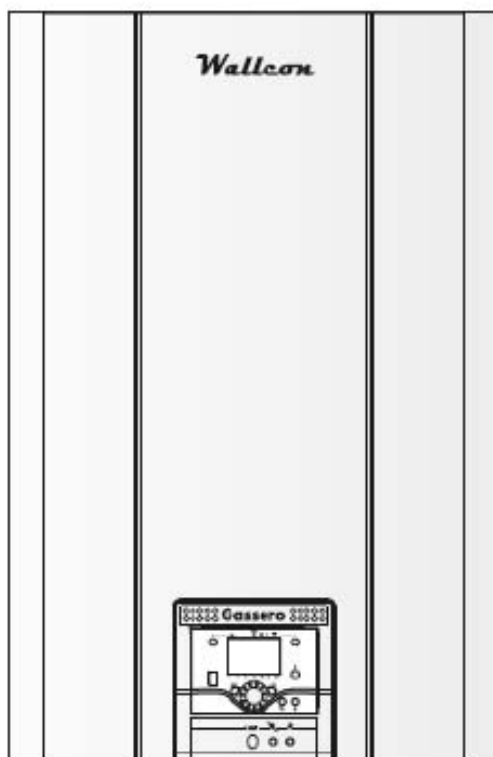




Gassero
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Installation and Operating Manual for the
Wallcon 115,125,160

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1.0 Appliance Type There are three outputs within the Wallcon range

Please ensure you have the correct unit for the application and where required located correctly within the cascade prior to beginning the installation.

The product codes for the entire range are:

Product Name	Product Code
Wallcon 115	WALLC115
Wallcon 125	WALLC125
Wallcon 160	WALLC160

1.1 Installation Regulations and Requirements

The installation of Wallcon boilers must be in accordance with the relevant requirements of Gas Safety (Installation & Use) Regulations 1994, Health & Safety at Work Act, Building Regulations, IEE Regulations, Construction (Design & Management) Regulations 1994, Local Authority Bye-Laws, National, Fire Regulations and Insurance Company requirements.

The following Codes of Practice are also applicable:-

BS 5440-1: 2000 Installation of flues and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases).

Part 1: Specification for the installation of flues.

BS 5440-2: 2000 Installation of flues and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases).

Part 2: Specification for installation and maintenance of ventilation for gas appliances.

BS 5449: 1990 Specification for forced circulation hot water central heating systems for domestic premises.

BS 6644: 2011 Specification for gas fired hot water boilers of rated inputs between 70kW (net) and 1.8MW(net) (2nd and 3rd family gases).

BS 6798: 1987 Specification for installation of gas fired hot water boilers of rated input not exceeding 60 kW.

BS 6880: 1988 Code of Practice for low temperature hot water heating systems of output greater than 45kW. Parts 1, 2 & 3.

BS 6891: 1988 Specification for installation of low pressure gas pipework of up to 28mm (R1) in domestic premises (2nd family gases)

BS 7593: 1992 Code of Practice for treatment of water in domestic hot water central heating systems.

BS 7671: 1992 Requirements for electrical installations. IEE Wiring Regulations. Sixteenth edition.

CISBE Guide reference sections B7, B11 and B13.

CP342 Part 2: 1974 Code of Practice for centralized hot water supply.

GE/UP/2 Gas installation pipework, boosters and compressors on industrial and commercial premises.

IGE/UP/4 Commissioning of gas fired plant on industrial and commercial premises

IGE/UP/10 Installation of gas appliances in industrial and commercial premises. Part 1: Flued appliances.

And any addition prevailing regulation and or code of practice not detailed above.

2.0 Appliance Warranties

All MHG appliances enjoy a full 24 month warranty as detailed in our terms and conditions.

The guarantee period shall begin on the day of commissioning, or at latest 3 months after delivery has been made.

The customer shall only be able to claim against MHG under guarantee if the commissioning of the object of delivery has been carried out by MHG staff or the authorised supplier, If the customer has followed MHG's instructions relating to the treatment and maintenance of the object of delivery, and if no replacement parts of outside origin have been fitted.

Parts subject to wear such as ignition electrodes, seals etc. are strictly excluded from the guarantee.

In addition to the above warranties, the Stainless Steel Primary Heat Exchangers carry a 60 month guarantee against manufacturing or material defect.

2.1 Supplied Components

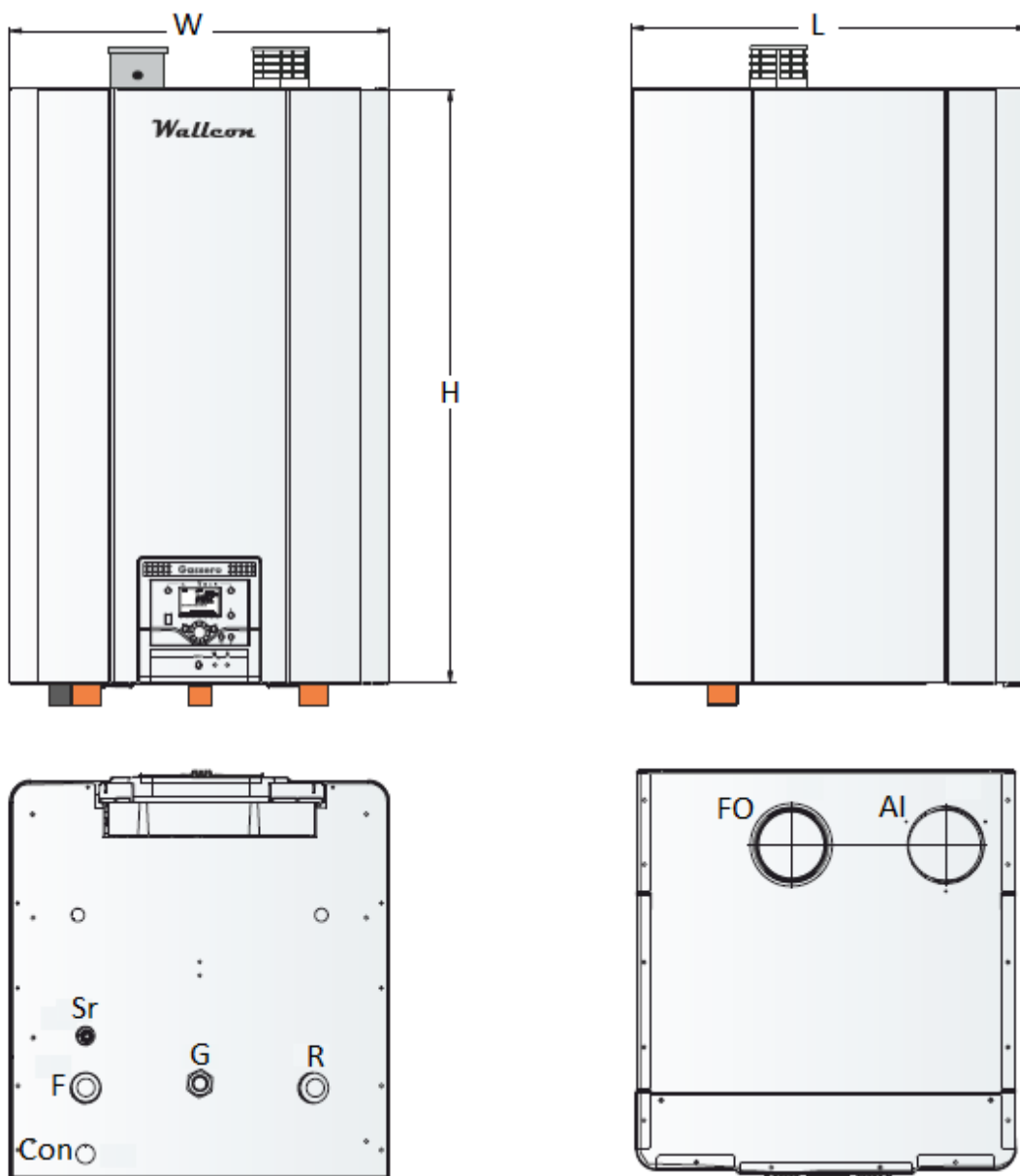
All Wallcons are supplied with a HWS probe sensor and QAC 34 outside Air Sensor. (To activate direct on boiler weather compensation)



3.0 Technical Data

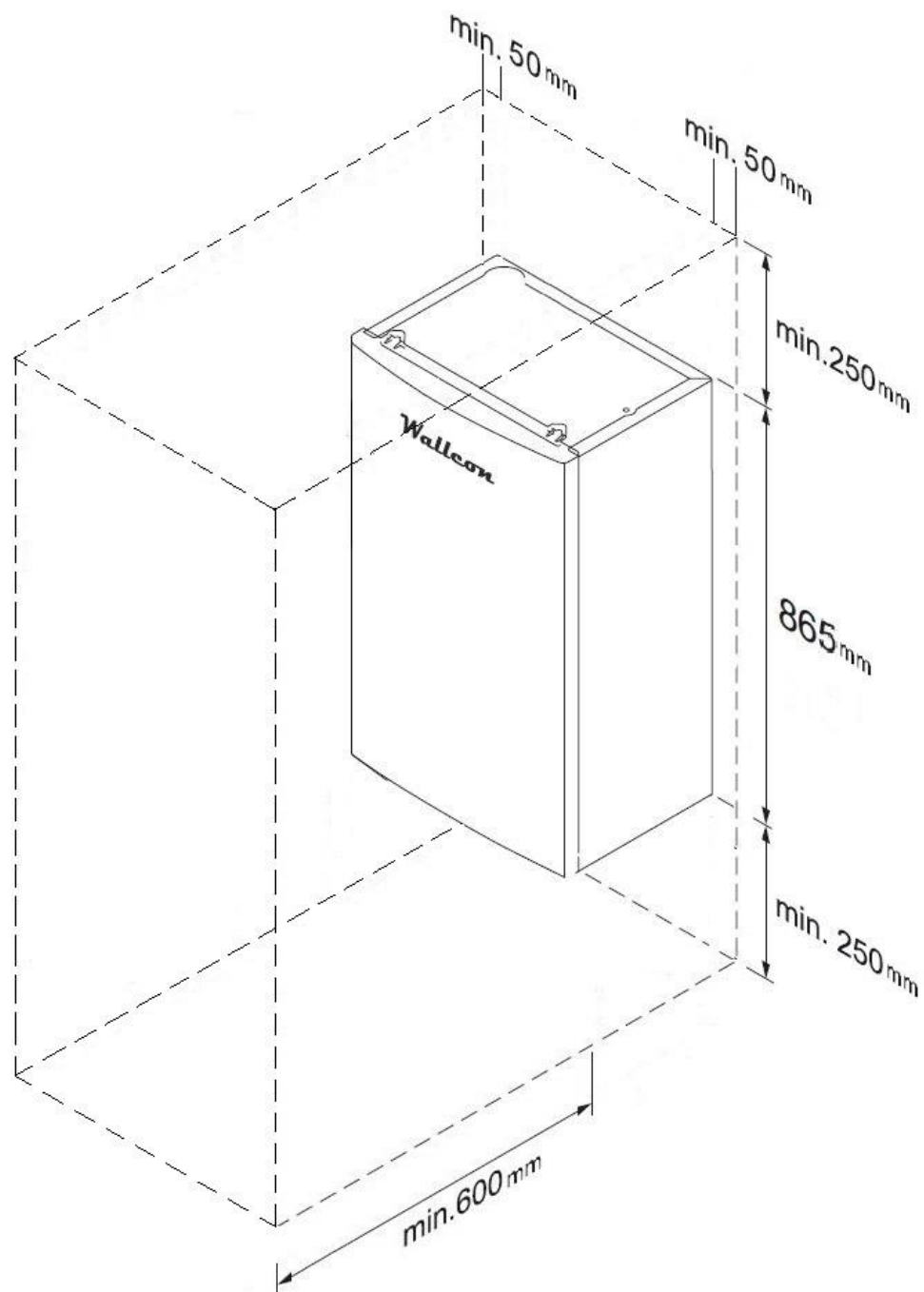
Model		115		125B		160B	
		Min.	Max.	Min.	Max.	Min.	Max.
Type of Flue Installation		B23,C13,C33,C53, C43,C63,C83		B23,C43,C53,C63,C83			
Gas Category							
Fuel Type		G20,G31					
Gas Pressure (Min/Max) Natural Gas	mbar	17/25					
Nominal Heat Input	kW	27	108.5	17	121	21.5	152
Nominal Heat Output at (80-60°C)	kW	26.1	105.4	16.4	116.2	20.9	146
Nominal Heat Output at (50-30°C)	kW	29.3	116.1	18.4	126	23.4	158.8
Water Operating Pressure	Bar	0.8	6	0.8	6	0.8	6
Maximum Operation Temperature	°C	90		90		90	
Water Content	L	11.7		11.7		14.9	
Condensing Water Mass	kg/h	16		17.5		22.4	
Efficiency & Emissions							
Heat Efficiency Qmin(80-60°C)	%	96.8		96.4		97.2	
Heat Efficiency Qmax (80-60°C)	%	97.1		96		96.1	
Heat Efficiency Qmin(50-30°C)	%	108.4		108.2		109.0	
Heat Efficiency Qmax (50-30°C)	%	107.0		104.1		104.5	
Partial Load, Return 30°C (Direct Method)	%	107.6		109.2		109.1	
Flue gas Temperature (50-30°C)	°C	33	64	31.5	64.8	32.4	62.6
Flue gas Temperature (80-60°C)	°C	59	77	56.3	88	59.4	82.5
Gas Diaphragm (G20-G25)	mm	10.7		-		-	
Gas Diaphragm (G31)	mm	7		9.5		9.5	
CO ₂ Emissions (G20)	%	8.8	9.3	8.7	9.4	9.2	9.4
CO ₂ Emissions (G25)	%	8.7	9.2	8.8	9.6	-	-
CO ₂ Emissions (G30)	%	10.3	10.9	11.1	11.02	10.3	10.7
NO _x Emissions (G20)	mg/kW h	17.1		51.72		98.76	
NO _x Emissions (G25)	mg/kW h	26.43		54.83		102.64	
NO _x Emissions (G30)	mg/kW h	38.61		98.97		-	
NO _x Class		5		5		4	
Flue Gas Mass (G20)	g/sec	12.60	48.40	8.03	53.53	9.69	67.24
Flue Gas Mass (G25)	g/sec	12.70	48.90	7.96	52.61	-	-
Flue Gas Mass (G30)	g/sec	12.20	46.30	7.13	50.14	9.64	65.90
Gas Consumption (G20)	m ³ /h	2.90	11.50	1.77	12.52	2.26	15.61
Gas Consumption (G25)	m ³ /h	3.30	13.40	2.10	14.61	-	-
Gas Consumption (G30)	m ³ /h	0.80	3.40	0.67	4.91	0.89	6.14
Fan Speed (G20)	rpm	1650	5850	1300	6400	1400	7250
Fan Speed (G25)	rpm	1650	5850	1300	6400	-	-
Fan Speed (G30)	rpm	1500	5350	1150	6150	1400	7250
Boiler Connections							
Boiler flow Connection	“	1 ¼”		1 ¼”		1 ¼”	
Boiler Return connection	“	1 ¼”		1 ¼”		1 ¼”	
Gas Supply	“	1”		1”		1”	
Safety Relief Valve Discharge	“	½”		½”		½”	
Condensate Syphon Discharge	Ø	25		25		25	
Flue Gas Outlet	Ø	100		100		100	
Air Inlet	Ø	100		100		100	
Electrical Connections							
Power supply	V/Hz	230-50		230-50		230-50	
Electrical Power	W	300		300		400	
IP Class	IP	X4D		X4D		X4D	
Boiler dimensions & weight							
Dimensions WxLxH	mm	557x580x865		557x580x865		557x690x865	
Weight	kq	92		92		98	

4.0 Dimensions



Label	Connections	Model	Dimensions
F	System Flow – 1 ¼"	115	W:557mm L:580mm H:865mm
R	System Return – 1 ¼"	125B	W:557mm L:580mm H:865mm
G	Gas Supply – 1"	160B	W:557mm L:690mm H:865mm
FO	Flue Outlet – Ø100mm		
AI	Air Intake – Ø100mm		
Sr	PRV outlet – Ø25mm		
Con	Condensate Discharge – Ø25mm		

4.1 Installation and Service Clearances



Clearances	
Front	Minimum of 600mm
Sides	Minimum of 50mm
Top	Minimum of 250mm
Bottom	Minimum of 250mm

5.0 Mounting Information

All Wallcons are supplied fully tested and therefore may contain residual test water.

The test water utilised contains additives that will help prevent the pump from sticking and other metals from oxidising.

Transport



Caution: Damage to the installation due to impacts.

The boiler contains parts which can be damaged by impacts.

During further transport all parts must be protected against impacts

MHG Heating Ltd refuse liability of any damage cause to the boiler as a result of miss handling during on site transportation.



Caution: Damage to the unit due to it being lifted and carried incorrectly.

Do not hold the boiler over the control panel to lift or carry it.

Mounting

Due to the varied nature of the wall mounting locations/conditions that can be encountered a wall mounting bracket is not supplied with the Wallcon boilers. Free standing or supported versions are available.

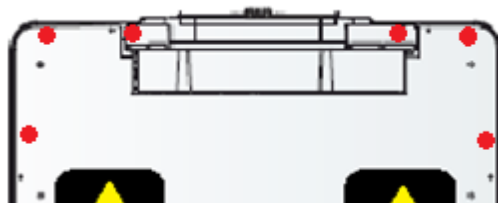
If the boiler is to be raised in to position on a mechanical lifting device, it is essential that the base of the unit and the components immediate inside are protected from damage by using bracing timbers

To maintain the structural integrity of the appliance the internal components should not be used during the lifting and positioning of the unit onto the wall bracket.

5.1 Case Removal

The procedure to remove the case from a Wallcon boiler is detailed below.

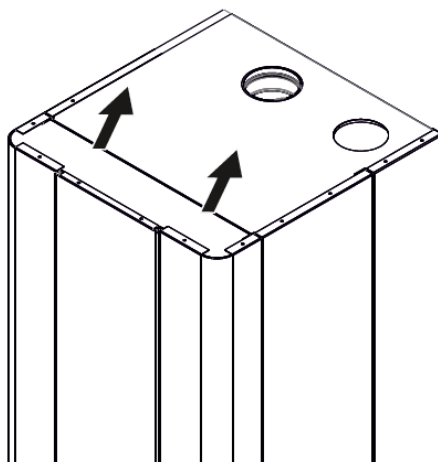
Remove the six case retaining screws from the bottom of the boiler as shown in the image below.



Once the screws have been removed pull the bottom of the case forward to disengage retaining clips.

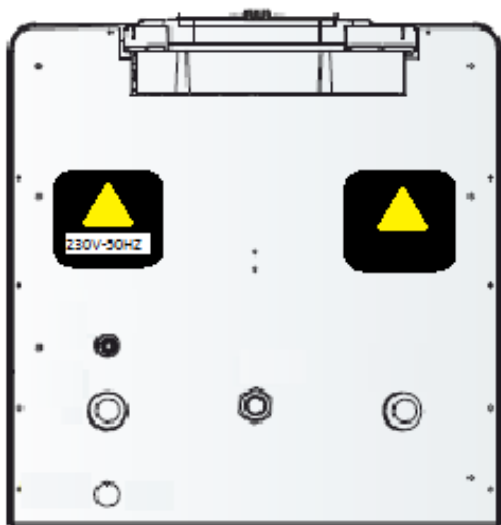


Once the bottom is free lift the case up and off the locating bolts situated on the top of the boiler.



6.0 Electrical Connections

Basic electrical connection for all types of Wallcon



The wiring connections of the Wallcon boilers are located within two terminal boxes mounted to the bottom of the boilers case.

All high voltage wiring is located in the left hand box and the low voltage wiring in the right hand box.

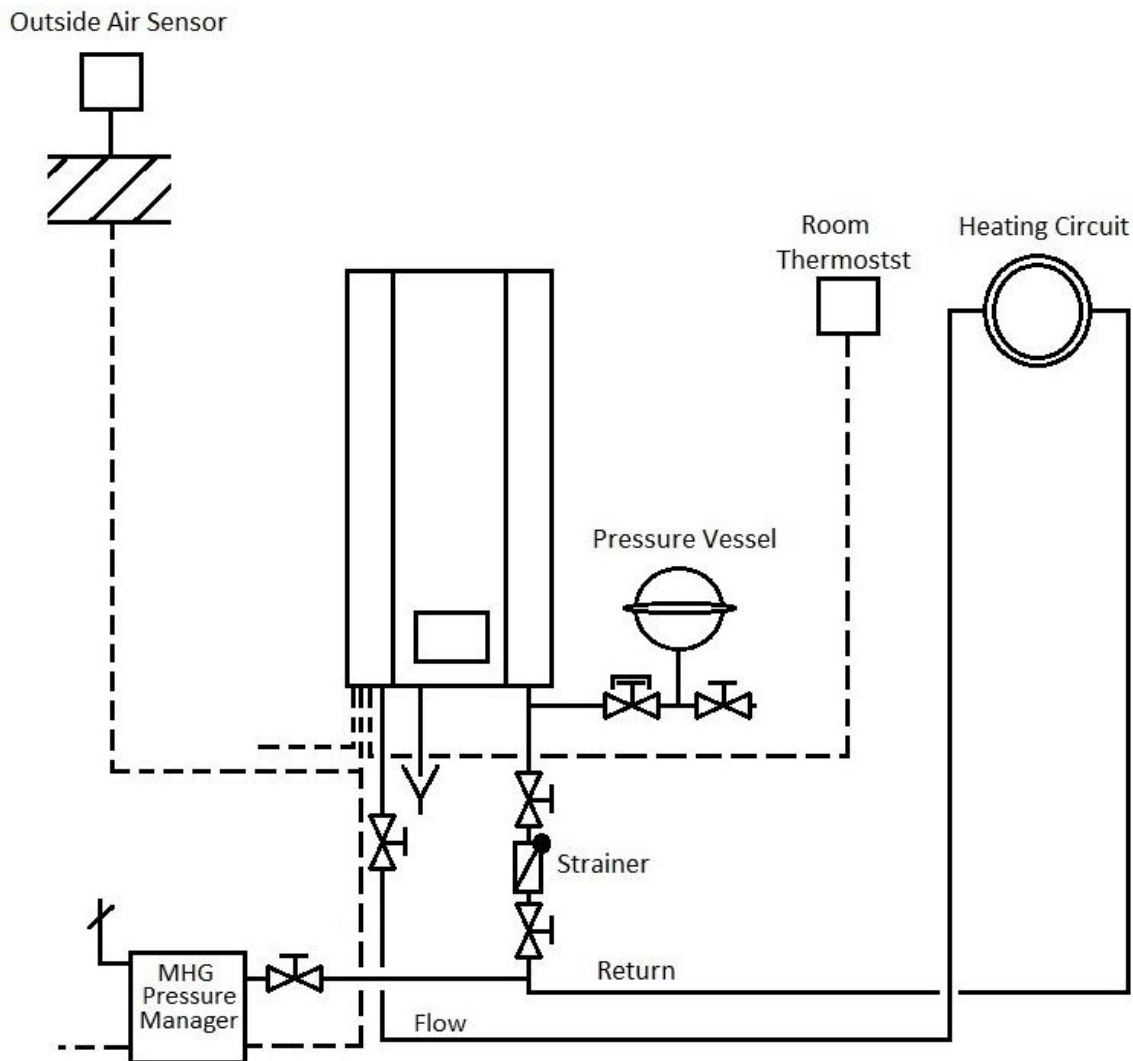
All wiring via terminal blocks provided.

High voltage Wiring terminals	
Power in to Boiler	230 Volts - 50 Hertz
Q2 Heating circuit pump	Live, Neutral, Earth, (Max switching 0.5Amp) (Q2) Can be used as Multifunctional Output
Q3 Hot water charging pump	Live, Neutral, Earth, (Max switching 0.5Amp) (Q3) Can be used as a Multifunctional Output
*Additional wiring to be added at commissioning if required.	Additional outputs can be configured if required.

Low Voltage Wiring Terminals	
Room Thermostat	Volt Free Enable, Not Polarity Sensitive, Room stat/BMS (<24 Volts) (H5)
0-10V enable *	Polarity sensitive, Max 10Volts, To be configured at Commissioning, (H3)
Outside Air Temperature Sensor	QAC34 sensor provided for direct on boiler weather compensation. (B9)
Cascade Sensor	QAD36 strap on sensor, provided on request.
Hot Water Enable	Thermostat or Sensor, to be configured at commissioning, (B3)
Cascade Communication *	To be wired from Master boiler to all slave boilers in parallel, polarity sensitive.
*Additional wiring to be added at commissioning if required.	Additional outputs can be configured if required.

* Screened cable must be used for this connection.

7.0 Hydraulic Design Single Unit (Option 1)

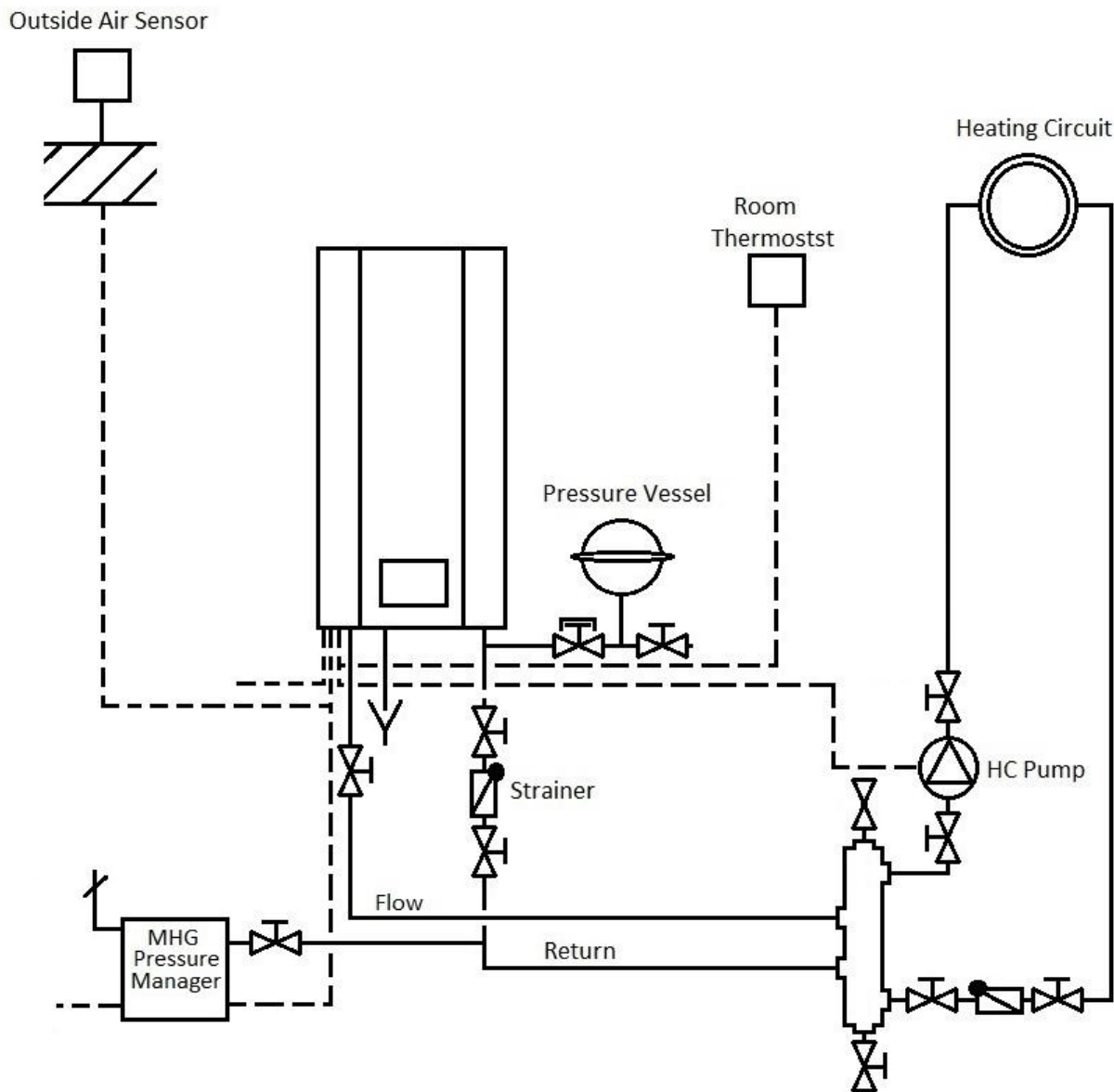


Electrical Connections Single Unit (Option 1)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable	Input	0-10Volt Enable H3	0-10Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

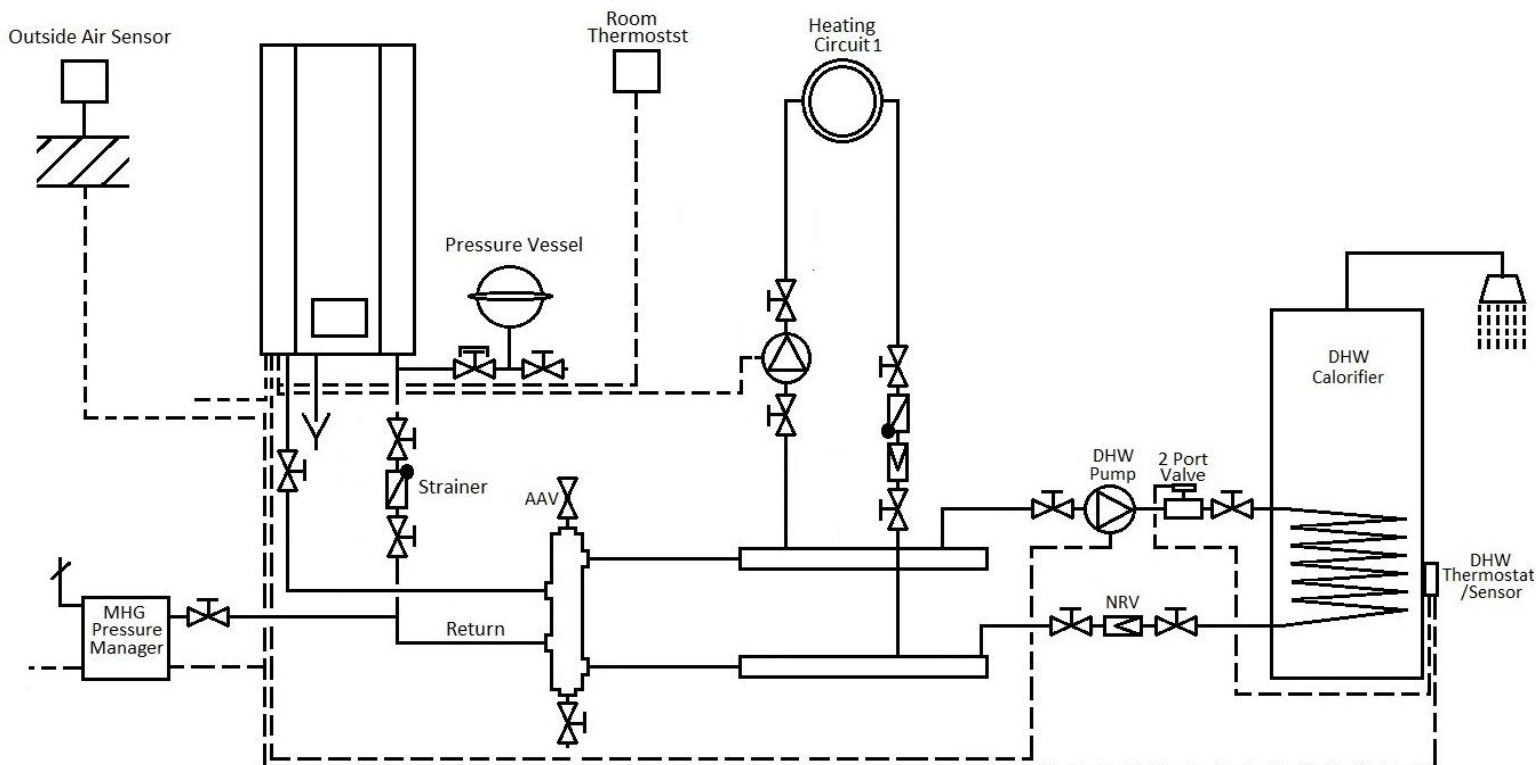
7.1 Hydraulic Design Single Unit (Option 2)**Electrical Connections Single Unit (Option 2)**

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable	Input	0-10Volt Enable H3	0-10Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

7.2 Hydraulic Design Single Unit (Option 3)



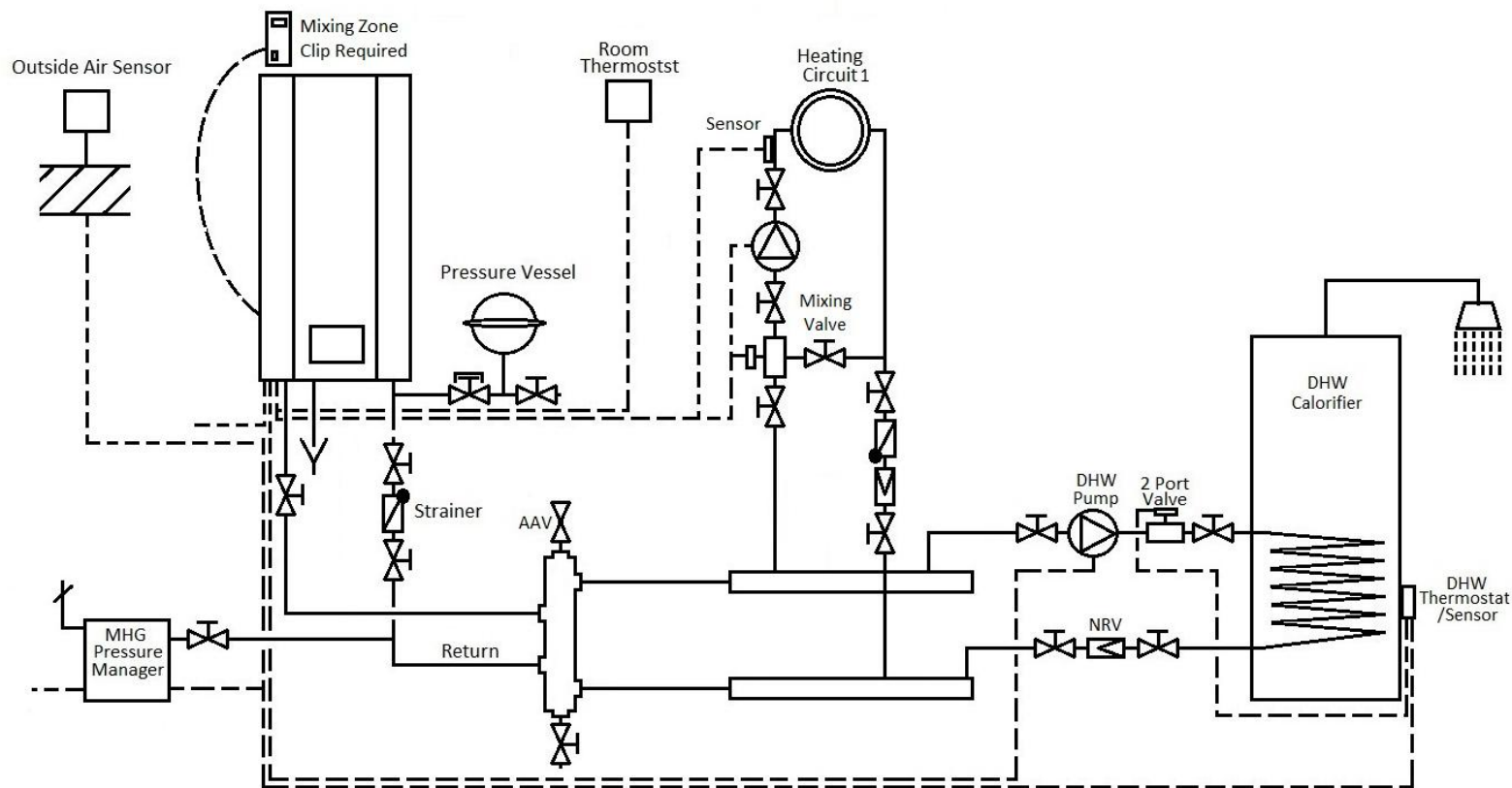
Electrical Connections Single Unit (Option 3)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz
DHW Pump	Output	Q3DHW Storage Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable	Input	0-10Volt Enable H3	0-10Volts
DHW Demand	Input	Volt free thermostat or sensor	<24Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

7.3 Hydraulic Design Single Unit (Option 4)



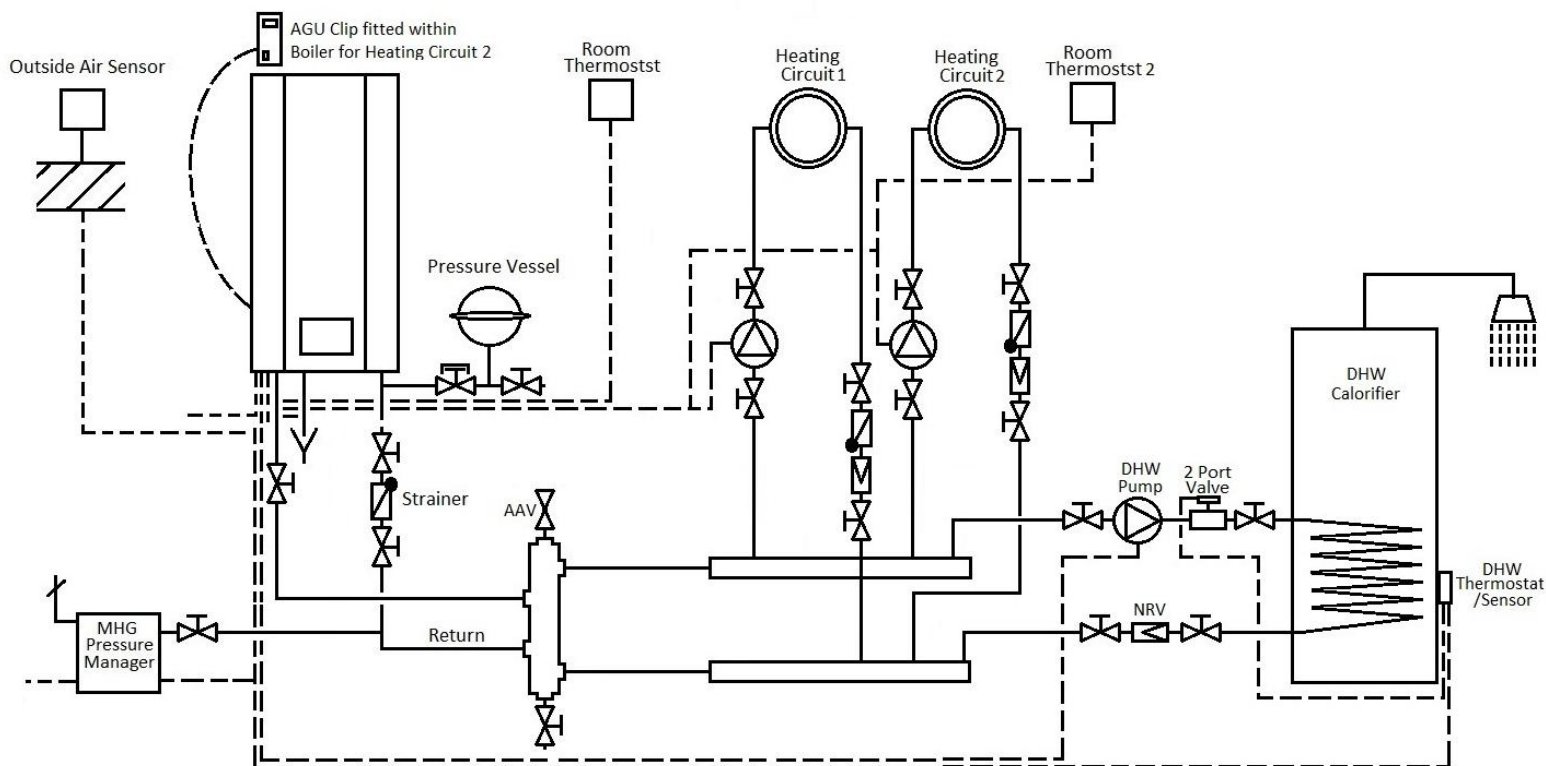
Electrical Connections Single Unit (Option 4)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz
3 Way Valve Open	Output	Additional internal wiring required at Commissioning	230volts-50Hz
3 Way Valve Close	Output	Additional internal wiring required at Commissioning	230volts-50Hz
DHW Pump	Output	Q3DHW Storage Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable	Input	0-10Volt Enable H3	0-10Volts
Mixed Circuit Sensor	Input	Additional internal wiring required at Commissioning QAD 36 sensor required	<24 Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

7.4 Hydraulic Design Single Unit (Option 5)



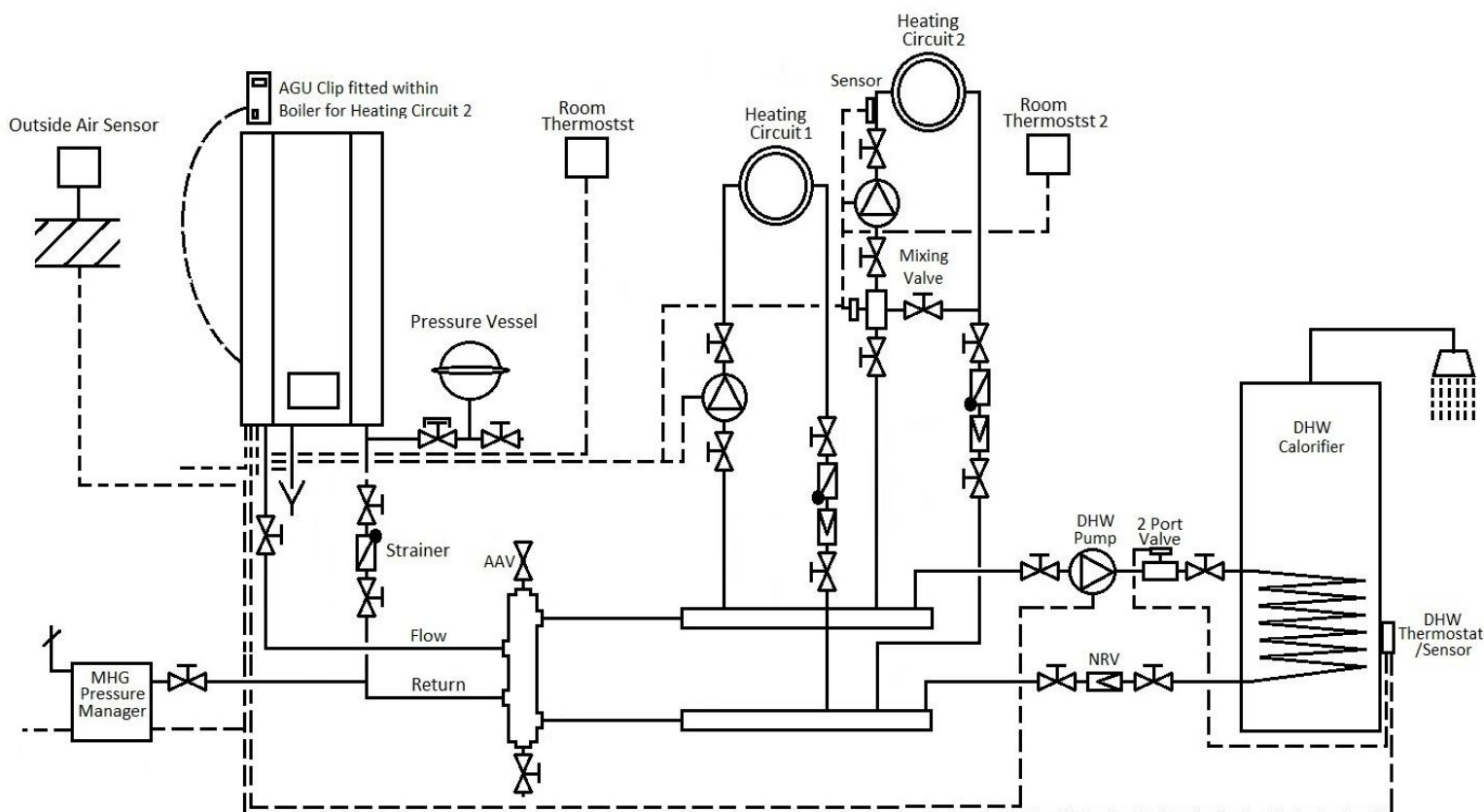
Electrical Connections Single Unit (Option 5)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit1 Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz
Heating Circuit 2 Pump	Output	Additional internal wiring required at Commissioning Max 0.5Amp	230Volts-50Hz
DHW Pump	Output	Q3DHW Storage Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat HC1	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable HC1	Input	0-10Volt Enable H3	0-10Volts
Room Thermostat HC2	Input	Additional internal wiring required at Commissioning Room thermostat, Volt free Enable or 0-10Volt HC2	<24 Volts
DHW Demand	Input	Volt free thermostat or sensor	<24Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

7.5 Hydraulic Design Single Unit (Option 6)



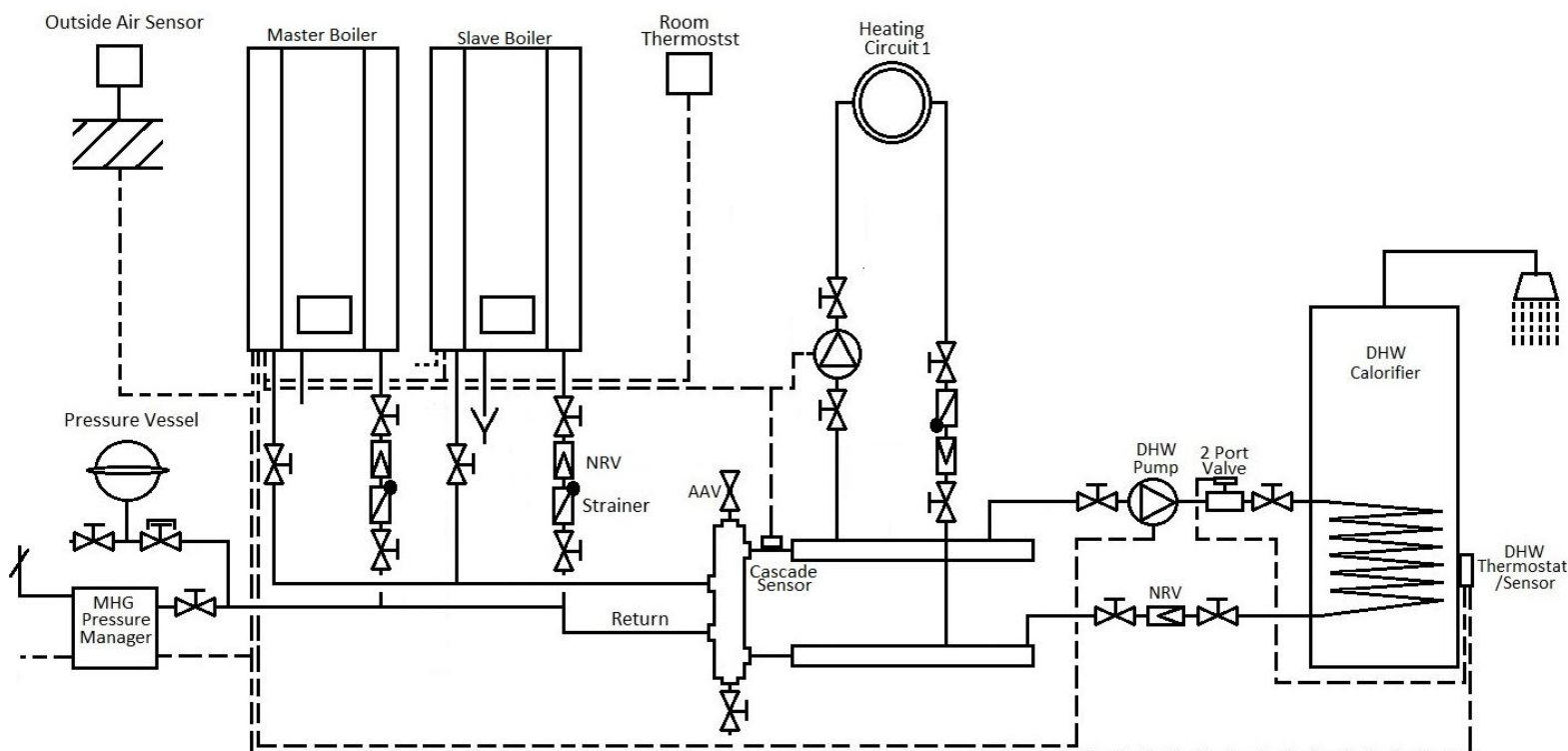
Electrical Connections Single Unit (Option 6)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit1 Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz
Heating Circuit 2 Pump	Output	Additional internal wiring required at Commissioning Max 0.5Amp	230Volts-50Hz
HC2 3 Way Valve Open	Output	Additional internal wiring required at Commissioning	230volts-50Hz
HC2 3 Way Valve Close	Output	Additional internal wiring required at Commissioning	230volts-50Hz
DHW Pump	Output	Q3DHW Storage Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat HC1	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable HC1	Input	0-10Volt Enable H3	0-10Volts
Room Thermostat HC2	Input	Additional internal wiring required at Commissioning Room thermostat, Volt free Enable or 0-10Volt HC2	<24 Volts
Mixed Circuit Sensor	Input	Additional internal wiring required at Commissioning QAD 36 sensor required	<24 Volts
DHW Demand	Input	Volt free thermostat or sensor	<24Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

**Only one enable to be used per installation. Volt Free or 0-10.

7.6 Hydraulic Design Cascade System (Option 7)



Electrical Connections Cascade System (Option 7)

Master Boiler

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz
Heating Circuit1 Pump	Output	Q2 Central Heating Pump Max 0.5Amp	230Volts-50Hz
DHW Pump	Output	Q3DHW Storage Pump Max 0.5Amp	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Cascade Communication	Output	Cascade Module. Screened Cable must be used	Coms
Outside Air Sensor	Input	Outside temperature Sensor. QAC34 sensor provided	
**Room Thermostat HC1	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable HC1	Input	0-10Volt Enable H3	0-10Volts
DHW Demand	Input	Volt free thermostat or sensor	<24Volts
MHG Pressure Manager	Input	Multifunctional to be configured during commissioning	<24 Volts

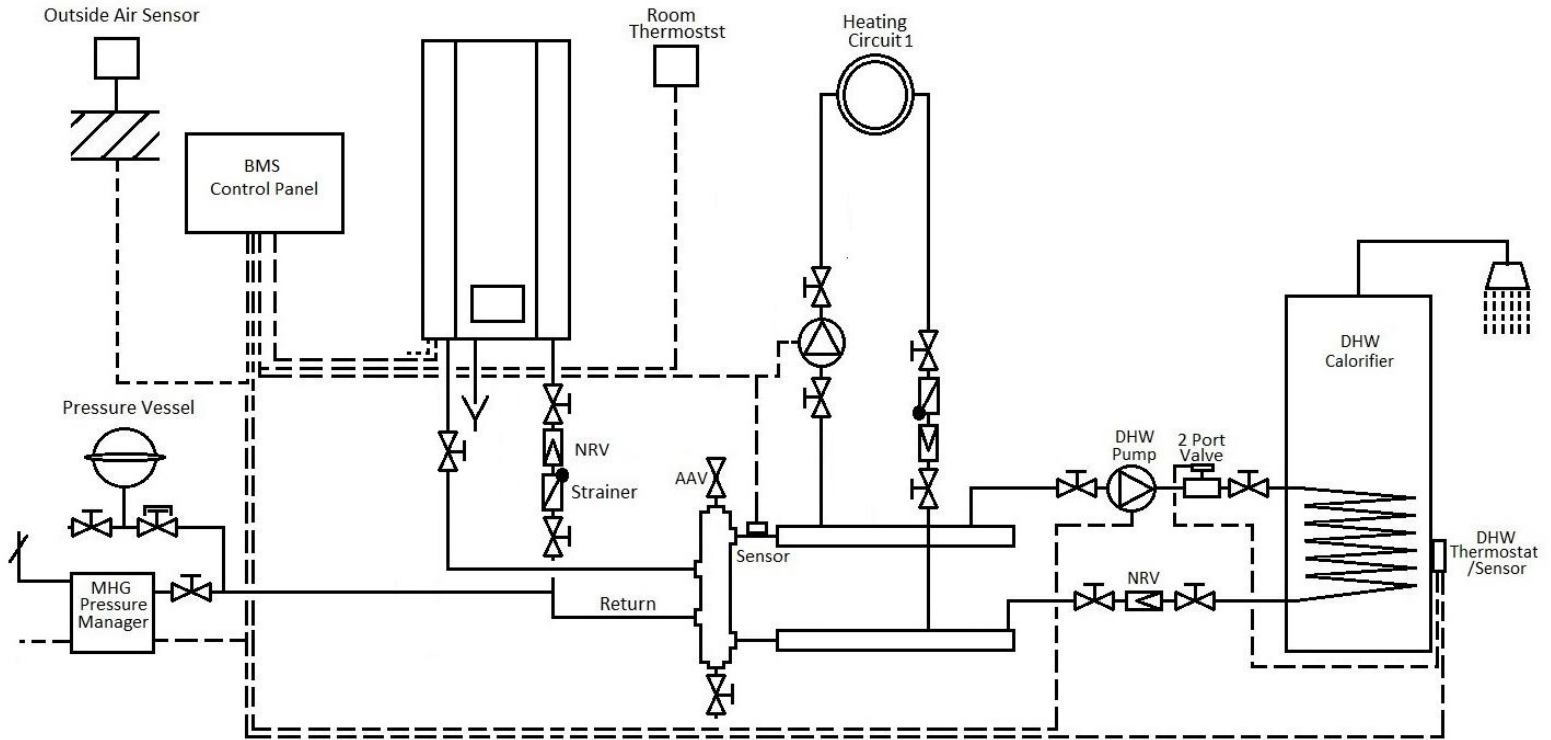
**Only one enable to be used per installation. Volt Free or 0-10.

Slave Boiler

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
Cascade Communication	Input	Cascade Module. Screened Cable must be used	Coms

7.7 Hydraulic Design BMS System (Option 8)



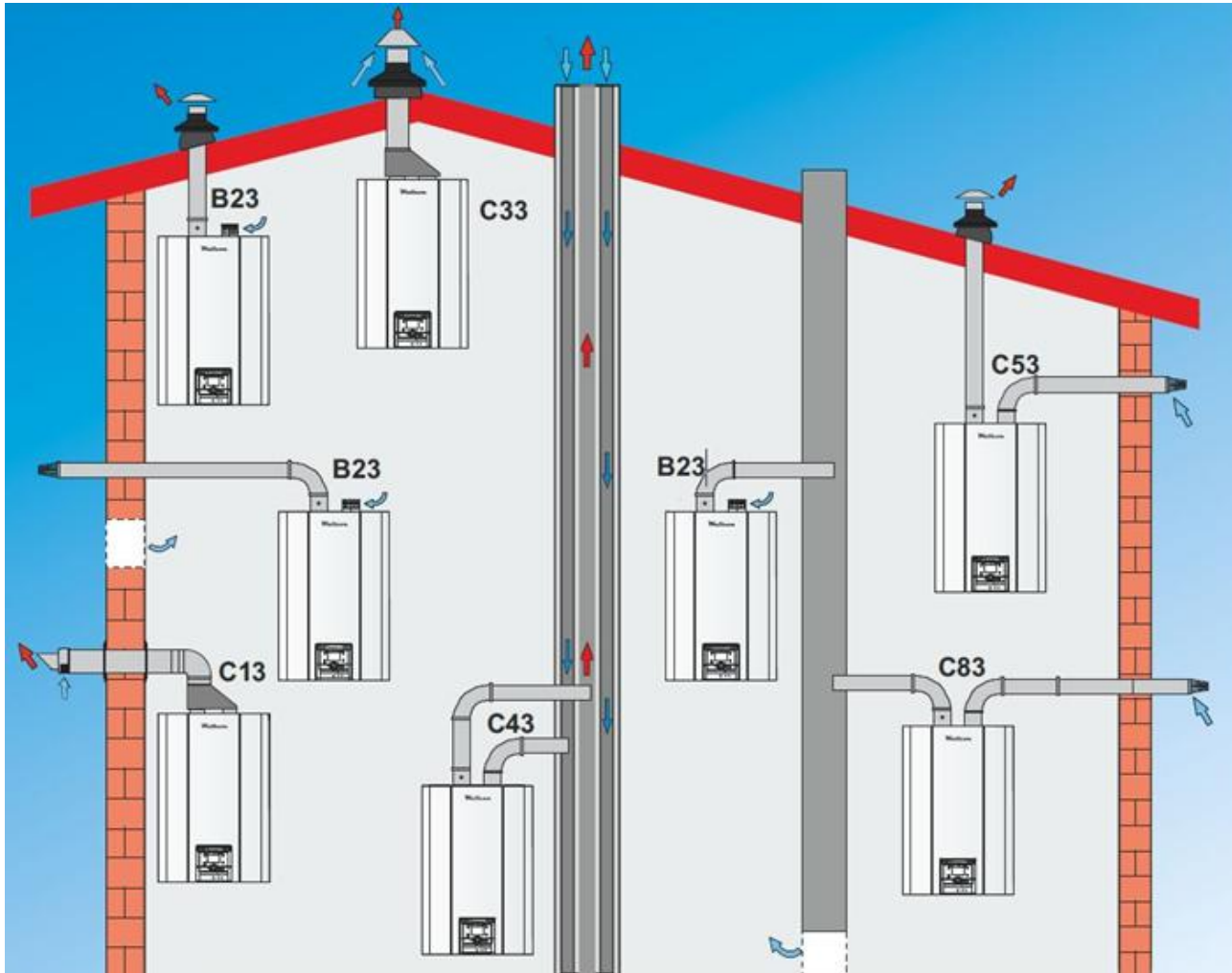
Electrical Connections BMS System (Option 8)

High Voltage	Input/Output	Terminal Description/Label	Type
Mains power	Input	Brown=Live, Blue=Neutral, Yellow/Green=Earth	230Volts-50Hz

Low Voltage	Input/Output	Terminal Description/Label	Type
**Room Thermostat HC1	Input	Room thermostat, Volt free Enable	<24 Volts
**0-10Volt Enable HC1	Input	0-10Volt Enable H3	0-10Volts

**Only one enable to be used per installation. Volt Free or 0-10.

8.0 Fluing Options



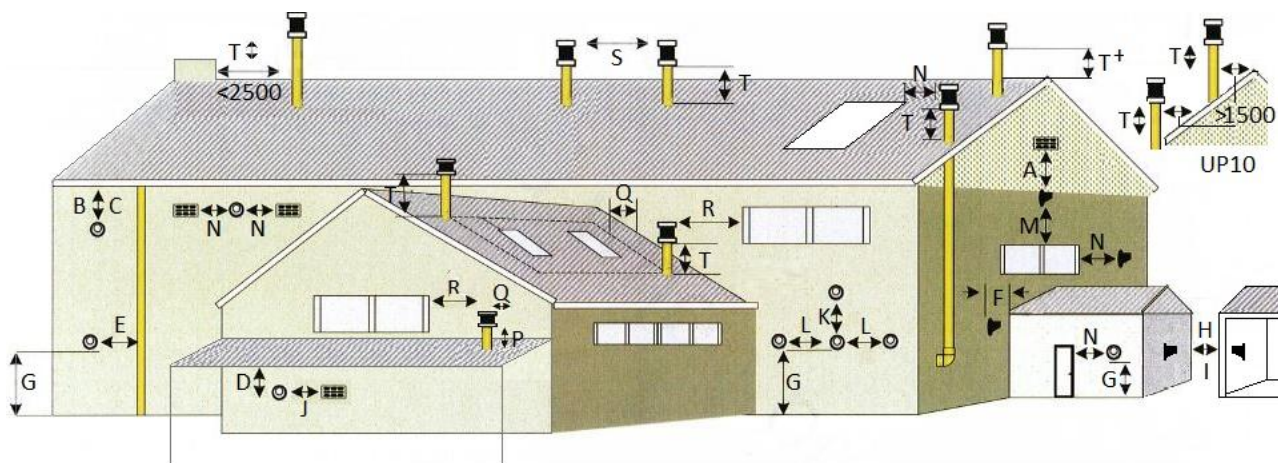
Flue Type	Description
B23	Open Flued Installation with products of combustion flued through a wall or roof to outside. Combustion air taken from the room via adequate ventilation.
C13	A Balanced Flue System/ Room sealed installation. A concentric flue installed horizontally.
C33	A Balanced Flue System/ Room sealed installation. A concentric flue installed vertically.
C43	A Balanced Flue System/ Room sealed installation. Independent air ducted in and products out via a U or SE duct.
C53	A Balanced Flue System/ Room sealed installation. Independent air ducted in and products flued out.
C83	A Balanced Flue System/ Room sealed installation. Air ducted from outside and the products flued out via a shared stack.

8.1 Balanced Flue Terminal Positions For Boilers Below and Above 70kW Net Input

(All measurements are in mm and are minimum clearances)

Terminal Location		BS5440 Boilers with a rated Input <70kW Net	IGE-UP-10 Boilers Input >70kW <333kW Net Fan Draught Balanced Flue X	IGE-UP-10 Boilers Input >70kW <333kW Net Fan Draught & Open Flued V
A	Directly below an opening into the building	300	2500	2500
B	Below gutter soil pipes etc.	75	200	200
C	Below Eaves	200	200	200
D	Below balconies or car port roof	200*	Not Recommended**	Not Recommended**
E	From vertical drain or soil pipe etc.	150	150	150
F	From internal or external corners	300	If <2500 use Plume Ext	If <2500 use P/T below [#]
G	Above ground or balcony level	300	If <3000 use Plume Ext	If <3000 use Plume Ext
H	From a surface facing the terminal	600	$23.126 \times (\text{kW}) + 618.84$	$23.126 \times (\text{kW}) + 618.84$
I	From a terminal facing the terminal [#]	1200	$19.32 \times (\text{kW}) + 647.59$	$19.32 \times (\text{kW}) + 647.59^{\#}$
J	From opening in a carport into a dwelling	1200*	Not Recommended**	Not Recommended**
K	Vertically from a terminal on the same wall [#]	1500	2500	2500 [#]
L	Horizontally from a terminal on the same wall	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$
M	Above an opening into the building	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$
N	Horizontally to an opening into the building	300*	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$
P	Above a flat roof (Obstacle > 2500) From Roof Level	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$
P+	Above a flat roof (Obstacle < 2500) From Obstacle Level	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$
Q	From an adjacent wall (edge of terminal)	300	If <2500 use Plume Ext	If <2500 use Plume Ext [#]
R	To an opening into the building	1000	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$
S	From any other flue terminal [#]	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91^{\#}$
T	Above a >20° Pitched Roof (BOT)	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$
T+	Above a >20° Pitched Roof (BOT) (Valley)	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$

kW=Net Heat Input. * Positions not recommended. ** Risk assessment required (App 9). (BOT = Base of Terminal). # Contact MHG



Groups of appliances of 150kW gross input (136kW net input) and above must comply with the Clean Air Act with respect to the chimney discharge height.

The terminal/s shall be guarded if it is less than 2000mm above the ground or in any position where it may cause injury to persons resulting from touching a hot surface. Absolute guidance must be sought from the respective regulation.

9.0 Filling The System

The Initial filling of a sealed heating system, and subsequent refilling, must be by a method that has been approved by the Water Regulation Advisory Scheme (WRAS) for that type of heating system.

i.e.Domestic (*In-House*)

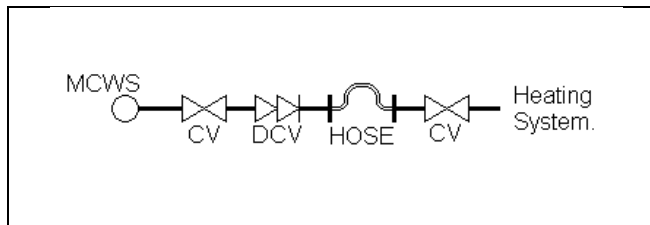
Fluid Category 3 (C-3)

Non Domestic (Other than *In-House*)

Fluid Category 4 (C-4)

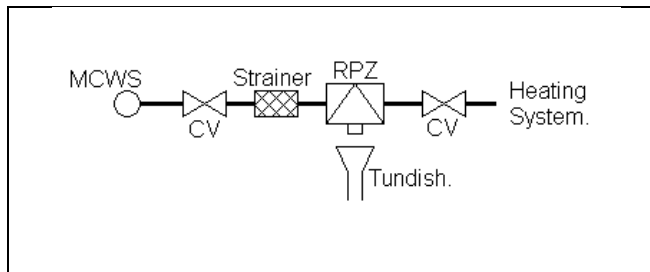
For Category 3 systems, the approved method of filling must comprise of the following components in the arrangement shown;

- Control Valve incorporating a Double Check Valve on the Mains Cold Water pipework.
- Temporary Connecting Hose, which must be disconnected after use.
- Control Valve, on the heating system.



For Category 4 systems, the approved method of filling must comprise of the following components in the arrangement shown;

- Control Valve.
- Strainer.
- Verifiable Backflow Device with Reduced Pressure Zone (RPZ Valve)
- Incorporating a 'Type BA' Air Gap.
- Tundish.
- Control Valve.



Further more, in accordance with BS 6644: 2011 system with an input greater than 70kW (nett), an automatic water replenishment unit shall be installed to automatically replenish any lost or evaporated water.

Please refer to BS 6644: 2011 for allowable water replenishment methods for use with sealed/pressurized heating systems.

For information on a comprehensive range of pressurization units that comply with current British Standards and WRAS Regulations, please contact MHG Heating Ltd Sales.

9.1 Expansion Vessel

In accordance with BS 6644: 2011, WRAS Regulations, and Local Authority Water Regulations, as applicable, the installer shall install a suitably sized, and approved, Expansion Vessel to ensure that the water capacity of the system has ample expansion capacity.

The location of the expansion vessel shall only be isolatable from the system via a Lockable Type Service Valve, which shall be locked in the *OPEN* position, to prevent accidental isolation.

Furthermore, a drain facility should be provided adjacent to the expansion vessel to aid the routine maintenance, overhaul, of the vessels Air Pressure setting.

For information on a comprehensive range of expansion vessels that comply with current British Standards and WRAS Regulations, please contact MHG Heating Ltd Sales.

9.1 System Water Quality

Water Treatment, System Cleaning (BS 7592: 2006)

The entire primary system **MUST** be thoroughly cleaned and flushed to remove debris, flux residues, etc. before opening the boiler isolation valves & flooding the boiler. Particular care must be taken where the Wallcon boiler is being retro-fitted into an old/existing system, as system silt or magnetite can be very damaging to the new boiler.

Following cleaning and flushing the system **MUST** be dosed with a good quality water treatment to prevent corrosion and the formation of scale. **FAILURE TO OBSERVE THESE REQUIREMENTS WILL RENDER THE WARRANTY ON THE APPLIANCE VOID.**

Cleaning, flushing and water treatment must be carried out in accordance with the requirements of BS 7593:1992, prior to commissioning the boiler.

Repeated draining and refilling of the system, without replenishment of water treatment, must be avoided, as this is very damaging to the boiler. The boiler must not operate without the system water being correctly and adequately treated, and maintained, with an appropriate level of corrosion inhibitor.

For specific guidance on water treatment, direct contact is advisable with:-

Fernox	P:0330 100 7750
2 Genesis Business Park	F: 0330 100 7751
Albert Drive	E: sales@fernox.com
Sheerwater	W: www.fernox.com
Woking Surrey	
GU21 5RW	

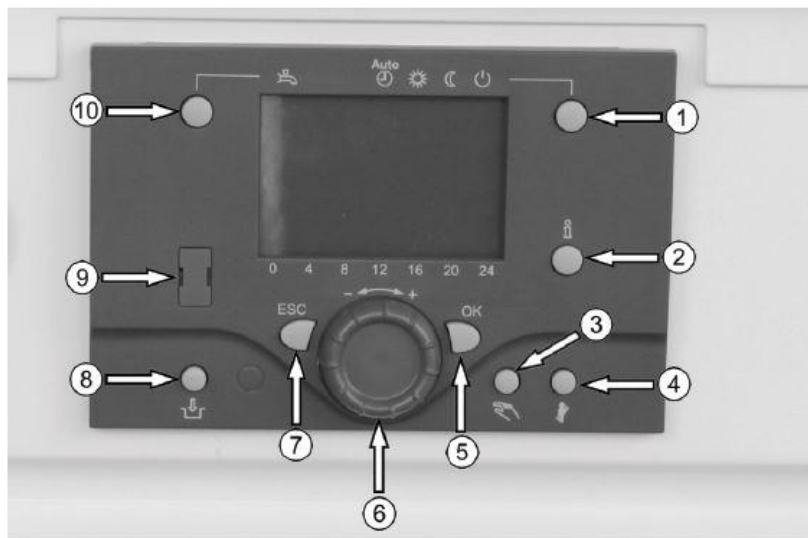
9.2 Care With The Use of Solder Flux

The Wallcon range has heat exchangers fabricated from Stainless Steel. It is most important that the compatibility of any flux is checked with the supplier before use, and that any flux manufactures recommendations are strictly followed with regards to use in conjunction with Stainless Steel.

If you are applying any of the Wallcon Range to a system where the water quality cannot be cleansed or treated please consider installing a system separation plate heat exchanger to ensure absolute separation of the system water and the boiler water.

Please refer to our website for further details on our matched brazed and gasketed plate heat exchanger range.

10.0 Boiler Controller






Label	Description
1	Heating Mode Select Button
2	Show Information
3	Manual (Hand)
4	Emission Test Mode
5	Accept Setting (Select)
6	Navigation and Setting (Rotary)
7	Escape Button
8	Reset Button
9	Service Connector for BSB data BUS
10	Hot Water Mode Select

Symbol	Description
AUTO (⌚)	Automatic Mode
☀	Continuous Operation (Day Mode)
☾	Reduced Operation (Night Mode)
🏠	Frost Protection Mode
⌚	Ongoing Process - Wait
🔋	Battery Requires Changing
🧳	Holiday Mode Active
1 2 3	Heating Circuit 1/2/3 Active
🔧	Maintenance / Special Operation
🔔	Error Alarm Activated
🔥	Burner in Operation (Burner Stage)
INFO	INFO Level Activated
PROG	PROG Level Activated
ECO	ECO Function Activated (Heating Temporarily Switched Off)

10.1 Accessing Controller Parameters

To access the controller parameter menu, from the standard home screen, press the OK button once then press and hold the INFO button for 5 seconds until the lower section of the screen changes. Use the wheel to highlight the ENGINEER setting. Press the OK button.

Access to all setting below is now possible using the rotary button.

Button	Notation	Description
	Rotary Button	Used to move through menus/lists of options.
	OK Button	Used to confirm a selection
	Escape Button	Used to escape back one level through menus

Parameter #	Description	Range	Default	Advised Change	Unit
Time And Date					
1	Hours/Minutes	00:00-24:00	----		hh:mm
2	Day/Month	01.01-31.12	----		dd:mm
3	Year	2004-2099	----		yyyy
Operator Section					
20	Language	English / Deutsch / Französisch / Italienisch / Niederländisch / Spanisch / Portugiesisch / Dänisch / Schwedisch / Finnisch	English		
22	Info	Temporarily, Permanent	Temporarily		
26	Operation	On, Off	Off		
27	Programming Lock	On, Off	Off		
28	Direct Adjustment	Storage with Confirmation, Automatic Storage	Storage With Confirmation		
29	Units	°C, bar / Fahrenheit, PSI	°C, bar		
44	Operation HC2	Jointly with HC1, Independent	Jointly with HC1		
46	Operation HC3/P	Jointly with HC1, Independently	Jointly with HC1		
70	Software	----	06.7		
Time Program Heating Circuit 1					
500	Day/Days	Mo-Su, Mo-Fr,Sa-Su,Mo,Tu,We,Th,Fr,Sa,Su	Mo-Su		
501	1 st Phase On	00:00-24:00	06:00		hh:mm
502	1 st Phase Off	00:00-24:00	22:00		hh:mm
503	2 nd Phase On	00:00-24:00	24:00		hh:mm
504	2 nd Phase Off	00:00-24:00	24:00		hh:mm
505	3 rd Phase On	00:00-24:00	24:00		hh:mm
506	3 rd Phase Off	00:00-24:00	24:00		hh:mm
516	Default Values	No, Yes	No		
Time Program Heating Circuit 2					
520	Day/Days	Mo-Su, Mo-Fr,Sa-Su,Mo,Tu,We,Th,Fr,Sa,Su	Mo-Su		
521	1 st Phase On	00:00-24:00	06:00		hh:mm

522	1 st Phase Off	00:00-24:00	22:00		hh:mm
523	2 nd Phase On	00:00-24:00	24:00		hh:mm
524	2 nd Phase Off	00:00-24:00	24:00		hh:mm
525	3 rd Phase On	00:00-24:00	24:00		hh:mm
526	3 rd Phase Off	00:00-24:00	24:00		hh:mm
536	Default Values	No, Yes	No		
Time Program3/ Heating Circuit 3					
540	Day/Days	Mo-Su, Mo-Fr,Sa-Su,Mo,Tu,We,Th,Fr,Sa,Su	Mo-Su		
541	1 st Phase On	00:00-24:00	06:00		hh:mm
542	1 st Phase Off	00:00-24:00	22:00		hh:mm
543	2 nd Phase On	00:00-24:00	24:00		hh:mm
544	2 nd Phase Off	00:00-24:00	24:00		hh:mm
545	3 rd Phase On	00:00-24:00	24:00		hh:mm
546	3 rd Phase Off	00:00-24:00	24:00		hh:mm
556	Default Values	No, Yes	No		
Time Program 4/DHW					
560	Day/Days	Mo-Su, Mo-Fr,Sa-Su,Mo,Tu,We,Th,Fr,Sa,Su	Mo-Su		
561	1 st Phase On	00:00-24:00	06:00		hh:mm
562	1 st Phase Off	00:00-24:00	22:00		hh:mm
563	2 nd Phase On	00:00-24:00	24:00		hh:mm
564	2 nd Phase Off	00:00-24:00	24:00		hh:mm
565	3 rd Phase On	00:00-24:00	24:00		hh:mm
566	3 rd Phase Off	00:00-24:00	24:00		hh:mm
576	Default Values	No, Yes	No		
Time Program 5					
600	Day/Days	Mo-Su, Mo-Fr,Sa-Su,Mo,Tu,We,Th,Fr,Sa,Su	Mo-Su		
601	1 st Phase On	00:00-24:00	06:00		hh:mm
602	1 st Phase Off	00:00-24:00	22:00		hh:mm
603	2 nd Phase On	00:00-24:00	24:00		hh:mm
604	2 nd Phase Off	00:00-24:00	24:00		hh:mm
605	3 rd Phase On	00:00-24:00	24:00		hh:mm
606	3 rd Phase Off	00:00-24:00	24:00		hh:mm
616	Default Values	No, Yes	No		
Holiday Heating Circuit 1					
641	Preselection	Period1, Period2, Period3, Period4, Period5, Period6, Period7, Period8	Period1		
642	Start	01.01-31.12	--,--		dd:mm
643	End	01.01-31.12	--,--		dd:mm
648	Operating Level	Frost, Reduced	Frost Protection		
Holiday Heating Circuit 2					
651	Preselection	Period1, Period2, Period3, Period4, Period5, Period6, Period7, Period8	Period1		
652	Start	01.01-31.12	--,--		dd:mm
653	End	01.01-31.12	--,--		dd:mm
658	Operating Level	Frost, Reduced	Frost Protection		
Holiday Heating Circuit 3					
661	Preselection	Period1, Period2, Period3, Period4, Period5, Period6, Period7, Period8	Period1		

662	Start	01.01-31.12	--:--		dd:mm
663	End	01.01-31.12	--:--		dd:mm
668	Operating Level	Frost, Reduced	Frost Protection		
Heating Circuit 1					
700	Operating Mode HC1	Protection, Automatic, Reduced, Comfort	Automatic		
710	Comfort Setpoint	P712-P716	20.0		°C
712	Reduced Setpoint	P714-P710	16.0		°C
714	Frost Protection Setpoint	4-P712	10.0		°C
716	Comfort Setpoint Max	P710 - 35	35.0		°C
720	Heating Curve Slope	0.10 - 4.00	1.50	3.20	-
721	Heating Curve Displacement	-4.5 - 4.5	0.0		°C
726	Heating Curve Adaption	Off - On	Off		-
730	Summer/Winter heating limit	---/8 – 30	18		°C
732	24-Hour heating limit	---/-10 – 10	-3		°C
733	Ext'n 24-Hour heating limit	Yes – No	Yes		
740	Flow temp setpoint min	8 – P741	8		°C
741	Flow temp setpoint max	P740 – 95	85		°C
742	Flow temp setpoint room stat	---/P740 - ---/P741	---		°C
744	Swi-on ratio room stat	---/1 – 99	---		%
746	Delay Heat request	0 – 600	0		S
750	Room Influence	---/1 – 100	---		%
760	Room temp limitation	---/0.5 – 4	1		°C
761	Heating limit room controller	---/0 – 100	---		%
770	Boost heating	---/0 – 20	5		°C
780	Quick setback	Off, Down to Reduced Setpoint, Down to Frost Protection Setpoint	To Reduced Setpoint		-
790	Optimum start control max	0 - 360	0		Min.
791	Optimum stop control max	0 – 360	0		Min.
794	Heat up gradient	0 – 600	60		Min/k
800	Reduced setp. increase start	---/P801 – 10	---		°C
801	Reduced setp. increase end	-30 – P800	-15		°C
809	Continuous pump operation	No – Yes	No		
812	Frost protection flow temp.	Off – On	On		-
820	Overttemp prot. pump circuit	Off – On	On		-
830	Mixing valve boost	0 – 50	5		°C
832	Actuator type	Two Position – Three Position	Three-position		-
833	Switching differential 2-pos	0 – 20	2		°C
834	Actuator running time	30 – 873	120		S
835	Mixing valve Xp	1 – 100	32		°C
836	Mixing valve Tn	10 – 873	120		S
850	Floor curing Function	Off, Function heating, Curing heating, Function + Curing heating, Curing + functional heating, Manually	Off		-
851	Floor curing setp. manually	0 – 95	25		°C
855	Floor curing setp. current	0 – 95			°C
856	Floor curing day current	0 – 32			
861	Excess heat draw	Off, Heating mode, Always	Always		
870	With buffer	No, Yes	Yes		-
872	With prim contr./system pump	No, Yes	Yes		

880	Pump speed reduction	According HC operating level, According characteristic curve, Temp. differential nominal	According characteristic curve		
881	Starting speed	0 – 100	100		%
882	Pump speed min	P885 – P883	50		%
883	Pump speed max	P882 – P886	100		%
885	Pump speed min OEM	0 – P882	50		%
886	Pump speed max OEM	P883 – 100	100		%
888	Curve readj. at 50% speed	0 – 100	33		%
889	Filter time const. speed ctrl.	0 – 20	5		Min.
890	Flow setp. readj. speed ctrl.	No, Yes	No		
898	Operating level changeover	Frost protection, Reduced, Comfort	Reduced		
900	Optg mode changeover	None, Protection, Reduced, Comfort, Automatic	Protection		Min.
Heating Circuit 2					
1000	Operating Mode HC2	Protection, Automatic, Reduced, Comfort	Automatic		-
101	Comfort Setpoint	P1012 – P1016	20.0		°C
1012	Reduced Setpoint	P1014 – P1010	16.0		°C
1014	Frost Protection Setpoint	4 – P1012	10.0		°C
1016	Comfort Setpoint Max	P1010 - 35	35.0		°C
1020	Heating Curve Slope	0.10 - 4.00	1.50	3.20	-
1021	Heating Curve Displacement	-4.5 - 4.5	0.0		°C
1026	Heating Curve Adaption	Off - On	Off		-
1030	Summer/Winter heating limit	---/8 – 30	18		°C
1032	24-Hour heating limit	---/-10 – 10	-3		°C
1033	Ext'n 24-Hour heating limit	Yes – No	Yes		
1040	Flow temp setpoint min	8 – P1041	8		°C
1041	Flow temp setpoint max	P1040 – 95	85		°C
1042	Flow temp setpoint room stat	---/P1040 - ---/P1041	---		°C
1044	Swi-on ratio room stat	---/1 – 99	---		%
1046	Delay Heat request	0 – 600	0		S
1050	Room Influence	---/1 – 100	---		%
1060	Room temp limitation	---/0.5 – 4	1		°C
1061	Heating limit room controller	---/0 – 100	---		%
1070	Boost heating	---/0 – 20	5		°C
1080	Quick setback	Off, Down to Reduced Setpoint, Down to Frost Protection Setpoint	To Reduced Setpoint		-
1090	Optimum start control max	0 – 360	0		Min.
1091	Optimum stop control max	0 – 360	0		Min.
1094	Heat up gradient	0 – 600	60		Min/k
1100	Reduced setp. increase start	---/P1101 – 10	---		°C
1101	Reduced setp. increase end	-30 – P1100	-15		°C
1109	Continuous pump operation	No – Yes	No		
1112	Frost protection flow temp.	Off – On	On		
1120	Overttempprot. pump circuit	Off – On	On		-
1130	Mixing valve boost	0 – 50	5		°C
1132	Actuator type	Two Position – Three Position	Three-position		-
1133	Switching differential 2-pos	0 – 20	2		°C
1134	Actuator running time	30 – 873	120		S
1135	Mixing valve Xp	1 – 100	32		°C

1136	Mixing valve Tn	10 – 873	120		S
1150	Floor curing Function	Off, Function heating, Curing heating, Function + Curing heating, Curing + functional heating, Manually	Off		-
1151	Floor curing setp. manually	0 – 95	25		°C
1155	Floor curing setp. current	0 – 95			°C
1156	Floor curing day current	0 – 32			°C
1161	Excess heat draw	Off, Heating mode, Always	Always		
1170	With buffer	No, Yes	Yes		-
1172	With prim contr./system pump	No, Yes	Yes		
1180	Pump speed reduction	According HC operating level, According characteristic curve, Temp. differential nominal	According characteristic curve		
1181	Starting speed	0 – 100	100		%
1182	Pump speed min	P1185 – P1183	50		%
1183	Pump speed max	P1182 – P1186	100		%
1185	Pump speed min OEM	0 – P1182	50		%
1186	Pump speed max OEM	P1183 – 100	100		%
1188	Curve readj. at 50% speed	0 – 100	33		%
1189	Filter time const. speed ctrl.	0 – 20	5		Min.
1190	Flow setp. readj. speed ctrl.	No, Yes	No		
1198	Operating level changeover	Frost protection, Reduced, Comfort	Reduced		
1200	Optg mode changeover	None, Protection, Reduced, Comfort, Automatic	Protection		
Heating Circuit 3					
1300	Operating Mode HC3	Protection, Automatic, Reduced, Comfort	Automatic		-
1310	Comfort Setpoint	P1312 – P1316	20.0		°C
1312	Reduced Setpoint	P1314 – P1310	16.0		°C
1314	Frost Protection Setpoint	4 – P1312	10.0		°C
1316	Comfort Setpoint Max	P1310 - 35	35.0		°C
1320	Heating Curve Slope	0.10 - 4.00	1.50	3.20	-
1321	Heating Curve Displacement	-4.5 - 4.5	0.0		°C
1326	Heating Curve Adaption	Off - On	Off		-
1330	Summer/Winter heating limit	---/8 – 30	18		°C
1332	24-Hour heating limit	---/-10 – 10	-3		°C
1333	Ext'n 24-Hour heating limit	Yes – No	Yes		
1340	Flow temp setpoint min	8 – P1341	8		°C
1341	Flow temp setpoint max	P1340 – 95	85		°C
1342	Flow temp setpoint room stat	---/P1340 - ---/P1341	---		°C
1344	Swi-on ratio room stat	---/1 – 99	---		%
1346	Delay Heat request	0 – 600	0		S
1350	Room Influence	---/1 – 100	---		%
1360	Room temp limitation	---/0.5 – 4	1		°C
1361	Heating limit room controller	---/0 – 100	---		%
1370	Boost heating	---/0 – 20	5		°C
1380	Quick setback	Off, Down to Reduced Setpoint, Down to Frost Protection Setpoint	To Reduced Setpoint		-
1390	Optimum start control max	0 – 360	0		Min.
1391	Optimum stop control max	0 – 360	0		Min.
1394	Heat up gradient	0 – 600	60		Min/k

1400	Reduced setp. increase start	---/P1401 – 10	---		°C
4101	Reduced setp. increase end	-30 – P1400	-15		°C
1409	Continuous pump operation	No – Yes	No		
1412	Frost protection flow temp.	Off – On	On		
1420	Overtempprot. pump circuit	Off – On	On		-
1430	Mixing valve boost	0 – 50	5		°C
1432	Actuator type	Two Position – Three Position	Three-position		-
1433	Switching differential 2-pos	0 – 20	2		°C
1434	Actuator running time	30 – 873	120		S
1435	Mixing valve Xp	1 – 100	32		°C
1436	Mixing valve Tn	10 – 873	120		S
1450	Floor curing Function	Off, Function heating, Curing heating, Function + Curing heating, Curing + functional heating, Manually	Off		-
1451	Floor curing setp. manually	0 – 95	25		°C
1455	Floor curing setp. current	0 – 95			°C
1456	Floor curing day current	0 – 32			
1461	Excess heat draw	Off, Heating mode, Always	Always		
1470	With buffer	No, Yes	Yes		-
1472	With prim contr./system pump	No, Yes	Yes		
1480	Pump speed reduction	According HC operating level, According characteristic curve, Temp. differential nominal	According characteristic curve		
1481	Starting speed	0 – 100	100		%
1482	Pump speed min	P1485 – P1483	50		%
1483	Pump speed max	P1482 – P1486	100		%
1485	Pump speed min OEM	0 – P1482	50		%
1486	Pump speed max OEM	P1483 – 100	100		%
1488	Curve readj. at 50% speed	0 – 100	33		%
1489	Filter time const. speed ctrl.	0 – 20	5		Min.
1490	Flow setp. readj. speed ctrl.	No, Yes	Yes		
1498	Operating level changeover	Frost protection, Reduced, Comfort	Reduced		
1500	Optg mode changeover	None, Protection, Reduced, Comfort, Automatic	Protection		
DHW					
1600	DHW Operating Mode	Off, On, Eco	On		-
1610	Nominal setpoint	P1612 – P1614	55	60	°C
1612	Reduced setpoint	8 – P1610	40		°C
1614	Nominal setpoint max	P1610 – 80	65		°C
1620	Release	24h/day, Heating program with forward shift, time switch program 4	Heating programs with shift		-
1630	Charging priority	Absolute, shifting, none, shifting, absolute	Shifting,		-
1640	Legionella function	Off, periodically, fixed weekday	Fixed weekday		-
1641	Legionella func. periodically	1 – 7	3		Days
1642	Legionella func. weekday	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday	Monday		
1644	Legionella funct. Time	----/00:00 – 23.50	----		hh:mm
1645	Legionella funct. Setpoint	55 – 95	65		°C
1646	Legionella funct. Duration	---/10 – 360	30		Min.
1647	Legionella funct. circ pump	Off – On	On		-

1660	Circulating pump release	Time switch program 3, DHW release, Time switch program 4, time switch program 5	DHW release		-
1661	Circulating pump cycling	Off, On	On		-
1663	Circulating setpoint	8 – 80	45		°C
1680	Optg. Mode changeover	None, Off, On	Off		
Consumer Circuit 1					
1859	Flow temp. setp. cons. request	8 – 120	70		°C
1874	DHW charging priority	Yes, No	Yes		
1875	Excess heat draw	Off, On	On		
1878	With Buffer	No, Yes	Yes		
1880	With prim. Contr./system pump	No, Yes	Yes		
Consumer Circuit 2					
1909	Flow temp. setp. cons. request	8 – 120	70		°C
1924	DHW charging priority	Yes, No	Yes		
1925	Excess heat draw	Off, On	On		
1928	With Buffer	No, Yes	Yes		
1930	With prim. Contr./system pump	No, Yes	Yes		
Primary contr./system pump					
2110	Flow temp. setpoint min	8 – P2111	8		°C
2111	Flow temp. setpoint max	P2110 – 95	80		°C
2121	Syst. Pump on heat gen. lock	Off, On	Off		
2130	Mixing valve boost	0 – 50	10		°C
2132	Actuator type	Two position, Three position	Three position		
2133	Switching differential 2-pos.	0 – 20	2		°C
2134	Actuator running time	30 – 873	120		S
2135	Mixing valve Xp	1 – 100	32		°C
2136	Mixing valve Tn	10 – 873	120		S
2150	Primary contr./system pump	Up stream of buffer, Downstream from buffer	Downstream from buffer		-
Cascade					
3510	Lead Strategy	[Late on, Early off], [Late on, late off], [Early on, late off]	Late on, Late off		
3511	Output ban min	0 – P3512	40		%
3512	Output ban max	P3511 – 100	90		%
3530	Release integral source seq.	0 – 500	50		°C*min .
3531	Reset integral source seq.	0 – 500	20		°C*min .
3532	Restart lock	0 – 1800	300		S
3533	Switch on delay	0 – 120	5		Min.
3534	Forced time basic stage	0 – 1200	60		S
3540	Auto source seq. ch'over	----/10 – 990	500		H
3541	Auto source seq. exclusion	None, First producer, last producer, first and last producer	None		
3544	Leading source	Producer 1, Producer 2, Producer 3, Producer 4, Producer 5, Producer 6, Producer 7, Producer 8, Producer 9, Producer 10, Producer 11, Producer 12, Producer 13, Producer 14, Producer 15, Producer 16	Producer 1		

3560	Return setpoint min	P3561 – 95	8		°C
3561	Return setpoint min OEM	8 – P3560	8		°C
3562	Return influence consumers	Off, On	On		
3590	Temp differential min	----/0 - 20	---		°C
Buffer Storage Tank					
4720	Auto generation lock	None, With B4, With B4 and B42/B41	With B4		-
4721	Auto heat gen lock SD	0 – 20	8		°C
4722	Temp diff buffer/HC	-20 – 20	-5		°C
4724	Min st tank temp heat mode	----/8 – 95	----		°C
4750	Charging temp max	8 – P4751	80		°C
4751	Storage tank temp max	P4750 – 95	90		°C
4755	Re-cooling temp	8 – 95	60		°C
4756	Re-cooling DHW/HCs	Off, On	Off		
4757	Re-cooling collector	Off, Summer, Always	Off		
4783	With solar integration	None, Yes	None		
4790	Temp diff on return div	P4791 – 40	10		°C
4791	Temp diff off return div	0 – P4790	5		°C
4795	Compar temp return div	Buffer sensor B4, Buffer sensor B41, Buffer sensor B41	With B42		
4796	Optg. action return diversion	Return temp setback, Return temp rising	Return temp rising		
4800	Partial charging setpoint	----/8 – 95	----		°C
4810	Full charging	Off, Heating mode, Always	Off		
4811	Full charging temp min	8 – 80	8		°C
4813	Full charging sensor	With B4, With B42/B41	With B42/B41 With B42/B41		
DHW Storage Tank					
5010	DHW charging	Once/day, Several times/day	Several times/day		
5011	DHW forward shift charge	---/00:30 – 04:00	----		H
5012	DHW forced charging	Off, On	On		
5020	Flow setpoint boost	0 – 30	16		°C
5021	Transfer boost	0 - 30	8		°C
5022	Type of charging	Recharging, full charging, full charging legio, full charging first time of day, full charging first time Legio	Full charging		
5024	Switching diff	0 – 20	5		°C
5030	Charging time limitation	----/10 – 600	150		Min.
5040	Discharging protection	Off, Always, Automatically	Automatically		
5050	Charging temp max	8 – P5051	80		°C
5051	Storage tank temp max	P5050 – 95	90		°C
5055	Storage tank return cooling	8 – 95	80		°C
5056	Storage tank return cooling producer/HC	Off – On	Off		-
5057	Storage tank return cooling Collector	Off, summer, always	Off		-
5060	El imm heater optg mode	Backup mode, summer only, always	Backup mode		-
5061	El immersion heater release	24h/day, DHW release, time switch program 4	DHW release		-
5062	Ei immersion heater control	External thermostat, DHW sensor	DHW sensor		-
5070	Automatic push	OFF, ON	On		
5071	Charging prio time push	0 – 120	0		Min.

5085	Excess heat draw	Off – On	On		-
5090	With Buffer	No - Yes	No		
5092	With prim contr/system pump	No, Yes	No		
5093	With solar integration	No, Yes	Yes		
5101	Pump speed min	P5106 – P5102	40		%
5102	Pump speed max	P5101 – P5107	100		%
5103	Speed Xp	1 – 100	32		°C
5104	Speed Tn	10 – 873	120		S
5015	Speed Tv	0 – 60	0		S
5016	Pump speed min OEM	0 – P5101	40		%
5107	Pump speed max OEM	P5102 – 100	100		%
5108	Starting speed charg pump	----/0 – 100	100		%
5109	St. speed intermcirc pump	----/0 – 100	100		%
5130	Transfer strategy	Off, Always, DHW release	Always		
5131	Comparison temp transfer	DHW sensor B3, DHW sensor B31	DHW sensor B3		
5139	Intermcirc boost recharging	0 – 10	2		°C
5140	Intermediate circuit boost	0 – 10	2		°C
5141	Excess intern circuit temp max	2 – 20	2		°C
5142	Flow setp. compensation delay	----/0 – 60	30		S
5143	Flow setp. compensation Xp	1 – 100	24		°C
5144	Flow setp. compensation Tn	10 – 873	120		S
5145	Flow setp. compensation Tv	0 – 60	0		S
5146	Full charging with B36	No, Yes	Yes		Min.
5148	Min start temp diff Q33	----/-20 – 20	0		°C
5151	Excess intermcir temp delay	0 - 255	30		S
Instantaneous Water Heater					
5420	Flow setpoint boost	0 - 30	16		°C
5429	Switching Off	0 - 20	5		°C
5441	Flow Measurement	None, With input H4	None		
5444	Threshold flow detection	0.1 - 25.5	5		l/min
5445	Switching diff flow detection	0.1 – 25.5	0.5		l/min
5450	Gradient end cons	-2 – 1.98	0.25		K/s
5451	Gradient start cons keep hot	-2 – 0	-1		K/s
5452	Gradient start cons	-2 – 0	-1		K/s
5455	Setp readjust cons 40°C	-20 – 20	0		°C
5456	Setp readjust cons 60°C	-20 – 20	0		°C
5460	Setpoint keep hot	---/10 – 60	50		°C
5461	Readjust setp keep hot 40°C	-20 – 20	0		°C
5462	Readjust setp keep hot 60°C	-20 – 20	0		°C
5464	Keep hot release	24h/day, DHW release, Time program 3, Time prog 4, Time prog 5	DHW release		
5468	Min cons time keep hot	0 – 60	5		s
5470	Keep hot time without Heating	0 – 1440	10		Min.
5471	Keep hot time with Heating	0 – 30	5		Min.
5472	Pump overrun time keep hot	0 – 255	20		Min.
5473	Pump overrun time keep hot	0 – 59	0		s
5475	Control sensor keep hot	Boiler sensor B2, Return sensor B7, DHW outlet sensor B38	Boiler sensor B2		
5482	Flow switch time cons	0 – 10	0		s
5489	Overrun Via InstWH	Off, On	On		
5530	Pump speed Min	40 – See 5531	40		%

5531	Pump Speed Max	See 5530 - 100	100		%
5537	Starting Speed	---/0 – 100	100		%
5550	Aqua Booster	No, Yes, Yes WO gradient detection	No		
Fault					
6700	Message	No error, Error 1.....	No Error		-
6705	Internal value of diagnostic code				-
6706	Current value of lockout phase				-
6710	Reset alarm	No, Yes	No		-
6740	Flow temp 1 alarm	----/10 – 240	----		Min.
6741	Flow temp 2 alarm	----/10 – 240	----		Min.
6742	Flow temp 3 alarm	----/10 – 240	----		Min.
6743	Boiler tamp alarm	----/10 – 240	----		Min.
6745	DHW charging alarm	----/1 – 48	----		H
6800	History 1	0 – 65535	-		-
6803	Error code 1	0 – 65535	No error		-
6805	Internal diagnostic code 1	0 – 255	-		-
6806	Burner control phase 1		-		-
6810	History 2	0 – 65535	-		-
6813	Error code 2	0 – 65535	No error		-
6815	Internal diagnostic code 2	0 – 255	-		-
6816	Burner control phase 2		-		-
6820	History 3	0 – 65535	-		-
6823	Error code 3	0 – 65535	No error		-
6825	Internal diagnostic code 3	0 – 255	-		-
6826	Burner control phase 3		-		-
6830	History 4	0 – 65535	-		-
6833	Error code 4	0 – 65535	No error		-
6835	Internal diagnostic code 4	0 – 255	-		-
6836	Burner control phase 4		-		-
6840	History 5	0 – 65535	-		-
6843	Error code 5	0 – 65535	No error		-
6845	Internal diagnostic code 5	0 – 255	-		-
6846	Burner control phase 5		-		-
6850	History 6	0 – 65535	-		-
6853	Error code 6	0 – 65535	No error		-
6855	Internal diagnostic code 6	0 – 255	-		-
6856	Burner control phase 6		-		-
6860	History 7	0 – 65535	-		-
6863	Error code 7	0 – 65535	No error		-
6865	Internal diagnostic code 7	0 – 255	-		-
6866	Burner control phase 7		-		-
6870	History 8	0 – 65535	-		-
6873	Error code 8	0 – 65535	No error		-
6875	Internal diagnostic code 8	0 – 255	-		-
6876	Burner control phase 8		-		-
6880	History 9	0 – 65535	-		-
6883	Error code 9	0 – 65535	No error		-
6885	Internal diagnostic code 9	0 – 255	-		-
6886	Burner control phase 9		-		-
6890	History 10	0 – 65535	-		-

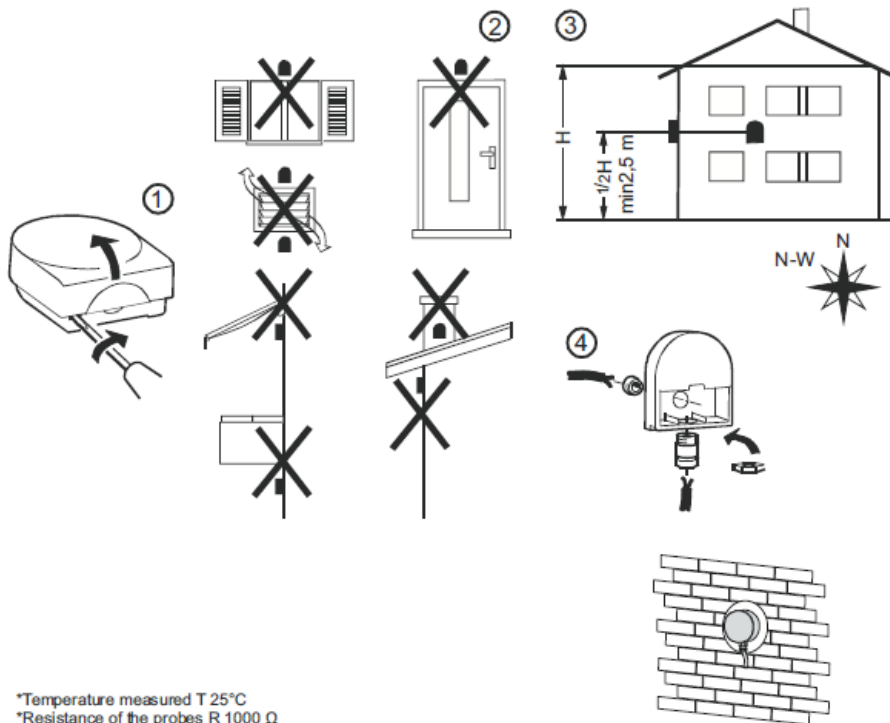
6893	Error code 10	0 – 65535	No error		-
6895	Internal diagnostic code 10	0 – 255	-		-
6896	Burner control phase 10		-		-
6900	History 11	0 – 65535	-		-
6903	Error code 11	0 – 65535	No error		-
6905	Internal diagnostic code 11	0 – 255	-		-
6906	Burner control phase 11		-		-
6910	History 12	0 – 65535	-		-
6913	Error code 12	0 – 65535	No error		-
6915	Internal diagnostic code 12	0 – 255	-		-
6916	Burner control phase 12		-		-
6920	History 13	0 – 65535	-		-
6923	Error code 13	0 – 65535	No error		-
6925	Internal diagnostic code 13	0 – 255	-		-
6926	Burner control phase 13		-		-
6930	History 14	0 – 65535	-		-
6933	Error code 14	0 – 65535	No error		-
6935	Internal diagnostic code 14	0 – 255	-		-
6936	Burner control phase 14		-		-
6940	History 15	0 – 65535	-		-
6943	Error code 15	0 – 65535	No error		-
6945	Internal diagnostic code 15	0 – 255	-		-
6946	Burner control phase 15		-		-
6950	History 16	0 – 65535	-		-
6953	Error code 16	0 – 65535	No error		-
6955	Internal diagnostic code 16	0 – 255	-		-
6956	Burner control phase 16		-		-
6960	History 17	0 – 65535	-		-
6963	Error code 17	0 – 65535	No error		-
6965	Internal diagnostic code 17	0 – 255	-		-
6966	Burner control phase 17		-		-
6970	History 18	0 – 65535	-		-
6973	Error code 18	0 – 65535	No error		-
6975	Internal diagnostic code 18	0 – 255	-		-
6976	Burner control phase 18		-		-
6980	History 19	0 – 65535	-		-
6983	Error code 19	0 – 65535	No error		-
6985	Internal diagnostic code 19	0 – 255	-		-
6986	Burner control phase 19		-		-
6990	History 20	0 – 65535	-		-
6993	Error code 20	0 – 65535	No error		-
6995	Internal diagnostic code 20	0 – 255	-		-
6996	Burner control phase 20		-		-
6999	Reset history	No, Yes	No		-
Diagnostic Heat Generation					
8304	Boiler pump Q1	Off, On	Off		
8308	Boiler pump speed	0 – 100	-		%
8310	Boiler temp, Control temperature	0 – 140	-		°C
8311	Boiler/Control setpoint	0 – 140	-		°C
8312	Boiler switching point	0 - 140	-		°C

8313	Switching point DHW operation	None, Boiler sensor B2, Return sensor B7, DHW charging sensor B36, DHW outlet sensor B38, DHW circulation sensor B39, Cascade sensor B10/B70			°C
8314	Boiler return temp	0 – 140	-		°C
8315	Boiler return temp setpoint	0 – 140	-		°C
8316	Flue gas temp	0 – 350	-		°C
8318	Flue gas temp max	0 – 350	-		°C
8321	Primary exchanger temp	0 – 140	0		°C
8323	Fan speed	0 – 10000	-		U/min
8324	Set point fan	0 – 10000	-		U/min
8325	Current fan control	0 – 100	0		%
8326	Burner modulation	0 – 100	-		%
8327	Water pressure	0 – 10	0		Bar
8329	Ionization current	0 – 100	-		µA
8330	Hour run 1 st stage	0 – 65535	-		H
8331	Start counter 1 st stage	0 – 199999	-		-
8338	Hours run burner	0 – 199999	-		H
8339	Hours run DHW	0 – 199999	-		H
8378	Total gas Heating	0 2147483647	0		kWh
8379	Total gas DHW	0 2147483647	0		kWh
8380	Total gas HC+DHW	0 2147483647	0		kWh
8381	Gas energy heating	0 2147483647	0		kWh
8382	Gas DHW	0 2147483647	0		kWh
8383	Gas HC+DHW	0 2147483647	0		kWh
8390	Current phase number	1 – 21 TNB, TLO, TNN, STY, STV, THL1, THL1A, TV, TBRE, TW1, TW2, TVZ, TSA1, TSA2 TI, MOD, THL2, THL21, TN, SAV, STOE	TNB		
8499	Collector pump 1	Off, On	Off		
8501	Solar ctrl elem buffer	Off, On	Off		
8502	Solar ctrl elemswi pool	Off, On	Off		
8505	Speed collector pump 1	0 – 100	0		%
8506	Speed solar pump extexch	0 – 100	-		%
8507	Speed solar pump buffer	0 – 100	-		%
8508	Speed solar swi pool	0 – 100	-		%
8510	Collector temp 1	-28 – 350	-		°C
8511	Collector temp 1 max	-28 – 350	-28		°C
8512	Collector temp 1 min	-28 – 350	350		°C
8513	dT collector 1/DHW	-168 – 350	-		°C
8514	dT collector 1/buffer	-168 – 350	-		°C
8515	dT collector 1/swimming pool	-168 – 350	-		°C
8519	Solar flow temp	-28 – 350	-		°C
8520	Solar return temp	-28 – 350	-		°C
8526	24-hour yield solar energy	0 – 999.9	-		kWh
8527	Total yield solar energy	0 – 9999999.9	-		kWh
8530	Hours run solar yield	0 – 199999	-		H
8531	Hours run collector overtemp	0 – 199999	-		H
8532	Hours run collector pump	0 – 199999	-		H
8560	Solid fuel boiler temp	0 – 140	-		°C
8570	Hours run solid fuel boiler	0 – 199999	-		H

Diagnostic Consumer					
8700	Outside temp	-50.0 – 50.0	-		°C
8701	Outside temp min	-50.0 – 50.0	-		°C
8702	Outside temp max	-50.0 – 50.0	-		°C
8703	Outside temp attenuated	-50.0 – 50.0	-		°C
8704	Outside temp composite	-50.0 – 50.0	-		°C
8730	Heating circuit pump 1	Off, On	Off		
8731	Heat circ. Mix valve 1 open	Off, On	Off		
8732	Heat circ. Mix valve 1 close	Off, On	Off		
8735	Speed heating circuit pump 1	0 – 100	0		%
8740	Room temp 1	0.0 – 50.0	-		°C
8741	Room setpoint 1	4.0 – 35.0	-		°C
8742	Room temp 1 model	0.0 – 50.0	-		°C
8743	Flow temp 1	0.0 – 140.0	-		°C
8744	Flow temp setpoint 1	0.0 – 140.0	-		°C
8749	Room thermostat 1	No demand, Demand	No Demand		
8760	Heating circuit pump 2	Off, On	Off		
8761	Heat circ. Mix valve 2 open	Off, On	Off		
8762	Heat circ. Mix valve 2 close	Off, On	Off		
8765	Speed heating circuit pump 2	0 – 100	0		%
8770	Room temp 2	0.0 – 50	-		°C
8771	Room setpoint 2	4.0 – 35	-		°C
8772	Room temp 2 model	0.0 – 50	-		°C
8773	Flow temp 2	0.0 – 140	-		°C
8774	Flow temp setpoint 2	0.0 – 140	-		°C
8779	Room thermostat 2	No demand, Demand	No Demand		
8790	Heating circuit pump 3	Off, On	Off		
8791	Heat circ. Mix valve 3 open	Off, On	Off		
8792	Heat circ. Mix valve 3 close	Off, On	Off		
8795	Speed heating circuit pump 3	0 – 100	0		%
8800	Room temp 3	0.0 – 50	-		°C
8801	Room setpoint 3	4.0 – 35	-		°C
8802	Room temp 3 model	0.0 – 50	-		°C
8803	Flow temp 3	0.0 – 140	-		°C
8804	Flow temp setpoint 3	0.0 – 140	-		°C
8809	Room thermostat 3	No demand, Demand	No Demand		
8820	DHW pump	Off, On	Off		
8825	Speed DHW pump	0 - 100	0		5
8826	Speed DHW interm. circ pump	0 – 100	0		%
8827	Speed inst. DHW Heater pump	0 – 100	0		%
8830	DHW temp 1	0.0 – 140	-		°C
8831	DHW temp setpoint	8.0 – 80	-		°C
8832	DHW temp 2	0.0 – 140	-		°C
8835	DHW circulation temp	0.0 – 140	-		°C
8836	DHW charging temp	0 – 140	-		°C
8852	DHW consumption temp	0 - 140	-		°C
8853	Instant DHW setpoint	0 – 140	-		°C
8860	DHW flow	0 – 30	-		l/min
8875	Flow temp setp. VK1	5 – 130	-		°C
8885	Flow temp setp. VK2	5 – 130	-		°C

8895	Flow temp setp. swimming pool	5 – 130	-		°C
8900	Swimming pool temp	0 – 140	0		°C
8901	Swimming pool setpoint	8 – 80	24		°C
8930	Primary controller temp	0.0 – 140.0	-		°C
8931	Primary controller setpoint	0.0 – 140.0	-		°C
8950	Common flow temp	0.0 – 140.0	-		°C
8951	Common flow temp setpoint	0.0 – 140.0	-		°C
8952	Common return temp	0 – 140	0		°C
8962	Common output setpoint	0 – 100	0		%
8980	Buffer temp 1	0.0 – 140.0	-		°C
8981	Buffer setpoint	0 – 140	0		°C
8982	Buffer temp 2	0.0 – 140.0	-		°C
8983	Buffer temp 3	0 – 140	0		°C
9005	Water pressure H1	0.0 – 10.0	-		Bar
9006	Water pressure H2	0.0 – 10.0	-		Bar
9009	Water pressure H3	0 – 10	0		Bar
9031	Relay output QX1	Off, On	Off		
9032	Relay output QX2	Off, On	Off		
9033	Relay output QX3	Off, On	Off		
9034	Relay output QX4	Off, On	Off		
9050	Relay output QX21 module 1	Off, On	Off		
9051	Relay output QX22 module 1	Off, On	Off		
9052	Relay output QX23 module 1	Off, On	Off		
9053	Relay output QX21 module 2	Off, On	Off		
9054	Relay output QX22 module 2	Off, On	Off		
9055	Relay output QX23 module 2	Off, On	Off		
9056	Relay output QX21 module 3	Off, On	Off		
9057	Relay output QX22 module 3	Off, On	Off		
9058	Relay output QX23 module 3	Off, On	Off		

10.2 Weather Compensation Slope

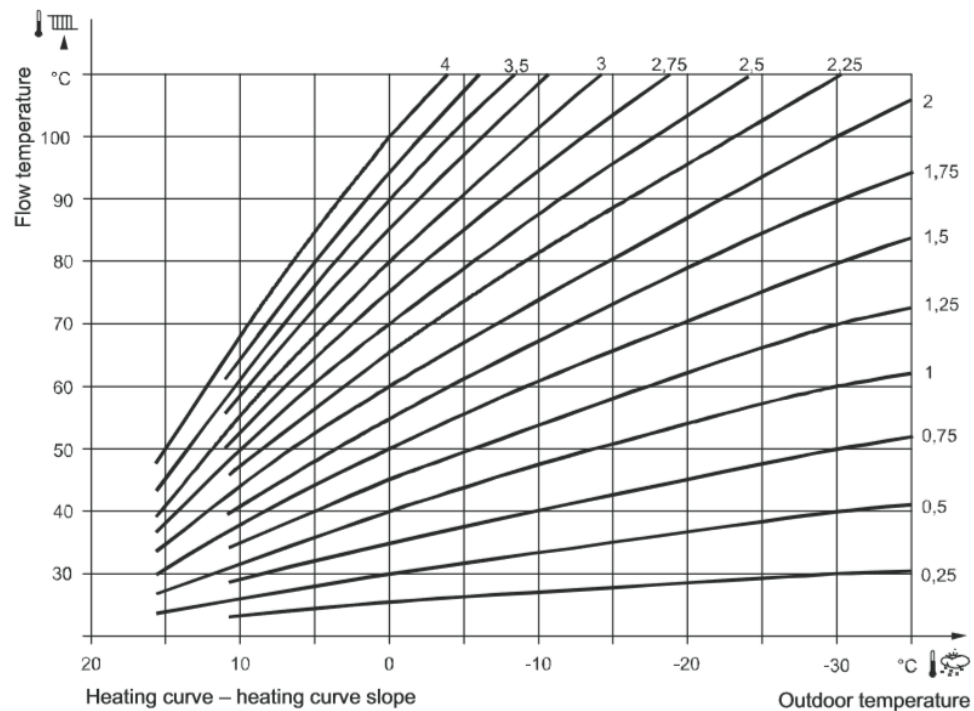


The correct positioning of the outside temperature sensor is fundamental for the correct operation of the climate control function of the boilers.

The sensor must be installed on a North, North West facing wall and be away from flues, doors, windows and areas exposed to direct sunlight.

The maximum length of cable allowed between the sensor and the controller is 50m

*Temperature measured T 25°C
*Resistance of the probes R 1000 Ω



10.3 Controller Error Codes

Code	Description
10	Outside temperature, sensor error
20	Boiler temperature 1, sensor error
26	Common flow temperature, sensor error
28	Flue gas temperature, sensor error
30	Flow temperature 1, sensor error
32	Flow temperature 2, sensor error
38	Flow temperature, primary controller, sensor error
40	Return temperature 1, sensor error
46	Cascade return temperature, sensor error
47	Common return temperature, sensor error
50	DHW temperature 1 sensor error
52	DHW temperature 2 sensor error
54	Flow temperature DHW, sensor error
57	DHW, circulation sensor error
60	Room temperature 1, sensor error
65	Room temperature 2, sensor error
68	Room temperature 3, sensor error
70	Storage tank temperature 1 (top), sensor error
71	Storage tank temperature 2 (bottom), sensor error
72	Storage tank temperature 3 (center), sensor error
78	Water pressure, sensor error
81	LPB short circuit or no bus power supply
82	LPB address collision
83	BSB wire cross-sectional/no communication
84	BSB wire address collision
85	BSB RF communication error
91	Data overrun in EEPROM
98	Extension module 1, error
99	Extension module 2, error
100	2 clock time masters
102	Clock time master without backup
103	Communication error
105	Maintenance message
109	Supervision boiler temperature
110	STB (SLT) lockout
111	Temperature limiter safety shutdown
117	Water pressure too high
118	Water pressure too low
119	Water pressure switch has cut out
121	Flow temperature heating circuit 1 not reached
122	Flow temperature heating circuit 2 not reached
125	Maximum boiler temperature exceeded
126	DHW charging temperature not reached
127	DHW legionella temperature not reached
128	Loss of flame during operation
129	Wrong air supply
130	Flue gas temperature limit exceeded
132	Gas pressure switch safety shutdown

133	Safety time for establishment of flame exceeded
146	Configuration error sensor/controlling elements
151	LMS14... error, internally
152	Parameterization error
153	Unit manually locked
160	Fan speed threshold not reached
162	Air pressure switch does not close
164	Flow/pressure switch, heating circuit error
166	Air pressure switch error, does not open
169	Sitherm Pro system error
170	Error water pressure sensor, primary side
171	Alarm contact 1 active
172	Alarm contact 2 active
173	Alarm contact 3 active
174	Alarm contact 4 active
176	Water pressure 2 too high
177	Water pressure 2 too low
178	Temperature limiter heating circuit 1
179	Temperature limiter heating circuit 2
183	Unit in parameterization mode
195	Maximum duration of the refill per charging exceeded
196	Maximum duration of the refill per week exceeded
209	Fault heating circuit
214	Monitoring of motor
215	Fault fan air diverting valve
216	Fault boiler
217	Sensor error
218	Pressure supervision
241	Flow sensor for yield measurement, error
242	Return sensor for yield measurement, error
243	Swimming pool sensor, error
260	217 Flow temperature 3, sensor error
270	215 Temperature difference, heat exchanger too large
317	214 Mains frequency outside permissible range
320	217 DHW charging temperature, sensor error
321	217 DHW outlet temperature, sensor error
322	218 Water pressure 3 too high
323	218 Water pressure 3 too low
324	146 Input BX, same sensors
325	146 Input BX/extension module, same sensors
326	146 Input BX/mixing group, same sensors
327	146 Extension module, same function
328	146 Mixing group, same function
329	146 Extension module/mixing group, same function
330	146 Sensor input BX1 without function
331	146 Sensor input BX2 without function
332	146 Sensor input BX3 without function
333	146 Sensor input BX4 without function
335	146 Sensor input BX21 without function
336	146 Sensor input BX22 without function
339	146 Collector pump Q5 missing

340	146 Collector pump Q16 missing
341	146 Sensor B6 missing
349	146 Buffer storage tank return valve Y15 missing
350	146 Buffer storage tank address error
351	146 Primary controller/system pump, address error
352	146 Pressure-less header, address error
353	146 Sensor B10 missing
371	209 Flow temperature heating circuit 3
372	209 Temperature limiter heating circuit 3
373	103 Extension module 3
374	169 Sitherm Pro calculation
375	169 BV stepper motor
376	169 Drift test limit value
377	169 Drift test prevented
378	151 Internal repetition
382	129 Repetition speed
384	151 Extraneous light
385	151 Mains under-voltage
386	129 Fan speed tolerance
387	129 Air pressure tolerance
388	146 DHW sensor no function
426	151 Feedback flue gas damper
427	152 Configuration flue gas damper
429	218 Dynamic water pressure too high
430	218 Dynamic water pressure too low
431	217 Sensor primary heat exchanger
432	151 Function earth not connected
433	216 Temperature primary heat exchanger too high

11.0 Commissioning The Appliance

11.1 Pre-Commissioning Checks

Prior to undertaking the commissioning of the unit please ensure that the system water has been cleansed and treated with a suitable inhibitor as detailed in Filling the system and system water quality.

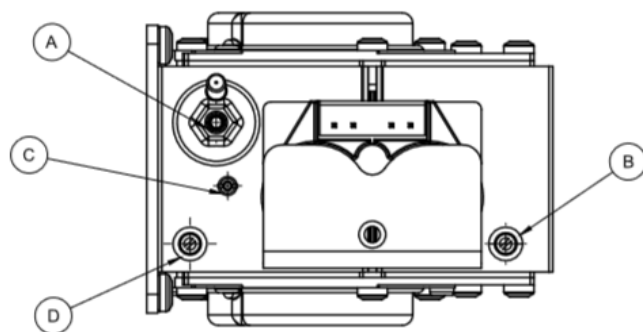
A tightness test must be carried out from the appliance to the first isolation valve (or further if connected to untested pipework).

11.2 Combustion System Commissioning

The combustion of the appliance must be commissioned by a suitably qualified engineer using a flue gas analyser.

The following steps must be followed to ensure the correct and complete commissioning of the combustion system has taken place.

- 1: On completion of a tightness test the boiler must first be fired and tested in Maximum output.
- 2: To operate the boiler in maximum output the MODE selection button is to be pressed and held for at least 3 seconds. 'Control function stop' will appear on the display.
- 3: Press the INFORMATION button once, the screen will now display the modulation rate of the boiler as %.
- 4: Adjust the setting to 100% using the NAVIGATION button, then press OK to set.
- 5: Set the CO₂ value by turning the throttle screw shown in the image below.
- 6: Adjustments are to be done in small increments and the combustion allowed to stabilise before re-adjusting.
- 7: Once the correct CO₂ value has been set at Maximum output press the OK button, the 100% will flash. Use the NAVIGATION button to alter the value to read 0%. Press the OK button to set the boiler into Minimum output.
- 8: Set the CO₂ value by adjusting the zero point screw shown below.
- 9: Adjustments are to be done in small increments and the combustion allowed to stabilise before re-adjusting.
- 10: Once the correct CO₂ value has been set at Minimum output the controller is returned to normal operation by pressing and holding the MODE selection button for at least 3 seconds.



Label	Description
A	Minimum Output Adjustment Screw
B	Inlet Pressure Test Point
C	Maximum output Adjustment Screw
D	Burner Pressure Test Point

A flue gas analyser must be used to ensure that the correct combustion settings are achieved.

This is undertaken by inserting the analyser's probe in to plugged hole within the flue collector of the appliance or in the tapping in the flue immediately above the appliance if present.

The combustion setting required for all Wallcon appliances are as detailed in the following table.

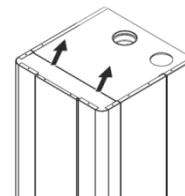
Gas Type		115		125		160	
		Min	Max	Min	Max	Min	Max
CO ₂ Natural Gas (G20)	%	8.8	9.3	8.7	9.4	9.2	9.4
CO ₂ LPG (G31)	%	10.3	10.9	11.1	11.2	10.3	10.7

11.3 Conversion of the Appliance to Operate on LPG (G31)

The Wallcon boilers can be set to operate on Natural Gas or LPG. The Boilers come preset as detailed on the information labels attached to each unit. If a gas different from that which the unit is arranged to run on is to be used, a conversion kit is required.

The gas conversion kit is installed as detailed bellow.

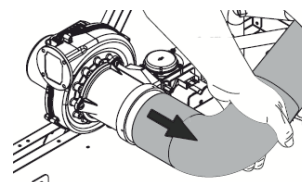
1: Remove the boilers case via the six retaining screws at the bottom and pull the bottom forward. Now lift the case up and off the locating bolts at the top.



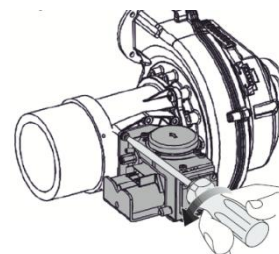
2: Remove the gas solenoid wiring. Detach the gas valve from the supply pipe via the union. Ensure gas is isolated if boiler has been installed.



3: Remove the Air Inlet flexible hose from the fans venture connection.



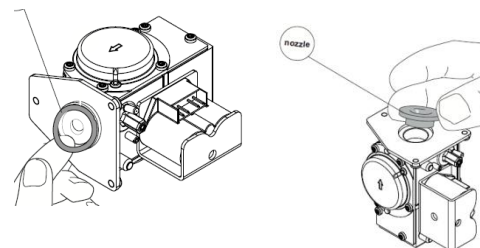
4: Undo the six M10 bolts holding the burner door onto the heat exchanger and remove entire assembly from the boiler.



5: Remove the venture screws and disconnect the gas valve.

6: Remove the O-ring and replace the nozzle with the correct one for the gas to be burnt.

Gas Type	Wallcon 115/125/160
Natural Gas (G20)	10.7mm
LPG (G31)	9.5mm



7: Reassemble boiler in reverse of the procedure above, ensuring all joints are gas tight.

8: Complete a gas tightness test on the appliance to ensure no gas leaks following the work undertaken.

12.0 Routine Inspection and Servicing

As with all Gas Appliances, we would highly recommended that a competent heating engineer services the Wallcon, at least every 12 months. This is assuming a normal daily usage of 8 – 10 hours.

If however the boiler is to be operated 24 hours a day, 7 days, we would recommend services every 6 months.

Wallcon boilers will display an E105 Error Code when 12 months has lapsed, indicating that the appliance requires a Routine Service Inspection. (E:105 Indication Reset)

If the Installer/Commissioning Engineer is unable to undertake the Routine Service Inspection, as detailed, please contact the MHG Technical Department, who will be able to arrange the Routine Service Inspection to be undertaken.

12.1 Routine Service Inspection

Before commencing any service/maintenance work, the following tasks must be undertaken.

- a) Ask the end user about any problems with the operation of the boiler unit and note their comments.
- b) Check the water pressure of the installation.
- c) Remove the boiler casing and visually inspect all pipe and water joints for signs of leakage.
- d) Inspect the top of the casing and the top of the heat exchangers for signs of water leakage or ingress.
- e) Run the unit in Commissioning Mode HIGH FIRE; with the use of a flue gas analyzer record the CO₂ level.
- f) Run the unit in Commissioning Mode LOW FIRE; with the use of a flue gas analyzer record the CO₂ level.
- g) Listen to the sound of the combustion fan. Utilizing the appliances fascia review the units Operating Error Codes, and note the recorded codes onto the Service Report.
- h) Undertake a System Water Analysis to check the concentration level of the Water Treatment, and note the level onto the Service Report.
- i) Check the flue route including the terminal position for conformity with prevailing regulations, and trim back any foliage that may be around the terminal.
- j) Check the plant room/compartment ventilation system for conformity with prevailing regulations.
- k) Check the Pressure (Safety) Relief Valve size, rating and orientation, for conformity with prevailing regulations.

The results of the Inspections undertaken above must be acted upon, and all discrepancies should be recorded on the Service Report and brought to the Client / End User's attention.

Undertake any maintenance, and if necessary any preventative maintenance, that's required.

12.2 Routine Cleaning & Maintenance (E:105 Indication Reset)

As part of the Routine Service Inspection, certain areas of the boiler need to be checked and cleaned as necessary.

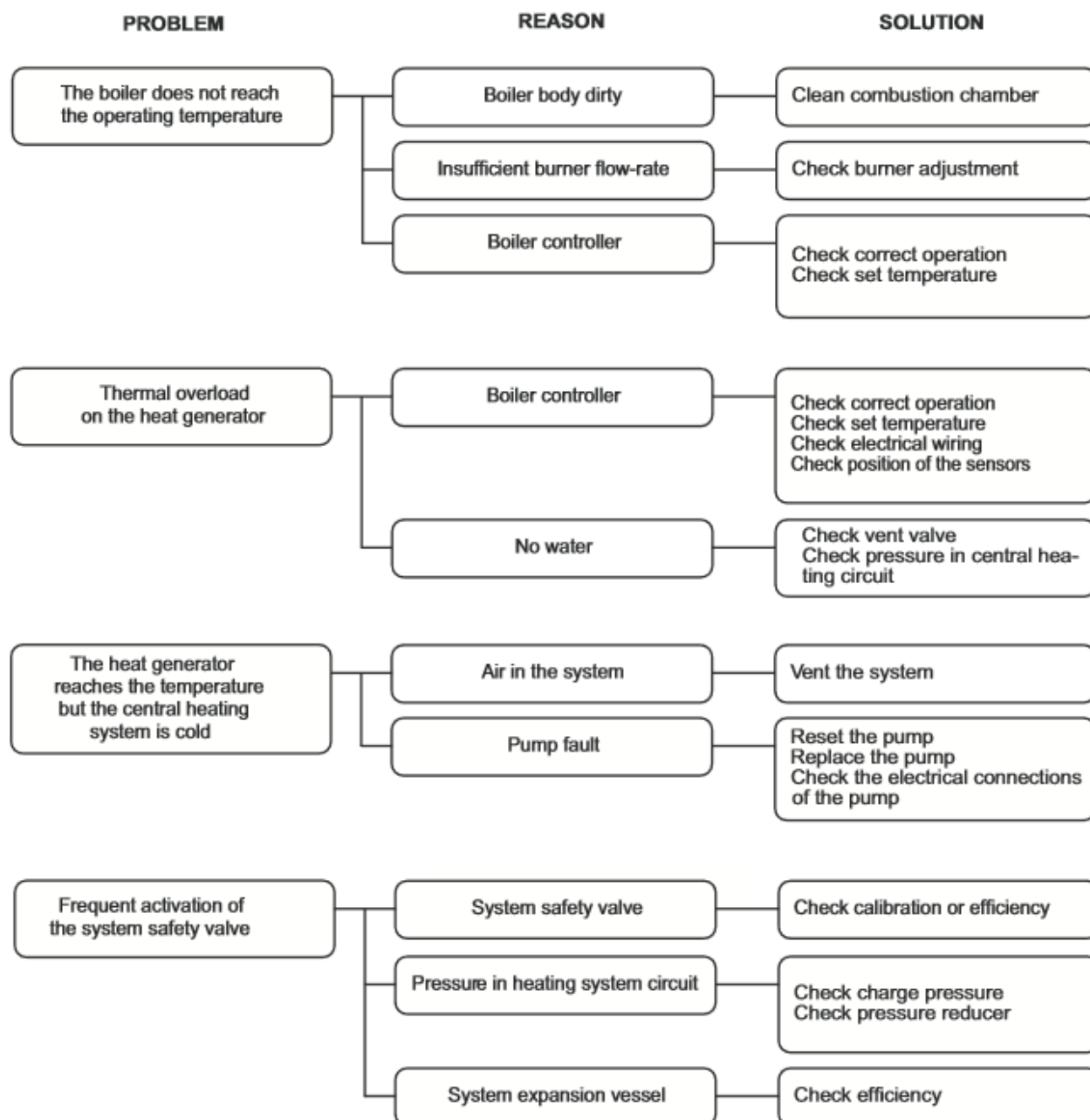
- a) Turn the boiler OFF at the ON/OFF switch and electrically isolate the boiler by removing the plug or fuse from the boiler supply.
- b) Turn off the gas at the boiler isolation tap, fitted by the installer, adjacent to the appliance.
- c) Remove the control panel retaining screws and allow controller to fold forward. Remove the controller mounting bar via the small screws at either end.
- d) Remove the electrical connections from the units fan assemble.
- e) Disconnect the earth lead, HT cap and Lead from the ignition electrodes. Also removing rectification lead from probe.
- f) Ensuring the gas isolation valve is off, undo the union connection to the inlet of the gas valve.
- g) Disassemble the burner by removing the six M6 nuts around the burner door, using a 10mm Spanner. Pull the burner forward and remove from the heat exchanger. Gently put to one side.
- h) Once access has been gained to the combustion chamber and front section of the heat exchanger, visually inspect the heat exchanger coils.
If any coils appear to be significantly dis-coloured, then a blockage of either scale, magnetite, or general system debris has occurred which will have allowed excessive overheating to have occurred within the coil.
If dis-colouration has occurred, then specialist de-scaling of the heat exchanger will be required, however, stress cracking may have occurred, and the heat exchanger may become porous following the de-scale works.
- i) If the heat exchanger has not suffered from dis-colouration, as 'Item g' above, then a Standard Service can be undertaken. Using a natural bristled brush ONLY, remove the worst of the mineral/debris build up.
With the use of the dissolved *MHG Combustion Chamber Cleaning Granules*, spray the solution onto the heat exchanger surface and leave for approximately 5 minutes. This will help to remove any stubborn mineral deposits and clear the condensate drain connections. Finally brush the heat exchanger whilst rinsing thoroughly with copious amounts of fresh water. *MHG Combustion Chamber Cleaning Granules* are available from MHG

Heating Ltd Spares Department. **A STEEL OR PVC BRUSH MUST NOT BE USED TO CLEAN THE HEAT EXCHANGER.**

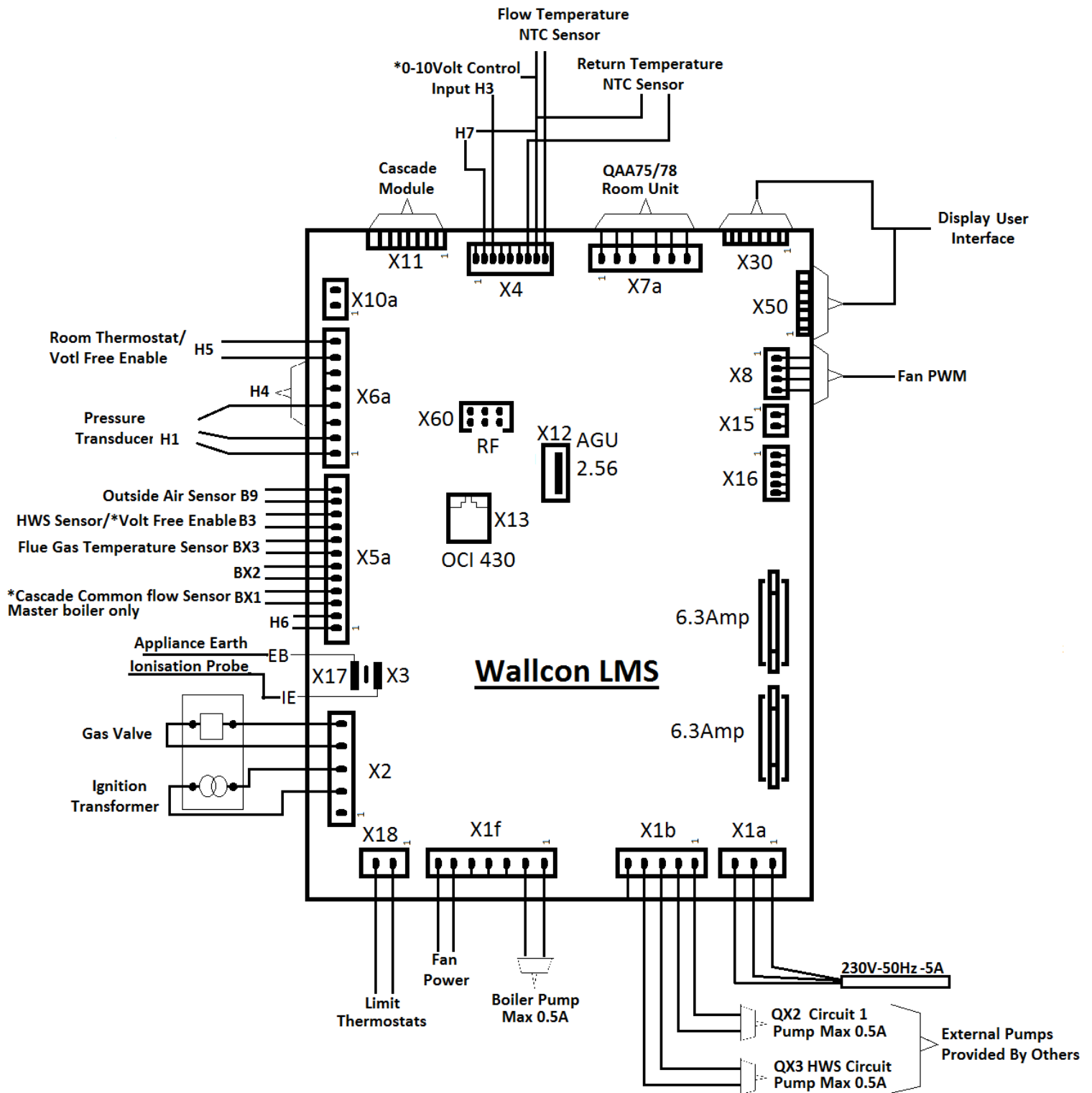
- j) Following the cleaning of the Heat Exchangers, the condensate syphon must be flushed to ensure that all mineral deposits/debris that has been washed from the heat exchanger surface is correctly removed. Open the syphon cleaning point cap at the base of the boiler, with a suitable receptacle directly below to collect the syphon contents. Safely dispose of the contents of the syphon. Replace the receptacle below the cleaning point and pour 2 litres of clean tap water into the heat exchanger, which will drain through the cleaning point. Refit the cleaning point cap and pour half a litre of clean tap water into the heat exchanger to ensure the syphon is re-flooded. Check the cleaning point cap for leaks.
- k) Visually check the burner surface for signs of damage and debris build-up. Remove any debris build up with compressed air. If excessive debris build-up is identified, the burner lance should be removed and the inner metal surface should be washed and cleaned. **A BRUSH, OF ANY KIND, MUST NOT BE USED TO CLEAN THE BURNER SURFACE.** If damage has occurred to the burner surface, the burner **MUST** be replaced.
- l) To ensure that the rectification circuit operates correctly the resistance between the burner and burner door must be checked with a multi-meter to ensure that it is less than 1 Ohm (<1 Ohm.)
- m) Clean with abrasive material and inspect the ignition electrode and rectification probe. Replace if necessary. Adjust the spark gap to 4mm and the rectification gap is 5-10mm
- n) Check the combustion fan blades for debris build-up. Remove any debris with a soft bristle brush or preferably compressed air. **DO NOT TOUCH, OR SPIN, THE FAN BLADES WITH YOUR FINGERS AS THIS COULD AFFECT THE BALANCING OF THE FAN BLADES.**
- o) Re-fit the Burners, in the reverse order of dismantling, ensure that all electrical connections are correctly and securely connected.
- p) Inspect all water joints. Any joints found to be leaking **MUST** be replaced. It is also advisable when replacing water joints to also change any adjacent joints at the same time.
- q) Inspect all gas joints with a suitable leak detection method. Any joints found to be leaking **MUST** be replaced. It is also advisable when replacing gas joints to also change any adjacent joints at the same time.
- r) Via the tapings on the boiler connector elbow or straight a flue gas recirculation check must be undertaken when the boiler is operating on high and low fire modes.
- s) With the use of a suitable Flue Gas Analyser, check and adjust the combustion settings.
- t) Inspect the general condition of the flue system, including the termination, repair as necessary or advise on any remedial action as required.
- u) Following the satisfactory completion of the above service procedure, the internal Routine Service Control Timer needs to be reset. Utilising the appliances fascia gain access to the Second Level Parameters.

13.0 Troubleshooting

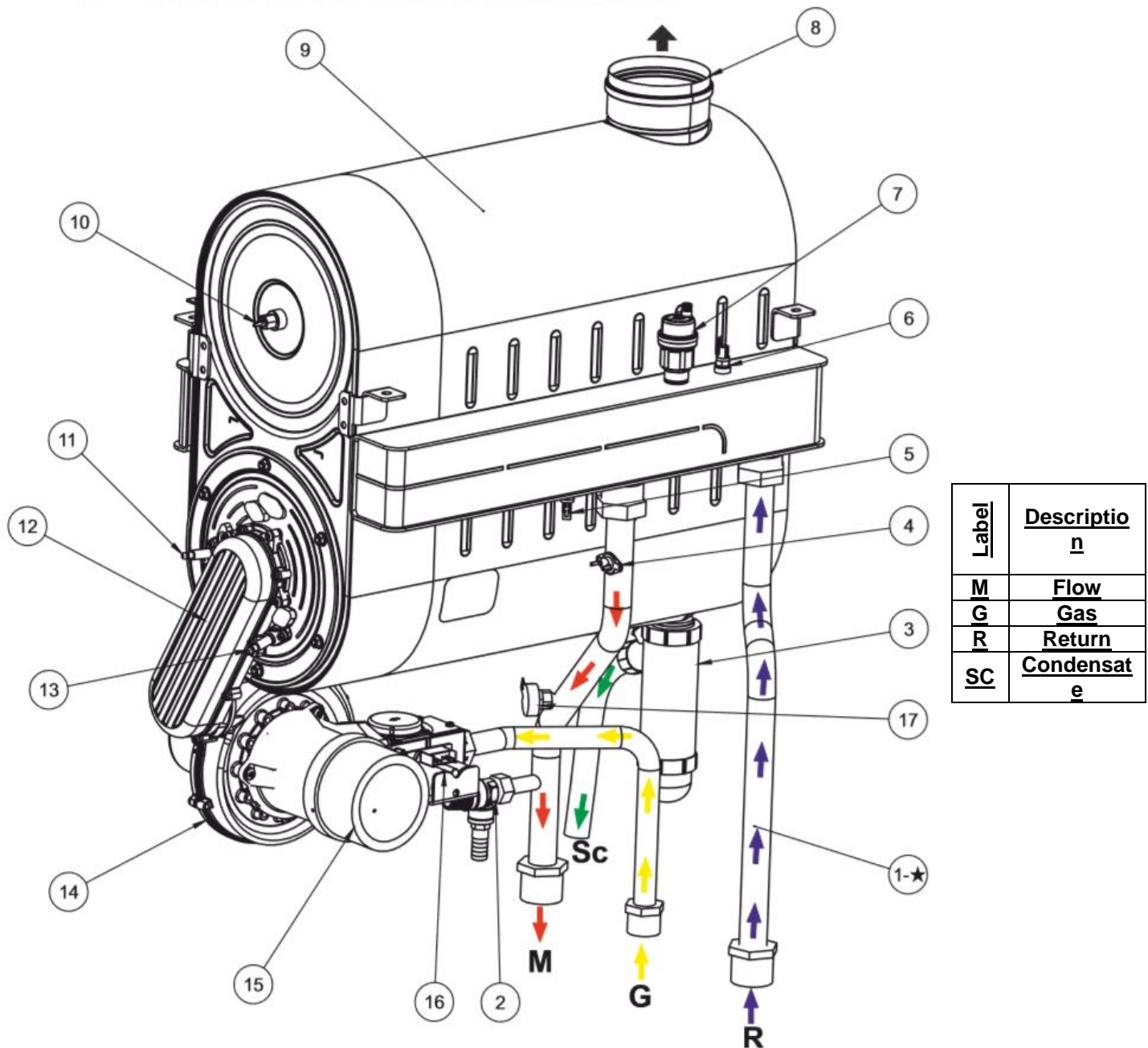
PROBLEM	REASON	SOLUTION
Smell of gas	Gas supply circuit	Check the tightness of the joints and that the pressure test points are closed
Smell of unburned gas	Flue gas circuit	Check: - The tightness of the joints - The absence of obstructions - The quality of combustion
Irregular combustion	Burner gas pressure	Check adjustment
	Diaphragm installed	Check diameter
	Condition of the burner and exchanger	Check they are clean
	Exchanger openings blocked	Check the openings are clean
	Fan fault	Check operation
Delays in ignition with pulsating operation of the burner	Burner gas pressure	Check adjustment
	Ignition electrode	Check positioning and condition
The boiler becomes dirty in a short time	Combustion	Check flame colour Check combustion adjustments
The burner does not start when receiving the signal from the boiler controller	Gas valve	Check that 230 V AC is present at the terminals on the gas valve; check wiring and connections
The boiler does not start	No power supply (the display is blank)	Check: - electrical connections - fuse
The pump does not start	Pump fault	Reset the pump Replace the pump Check the electrical connections of the pump



14.0 Internal Wiring

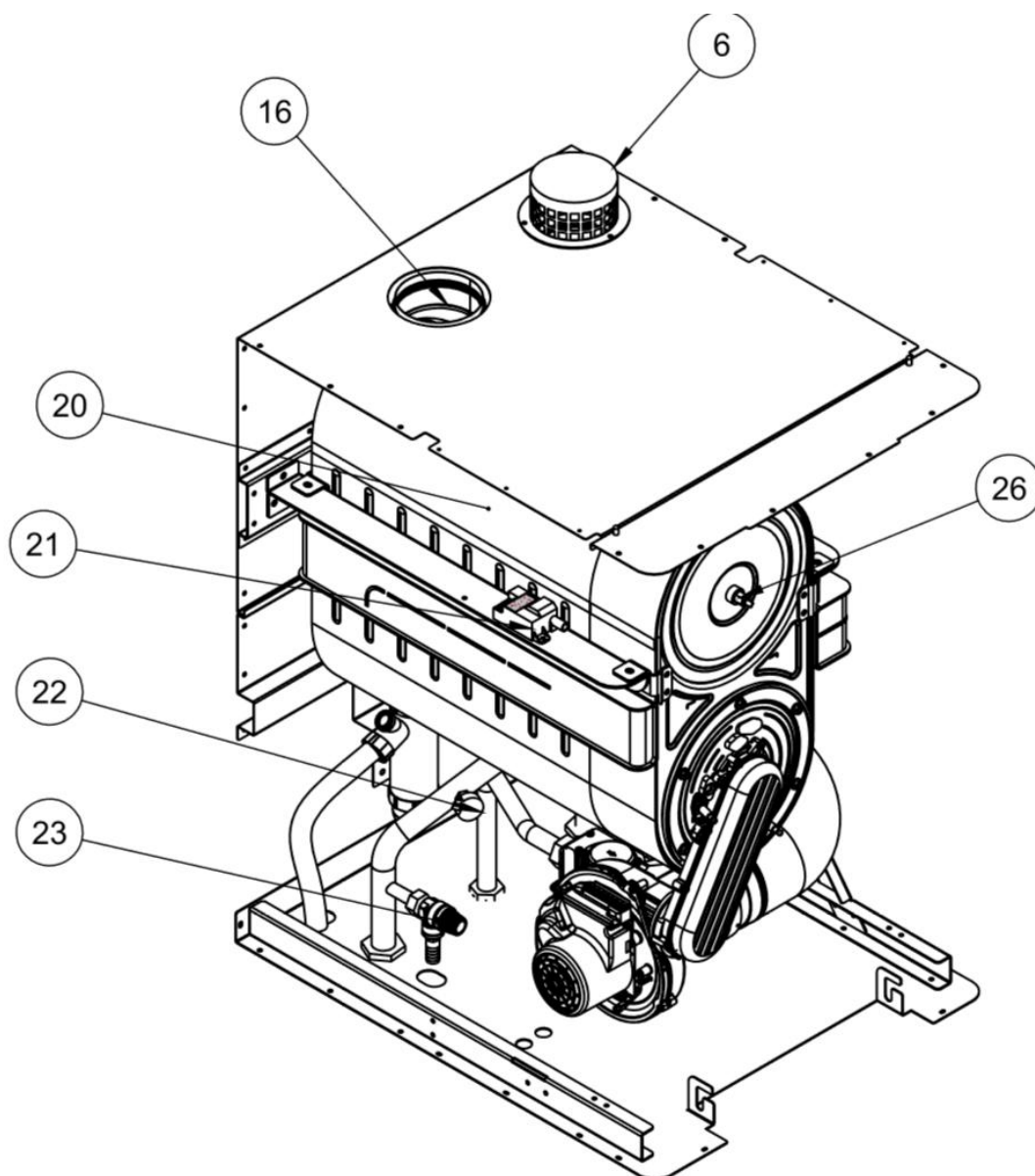


*Wiring loom and parameter adjustments required.

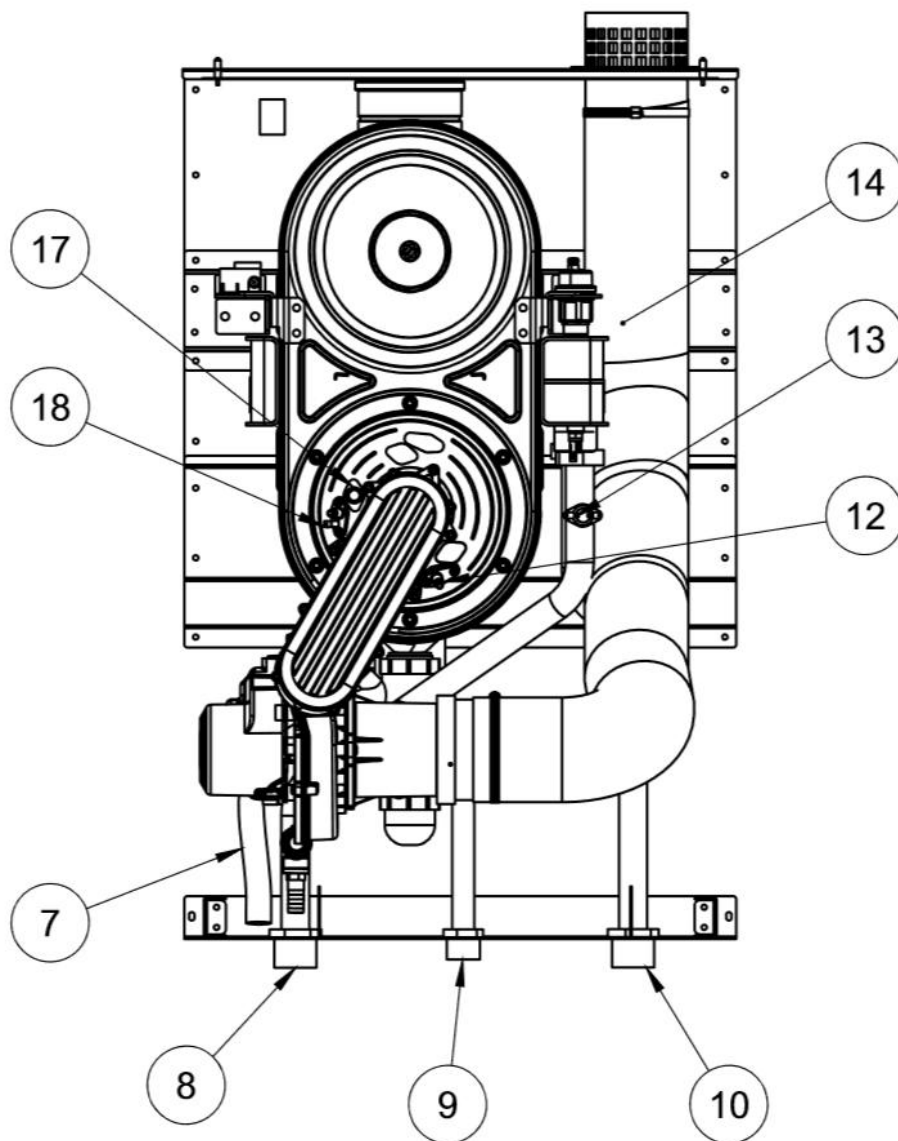
15.0 Spares Diagram***All Wallcon**

<u>Label Number</u>	<u>Item Description</u>	<u>Label Number</u>	<u>Item Description</u>
1*	Boiler Circulation Pump	10	Flue Gas Temperature Sensor
2	Safety Relief Valve	11	Ignition Electrode
3	Condensate Syphon	12	Air Gas Mixing tube
4	Limit Thermostat	13	Ionization Electrode
5	Flow Temperature Sensor	14	Combustion Fan
6	Return Temperature Sensor	15	Venturi Adapter
7	Automatic Air Vent	16	Gas Valve
8	Flue Outlet	17	Pressure Transducer
9	Heat Exchanger		

boilers sold in the UK will have internal circulation pumps

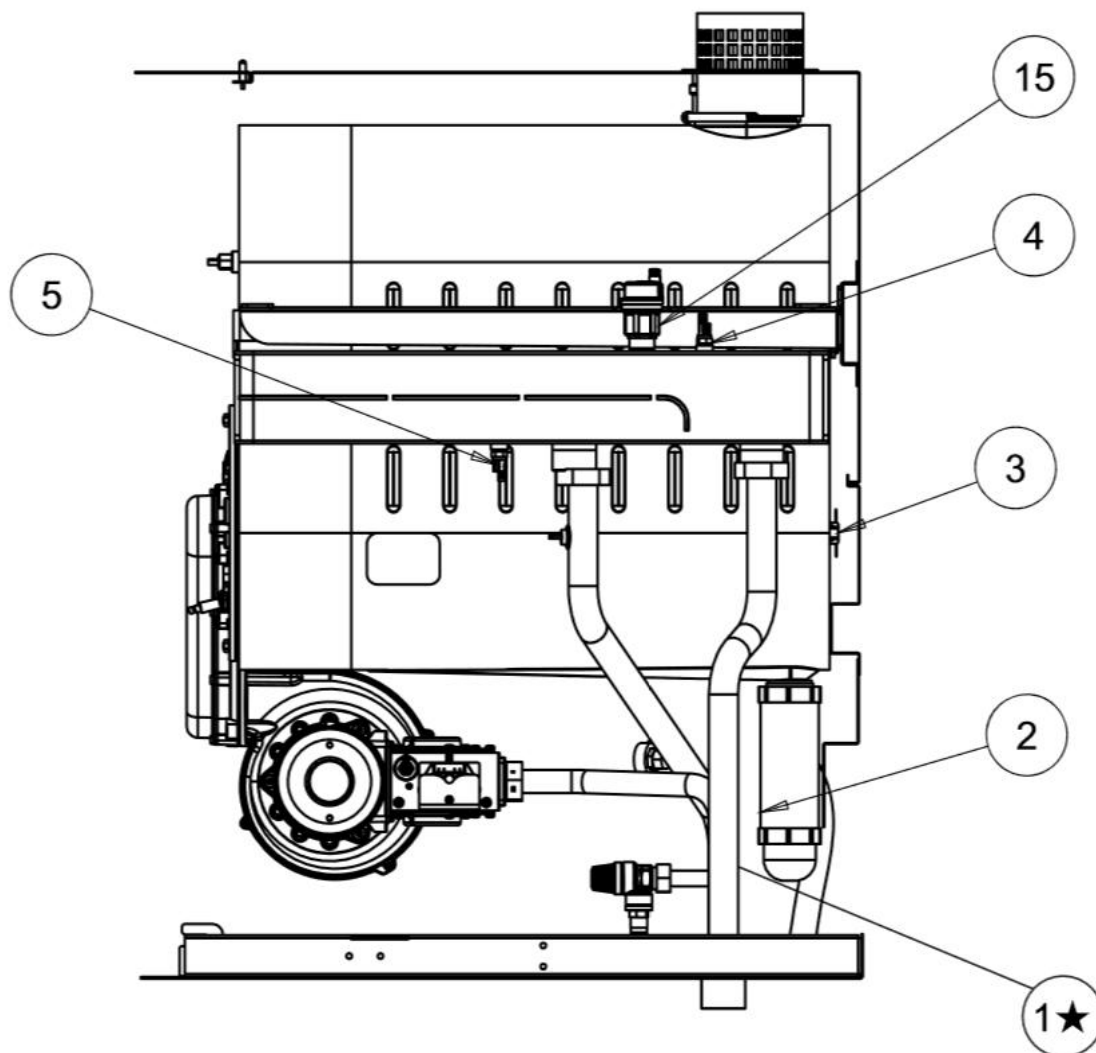
15.1 Spares Diagram

<u>Label Number</u>	<u>Item Description</u>
6	Air Intake Terminal
16	Flue outlet
20	Heat Exchanger
21	Ignition Transformer
22	Pressure Transducer
23	Safety Relief Valve
26	Flue Gas Temperature Sensor

15.2 Spares Diagram

Label Number	Item Description
7	Condensate Discharge Pipe
8	Boiler Flow Connection
9	Gas Connection
10	Boiler Return Connection
12	Ionization Electrode
13	Limit Thermostat
14	Air Intake Flexible Duct
17	Flame Observation Glass
18	Ignition Electrode

15.3 Spares Diagram



<u>Label Number</u>	<u>Item Description</u>
1*	Boiler Circulation Pump
2	Condensate Syphon
3	Heat Exchanger Thermal Fuse
4	Return Temperature sensor
5	Flow Temperature Sensor
15	Automatic Air Vent

***All Wallcon boilers sold in the UK will have internal circulation pumps**

Notes