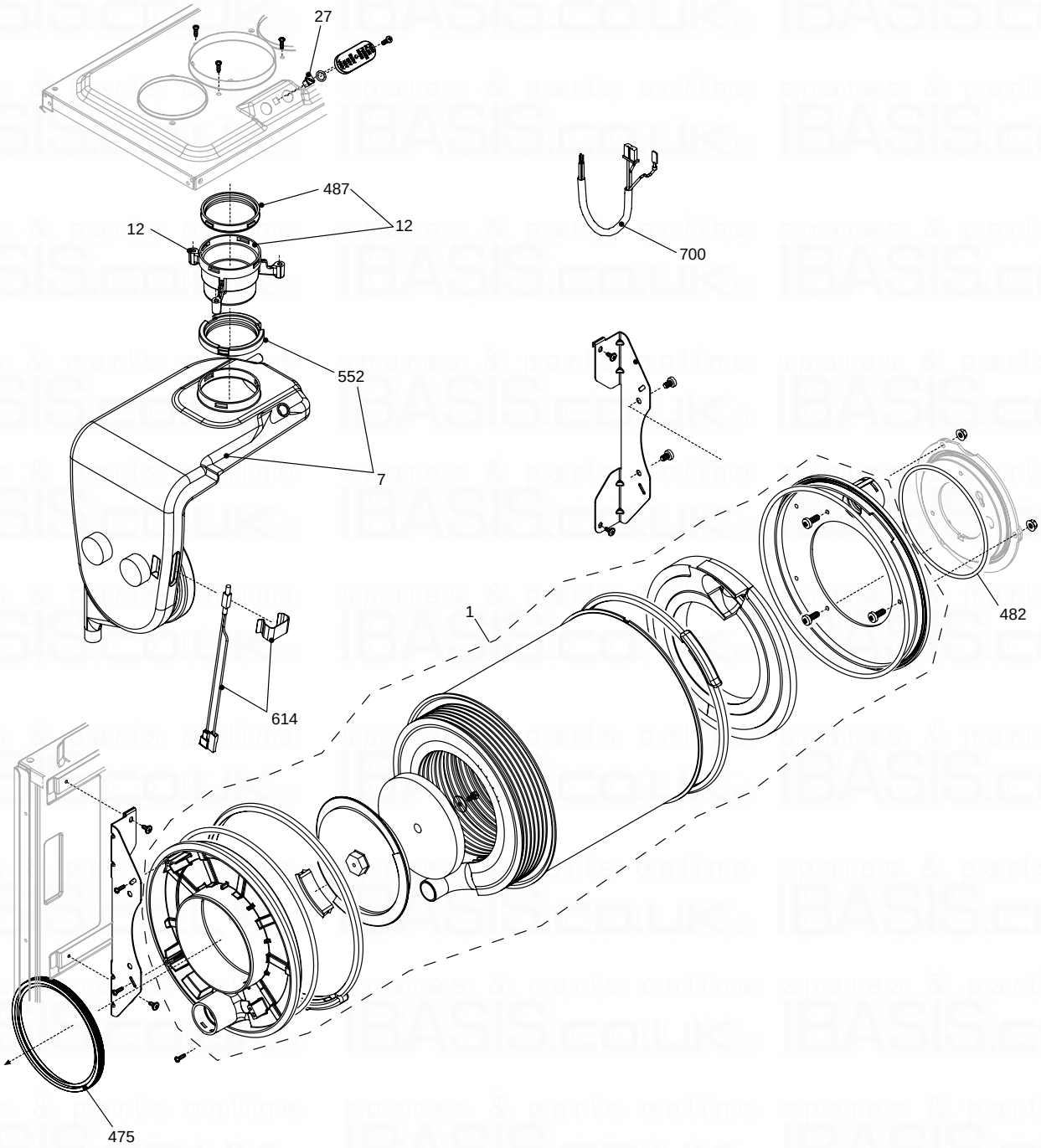


POS.	DESCRIPTION	25	30c	35c
1	Roomsealed chamber	R10028479	R10028447	R10028447
2	Roomsealed chamber side	R10026231	R10026231	R10026231
3	Fan	R10028456	R10028456	R10028456
4	Burner assembly	R10028537	R10028642	R10028537
5	Spark / ignition electrode	R10027864	R10027864	R10027864
6	Condense electrode	R10026316	R10026316	R10026316
12	Gas pipe	R10029096	R10029755	R10030387
13	Gas valve	R10028538	R10028538	R10028538
14	Gas ramp coupling	-	R10029753	-
15	3/4" gas cock	R10020897	R10020897	R10020897
16	Combustion chamber cover	R10028345	R10026230	R10026230
19	Glass stopper assembly	R10026328	R10026328	R10026328
27	Plug	R10023805	R10023805	R10023805
35	Air gas conveyor	R10028420	R10028420	R10028420
39	Pipe	R10030381	R10029561	R10028206
46	Gas diaphragm 6,7	R10027161	R10027161	R10027162
67	Washer Ø 62	R10026322	R10026322	R10026322
69	Tryton	R10028425	R10028425	R10028425
72	Mixer	R10024295	R10024295	R10024295
79	Flame detection electrode	R10028422	R10028422	R10028422
88	Fan baffle	20006411	20006411	20006411
200	Washer	R5023	R5023	R5023
486	O ring	R10026325	R10026325	R10026325
497	Washer	R10026796	R10026796	R10026796
613	Ignition transformer	20001563	20001563	20001563
700	Spark electrode cable	R10026558	R10026558	R10026558
701	Gas valve cable	R10029108	R10029108	R10029108
702	Ignition cable	20001681	20001681	20001681

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Table 5

10.0 Exploded diagrams



POS.	DESCRIPTION	25	30c	35c
1	Condensing exchanger assembly	R01005443	R01005366	R01005369
7	Conveyor	R10028536	R10028623	R10028623
12	Flue drain connection	R10028421	R10028421	R10028421
27	Nut screw	R10020625	R10020625	R10020625
475	Washer Ø 125	R10026323	R10026323	R10026323
482	Washer	R10026366	R10026366	R10026366
487	Washer Ø 60	R10026345	R10026345	R10026345
552	Washer Ø 60	R10028426	R10028426	R10028426
614	High limit thermostat	20001564	20001564	20001564
700	Combustion cable	R10028595	R10028601	R10028601

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11.0 LPG Instructions

11.1 Related documents

BS 5440	PARTS 1 & 2	FLUES & VENTILATION REQUIREMENTS
BS 5449	PART 1	FORCED CIRCULATION OF HOT WATER SYSTEMS
BS 5482	PART 1	DOMESTIC BUTANE & PROPANE GAS BURNERS IN PERMAMENT DWELLINGS
BS 5546		INSTALLATION OF GAS HOT WATER SUPPLIES FOR DOMESTIC PURPOSES
BS 6798		INSTALLATION OF BOILERS OF RATED NOT EXCEEDING 60kW

11.2 Technical data

Gas Pressures	IHeat 25c	IHeat 30c	IHeat 35c
Inlet pressure		37.0mbar	
Maximum gas rate (kg/hr)	2.17	2.48	2.80
Minimum gas rate (kg/hr)	0.47	0.54	0.54
Injector size4.7mm	4.7mm	5.0mm	
CO_2 max (%)	9.8-10.2	9.8-10.2	9.8-10.2
CO_2 min (%)	9.8-10.2	9.8-10.2	9.8-10.2
CO max (PPM) less than	170	200	220
CO min (PPM) less than	30	20	20
NOx max (mg/kWh)	70.6	88.3	8.3
NOx min (mg/kWh)	53.0	53.0	70.6
CO/CO_2 ratio @ max	0.002 to 1	0.002 to 1	0.002 to 1
CO/CO_2 ratio @ min	0.004 to 1	0.004 to 1	0.004 to 1
SEDBUK 'A' (%)	92.4	2.7	92.7

11.3 Converting the appliance gas type

To convert the appliance to another gas type it is necessary to change the burner injector, adjust the appliance fan speeds and adjust the gas valve (CO_2).

- To change the injector see 7.12.1
- To adjust the fan speeds see 8.3
- To adjust CO2 values see 8.4

11.4 Gas supply

The gas supply must be connected to the appliance by a competent LPG installer and must be of sufficient size to supply the appliance at its maximum output. An existing supply must be checked to ensure that it is of adequate size to deal with the maximum rated input of this and any other appliances that it serves.

11.5 Gas supply installation

The entire installation including the meter must be purged and checked for gas soundness.

11.6 Checking the CO and CO_2 flue gas levels and adjusting the gas valve

Note: Checking the combustion values at Maximum and Minimum rate and/or adjustment of the gas valve must only be carried out using a suitably calibrated flue gas analyser.
Isolate the appliance from the electrical supply and remove the appliance casing as described in 5.23.1. Insert the analyser probe into the flue gas test point (A,B fig. 30). Restore the electrical supply to the boiler and switch the boiler to the OFF mode.
To adjust the valve you must first ensure that the fan speed potentiometers (trimmers) have been set correctly (see 8.3).
Remove the 3-selector knobs, locate and press the CO button (see fig. 35). The appliance will operate in CO mode for approximately 15 minutes (see 8.2.2).

11.6.1 Gas Valve Maximum Setting

Locate and gently turn the HTG trimmer until the maximum value fan speed (see fan speed data table - max) is obtained and then check that the combustion readings correspond to the boiler model. (see Section 3 – Technical data) If the flue gas readings are incorrect the maximum gas rate must be adjusted as follows.
Using a 2.5mm Allen key, very slowly turn the maximum adjustment screw (see fig 35) – clockwise to decrease anti-clockwise to increase – until the correct values are achieved.
Note: Allow time for the analyser readings to stabilize When correct readings are obtained combustion levels must be carried out at Minimum gas rate.

11.6.2 Gas Valve minimum setting

Locate and gently turn the HTG trimmer until the minimum value fan speed (see fan speed data table-min) is obtained and then check that the combustion readings correspond to the boiler model. (see Section 3 – Technical data)
If the flue gas readings are incorrect the minimum gas rate

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must be adjusted as follows.
Using a suitable screwdriver, very slowly turn the minimum adjustment screw (see fig 35) – clockwise to increase, anti-clockwise to decrease – until the correct combustion values are achieved.
Note: Allow time for the analyser readings to stabilize. Important: if after adjustment of the valve the carbon monoxide (CO) or carbon dioxide (CO_2) levels are outside the range quote, than call Halstead Boilers Ltd technical helpline on 0844-3711121.

If in doubt ASK!

11.6.3 Completion

On completion of the combustion analysis check and/or any gas valve adjustment, set the HTG trimmer to the corresponding value as detailed in the fan speed table. Refit the 3-selector knobs and move the mode selector to the OFF position.

Remove the test probe from the test point and refit.

IMPORTANT

A GAS SOUNDNESS CHECK MUST BE CARRIED OUT IF ANY GAS CARRYING COMPONENTS HAVE BEEN REMOVED, REPLACED, OR DISTURBED.

FAN SPEED (rpm) TABLE - LPG

MODEL	MAX	MIN	HTG	IGN
iHeat25c	5500	1700	4300	3700
iHeat30c	5200	1500	4500	3700
iHeat35c	6000	1400	5200	3700

11.7 Appliance fan speeds

The appliance fan speeds require to be checked and/or adjusted prior to making any adjustments to the gas valve or if the main PCB has been replaced.

ATTENTION

Gas type and appliance fan speed (output) **must be set** according to the specific appliance specification. The manufacturer accepts no responsibility if the gas type and/or fan speed is not correctly adjusted according to the respective appliance specification as detailed on the appliance data badge.

11.7.1 Checking/asjusting the appliance fan speeds

Move the selector switch to the OFF position and remove the 3-selector knobs.

11.7.2 Absolute max fan speed

Locate the MAX trimmer (fig. 34) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table above).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

11.0 LPG Instructions

11.7.3 Absolute min fan speed

Locate the MIN trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table above).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

11.7.4 Ignition fan speed

Locate the IGN trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table above).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

11.7.5 Heating fan speed

Locate the HTG trimmer (fig. 35) and gently adjust clockwise or counter clockwise to achieve the correct fan speed (see table above).

NOTE: the display shows the fan RPM in multiples of 1000, i.e. 2.5 = 2500RPM.

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GAS BOILER SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____

Address _____

Boiler Make and Model _____

Boiler Serial Number

Commissioned by *(print name)* _____ CORGI ID Number _____

Company Name _____ Telephone Number _____

Company Address _____

_____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certicate *:

Building Regulations Noti cation Number *(if applicable)* _____

CONTROLS Tick the appropriate boxes

Time and Temperature Control to Heating	Room Thermostat and Programmer/Timer ☐	Programmable Room Thermostat ☐	Load/Weather Compensation ☐	Optimum Start Control ☐
Time and Temperature Control to Hot Water	Cylinder Thermostat and Programmer/Timer ☐	Combination Boiler ☐
Heating Zone Valves	Fitted ☐	Not Required ☐
Hot Water Zone Valves	Fitted ☐	Not Required ☐
Thermostatic Radiator Valves	Fitted ☐	Not Required ☐
Automatic Bypass to System	Fitted ☐	Not Required ☐
Boiler Interlock	Provided ☐

ALL SYSTEMS

The system has been u shed and cleaned in accordance with BS7593 and boiler manufacturer's instructions Yes ☐

What system cleaner was used? _____

What inhibitor was used? Quantity _____ *litres*

CENTRAL HEATING MODE Measure and Record:

Gas Rate	_____ m^3/hr	OR		_____ ft^3/hr
Burner Operating Pressure (if applicable)	_____ mbar	OR	Gas Inlet Pressure	_____ mbar
Central Heating Flow Temperature				_____ ℃
Central Heating Return Temperature				_____ ℃

COMBINATION BOILERS ONLY

Is the installation in a hard water area (above 200ppm)? Yes ☐ No ☐

If yes, has a water scale reducer been tted? Yes ☐ No ☐

What type of scale reducer has been tted? _____

DOMESTIC HOT WATER MODE Measure and Record:

Gas Rate	_____ m^3/hr	OR		_____ ft^3/hr
Burner Operating Pressure (at maximum rate)	_____ mbar	OR	Gas Inlet Pressure (at maximum rate)	_____ mbar
Cold Water Inlet Temperature				_____ ℃
Hot water has been checked at all outlets	Yes ☐		Temperature	_____ ℃
Water Flow Rate				_____ *l/min*

CONDENSING BOILERS ONLY

The condensate drain has been installed in accordance with the manufacturer's instructions and/or BS5546/BS6798 Yes ☐

ALL INSTALLATIONS

If required by the manufacturer, record the following CO_2 _____ % OR CO _____ *ppm* OR CO/CO_2 Ratio _____

The heating and hot water system complies with the appropriate Building Regulations Yes ☐

The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions Yes ☐

The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes ☐

The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes ☐

Commissioning Engineer's Signature _____

Customer's Signature _____

(To conr m satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be noti ed to Local Authority Building Contr ol (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certi cate will then be issued to the customer.

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

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www.centralheating.co.uk

SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service 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 speci ed spar e part when replacing controls.

SERVICE 1 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 2 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 3 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 4 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 5 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 6 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 7 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 8 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 9 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

SERVICE 10 Date

Energy Ef ciency Checkl ist completed? Yes ☐ No ☐

Engineer Name

Company Name

Telephone Number

CORGI ID Number

Comments

Signature

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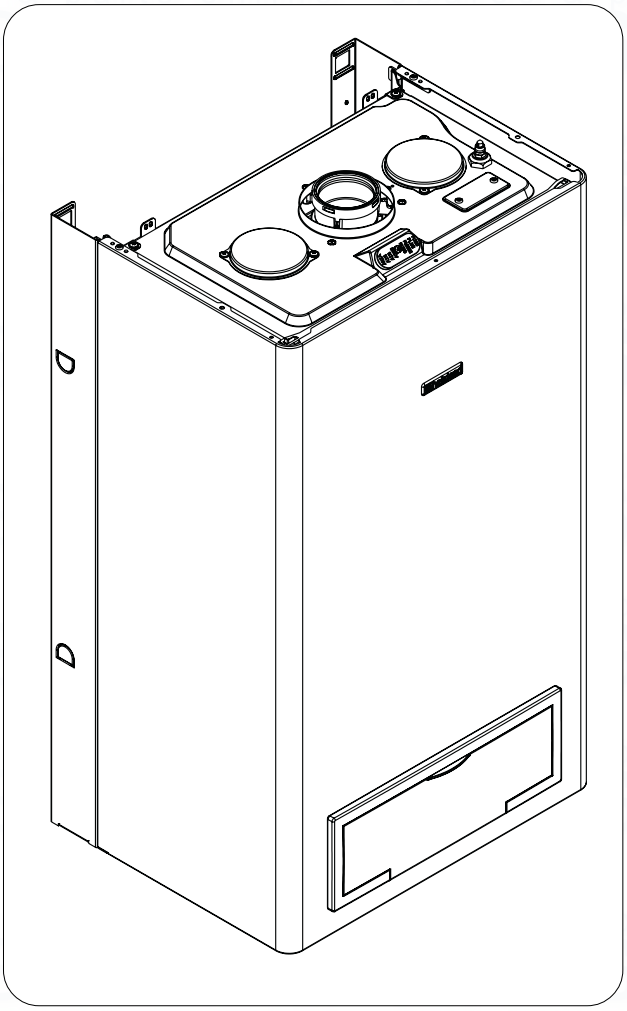
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THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Halstead Boilers is continuously improving its products and may therefore change specifications without prior notice.
The statutory rights of the consumer are not affected.08/07 751094

iHeat 25c
iHeat 30c
iHeat 35c

Combination Condensing Boilers



User Instructions

G.C. NUMBER

iHeat 25c	N° 47-260-16
iHeat 30c	N° 47-260-17
iHeat 35c	N° 47-260-18

These instructions should be left with the user

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Contents

Introduction	Page
Dear customer	2
Do's and don't's	2

Things you should know	Page
1.1 Gas appliances	3
1.2 Electrical supply	3
1.3 Guarantee registration card	3
1.4 Appliance log book (UK only)	3
1.5 How does it work?	3
1.6 Dimensions	3
1.7 Clearances required	3
1.8 Frost protection system	3
1.9 Status indicators	3
1.10 Digital display	4

Getting started	Page
2.1 Before switching on	5
2.2 Appliance controls	5
2.3 Lighting the boiler	5
2.4 Adjusting the CH temperature	5
2.5 Adjusting the DHW temperature	5

How to...	Page
3.1 Top-up the system	6
3.2 Reset the appliance	6
3.3 Shut down the system for short periods	6
3.4 Shut down the system for long periods	6
3.5 Care for the appliance	6

What if...	Page
4.1 I suspect a gas leak	7
4.2 I have to frequently to top-up the system	7
4.3 The fault light is on	7
4.4 The appliance is due its annual service	7
4.5 I need to call an engineer	7
4.6 I need to extend the warranty	7

Setting	Page
5.1 Mechanical clock	7

Introduction

Dear Customer

Your boiler has been designed to meet and exceed the very latest standards in gas central heating technology, and if cared for, will give years of reliable use and efficiency.

Please therefore take some time to read these instructions carefully.

Do's and Don't's

- **Do** ensure that the system pressure is periodically checked
- **Do** ensure that you know how to isolate the appliance in an emergency
- **Do** ensure that you are familiar with the appliance controls
- **Do** ensure that your installer has completed the appliance log book section
- **Do not** attempt to remove the appliance casing or gain internal access
- **Do not** hang clothes etc. over the appliance
- **Do not** forget to have the appliance serviced annually.

This booklet is an integral part of the appliance. It is therefore necessary to ensure that the booklet is handed to the person responsible for the property in which the appliance is located/installed. A replacement copy can be obtained from the customer services.

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1.0 Things you should know

1.1 Gas appliances

Gas Safety (Installations and Use) Regulations (UK).
In the interests of your safety and that of others it is a legal requirement that all gas appliances are installed and correctly maintained by a competent person and in accordance with the latest regulations.

1.2 Electrical supply

Please ensure that this appliance has been properly connected to the electrical supply by means of a double pole isolator or un-switched socket, and that the correct size of fuse (3 AMP) has been fitted.
Warning: this appliance must be earthed!

1.3 Guarantee registration card

Please take the time to fill out your guarantee registration card. The completed warranty card should be posted within 30 days of installation.

1.4 Appliance Benchmark Logbook

See rear of booklet for full terms and conditions of your **iHeat** lifetime guarantee.
A logbook section can be found at the rear of the appliance installation booklet. This important document must be completed during the installation/commissioning of your boiler. All CORGI registered installers carry a CORGI ID card, and have a registration number. These details should be recorded in the Benchmark logbook section within the installation booklet. You can check your installers details by calling CORGI direct on 01256 372300. Failure to install and commission the appliance in accordance with the manufacturers instructions may invalidate the warranty. This does not affect your statutory rights.

1.5 How does it work?

Your **iHeat** boiler supplies heated water to your radiators and hot water to your hot water taps.
The central heating is controlled via a time clock and any thermostats that your installer may have fitted. The boiler will light when it receives a request from the time clock via any thermostat that may be installed, or whenever a hot water outlet (tap) is opened.
Your **iHeat** boiler lights electronically and does not have a pilot light.
In the unlikely event of a fault developing with your boiler, the supply of gas to the burner will be terminated automatically.

1.6 Dimensions

iHeat25c	
HEIGHT	780mm
WIDTH	400mm
DEPTH	358mm
iHeat30c - iHeat35c	
HEIGHT	780mm
WIDTH	450mm
DEPTH	358mm

1.7 Clearances required

ABOVE	150 mm
BELOW	150 mm
LEFT SIDE	50 mm
RIGHT SIDE	12mm
FRONT	600 mm



1.8 Frost protection system

The **iHeat** is equipped with a built-in frost protection system, this enables the boiler to over-ride the time controls – even if switched off – and operate the burner and/or pump, should the temperature drop below 6°C for the main and below 4°C for the DHW line. In particular the burner will be in ON status until the main temperature reaches 35°C for CH appliance and 55°C for DHW appliance.
Please note that the frost protection system is designed to protect the appliance only, should frost protection be required for the heating system, additional controls may be required.
When the frost protection system has been activated, **'AF'** is displayed on the appliance LED display (see picture).
NOTE
The frost protection system is reliant on the appliance having a permanent electrical supply, and being in a non-fault condition.

1.9 Appliance status indicators

Your boiler is equipped with 2 status LED indicators, the Green LED indicates that the flame is present, whilst the Red LED indicates the appliance has detected a fault.

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1.10 Digital display

The 2-digit digital display will normally show the current working (outlet) temperature of the boiler, however in certain circumstances a fault code or specific characters will be displayed to indicate that the appliance is performing a specific function.

1. Pressure gauge
2. Hot water temperature selector
3. Green LED indicator
4. 2-digit display
5. Red LED indicator
6. Heating temperature selector
7. Clock (if fitted)
8. Mode selector switch

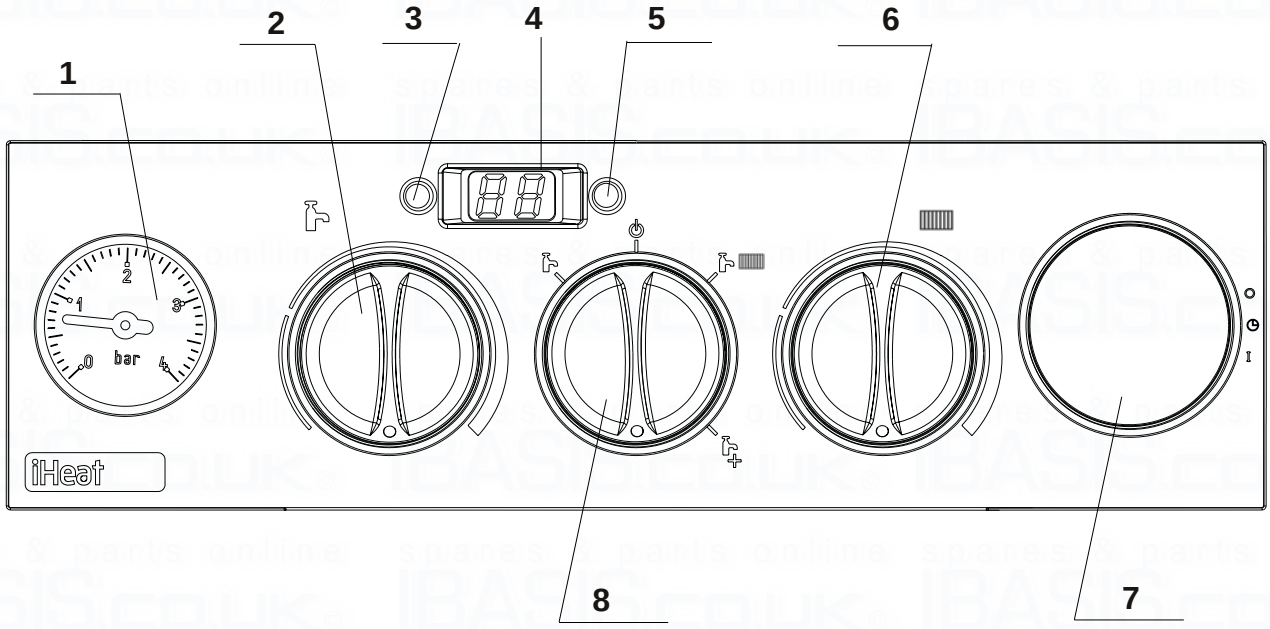


fig. 1

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2.0 Getting started

2.1 Before switching on

Before switching the appliance on please familiarise yourself with:

- how to isolate the appliance from the gas, water, and electricity supplies;
- how to check and top-up – if necessary – the system water pressure;
- the time clock or programmer;
- any external thermostats and their functions;
- the appliance controls.

2.2 Appliance controls (see fig. 1)

The appliance controls are situated on the lower front of the appliance. The appliance controls include:

- pressure gauge;
- appliance mode selector;
- temperature selector;
- 2-digit LED display;
- burner ON mode (green);
- fault indicator (red);
- optional - integral time clock/programmer (if fitted).

The pressure gauge shows the current pressure of your heating system, the gauge should be set between 1 and 1.5 BAR. When the appliance is operating the gauge may rise or fall slightly, this is quite normal. The minimum permissible level for the safe and efficient operation of the appliance is 0.5 BAR. Should the pressure fall below 0.5 BAR, the boiler may lockout.

The appliance mode selector is used to switch the boiler to the various operating modes:

- OFF/RESET "  "
- DHW MODE "  "
- CH MODE "  "
- CH with PREHEATING MODE "  "

NOTE
The appliance frost protection is active in all of the above modes.

The **temperature selectors** can be used to vary the temperature of the water that circulates around your radiators and the water that flows from your hot water taps. The temperature range is adjustable between 40°C and 80°C for the central heating, and between 35°C and 60°C for the hot water. Moreover if floor heating mode is selected (by using the relative jumper), the temperature range for CH mode can be modified between 20°C and 45°C.

The **2-digit LED display normally** shows the operating temperature of the appliance, however it can also display additional characters or flashing numbers to signify specific operating modes or fault codes.

When the **status indicator (Green) is lit** it indicates that the flame is present and the burner is ON.
When the **fault indicator (Red) is lit** it indicates that the appliance has identified a possible fault and performed a safety lockout.

The **integral time clock (when fitted)** can be used to switch the heating on and off at pre-determined intervals.

The **integral time clock or programmer (when fitted)** can be used to switch the heating and/or hot water on and off at pre-determined intervals.

2.3 Lighting the boiler

Ensure the gas and electrical supply to the boiler are turned on.

Turn the mode selector switch to the **ON** position. When there is a request for heating or hot water via the time clock or programmer, the boiler will begin an ignition sequence. When the appliance reaches the set temperature, the burner will go off for a minimum period of approximately 3 minutes.

When the programmer/time clock or external thermostats heating request has been satisfied, the appliance will switch off automatically.

2.4 Adjusting the heating temperature

Rotate the temperature selector – clockwise to increase, counter-clockwise to decrease – to the desired temperature setting. The temperature can be set from a minimum of 40°C to a maximum of 80°C (if standard CH mode is selected).

2.5 Adjusting the hot water temperature

Rotate the temperature selector – clockwise to increase, counter-clockwise to decrease – to the desired temperature setting. The temperature can be set from a minimum of 35°C to a maximum of 60°C. If the temperature at the outlet is still not sufficiently hot enough, it may be necessary to reduce the flow of water at the hot water outlet (tap).

NOTE
If the appliance fails to ignite during the ignition sequence, it will enter a lockout condition. Should this occur, please allow a period of at least two minutes before re-setting the appliance.

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3.0 How to ...

3.1 How to top-up the system pressure (fig. 2 & 3)

The system pressure must be checked periodically to ensure the correct operation of the boiler. The needle on the gauge should be reading between 1 and 1.5 BAR when the boiler is in an off position and has cooled to room temperature. If the pressure requires 'topping-up' use the following instructions as a guide.

- Locate the filling valve connections (usually beneath the boiler, see fig. 2).
- Attach the filling loop to both connections.
- Open the filling valve slowly until you hear water entering the system.
- Close the filling valve when the pressure gauge (on the boiler) reads between 1 and 1.5 BAR.
- Remove the filling loop from the connections.

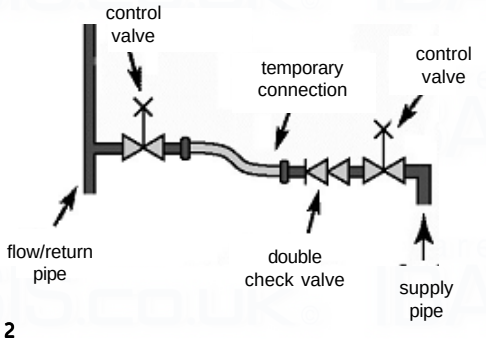


fig. 2

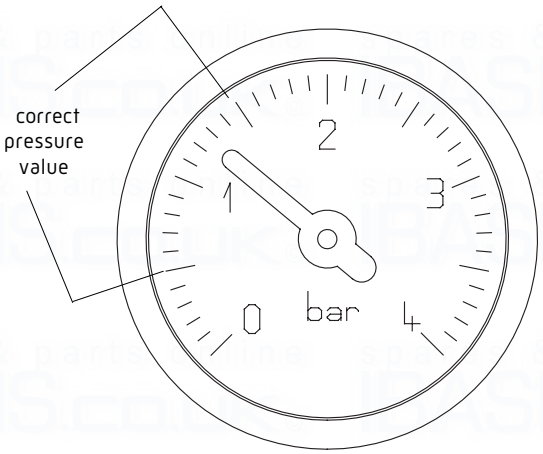


fig. 3

3.2 How to reset the appliance

When the red fault LED is illuminated, the appliance will require to be reset manually. Before resetting the boiler, check what action is required to be taken, using the information on the fault code table below. Allow a period of two minutes to elapse before rotate the mode selector knob across the OFF/RESET position.

IMPORTANT

If the appliance requires to be reset frequently, it may be indicative of a fault, please contact your installer or the Customer Services for further advice.

3.3 How to shut down the system for short periods

The system and boiler can be shut down for short periods by simply turning the time clock to the off position. It is also advisable to turn off the main water supply to the house.

3.4 How to shut down the system for long periods

If the house is to be left unoccupied for any length of time – especially during the winter – the system should be thoroughly drained of all water. The gas, water, and electricity supply to the house should also be turned off. For more detailed advice contact your installer.

3.5 How to care for the appliance

To clean the outer casing use only a clean damp cloth. Do not use any scourers or abrasive cleaners.

APPLIANCE FAULT CODES

CODE	ACTION REQUIRED
AL10	Reset appliance. Call engineer if fault re-occurs
AL20	Reset appliance. Call engineer if fault re-occurs
AL21	Reset appliance. Call engineer if fault re-occurs
AL26	Reset appliance. Call engineer if fault re-occurs
AL28	Reset appliance. Call engineer if fault re-occurs
AL34	Reset appliance. Call engineer if fault re-occurs
AL40	Check system pressure and refill if necessary. Reset appliance. Call engineer if fault re-occurs
AL41	Check system pressure and refill if necessary. Call engineer if fault re-occurs
AL52	Call engineer
AL55	Call engineer
AL60	Reset appliance. Call engineer if fault re-occurs
AL71	Call engineer if fault re-occurs
AL73	Call engineer if fault re-occurs
AL74	Reset appliance. Call engineer if fault re-occurs
AL79	Reset appliance. Call engineer if fault re-occurs

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4.0 What if

4.1 I suspect a gas leak

If you suspect a gas leak, turn off the gas supply at the gas meter, and contact your installer or local gas supplier. If you require further advice please contact your nearest Service & Technical Helpline **(0844 371 1111)**.

4.2 I frequently "top-up" or "repressurise the system

If the system regularly requires topping-up or re-pressurising, it may be indicative of a leak. Please contact your installer and ask him to inspect the system.

4.3 The fault light is on

If the Red LED light is illuminated, it indicates that the boiler has failed to ignite or has detected a possible fault. When this happens the boiler automatically shuts down and requires to be reset manually (see 3.2).

4.4 The appliance is due its annual service

Please contact the Service & Technical Helpline **(0844 371 1111)** if you would prefer an authorised engineer or agent to service your appliance. Alternatively your local CORGI registered engineer may be able to service the appliance for you. If you are a tenant your landlord will arrange for servicing.

4.5 I need to call an engineer

If you think your boiler may have developed a fault, please contact your installer or the Service & Technical Helpline **(0844 371 1111)**. Have all your details to hand including full address and postcode, relevant contact numbers and your appliance logbook.

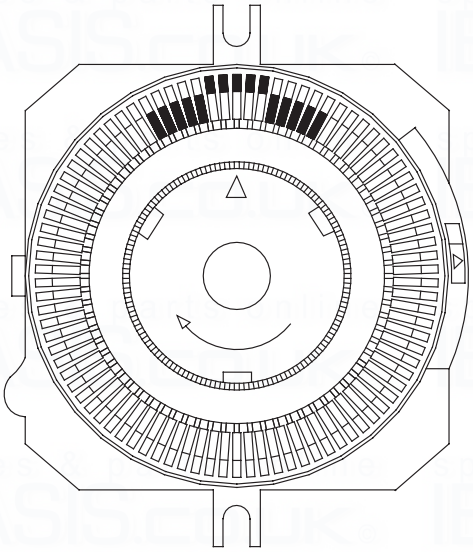
4.6 I want to extend the warranty

You can if you wish, extend the warranty on your **iHeat** boiler. Simply contact our Service & Technical Helpline **(0844 371 1111)** for further information.

5.0 Setting the mechanical clock

5.1 Setting the mechanical clock

If your boiler has been installed with the mechanical clock, it can be used and adjusted as follows:



Setting the time

The time of day can be set by grasping the outer edge of the black dial and turning it in a clockwise direction until the correct time is in line with the white pointer.

Setting the "switching times"

The **"ON" periods** are set by sliding the black tappets, adjacent to the time periods required, to the outer edge of the dial.

The tappets that remain at the centre of the dial will be the **"OFF" periods**.

The smallest switching time (ON or OFF) is 15 minutes.

To select **"AUTO"** mode move the selector switch in central position.

To select **"ON"** mode move the selector switch in the bottom position.

To select **"OFF"** mode move the selector switch in the upper position.

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WARRANTY TERMS & CONDITIONS + LIFETIME WARRANTY

1. Registration must be completed within 30 days of installation. Failure to return within 30 days will invalidate your warranty. Registration if effected by returning the enclosed registration card to the commercial center of Halstead Glen Dimplex at 5 Spartan Close, Tachbrook Park, Leamington Spa, CV34 6RR. Proof of postage should be obtained.
2. The Benchmark document must be completed by installer/householder at the time of installation and must be presented to our engineer at subsequent visits.
3. The boiler must be serviced annually, at the householders expenses in accordance with manufacturer's instructions, and this service must be booked through Halstead Glen-Dimplex by calling 0844 371 1111.
4. The service must be carried out by a Halstead approved central heating engineer. Any work carried out by a non-Halstead approved engineer will invalidate this warranty.
5. Appropriate system cleaning (e.g. power flush) and the correct use of additives must be carried out at the time of installation. Failure to cleanse the system will invalidate this warranty. Evidence of cleansing should be presented to our engineer upon request.
6. Based on a typical boiler lifespan, Halstead deem the life of a boiler to be 10 years from the date of installation. At the end of 10 years, the owner can choose to continue to use the boiler (un-warranted), or Halstead will offer to install a replacement at a preferential price.
7. This warranty applies only to manufacturing problems with the boiler; damage caused through misuse, incorrect operation, foreign bodies in the heating system, system faults and failures are not covered.
8. This warranty applies only if the boiler is installed and used in accordance with the manufacturer's instructions, in normal domestic applications.
9. Providing all the above Terms and Conditions are met, this warranty covers functional parts and labour. Functional parts are detailed in the attached appendix, together with specific exclusions.
10. Halstead Glen Dimplex offer the opportunity for a system audit and commissioning check within 30 days of registration. This is chargeable at the same rate as an annual service and if taken up then the first annual service will be provided free of charge. Failure to take up this offer may invalidate the full warranty which will revert to a standard 1 year warranty
11. Failure to meet any of the above Terms and Conditions will invalidate this warranty.

APPENDIX

Problem attributable to failure of:	Exclusions
Main heat exchanger	Premature corrosion caused by pollutants and chemicals in the gas and air
Plate heat exchanger	Problems attributable to scaling
Fan	Problems caused by pollutants or incorrect wiring (e.g by installer), failure caused by water spillages
Gas Valve	Problems caused by pollutants and chemicals in the air and gas
Pump	Problems attributable to dry-firing, limescale and magnetite
PCB	Failure attributable to incorrect wiring (e.g. by installer), failure caused by water spillages
Expansion vessel	Problems attributable to chemicals in the water
Any part of hydroblock	Problems attributable to incorrect components positioning (e.g by installer)
Electrodes	Premature corrosion caused by pollutants and chemicals in the gas and air

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