



Installation and Operating Manual for the
ProCon E 26
Wall Mounted Condensing Boiler Range

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1.0 Appliance Type There are three build types and four outputs within the ProCon range.

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

1.1 The ProCon H Range of appliances is designed to be applied to systems requiring direct on boiler weather compensated heating and priority hot water production via a separate high recovery calorifier/cylinder.

1.2 The ProCon S Range of appliances is designed to be applied to systems requiring direct on boiler weather compensated heating and priority on demand hot water production via an internal plate heat exchanger.

1.3 The ProCon HS Range of appliances are designed to be applied to systems requiring direct on boiler weather compensated heating and priority hot water production via a separate high recovery calorifier/cylinder, where the diverter valve controlling the production of hot water is within the boiler case.

1.4 Supplied Components

All ProCon boilers are supplied with the following components.

QAC 34 Outside Air Sensor (To activate direct on boiler weather compensation)



Wall Mounting bracket and fixing kit.

2.0 Pressure (Safety) Relief Valve

In accordance with the prevailing British Standard 5440/6644, the installer shall install and additionally required suitably sized Pressure (Safety) Relief Valve. In addition to the one fitted within the boiler.

The location of this valve is important with respect to the applied pressure of the circulation pumps, it is therefore recommended to locate the Pressure (Safety) Relief Valve on the flow pipe immediately adjacent to any heat source; furthermore, there must not be any means of isolation between the heat source and the Pressure (Safety) Relief Valve.

3.0 Installation Regulations and Requirements

The installation of ProCon HT 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: 2005 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.

3.1 Appliance Warranties

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

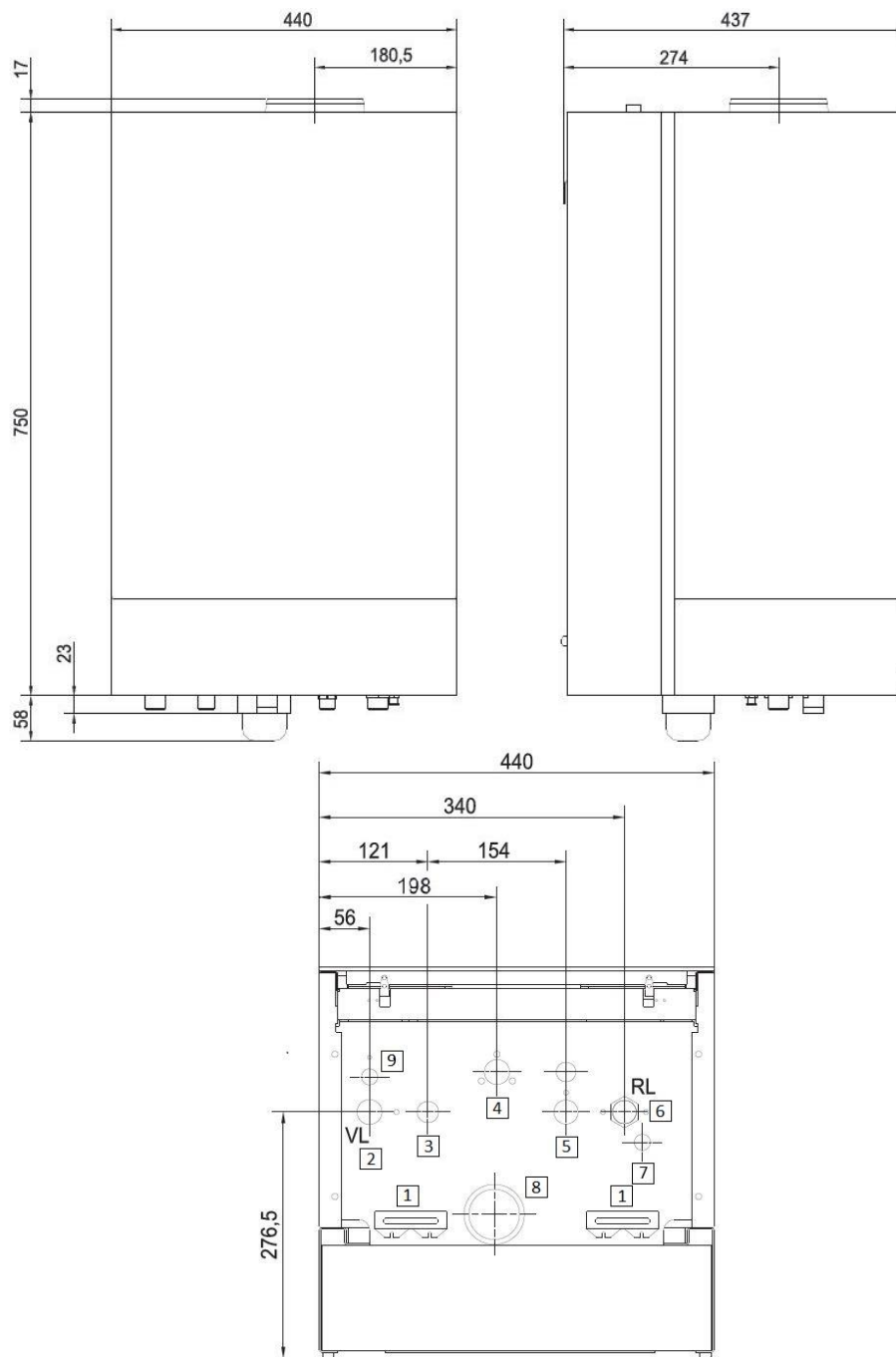
The guarantee period shall begin on the day of commissioning, or at latest 3 months after delivery has been made.

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 Primary Heat Exchangers carry a 60 month guarantee against manufacturing or material defect.

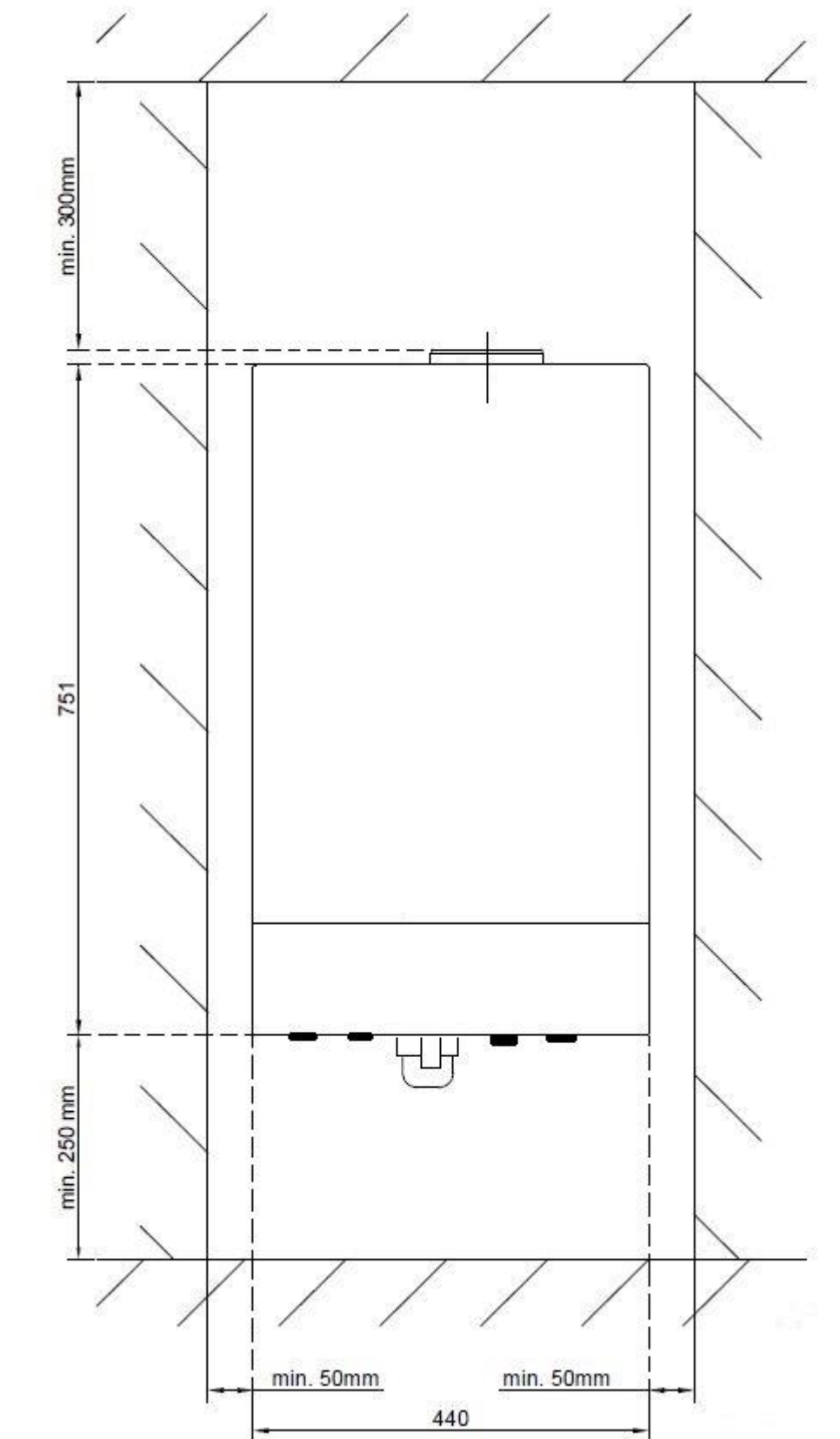
4.0 Dimensions



1	Cable Entry Grommets	6	*Heating Return 3/4" (All Models)
2	Heating Flow 3/4" (All Models)	7	Condensate Outlet 3/4" BSP Plastic
3	*Hot Water Primary Flow 1/2" (HS Models) *Hot Water Outlet 1/2" (S Models)	8	Condensate Cleanout Connection 3/4" Cap
4	*Gas Inlet 3/4"	9	Pressure Relief Valve outlet
5	*Hot Water Primary Return 1/2" (HS Models) *Cold Water Inlet 1/2" (S Models)		

**External thread, flat sealing*

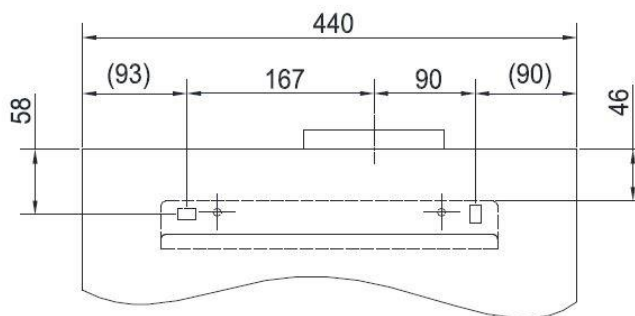
4.1 Installation and Service Clearances



- A clearance of 600mm is required in front of the appliance for servicing.

4.2 Mounting Information

Attach the wall rail with the enclosed fastening set.



The mounting set consists of:

2 PCs. Hexagon Woodscrew 8 x 65 DIN 571, SW13

2 PCs. Wall plugs S10

2 PCs. washers 8.4 DIN 125, steel A3B

5.0 Delivery and Mobility

All ProCons 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.

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.

All packaging materials should be disposed of in an environmentally way.

5.1 Case Removal

To remove the case insert a flat blade screwdriver or similar into the black latch slots and turn through 90°.



Pull the base of the cover forward and up to release the hooks at the top. Ensure that the earth cable is removed prior to lifting the cover clear.

The lower case housing the display panel can be hinged down to allow greater access to all internal components.

The lower case is secured on either side by screws located on the front edge of the case.

6.0 Technical Data

Technical Data	Units	H	HS	S
Product Identification Number		CE-0085CO0278		
Category		II2ELL3P(DE), II2H3P(AP,ES,IE,IT,PT)		
Volume of Water in Boiler	L	2.8		
Weight of Boiler (Including Packaging)	Kg	38.4 (45)	38.6 (45)	39 (46.2)
Dimensions (H x W x D)	mm	750X440X437		
Heating Flow and Return Connections		¾" External Thread, Flat Sealing		
Hot water flow and return (Mains Inlet)		½" External Thread, Flat Sealing		
Gas Connection		¾" External Thread, Flat Sealing		
Flue Size		DN 80/125		
Condensate Drain		¾"		
Nominal Heat Input	kW	2.9-24.9		
Nominal Heat Output 80/60°C	kW	2.7-24.1		
Nominal Heat Output 50/30°C	kW	3.3-26.0		
Efficiency 40/30°C	%	108.2		
Gas Types		Nat. Gas		LPG
Gas Air Mixing Valve Opening	Mm	30		26.1
CO ₂ -Min Load	Vol.%	9.3		10.5
CO ₂ -Max Load	Vol.%	8.7		10.3
Exhaust Temperature at 80/60°C min.Load	°C	68		
Exhaust Temperature at 80/60°C max.Load	°C	78		
Max. Poss. Delivery Pressure at Flue Outlet	Pa	200		
Flue Types		B ₂₃ , B _{23p} , B ₃₃ , C _{13x} , C _{33x} , C _{43x} , C _{63x} , C _{93x}		
Min. Gas Supply Pressure	Mbar	18.0		30.0
Max. Gas Supply Pressure	Mbar	25.0		50.0
Max. Gas Supply Pressure, P _{imax}	Mbar	60		
Gas Power Consumption for Natural Gas H (HU = 10.0 kWh / m ³)	m ³ /h	2.5		
Electrical Connection		230V 1/N/PE ~ 50Hz		
Max. Electrical Power Consumption	W	98		
Min Flow Rate	l/h	120		
Delivery at Δt = 20°C	l/h	1070		
Max. Flow Temperature	°C	90		
Max. Operating working Pressure	Bar	3		
DHW				
Max. Water Pressure	Bar			10
Max. Permissible Water Hardness	mol/m ³			2.7*
DHW Continuous Output with Δt = 30K	l/min			11.5
Max. DHW Nominal Power	kW			24.1
Min. Draw-off Rate	l/min			3
Drinking Water Connection	G			½
Water Content	L			0.5
*(Corresponds to 15° dH or 27° fH,19° E)				

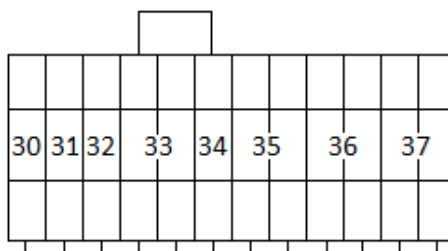
*(Corresponds to 15° dH or 27° fH, 19° E)

7.0 Electrical Connections

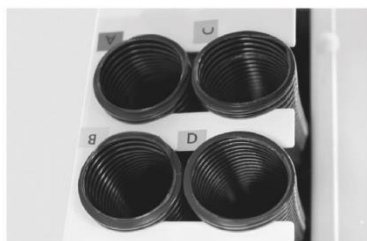
Basic electrical connection for all types of ProCon E



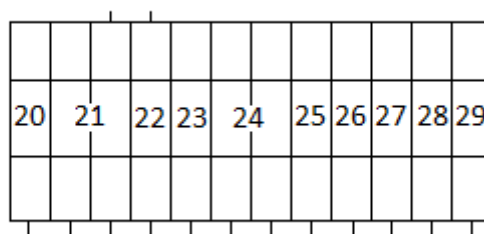
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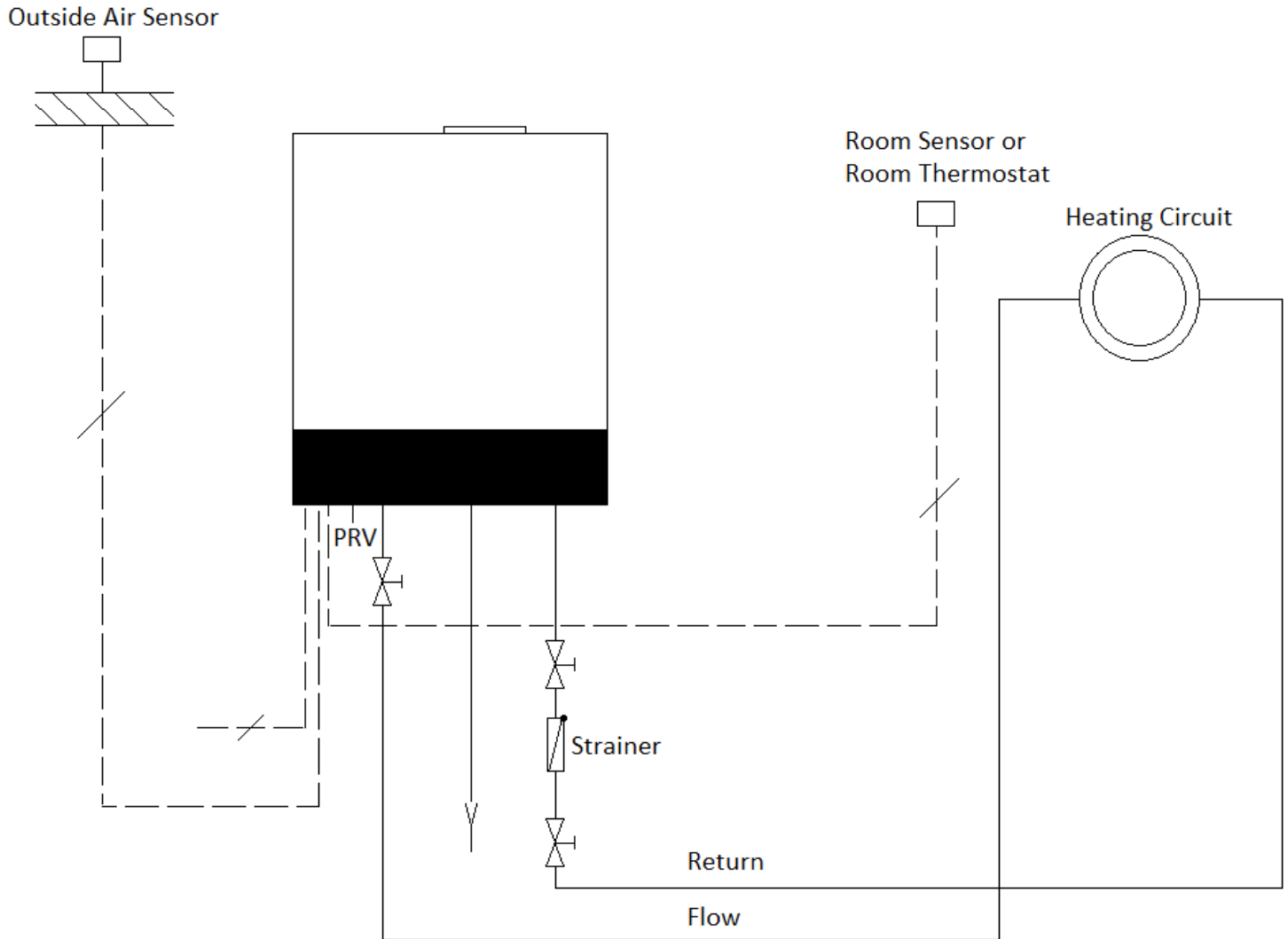
30	H1 Programmable Input	Orange/White
31	H1 Sensor Ground	Black
32	H4 Programmable Input	Green
33	H4 & H5 Sensor Ground	Black
34	H5 Programmable Input	White
35	CL+ QAA75/78 Room Unit	Blue
36	CL- QAA75/78 Room Unit	Green
37	G+ QAA75/78 Room Unit	Red



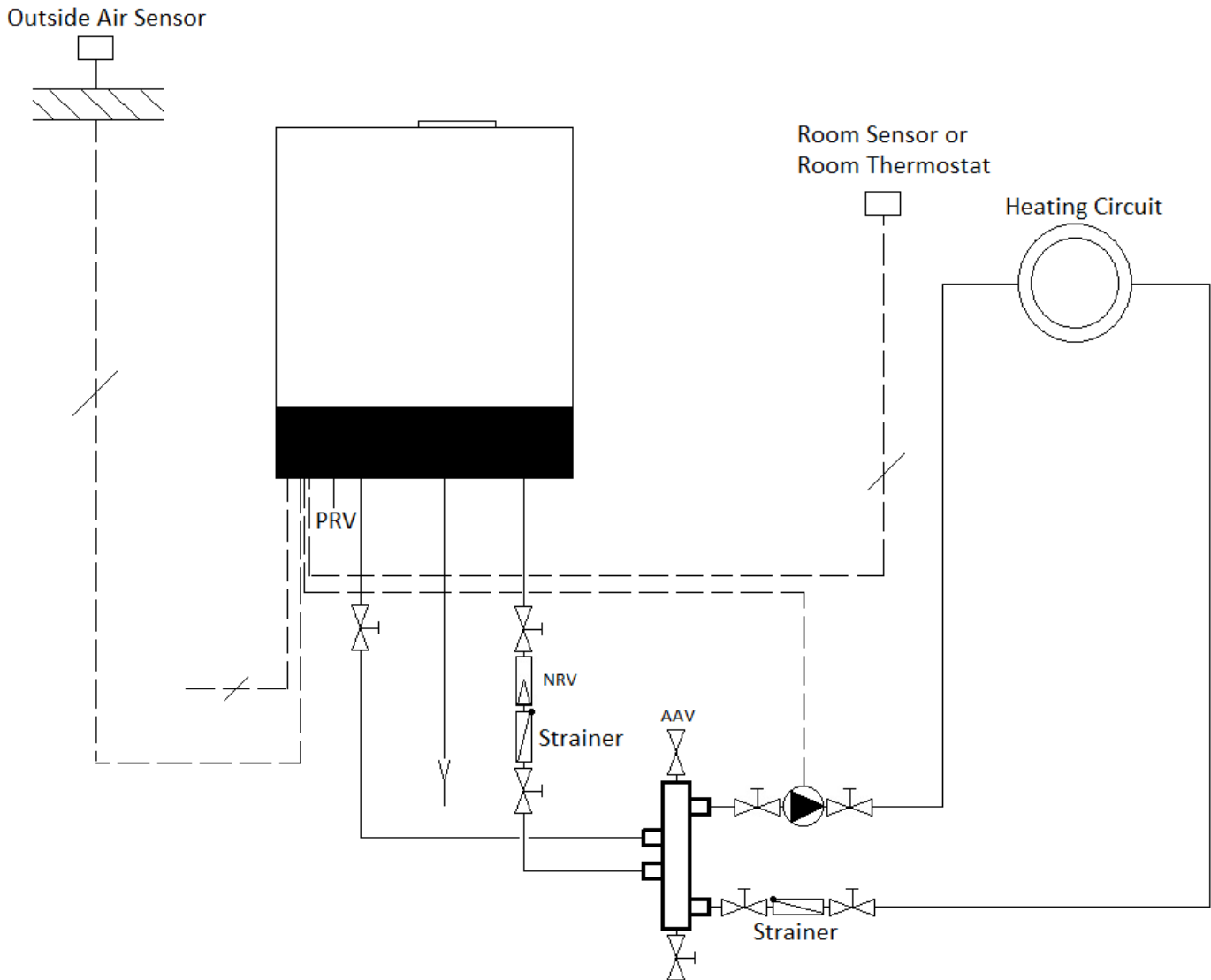
C



20	B9 Outside Air Sensor (QAC34)	Yellow
21	B9 & B3 Sensor Ground	Black
22	B3 HWS Sensor / Volt Free Enable	Red
23	BX3 Programmable Sensor Input	Brown/White
24	BX2/BX3 Sensor Ground	Black
25	BX2 Programmable Sensor Input	Grey
26	BX21 Sensor Ground	Black
27	BX21 Programmable Input (AGU Clip)	White
28	MB LPB Cascade Communication (OCI Clip)	Black/Green
29	DB LPB Cascade Communication (OCI Clip)	Brown

8.0 Hydraulic Design Single Unit (Option 1) (New Installations only)**Electrical Connections Single Unit (Option 1)**

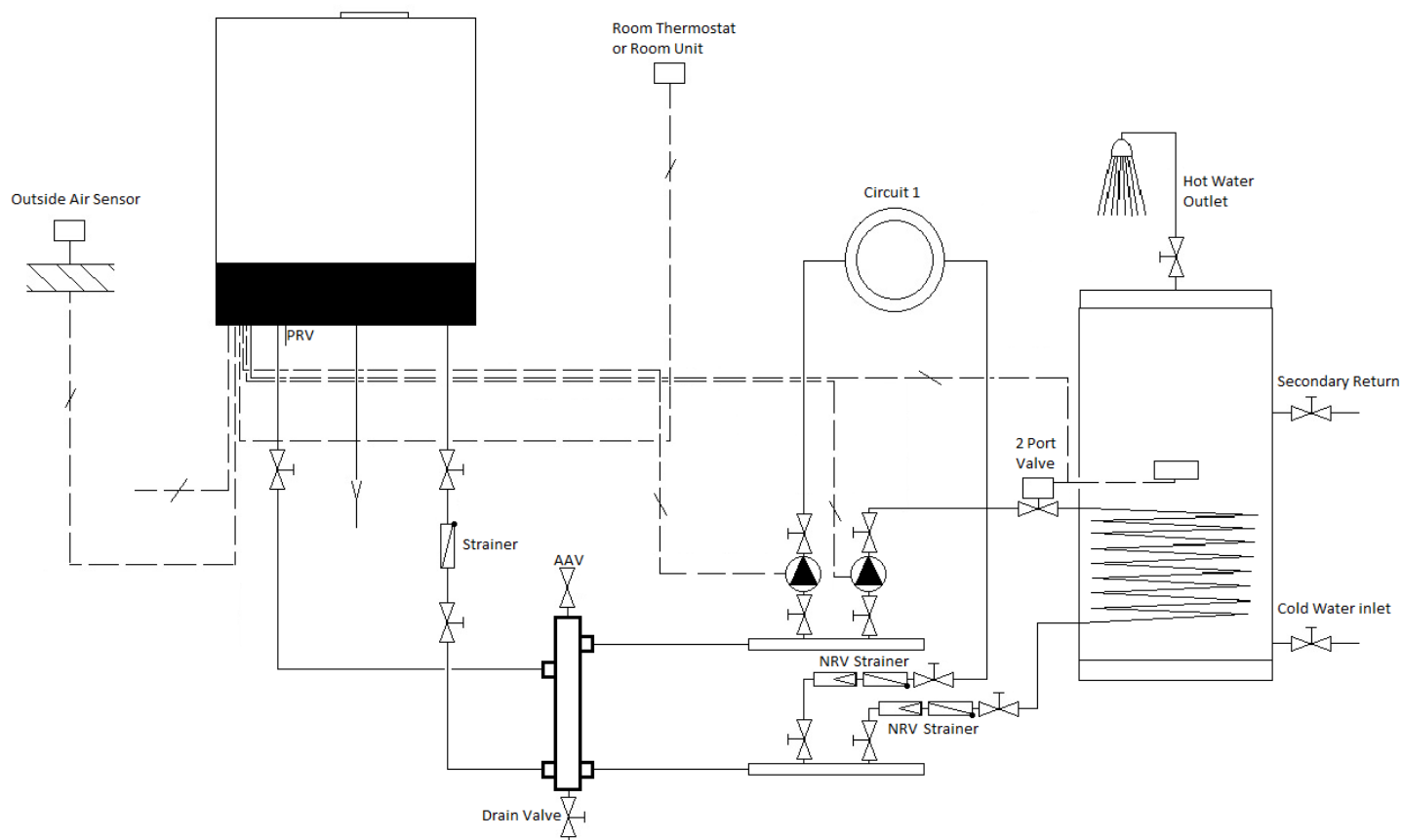
Terminal	Description
N	Permanent Neutral
E	Permanent Earth
L	Permanent Live 5Amp
20	B9 Outside Air Sensor (QAC34)
21	B9 & B3 Sensor Ground
33	H5 Ground
34	H5 Room thermostat VF or 0-10V
35	CL+ QAA75/78 Room Unit (if used)
36	CL- QAA75/78 Room Unit (if used)
37	G+ QAA75/78 Room Unit (if used)

8.1Hydraulic Design Single Unit (Option 2)**Electrical Connections Single Unit (Option 2)**

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	33	H5 Ground
12	QX3/QX1 Neutral	34	H5 Room thermostat VF or 0-10V
13	QX3/QX1Earth	35	CL+ QAA75/78 Room Unit (if used)
14	*QX1 Live Heating Circuit 1 Pump	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

***Max switching capability 0.5 Amps**

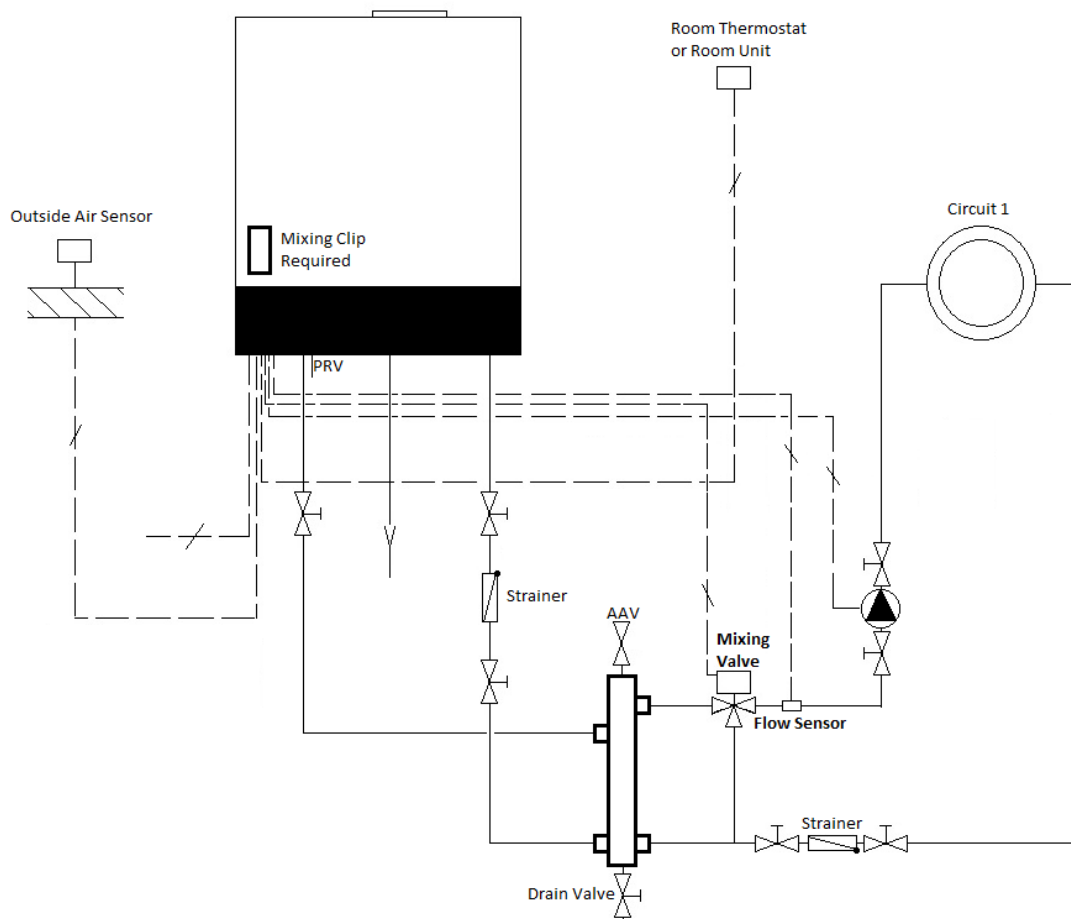
8.2 Hydraulic Design Single Unit (Option 3)



Electrical Connections Single Unit (Option 3)

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	22	B3 DHW sensor / Volt Free Enable
11	*QX3 Live DHW Pump	33	H5 Ground
12	QX3/QX1 Neutral	34	H5 Room thermostat VF or 0-10V
13	QX3/QX1 Earth	35	CL+ QAA75/78 Room Unit (if used)
14	*QX1 Live Heating Circuit 1 Pump	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

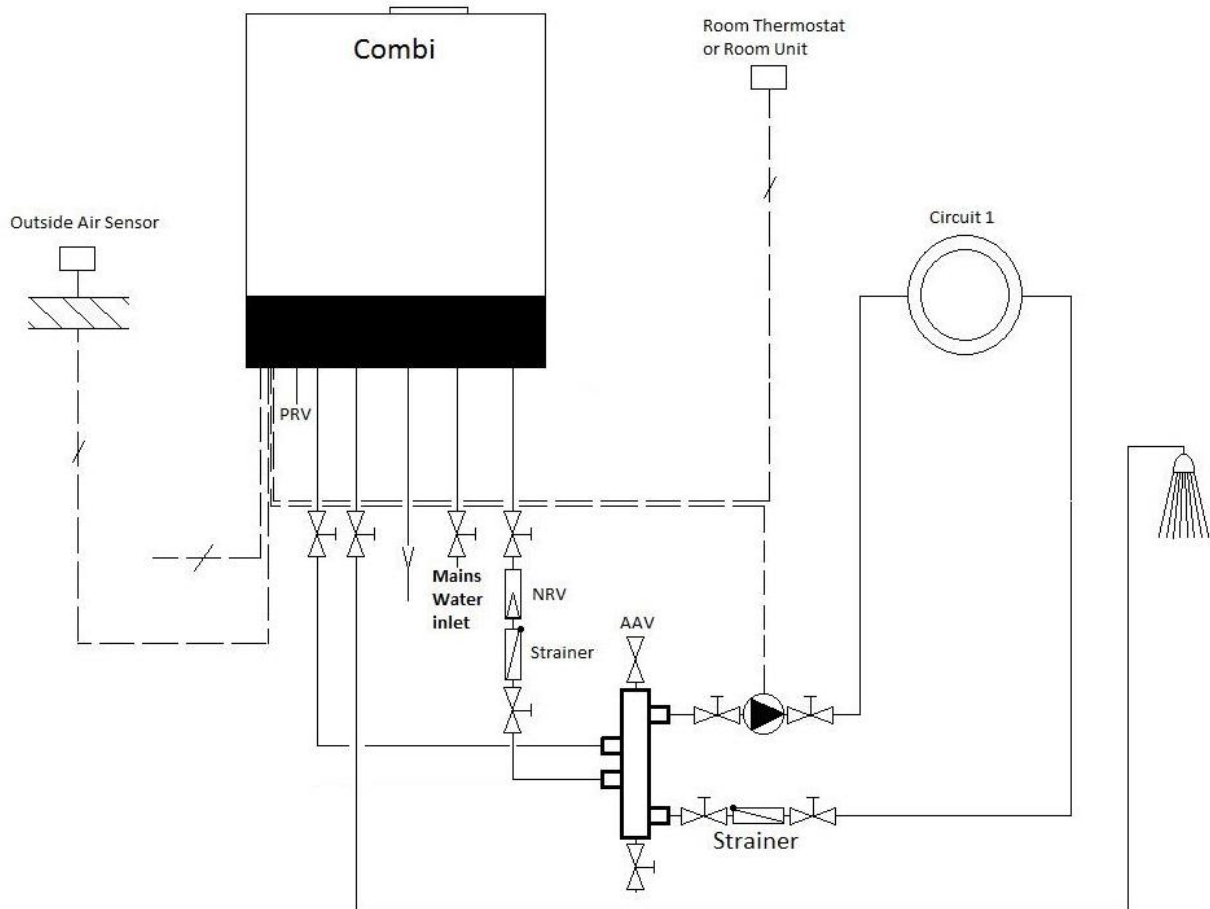
***Max switching capability 0.5 Amps**

8.3Hydraulic Design Single Unit (Option 4)**Electrical Connections Single Unit (Option 4)**

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	26	BX21 Sensor Ground
15	*QX23 Live Circuit 1 Heating pump	27	BX21 Flow Sensor Heating Circuit 1
16	QX23 Neutral Circuit 1 Heating pump	33	H5 Ground
17	QX23 Earth Circuit 1 Heating pump	34	H5 Room thermostat VF or 0-10V
18	*QX22 Live 3 Way Valve Close	35	CL+ QAA75/78 Room Unit (if used)
19	*QX21 Live 3 Way Valve Open	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

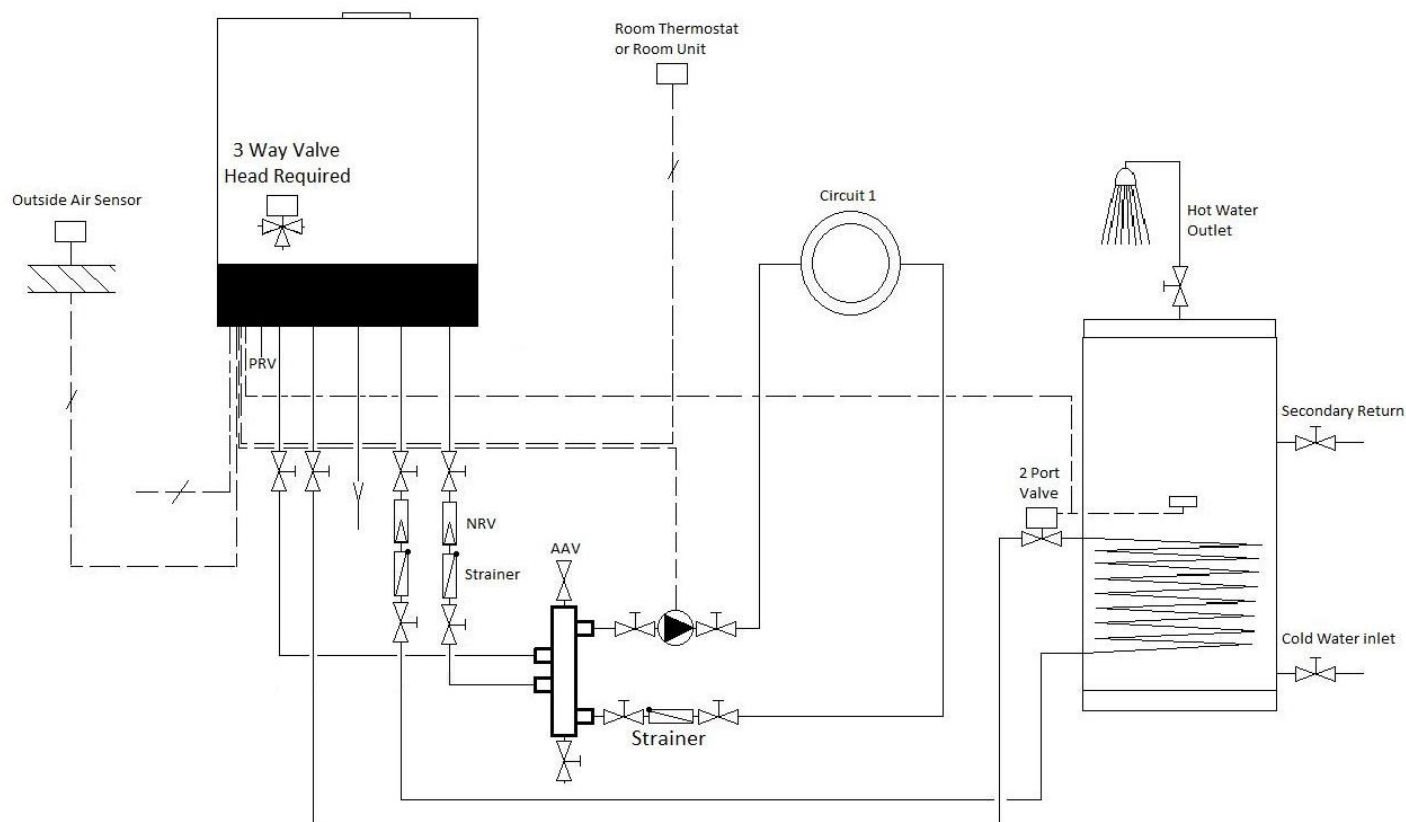
***Max switching capability 0.5 Amps**

Parameter #	Parameters Description	Default	Proposed Change
6020	Function Extension module 1	Heating Circuit 2	Heating Circuit 1

8.4Hydraulic Design Single Unit (Option 5)**Electrical Connections Single Unit (Option 5)**

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	33	H5 Ground
12	QX1 Neutral Circuit 1 Heating Pump	34	H5 Room thermostat VF or 0-10V
13	QX1 Earth Circuit 1 Heating Pump	35	CL+ QAA75/78 Room Unit (if used)
14	*QX1 Live Circuit 1 Heating Pump	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

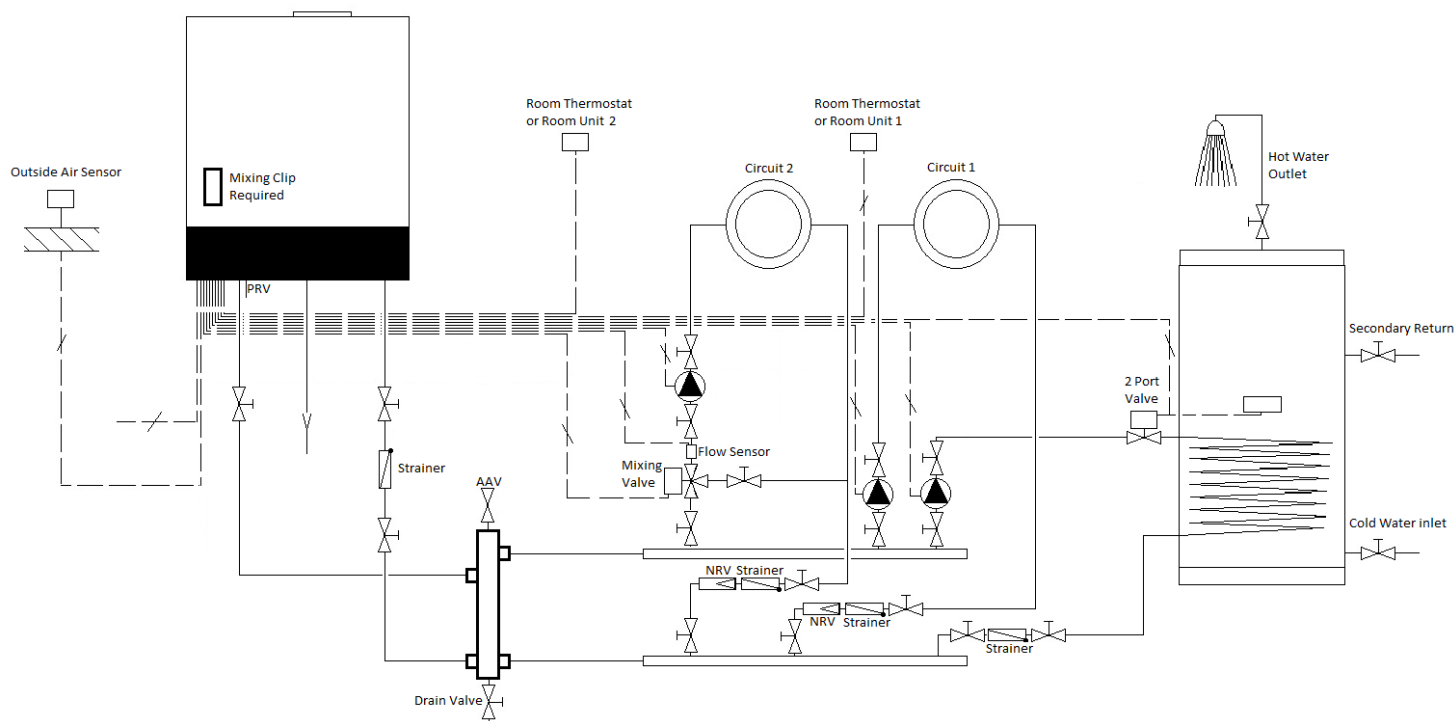
***Max switching capability 0.5 Amps**

8.5 Hydraulic Design Single Unit (Option 6)**Electrical Connections Single Unit (Option 6)**

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	22	B3 DHW sensor / Volt Free Enable
10	*QX3 Live 3 Way Valve Close Programmable Output (Red)	33	H5 Ground
11	*QX3 Live HWS Pump or 3 way Valve Open Programmable Output (White)	34	H5 Room thermostat VF or 0-10V
12	QX3 (Black)/QX1 Neutral Heating Circuit 1 Pump	35	CL+ QAA75/78 Room Unit (if used)
13	QX1 Earth Heating Circuit 1 Pump	36	CL- QAA75/78 Room Unit (if used)
14	*QX1 Live Heating Circuit 1 Pump	37	G+ QAA75/78 Room Unit (if used)

***Max switching capability 0.5 Amps**

8.6 Hydraulic Design Single Unit (Option 7)



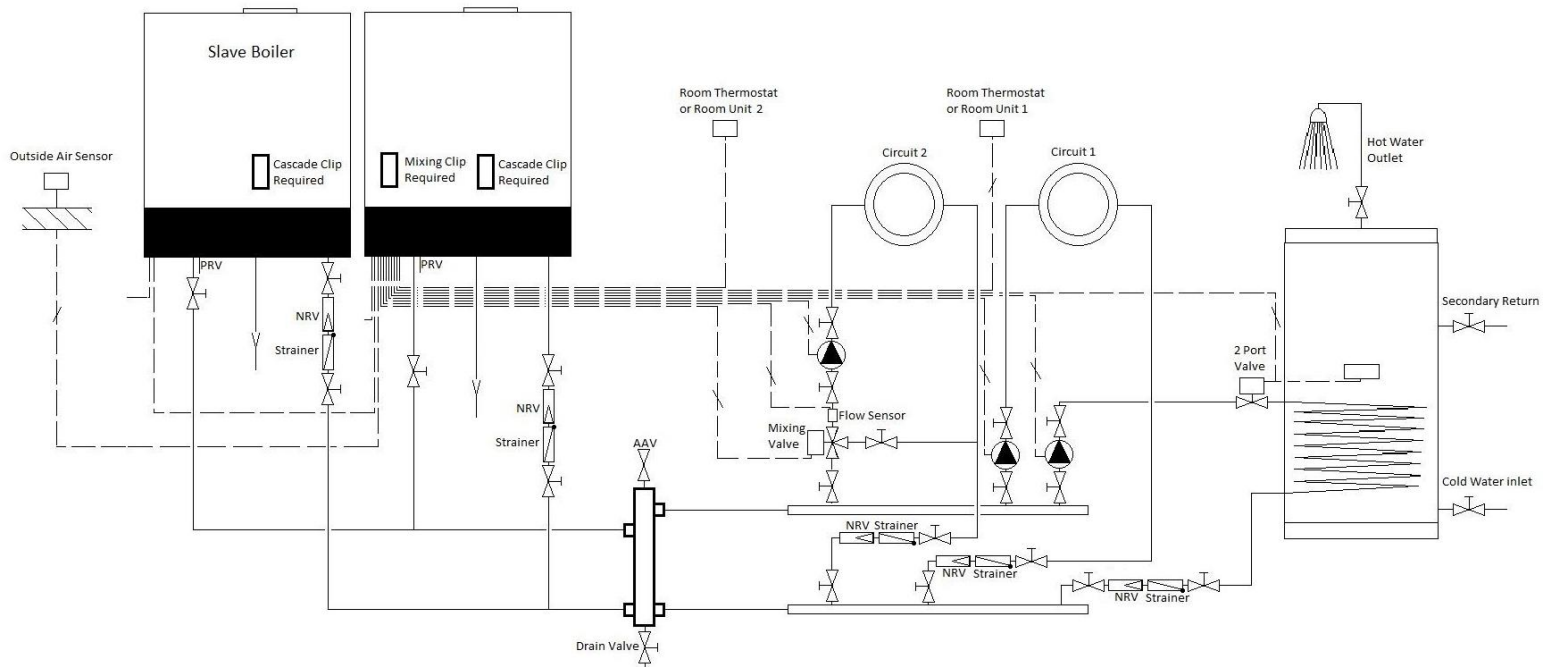
Electrical Connections Single Unit (Option 7)

Terminal	Description	Terminal	Description
N	Permanent Neutral	20	B9 Outside Air Sensor (QAC34)
E	Permanent Earth	21	B9 & B3 Sensor Ground
L	Permanent Live 5Amp	22	B3 DHW sensor / Volt Free Enable
12	QX1 Neutral Heating Circuit 1 Pump	26	BX21 Sensor Ground
13	QX1 Earth Heating Circuit 1 Pump	27	BX21 Flow Sensor Heating Circuit 2
14	*QX1 Live Heating Circuit 1 Pump	33	H5 Ground
15	*QX23 Live Circuit 2 Heating pump	34	H5 Room thermostat VF or 0-10V
16	QX23 Neutral Circuit 2 Heating pump	32	H4 HC2 Room Thermostat VF or 0-10V
17	QX23 Earth Circuit 2 Heating pump	33	H4 Ground
18	*QX22 Live HC2 3 Way Valve Close	35	CL+ QAA75/78 Room Unit (if used)
19	*QX21 Live HC2 3 Way Valve Open	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

Max switching capability 0.5 Amps

Parameter #	Parameters Description	Default	Proposed Change
6020	Function Extension module 1	Heating Circuit 2	Heating Circuit 1

8.7Hydraulic Design Single Unit (Option 8)



Electrical Connections Single Unit (Option 8)

Master Boiler			
Terminal	Description	Terminal	Description
N	Permanent Neutral	21	B9 & B3 Sensor Ground
E	Permanent Earth	22	B3 DHW sensor / Volt Free Enable
L	Permanent Live 5Amp	26	BX21 Sensor Ground
12	QX1 Neutral Heating Circuit 1 Pump	27	BX21 Flow Sensor Heating Circuit 2
13	QX1 Earth Heating Circuit 1 Pump	28	MB LPB Cascade Communication
14	*QX1 Live Heating Circuit 1 Pump	29	DB LPB Cascade Communication
15	*QX23 Live Circuit 2 Heating pump	33	H5 Ground
16	QX23 Neutral Circuit 2 Heating pump	34	H5 Room thermostat VF or 0-10V
17	QX23 Earth Circuit 2 Heating pump	32	H4 HC2 Room Thermostat VF or 0-10V
18	*QX22 Live HC2 3 Way Valve Close	33	H4 Ground
19	*QX21 Live HC2 3 Way Valve Open	35	CL+ QAA75/78 Room Unit (if used)
20	B9 Outside Air Sensor (QAC34)	36	CL- QAA75/78 Room Unit (if used)
		37	G+ QAA75/78 Room Unit (if used)

Max switching capability 0.5 Amps

Slave Boiler/Boilers			
Terminal	Description	Terminal	Description
N	Permanent Neutral	28	MB LPB Cascade Communication
E	Permanent Earth	29	DB LPB Cascade Communication
L	Permanent Live 5Amp		

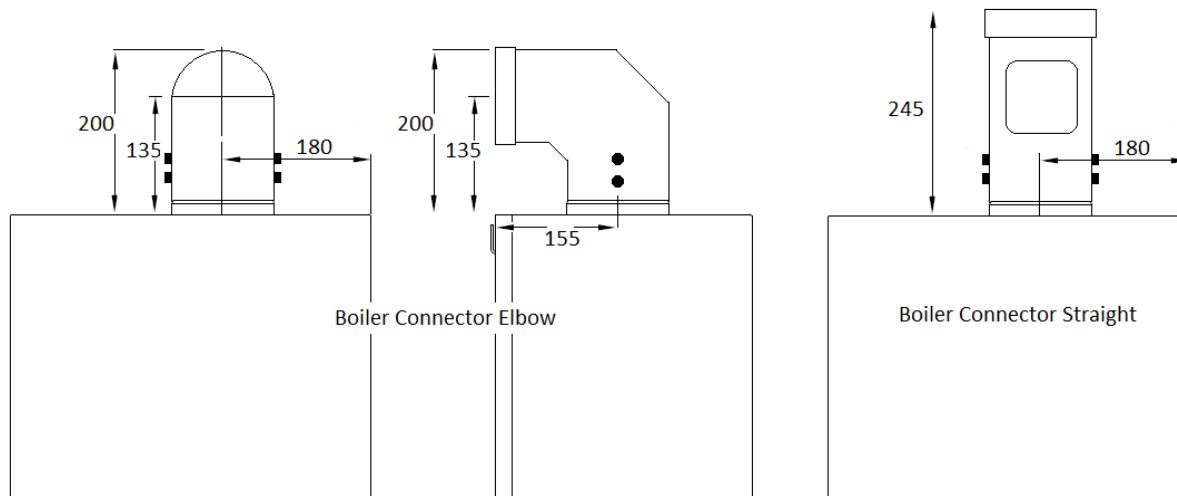
9.0 Fluing Options

Please note that excessive resistance within the flue and combustion air supply systems will lead to a reduction in the output of the appliance and induce operational faults.

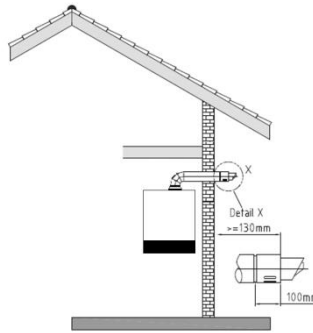
80/125mm Concentric Flue Components (Pa Resistances)	
Wall Terminal	5.0
Vertical Terminal	5.0
955mm Flue Extension	4.0
500mm Flue Extension	2.0
255mm Flue Extension	1.5
87° Bend	4.0
45° Bend	2.0
30° Bend	1.5
80mmØ PPS Flue Components (Pa Resistances)	
Exhaust Pipe Terminal	2.5
Air Pipe Terminal	4.0
955mm Flue Extension	3.0
500mm Flue Extension	1.5
255mm Flue Extension	1.0
87° Bend	3.0
45° Bend	1.5
30° Bend	1.0

When flues are installed with horizontal sections/portions a 3° fall back to the boiler must be maintained. This will not only ensure condensate removal preventing premature seal failure, but also prevent nuisances dripping from the wall terminal.

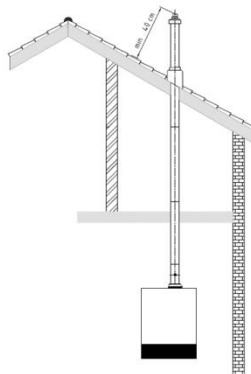
Dimensions below are for concentric DN80/125 boiler connector fittings.



9.1 Single ProCon Balanced Flued Through The Wall Termination (DN 80/125mm)(750mm long)



9.2 Single ProCon Balanced Flued Vertical Termination (DN80/125mm)



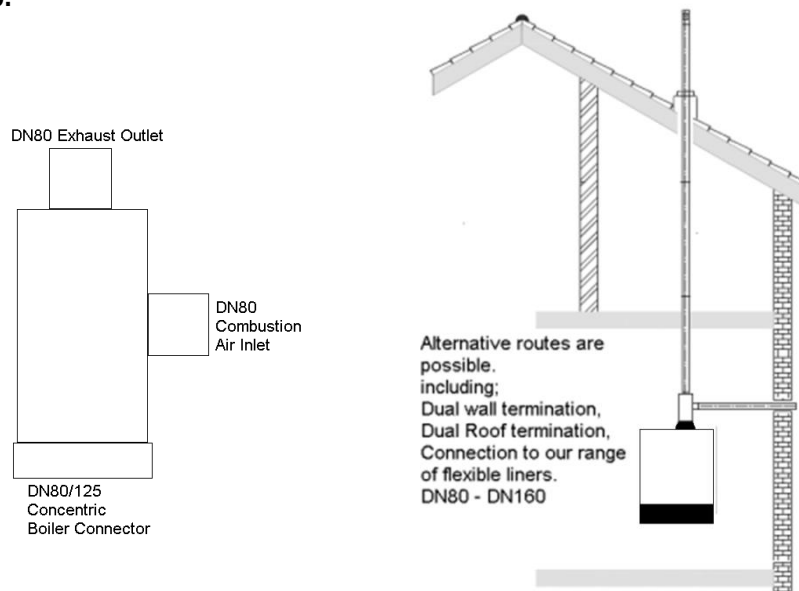
9.3 Single ProCon Balanced Flued Twin DN80 Flues C/W a DN80/125mm - 2 x DN80 Boiler Adapter

Individual DN80 solid or flexible flues can be utilized with the ProCon range following the application of the DN80/125 – 2 x DN80 adapters. #99.98001-0000

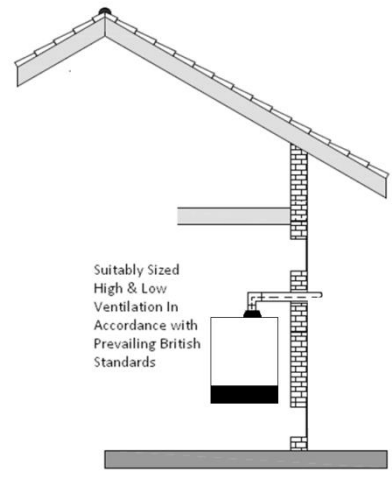
Alternative routes are possible:

Dual Wall Termination, Dual Roof Termination or Connection to our range of Flexible Flue Liner

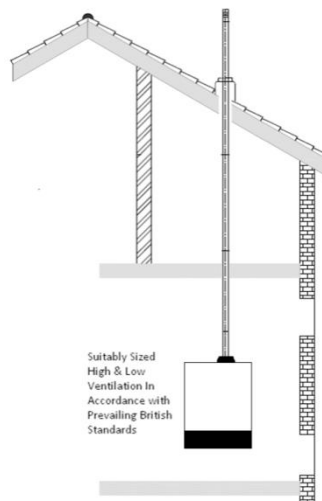
DN80 – DN160.



9.4 Single ProCon Open Flued Through The Wall Termination(DN 80mm)

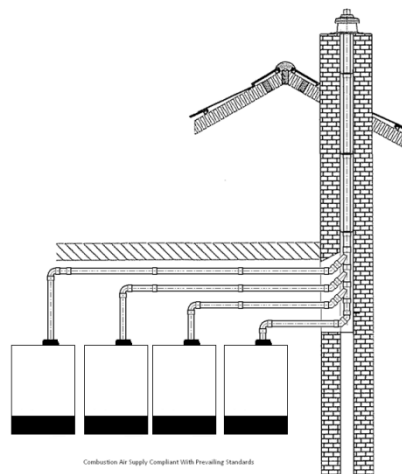


9.5 Single ProCon Open Flued Vertical Termination(DN 80mm)

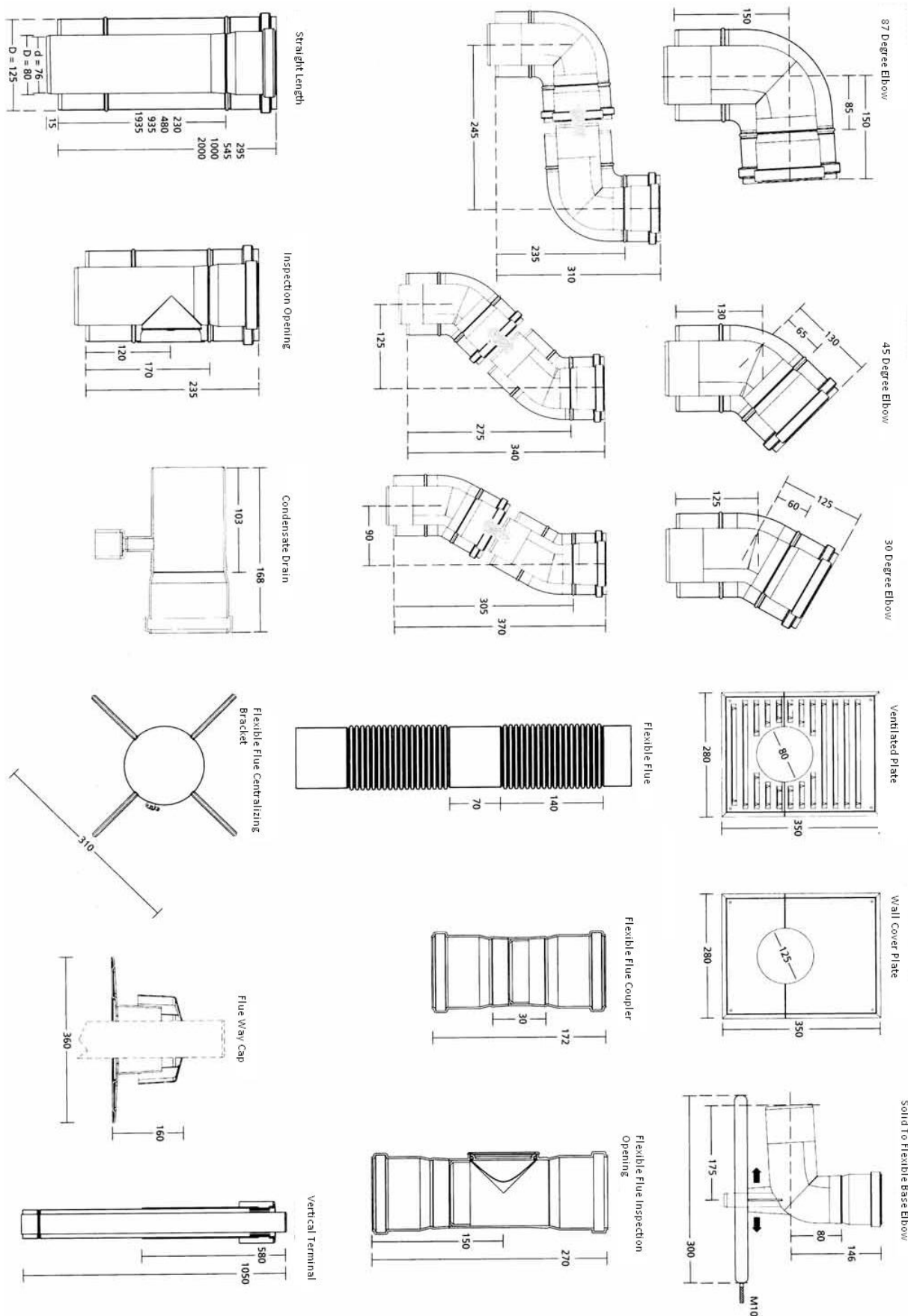


9.6 Cascaded Appliance Fluing InstallationOpen Flued

To reduce the likelihood of recirculation of flue gases through a non-firing unit it is advised to combine the flues in the vertical only.



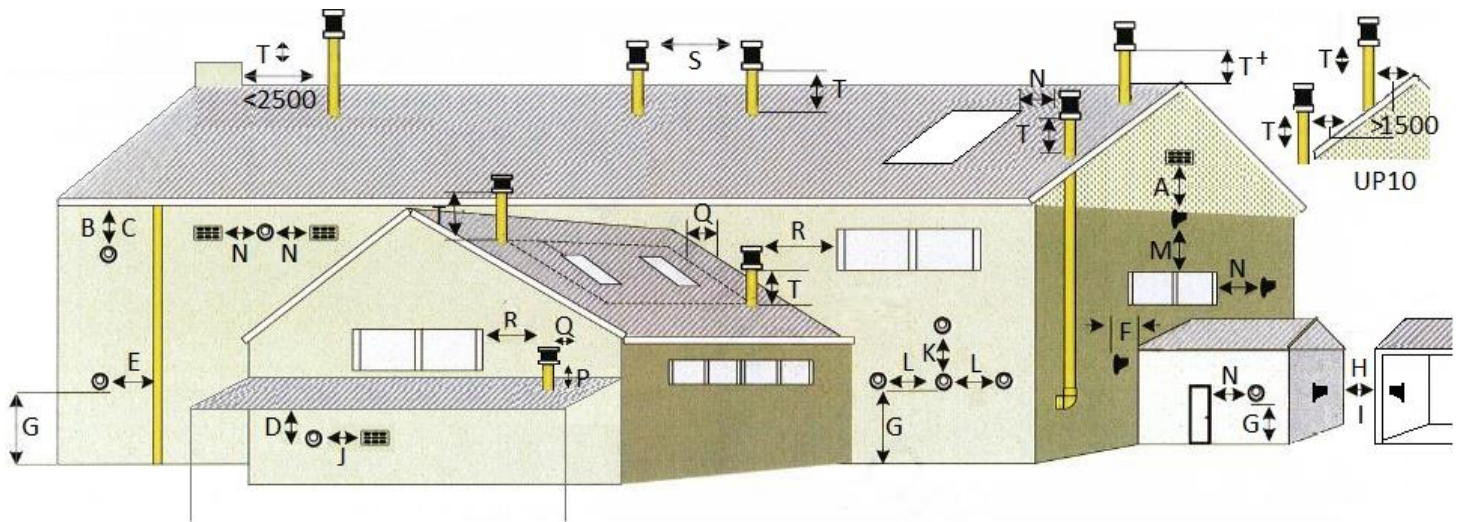
9.7 Dimensions of Available Flue Components (DN80/125mm)



9.8 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	IGE-UP-10 Boilers Input >70kW <333kW Net Nat Draught Balanced Flue W
A	Directly below an opening into the building	300	2500	2500	2500
B	Below gutter soil pipes etc.	75	200	200	300
C	Below Eaves	200	200	200	300
D	Below balconies or car port roof	200*	Not Recommended**	Not Recommended**	Not Recommended**
E	From vertical drain or soil pipe etc.	150	150	150	150
F	From internal or external corners	300	If <2500 use Plume Ext	If <2500 use P/T below [#]	Not Recommended**
G	Above ground or balcony level	300	If <3000 use Plume Ext	If <3000 use Plume Ext	Not Recommended**
H	From a surface facing the terminal	600	$23.126 \times (\text{kW}) + 618.84$	$23.126 \times (\text{kW}) + 618.84$	Not Recommended**
I	From a terminal facing the terminal [#]	1200	$19.32 \times (\text{kW}) + 647.59$	$19.32 \times (\text{kW}) + 647.59^{\#}$	Not Recommended**
J	From opening in a carport into a dwelling	1200*	Not Recommended**	Not Recommended**	Not Recommended**
K	Vertically from a terminal on the same wall [#]	1500	2500	2500 [#]	2500
L	Horizontally from a terminal on the same wall	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$	$1.9031 \times (\text{kW}) + 1866.8$
M	Above an opening into the building	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$	$1.9031 \times (\text{kW}) + 1866.8$
N	Horizontally to an opening into the building	300*	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$	$1.9031 \times (\text{kW}) + 1866.8$
P	Above a flat roof (Obstacle > 2500) From Roof Level	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$	$3.4256 \times (\text{kW}) + 360.21$
P+	Above a flat roof (Obstacle < 2500) From Obstacle Level	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$	$3.4256 \times (\text{kW}) + 360.21$
Q	From an adjacent wall (edge of terminal)	300	If <2500 use Plume Ext	If <2500 use Plume Ext [#]	Not Recommended**
R	To an opening into the building	1000	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91$	$1.9031 \times (\text{kW}) + 1866.8$
S	From any other flue terminal [#]	300	$7.232 \times (\text{kW}) + 93.708$	$9.5156 \times (\text{kW}) + 833.91^{\#}$	$1.9031 \times (\text{kW}) + 1866.8$
T	Above a >20° Pitched Roof (BOT)	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$	$3.4256 \times (\text{kW}) + 360.21$
T+	Above a >20° Pitched Roof (BOT) (Valley)	300	$4.5675 \times (\text{kW}) - 19.723$	$4.5675 \times (\text{kW}) - 19.723$	$3.4256 \times (\text{kW}) + 360.21$



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

Horizontal Terminals Shall Not Be Located: Discharging into any road, track, thoroughfare, walkway or property boundary, to any play area/playing field, seating area or area where public gatherings take place. Where a surface or building element that may be adversely affected from plume condensates. Where vehicles may be parked unless separated by at least 1800mm.

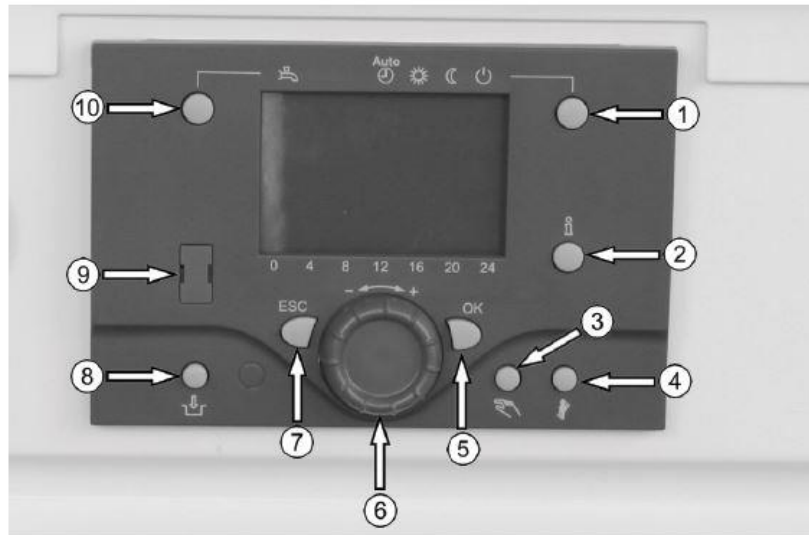
Areas that may affect the dispersion of products of combustion, foliage, shrubs, trees, canopies, roof structures, nearby structures, or any locations with unfavorable wind conditions.

Groups of appliances of (333kW net input) and above must comply with the Clean Air Act with respect to the chimney discharge height.

Where a chimney is used, the chimney height, rounded up to the nearest meter, shall give a termination position at least 3m above the level of any adjacent area to which there is general access, for example ground level, roof areas or adjacent openable windows. The chimney height shall not be less than the height of any building within a distance of 5 x the uncorrected chimney height (U) for appliances above 134kW net heat input. $U = 1.496 [Q \times 1.1]^{0.6}$ where Q = Net Heat Input MW

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

Document intended for quick guidance only. Absolute guidance must be sought from the respective regulation

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 / Select Button)
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
🔧	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

*If the controller is displaying German Text undertake the following;
Press the ESC button several times to display the DEFAULT SCREEN.
Press the OK button once, turn the wheel clockwise one click to highlight 'Bedieninheit',
Press the OK button, The screen displays 'BedieninheitSprache' 'Deutsch', Press the OK button to make 'Deutsch' flash, Turn the wheel one click anticlockwise to select 'English'. Press the OK button. The screen indicates 'OPERATOR SECTION, LANGUAGE',
Press the ECS button twice, to return to the main screen.*

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	Overtemprot. 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	Overtemprot. 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		
Swimming pool Circuit					
1959	Flow temp. setp. cons. request	8 – 120	70		°C
1947	DHW charging priority	Yes, No	Yes		
1945	Excess heat draw	Off, On	On		
1948	With Buffer	No, Yes	Yes		
1980	With prim. Contr./system pump	No, Yes	Yes		
Swimming pool					
2055	Setpoint solar heating	8 – 80	26		°C
2056	Setpoint source heating	8 – 80	22		°C
2065	Charging priority solar	Priority 1, Priority 2, Priority 3	Priority 3		
2070	Swimming pool temp max	P2055 – 95	32		°C
2080	With solar integration	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		-
Boiler					
2203	Release below outside temp.	---/-50 – 50	0		°C
2208	Full charging buffer	Off, On	Off		
2210	Setpoint min	P2211 – P2214	10		°C
2211	Setpoint min OEM	8 – P2210	40		°C
2212	Setpoint max	P2214 – P2213	90		°C
2213	Setpoint max OEM	P2212 – 120	85		°C

2214	Setpoint manual control	P2210 – P2212	70		°C
2217	Setpoint frost protection	---/-20 – 20	8		°C
2233	P-band Xp HCs	1 – 200	52		°C
2234	Int action time Tn HCs	4 – 873	80		S
2235	Der action time Tv HCs	0 – 30	0		S
2236	P-band Xp DHW	1 – 200	34		°C
2237	Int action time Tn DHW	4 – 873	80		S
2238	Der action time Tv DHW	0 – 30	8		S
2241	Burner running time min	0 – 20	0		Min.
2243	Burner off time min	0 – 20	3		Min.
2245	SD burner off time	0 – 80	15		°C
2250	Pump overrun time	0 – 240	5		Min.
2253	Pump over. time after DHW	0 – 20	1		Min.
2260	Prot. boiler startup consumers	Off, On	Off		
2263	Setpoint min boiler Switch Off	Off, On	Off		
2264	Prot. boiler startup anticipation	0 – 240	0		S
2270	Return setpoint min	P2270 – 95	8		°C
2271	Return setpoint min OEM	8 – P2270	8		°C
2272	Return influence consumers	Off, On	On		
2300	Frost protection boiler plant	Off, On	Off		
2301	Boiler pump on heat gen. lock	Off, On	Off		
2305	Impact heat generation lock	Heating mode only, Heating and DHW mode	Heating mode only		
2310	Limit thermostat function	Off, On	On		
2316	Temp. differential max	----/0 – 80	----		°C
2317	Temp. differential nominal	----/0 – 80	16		°C
2320	Pump modulation	None, Demand, Boiler setpoint, Temp differential Nominal, Burner output	Temp Differential Nominal		
2321	Starting speed	----/0 – 100	100		
2322	Pump speed min	P2327 – P2323	80		
2323	Pump speed max	P2322 – P2328	100		
2324	Speed Xp	1 – 200	32		°C
2325	Speed Tn	10 – 873	120		S
2326	Speed Tv	0 – 30	10		S

2327	Pump speed min OEM	0 – P2322	40		
2328	Pump speed max OEM	P2323 – 100	100		
2329	Pump setpoint reduction	0 – 20	10		°C
2330	Output nominal	0 – 2000	25		kW
2331	Output basic stage	0 – 2000	5		kW
2334	Output at pump speed min	0 – 100	0		%
2335	Output at pump speed max	0 – 100	100		%
2441	Fan speed heating max	P9525 – P9530	6900		Min. ⁻¹
2442	Fan speed full charging max	P9525 – P9530	6900		Min. ⁻¹
2443	Fan sp. start value inst. DHW	0 – P9530	0		Min. ⁻¹
2444	Fan speed DHW max	----/P9525 – P9530	---		Min. ⁻¹
2445	Fan shutdown heating mode	Off, On	Off		
2446	Fan shutdown delay	0 -0200	3		S
2450	Controller delay	Off, Heating mode only, DHW mode only, Heating and DHW mode	Off		
2452	Controller delay speed	P9525 – P9530	2400		Min. ⁻¹
2453	Controller delay duration	0 – 255	10		S
2454	Switching diff on HCs	0 – 20	4		°C
2455	Switching diff off min HCs	0 – 20	4		°C
2456	Switching diff off max HCs	0 – 20	4		°C
2457	Settling time HCs	0 – 240	10		Min.
2460	Switching diff on DHW	0 – 20	0		°C
2461	Switching off min DHW	0 – 20	5		°C
2462	Switching off max DHW	0 – 20	5		°C
2463	Settling time DHW	0 – 240	10		Min.
2464	Dyn SD on setpoint	Off, On	Off		
2465	Min setpoint change dyn SD	0 – 80	20		°C
2466	Dyn SD with HC/DHW change	Off, On	Off		
2467	Dyn SD when burner on	Off, On	On		
2470	Delay heat req special op.	0 – 600	0		S
2473	Flue gas temp output red	0 – 200	95		°C
2474	Flue gas temp switch-off limit	0 – 200	100		°C

2476	Flue gas superv. Shutdown	Start pre-ventilation, Lockout position	Lockout position		
2477	Flue gas superv. st. prev. time	10 – 218	10		Min.
2478	Flue gas temp output limit	0 – 200	80		°C
2479	Fl'gsuperv. time con rel mod	0 – 50	0		S
2480	Static press superv. sh'down	Start preventilation, Lockout position	Lockout position		
2490	Dyn press superv. sh'down	Start preventilation, Lockout position	Lockout position		
2491	Dynsuperv. press diff min	0 – 5	0		Bar
2492	Dynsuperv. press diff max	0 – 5	5		Bar
2494	Dynsuperv. press increase	No, Yes	Yes		
2495	Dyn press superv time	0 – 10	0.2		S
2630	Auto deaeration procedure	Off, On	Off		
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
Configuration					
5700	Presetting	Changed, Unchanged	Changed		-
5710	Heating circuit 1	Off, On	On		-
5711	Cooling circuit 1	Off, 4-pipe system cooling	Off		
5715	Heating circuit 2	Off, On	Off		-
5721	Heating circuit 3	Off, On	Off		-

5730	DHW sensor	DHE sensor B3, Thermostat, DHW outlet sensor B38	DHW Sensor B3		-
5731	DHW controlling element	No charging request, charging pump, diverting valve	Diverting Valve		-
5732	Pump off change div valve	0 – 10s	0		S
5733	Delay pump off	0 – 10s	0		S
5734	Basic position DHW div valve	Last request, Heating circuit, DHW	DHW		-
5736	DHW separate circuit	Off, On	Off		-
5737	Optg action DHW div valve	Position on DHW, Position on heating circuit	Position on DHW		-
5738	Mid-position DHW div Valve	Off, On	Off		-
5774	Ctrl boiler pump/DHW valve	All requests, Request HC1/DHW only	All requests		-
5775	Boiler pump with DHW	On, Off	On		-
5840	Solar controlling element	Charging pump, Diverting valve	Charging Pump		-
5841	External solar charger	Jointly, DHW storage tank, Buffer storage tank	Jointly		-
5870	Combi storage tank	No, Yes	No		-
5890	Relay output QX1	None, Circulating pump Q4, EI imm heater DHWK6, Collector pump Q5, Cons circuit pump VK1 Q15, Boiler pump Q1, Bypass pump Q12, Alarm output K10, 2 nd pump speed HC1 Q21, 2 nd pump speed HC2 Q22, 2 nd pump speed HC3 Q23, Heat circuit pump HC3 Q20, Cons circuit pump VK2 Q18, System pump Q14, Heat gen shutoff valve Y4, solid fuel boiler pump Q10, Time program 5 K13, Buffer return valve Y15, Solar pump extexch K9, Solar ctrl elem buffer K8, Solar ctrl elemswi pool K18, Swimming pool pump Q19, Cascade pump Q25, St tank transfer Q11, DHW mixing pump Q35, DHW intermcirc pump Q33, Heat request K27, Refrigeration request K28, Heat circuit pump HC1 Q2, Heat circuit pump HC2 Q6, DHW ctrl elem Q3, Instant heater ctrl elem Q34, Water filling K34, 2 nd boiler pump speed Q27, Status output K35, Status information K36, Flue gas damper K37, Fan shutdown K38, dT controller 1 K21, dT controller 2 K22	Boiler Pump Q1		-
5891	Relay output QX2	See Para 5890	None		-
5892	Relay output QX3	See Para 5890	DHW ctrl elem Q3		-

5894	Relay output QX4	None, Heat gen shutoff valve Y4, Buffer return valve Y15, Solar ctrl elem buffer K8, Solar ctrl elemswi pool K18, DHW ctrl elem Q3, Instant heat ctrl elem Q34	None		-
5930	Sensor input BX1	None, DHW sensor B32, Collector sensor B6, DHW circulation sensor B39, Buffer sensor B4, Buffer sensor B41, Flue gas temp sensor B8, Segment flow sensor B10, Solid fuel boiler sensor B22, DHW charging sensor B36, Buffer sensor B42, Segment return sensor B73, Cascade return flow sensor B70, Pool sensor B13, Solar flow sensor B63, Solar return sensor B64, Primary exch sensor B26	Flue gas temp sensor B8		-
5931	Sensor input BX2	See Para 5930	None		-
5932	Sensor input BX3	See Para 5930	None		-
5950	Function of Input H1	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		-
5951	Contact Type H1	Normal closed, Normal Open	Normal Open		-
5953	Voltage value 1 H1	0 – 10	0		Volts
5954	Function value 1 H1	-1000 – 5000	0		-
5955	Voltage value 2 H1	0 – 10	0		Volts
5956	Function value 2 H1	-1000 – 5000	0		-

5960	Function input H3	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		-
5961	Contact type H3	Normal closed, Normal open	Normal open		-
5963	Voltage value 1 H3	0 – 10	0		Volts
5964	Function value 1 H3	-1000 – 5000	0		-
5965	Voltage value 2 H3	0 – 10	0		Volts
5966	Function value 2 H3	-1000 – 5000	0		-
5970	Function input H4	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		-
5971	Contact type H4	Normal closed, Normal open	Normal open		-
5973	Frequency value 1 H4	0 – 1000	0		-
5974	Function value 1 H4	-1000 - 5000	0		-

5975	Frequency value 2 H4	0 – 1000	0		-
5976	Function value 2 H4	-1000 - 5000	0		-
5977	Function input H5	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	Room Thermostat HC1		-
5978	Contact type H5	Normal closed, Normal open	Normal open		-
6008	Function input H6	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V			-
6009	Contact type H6	Normal closed, Normal open	Normal open		-

6011	Function input H7	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	Boiler flow switch		-
6012	Contact type H7	Normal closed, Normal open	Normal open		-
6020	Function extension module 1	None, Multifunctional, Heating circuit 1, Heating circuit 2, Heating circuit 3, Return temp controller, Solar DHW, Primary contr/system pump	Heating circuit 2		-
6021	Function extension module 2	None, Multifunctional, Heating circuit 1, Heating circuit 2, Heating circuit 3, Return temp controller, Solar DHW, Primary contr/system pump	None		-
6022	Function extension module 3	None, Multifunctional, Heating circuit 1, Heating circuit 2, Heating circuit 3, Return temp controller, Solar DHW, Primary contr/system pump	None		-
6024	Funct. Input EX21 module 1	None, Limit thermostat HC	None		-
6026	Funct. Input EX21 module 2	None, Limit thermostat HC	None		
6028	Funct. Input EX21 module 3	None, Limit thermostat HC	None		

6030	Relay output QX21 module 1	None, Circulating pump Q4, EI imm heater DHW K6, Collector pump Q5, Cons circuit pump VK1 Q15, Boiler pump Q1, Bypass pump Q12, Alarm output K10, 2 nd pump speed HC1 Q21, 2 nd pump speed HC2 Q22, 2 nd pump speed HC3 Q23, Heat circuit pump HC3 Q20, Cons circuit pump VK2 Q18, System pump Q14, Heat gen shutoff valve Y4, Solid fuel boiler pump Q10, Time program 5 K13, Buffer return valve Y15, Solar pump extexch K9, Solar ctrl elem buffer K8, Solar ctrl elemswi pool K18, Swimming pool pump Q19, Cascade pump Q25, St tank transfer pump Q11, DHW mixing pump Q35, DHW intermcirc pump Q33, Heat request K27, Refrigeration request K28, Heat circuit pump HC1 Q2, Heat circuit pump HC2 Q6, DHW ctrl elem Q3, Instant heater ctrl elem Q34, Water filling K34, 2 nd boiler pump speed Q27, Status output K35, Status information K36, Fan shutdown K38, dT controller 1 K21, dT controller 2 K22	None		
6031	Relay output QX22 module 1	See Para 6030	None		
6032	Relay output QX23 module 1	See Para 6030	None		
6033	Relay output QX21 module 2	See Para 6030	None		
6034	Relay output QX22 module 2	See Para 6030	None		
6035	Relay output QX23 module 2	See Para 6030	None		
6036	Relay output QX21 module 3	See Para 6030	None		
6037	Relay output QX22 module 3	See Para 6030	None		
6038	Relay output QX23 module 3	See Para 6030	None		

6040	Sensor input BX21 module 1	None, DHW sensor B31, Collectoe sensor B6, DHW circulation sensor B39, Buffer sensor B4, Buffer sensor B41, Flue gas temp sensor B8, Common flow sensor B10, Solid fuel boiler sensor B22, DHW charging sensor B36, Buffer sensor B42, Common flow sensor B37, buffer return sensor B70, Swimming pool sensor B13, Solar flow sensor B63, Solar return sensor B64, Primary exch sensor B26	None		
6041	Sensor input BX22 module 1	See Para 6040	None		
6042	Sensor input BX21 module 2	See Para 6040	None		
6043	Sensor input BX22 module 2	See Para 6040	None		
6044	Sensor input BX21 module 3	See Para 6040	None		
6045	Sensor input BX22 module 3	See Para 6040	None		
6046	Function input H2 module 1	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		
6047	Contact type H2 module 1	Normal closed, Normal open	Normal open		
6049	Voltage value 1 H2 module 1	0 - 10	0		Volts
6050	Function value 1 H2 module 1	-1000 - 5000	0		
6051	Voltage value 2 H2 module 1	0 - 10	0		Volts

6052	Function value 2 H2 module 1	-1000 - 5000	0		
6054	Function input H2 module 2	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		
6055	Contact type H2 module 2	Normal closed, Normal open	Normal open		
6057	Voltage value 1 H2 module 2	0 - 10	0		Volts
6058	Function value 1 H2 module 2	-1000 - 5000	0		
6059	Voltage value 2 H2 module 2	0 - 10	0		Volts
6060	Function value 2 H2 module 2	-1000 - 5000	0		

6062	Function input H2 module 3	None, Optg mode change HCs + DHW, Optg mode changeover DHW, Optg mode changeover HCs, Opt mode changeover HC1, Opt changeover HC2, Opt changeover HC3, Heat generation lock, Error/alarm message, Consumer request VK1, consumer request VK2, release swi pool source heat, Excess heat discharge, release swi pool solar, Operating level DHW, Operating level HC1, Operating level HC2, Operating level HC3, Room thermostat HC1, Room thermostat HC2, Room thermostat HC3, DHW flow switch, DHW thermostat, Pulse count, Checkb sign flue gas damper, Start prevention, Boiler flow switch, Boiler pressure switch, Consumer request VK1 10V, Consumer request VK2 10V, Pressure measurement 10V, Output request 10V	None		
6063	Contact type H2 module 3	Normal closed, Normal open	Normal open		
6065	Voltage value 1 H2 module 3	0 - 10	0		Volts
6066	Function value 1 H2 module 3	-1000 - 5000	0		
6067	Voltage value 2 H2 module 3	0 - 10	0		Volts
6068	Function value 2 H2 module 3	-1000 - 5000	0		
6072	Signal output UX	0...10V, PWM	PWM		
6078	Function output UX2	None, Boiler pump Q1, DHW pump Q3, DHW intermcir pump Q33, Heat circuit pump HC1 Q2, Heat circuit pump HC2 Q6, Heat circuit pump HC3 Q20, Collector pump Q5, Solar pump extexch K9, Solar pump buffer K8, Solar pump swi pool K18, Instant heater pump Q34, Solid fuel boiler pump Q10, Bypass pump Q12	None		
6085	Function output P1	See Para 6078	Boiler pump Q1		
6089	Function output UX3	See Para 6078	None		
6097	Sensor type collector	NTC, Pt 1000	NTC		
6098	Readjust collector sensor	-20 - 20	0		°C
6100	Readjust outside sensor	-3.0 - 3.0	0		°C
6101	Sensor type flue gas temp	NTC, Pt 1000, NTC 20k	NTC		

6102	Readjust flue gas sensor	-20 - 20	0		°C
6110	Time constant building	0 - 50	15		H
6116	Time constant setp. compens.	0 - 14	0		Min.
6117	Central setp. compensation	----/1 - 100	5		°C
6118	Setpoint drop delay	----/1 - 200	----		°C
6120	Frost protection plant	Off, /on	Off		-
6127	Pump/valve kick duration	0 - 51	30		S
6140	Water pressure max	----/0.0 - 10.0	3		Bar
6141	Water pressure min	----/0.0 - 10.0	0.8		Bar
6142	Water pressure critical min	----/0.0 - 10.0	0.5		Bar
6143	Water press. switching diff.	0.0 - 10.0	0.3		Bar
6150	Water pressure 2 max	----/0.0 - 10.0	3		Bar
6151	Water pressure 2 min	----/0.0 - 10.0	0.8		Bar
6152	Water pressure 2 critical min	----/0.0 - 10.0	0.5		Bar
6153	water press. 2 switching diff.	0.0 - 10.0	0.3		Bar
6180	Water pressure 3 max	----/0.0 - 10.0	3		Bar
6181	Water pressure 3 min	----/0.0 - 10.0	0.8		Bar
6182	Water pressure 3 critical min	----/0.0 - 10.0	0.5		Bar
6183	Water press. 3 switching diff.	0.0 - 10.0	0.3		Bar
6200	Save sensors	No, Yes	No		-
6204	Save parameters	No, Yes	No		-
6205	Reset to default parameters	No, Yes	No		-
6212	Check no. heat source 1	0 - 199999	12		-
6213	Check no. heat source 2	0 - 199999	0		-
6215	Check no. storage tank	0 - 199999	0		-
6217	Check no. heating circuits	0 - 199999	101		-
6220	Software version	0 - 99	03.5		-
LPB System					
6600	Device address	0 - 16	1		-
6601	Segment address	0 - 14	0		-
6604	Bus power supply function	Off, Automatic	Automatic		-
6605	Bus power supply state	Off, On	On		
6610	Display system message	No, Yes	Yes		-

6611	Sys message alarm	No, Yes	No		-
6612	Alarm delay	----/2 – 60	----		Min.
6620	Action changeover function	Segment, System	System		-
6621	Summer changeover	Local, Central	Local		-
6623	Optg mode changeover	Local, Central	Central		-
6624	Manual source lock	Local, Own segment	Local		-
6625	DHW assignment	Own controller, All controllers within own segment, All controllers within system	All controllers within system		-
6630	Cascade master	Always, Automatically	Automatically		-
6631	Ext source in Eco mode	Off, On DHW, On	Off		-
6632	Note OT limit ext source	No, Yes	No		-
6640	Clock mode	Autonomously, From BUS slave without remote setting, From BUS slave with remote setting, Controller is clock time master	Autonomously		-
6650	Outside temp source	S0/G1 – S14/G16	S0/G1		-
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		-
Service / Special Operation					
7040	Burner hours interval	----/10 – 10000	----		H
7041	Burner hrs since maintenance	0 – 10000	0		H
7042	Burner start interval	----/100 – 65500	----		-

7043	Burner start sinc maintenance	0 – 65535	0		-
7044	Maintenance interval	----/1 – 240	----		Month s
7045	Time since maintenance	0 – 240	0		Month s
7050	Fan speed threshold for service	0 – 10000	0		Min ⁻¹
7051	Ionization current service message	No, Yes	No		-
7130	Chimney sweep function	Off, On	Off		-
7131	Chimney sweep burner output	Low fire, High fire, Max heating load	Max heating load		-
7140	Manual operation	Off, On	Off		-
7143	Controller stop function	Off, On	Off		-
7145	Controller stop setpoint	0 – 100	0		%
7146	Deaeration function	Off, On	Off		-
7147	Type of ventilation	None, heating circuit continuous, Heating circuit cycled, DHW continuous, DHW cycled	None		-
7165	Forced heat draw DHW	Off, On	Off		-
7170	Telephone customer service	0 – 9	0		-
7250	PStick storage pos	0 – 250	0		-
7251	PStick description				-
7252	PStick command	No operation, Reading from stick, Writing on stick	No operation		-
7253	PStick progress	0 – 100	0		%
7254	PStick status	No stick, Stick ready, Writing on stick, Reading from stick, EMC test active, Writing error, Reading error, Incompatible data set, Wrong stick type, Stick format error, Check data set, Data set disabled, Reading disabled	No stick		
Input / Output Test0					
7700	Relay test	No test, Everything off, Relay output QX1, Relay output QX2, Relay output QX3, Relay output QX4, Relay output QX21 module 1, Relay output QX 22 module 1, Relay output QX23 module 1, Relay output QX21 module 2, Relay output QX22 module 2, Relay output QX23 module 2, Relay output QX21 module 3, Relay output QX22 module 3, Relay output QX23 module 3	No Test		
7713	Output test P1	----/0 – 100	----		%

7714	PWM signal P1	0 – 100	-		%
7716	Output test UX2	----/0 – 100	----		%
7717	Output signal UX2	----/0 – 100	----		
7717*	Voltage output UX2	----/0 – 10	----		V
7719	PWM output UX2	----/0 – 100	----		%
7724	Output test UX3	----/0 – 100	----		%
7725	Output signal UX3	----/0 – 100	----		
7725*	Voltage output UX3	----/0 – 10	----		V
7726	PWM output UX3	----/0 – 100	----		%
7730	Outside temp B9	-50 – 50	-		°C
7750	DHW temp B3/B38	0 – 140	-		°C
7760	Boiler temp B2	0 – 140	-		°C
7820	Sensor temp BX1	-28 – 350	-		°C
7821	Sensor temp BX2	-28 – 350	-		°C
7822	Sensor temp BX3	-28 – 350	-		°C
7823	Sensor temp BX4	-28 – 350	-		°C
7830	Sensor temp BX21 module 1	-28 – 350	-		°C
7831	Sensor temp BX22 module 1	-28 – 350	-		°C
7832	Sensor temp BX21 module 2	-28 – 350	-		°C
7833	Sensor temp BX22 module 2	-28 – 350	-		°C
7834	Sensor temp BX21 module 3	-28 – 350	-		°C
7835	Sensor temp BX22 module 3	-28 – 350	-		°C
7840	Voltage signal H1	0 – 10	-		V
7841	Contact state H1	Open, Closed	Open		
7845	Voltage H2 module 1	0 – 10	-		V
7846	Contact state H2 module 1	Open, Closed	Open		
7848	Voltage H2 module 2	0 – 10	-		V
7849	Contact state H2 module 2	Open, Closed	Open		
7851	Voltage H2 module 3	0 – 10	-		V
7852	Contact state H2 module 3	Open, Closed	Open		
7854	Voltage signal H3	0 – 10	-		V
7855	Contact state H3	Open, Closed	Open		
7860	Contact state H4	Open, Closed	Open		
7862	Frequency H4	0 – 2000	-		
7865	Contact state H5	Open, Closed	Open		
7872	Contact state H6	Open, Closed	Open		
7874	Contact state H7	Open, Closed	Open		
7950	Input EX21 module 1	0V, 230	0		V
7951	Input EX21 module 2	0V, 230	0		V
7952	Input EX21 module 3	0V, 230	0		V
State					
8000	State heating circuit 1	SLT cut out, Fault, Man	-		

8001	State heating circuit 2	SLT cut out, Fault, Man	-		
8002	State heating circuit 3	SLT cut out, Fault, Man	-		
8003	State DHW	SLT cut out, Fault, Man	-		
8005	State boiler	SLT cut out, Fault, Man	-		
8007	State solar	SLT cut out, Fault, Man	-		
8008	State solid fuel boiler	SLT cut out, Fault, Man	-		
8009	State burner	SLT cut out, Fault, Man	-		
8010	State buffer	SLT cut out, Fault, Man	-		
8011	State swimming pool	SLT cut out, Fault, Man	-		
Diagnostic Cascade					
8100	Priority/ state source 1	Not available, Fault, Manual control active, Heat generation lock active, Chimney sweep funct active, Temporarily unavailable, outside temp limit active, No released, Released			
8102	Priority/ state source 2	See Para 8100			
8104	Priority/ state source 3	See Para 8100			
8106	Priority/ state source 4	See Para 8100			
8108	Priority/ state source 5	See Para 8100			
8110	Priority/ state source 6	See Para 8100			
8112	Priority/ state source 7	See Para 8100			
8114	Priority/ state source 8	See Para 8100			
8116	Priority/ state source 9	See Para 8100			
8118	Priority/ state source 10	See Para 8100			
8120	Priority/ state source 11	See Para 8100			
8122	Priority/ state source 12	See Para 8100			
8124	Priority/ state source 13	See Para 8100			
8126	Priority/ state source 14	See Para 8100			
8128	Priority/ state source 15	See Para 8100			
8130	Priority/ state source 16	See Para 8100			
8138	Cascade flow temp	0 – 140			°C
8139	Cascade flow temp setp.	0 – 140			°C
8140	Cascade return temp	0 – 140			°C
8141	Cascade return temp setp.	0 – 140			°C
8150	Source seqch'over current	0 – 990			H
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

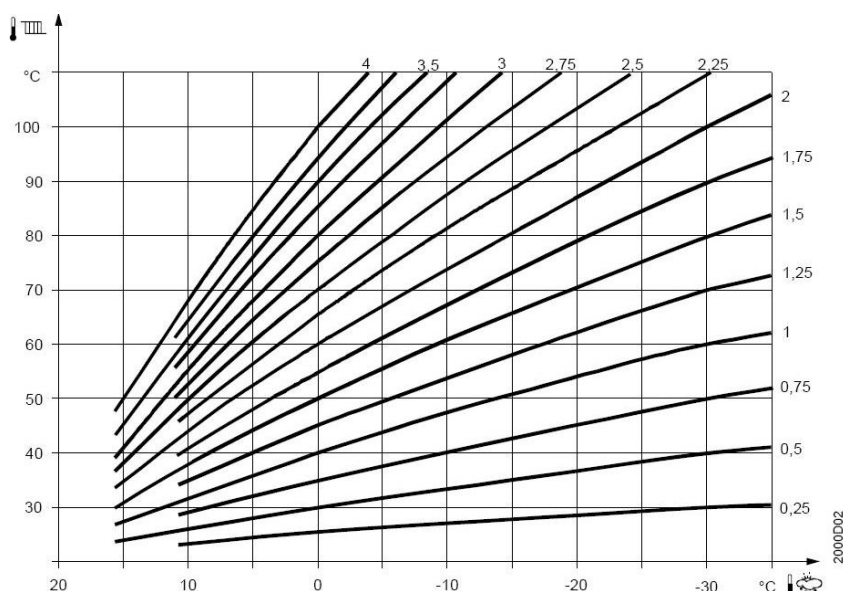
8520	Solar return temp	-28 – 350	-		°C
8526	24-hour yield solar energy	0 – 999.9	-		kWh
8527	Total yield solar energy	0 – 9999999.9	-		kWh
8530	Hours run solar yield	0 – 199999	-		H
8531	Hours run collector overtemp	0 – 199999	-		H
8532	Hours run collector pump	0 – 199999	-		H
8560	Solid fuel boiler 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		
Burner Control					
9500	Pre-purge time	0 – 51	10		S
9501	Pre-purge time min	0 – 51	10		S
9504	Required speed pre-purging	200 – 10000	2400		Min ⁻¹
9505	Req. speed pre-purging min	200 – 10000	2400		Min ⁻¹
9506	Speed tolerance pre-purging	50 – 1200	600		Min ⁻¹
9512	Required speed ignition	200 – 10000	2700		Min ⁻¹
9513	Required speed ignition max	200 – 10000	2700		Min ⁻¹
9514	Speed tolerance ignition	50 – 1200	600		Min ⁻¹
9517	Pre-ignition time	0.4 – 1200	1		S
9518	Safety time	1.8 – 9.8	5		S
9519	Safety time with ignition	0.2 – 9.6	4.6		S
9524	Required speed LF	0 – 10000	1250		Min ⁻¹
9525	Required speed LF min	0 – 10000	1250		Min ⁻¹
9526	Required tolerance LF	50 – 1200	600		Min ⁻¹
9529	Required speed HF	0 – 10000	60000		Min ⁻¹
9530	Required speed HF max	0 – 10000	60000		Min ⁻¹
9531	Required tolerance HF	50 – 1200	600		Min ⁻¹
9534	Optg time with ignition load	0.2 – 10	1		S
9540	Post-purge time	0 – 51	5		S

9541	Post-purge time TL max	0 – 10	5		Min
9542	Post-purge time min	0 – 51	5		S
9544	Post-purge time 2	0.2 – 51	0.2		S
9545	Post-purge in lockout pos	Off, On	Off		
9551	Required speed stop max	0 – 2000	300		Min ⁻¹
9610	Capacity	Up to 70kW, Up to 120kW, Above 120kW	Up to 70kW		
9611	LP configuration	LP mode 1, LP mode 2, LP mode 3, LP mode 4, LP mode 5	LP mode 1		
9612	GP configuration	GP not connected, GP connected	GP not connected		
9613	Home run mode	Startup with home run, startup without home run	Startup with home run		
9614	Post-purging level	Run, Pre-purge	Run		
9615	Forced pre-purging on error	Off, On	On		
9616	Max speed	0 – 10000	10000		Min ⁻¹
9617	Hall sensor pulse/rev	0 – 6	2		
9618	Ion. Curr. Level extran light	0 – 100	0.61		µA
9619	Ion. Curr. Level flame exting	0 – 100	0.78		µA
9626	Fan output/speed slope	-1000 – 1000	0		
9627	Fan output/speed Y-section	-1500 – 1500	0		
9630	Speed Kp	0 – 15.9375	1.125		
9631	Speed Tn	0 – 600	8		S
9632	Speed Tv	0 – 1.75	0		S
9650	Chimney drying	Off, Temporarily, Permanently	Off		
9651	Req. speed chimney drying	0 – 10000	500		Min ⁻¹
9652	Duration chimney drying	10 – 1440	10		Min.

10.2 Weather Compensation Slope



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 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*)

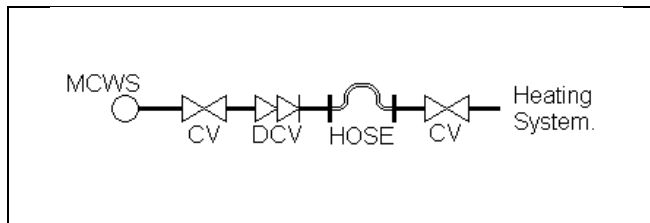
Fluid Category 3 (C-3)

Non Domestic (Other than *In-House*)

Fluid Category 4 (C-4)

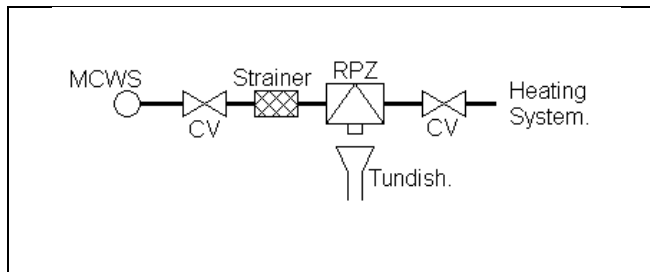
For Category 3 systems, the approved method of filling must comprise of the following components in the arrangement shown;

- 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: 2005 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: 2005 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.

11.1 Expansion Vessel

In accordance with BS 6644: 2005, WRAS Regulations, and Local Authority Water Regulations, as applicable, the boiler is supplied with a 10L internal Expansion Vessel to ensure that the water capacity of the system has ample expansion capacity.

If additional expansion is required due to the size of the system 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.

12.0 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 ProCon 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
2 Genesis Business Park
Albert Drive
Sheerwater
Woking Surrey
GU21 5RW
Tel:0330 100 7750
Fax: 0330 100 7751

12.1 Care With The Use of Solder Flux

The ProCon HT range has heat exchangers fabricated from 316L Stainless Steel. It is most important that the compatibility of any flux is checked with the supplier before use, and that any flux manufacturers recommendations are strictly followed with regards to use in conjunction with Stainless Steel.

If you are applying any of the ProCon 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.

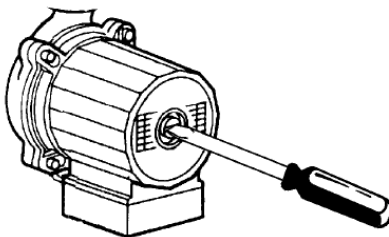
Please refer to our website for further details on our matched brazed and gasketed plate heat exchanger range.

13.0 Commissioning The Appliance

13.1 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.

Prior to applying power to the appliance its circulation pump should be bled and checked to ensure free rotation of the armature. Also ensure that the ignition electrodes spark gap is set to 4mm.



13.2 Combustion System Commissioning

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.

Use the rotary knob to select maintenance / special operation. Confirm the selection with the OK button

Use the rotary knob to highlight Para 7143. Confirm the selection with the OK button.

Change setting to ON. Confirm with OK button.

To set max power use the rotary control knob the change Para 7145 to 100%

Confirm the selection with the OK button

Measure the CO₂ value on the test nipple of the exhaust pipe

Use adjusting screw 4 to set the CO₂ value of 8.7%

After each adjustment, wait about 1 min., Until the CO₂ level updated.

To set min power use the rotary knob to highlight Para 7145. Confirm the selection with the OK button

Using the rotary control knob change setting to 0%. Confirm the selection with the OK button

Measure the CO₂ value on the test nipple of the exhaust pipe.

Use the adjusting screw 2, to set the CO₂ value to 9.3%.

After each adjustment, wait about 1 min., Until the CO₂ level updated.

Check the CO₂ values of the min and max power settings again after allowing the gas valve to settle once set, to confirm correct adjustment has been made.



Once completed return all settings to original settings.

CO ₂ Settings Required		
	Natural Gas	LPG
High Fire	8.7% CO ₂	10.5% CO ₂
Low Fire	9.3% CO ₂	10.3% CO ₂

13.3 Conversion to LPG

To convert the appliance to LPG from Natural Gas the following items are required;

Part number 96.00025-7201 (LPG conversion kit) consisting of LPG gas air mixing box (blue) and conversion identification labels.

For more information please contact MHG Heating Ltd office.

14.0 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.
See section 13.2
- f) Run the unit in Commissioning Mode LOW FIRE; with the use of a flue gas analyzer record the CO₂ level.
See section 13.2
- 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.

14.1 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.

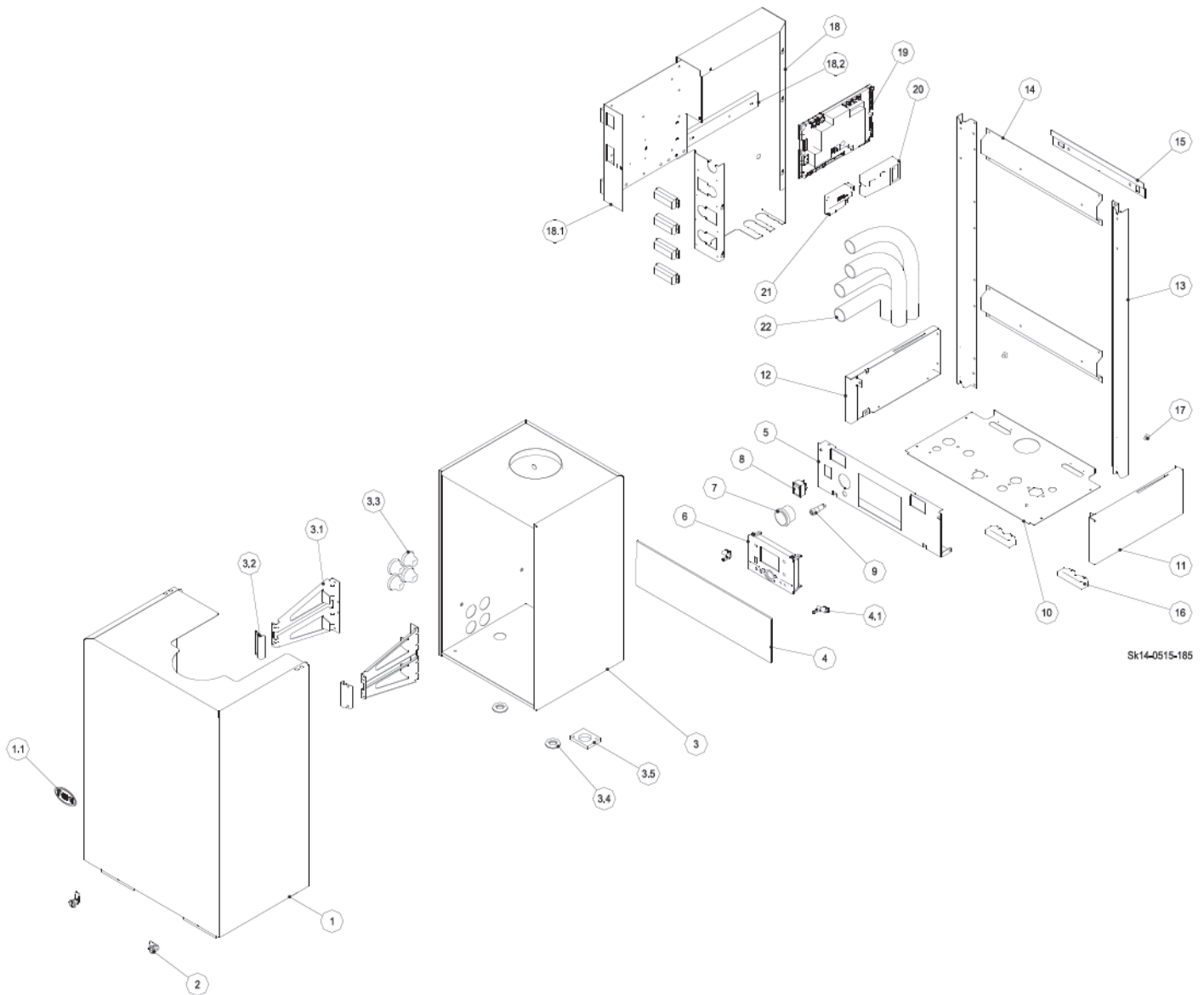
- a) Turn the boiler OFF at the ON/OFF switch and electrically isolate the boiler by removing the plug or fuse from the boiler supply.
- b) Turn off the gas at the boiler isolation tap, fitted by the installer, adjacent to the appliance.
- c) Remove the electrical connections from the units fan assemble.
- d) Disconnect the earth lead, HT cap and Lead and rectification lead from the electrodes.
- e) Disassemble the burner by removing the four M6 nuts around the burner door, using a 10mm Spanner. Pull the burner forward and remove from the heat exchanger.
- f) As the burner comes away from the heat exchanger unplug the fans electrical plugs at the rear.
- g) Once access has been gained to the combustion chamber and front section of the heat exchanger, visually inspect the heat exchanger coils.
It is usually only necessary to clean the front section of the heat exchanger. If server deposits are found, the rear section of the heat exchanger should also be checked and cleaned, which will necessitate the removal of the heat exchanger from the boiler.
If any coils appear to be significantly dis-coloured, then a blockage of; 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.
- h) 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 *ProCon 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

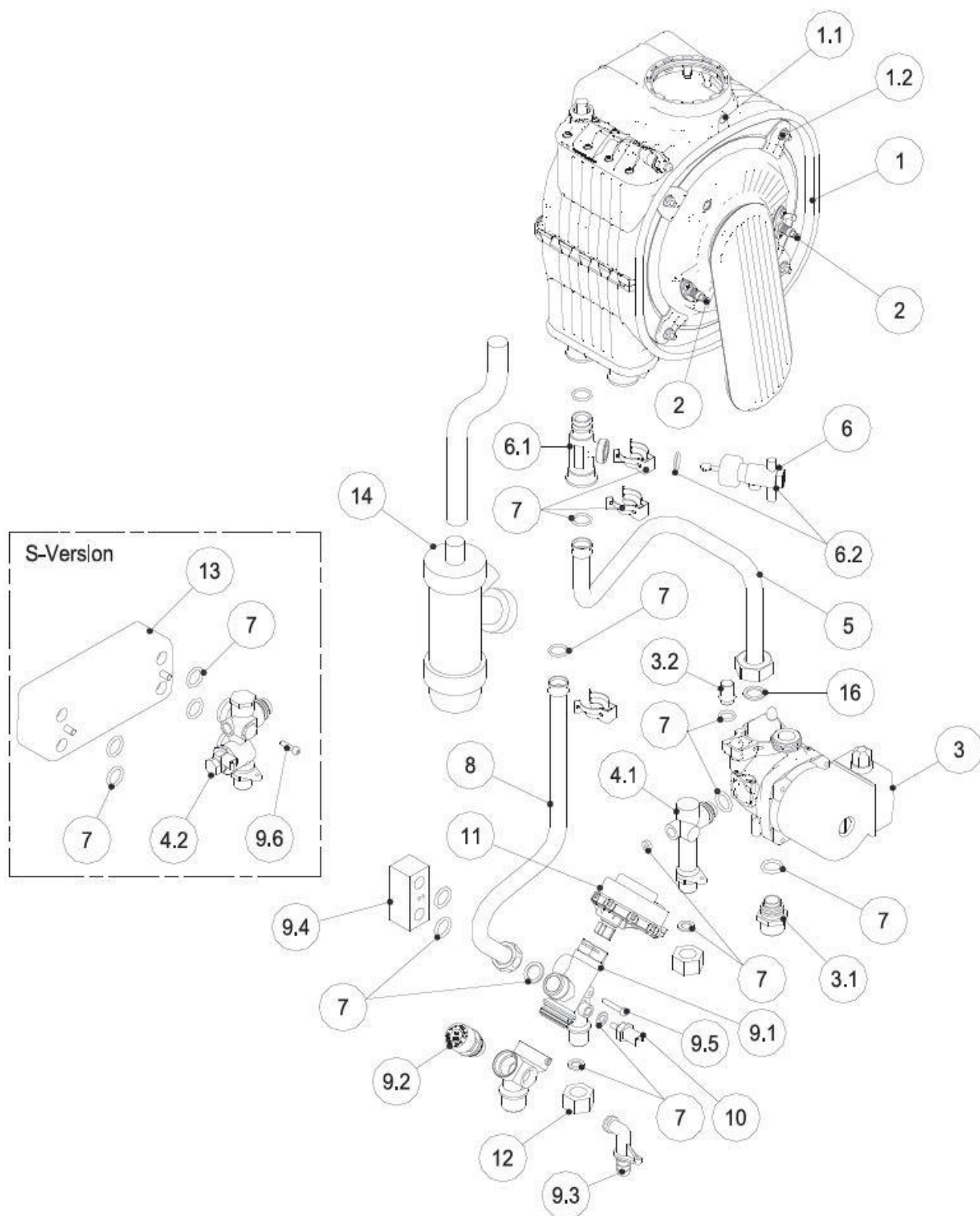
copious amounts of fresh water. *ProCon Combustion Chamber Cleaning Granules* are available from MHG Heating Ltd Spares Department.

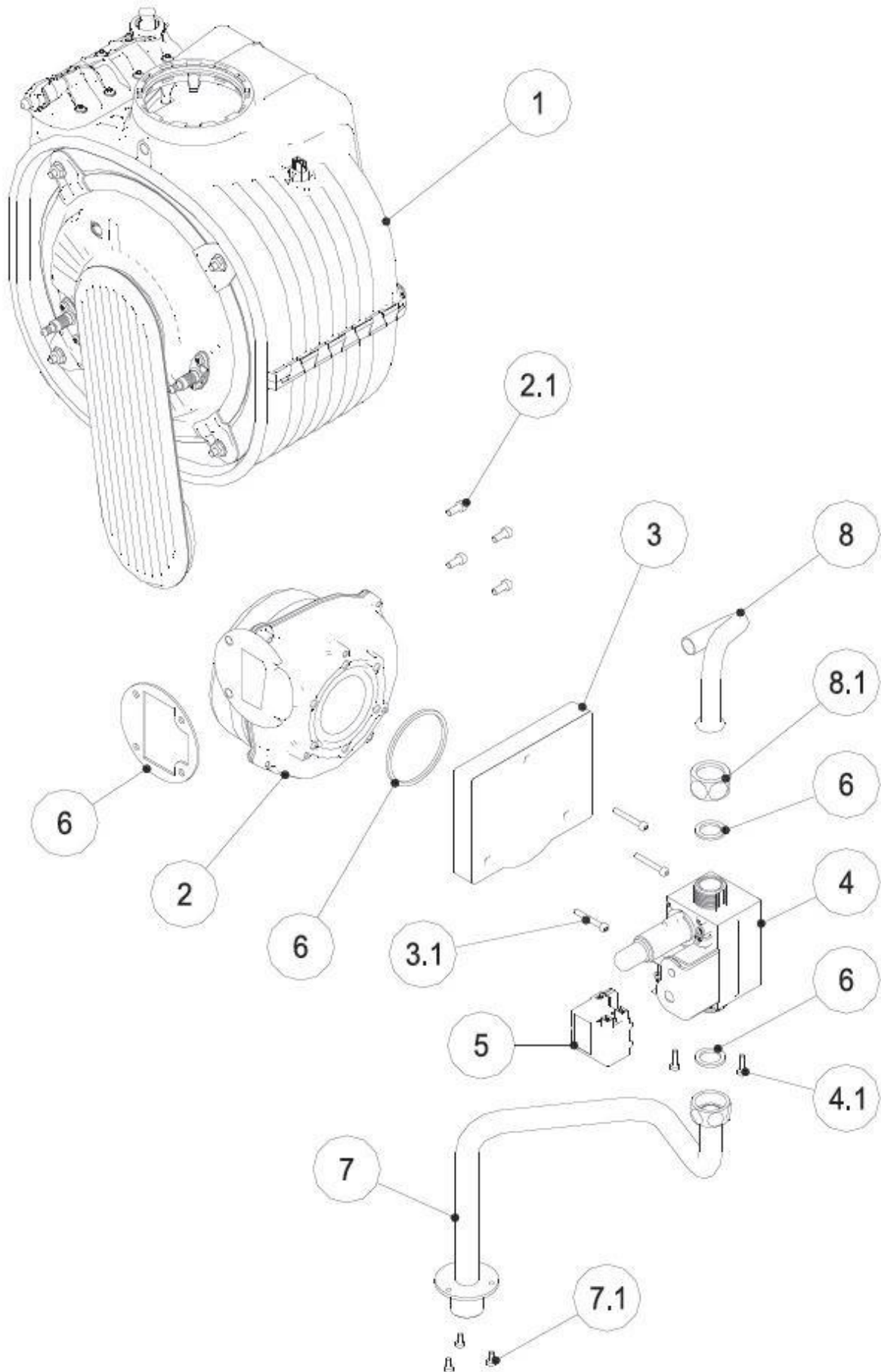
A STEEL OR PVC BRUSH MUST NOT BE USED TO CLEAN THE HEAT EXCHANGER.

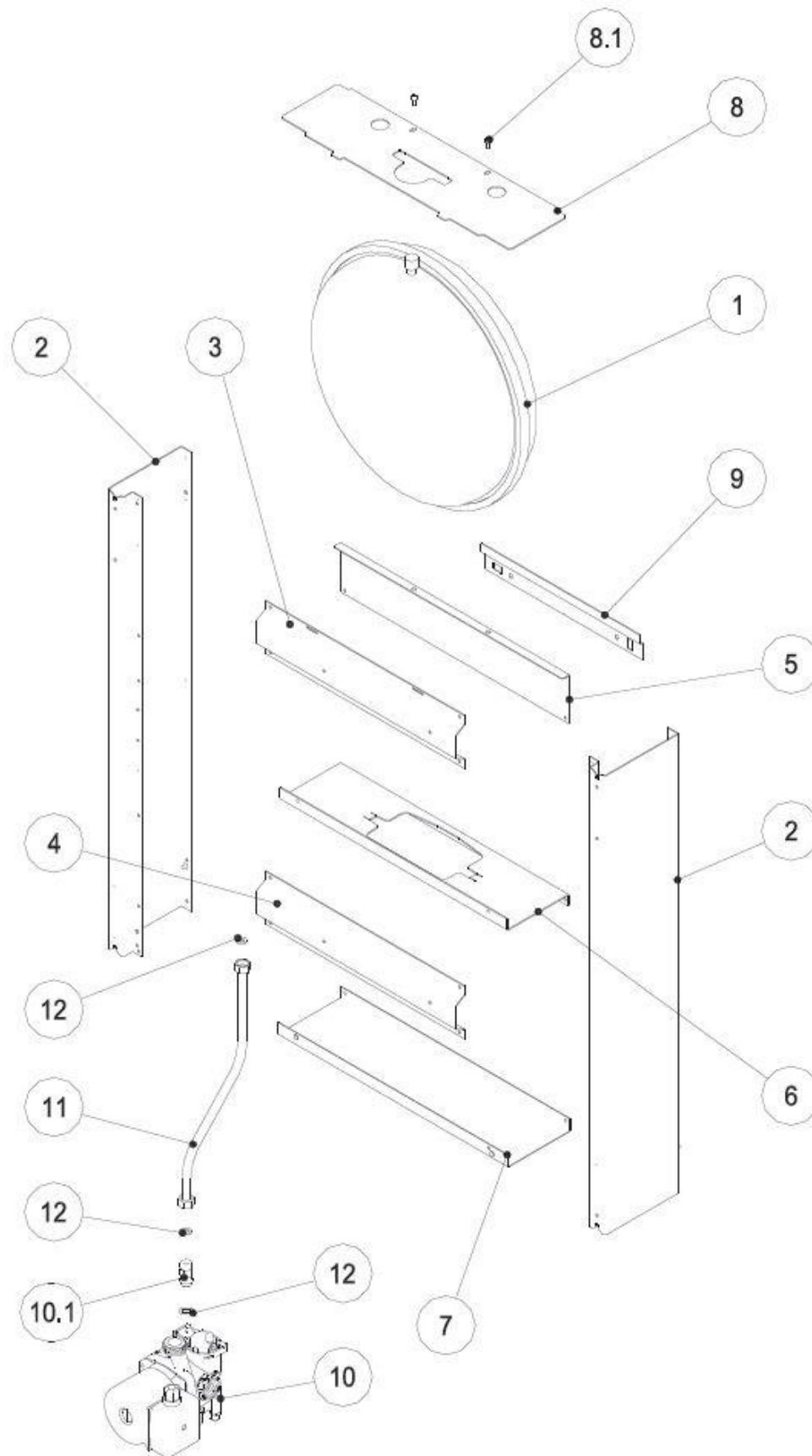
- i) Following the cleaning of the Heat Exchangers, the condensate syphon must be flushed to ensure that all mineral deposits/debris that has been washed from the heat exchanger surface is correctly removed. Open the syphon cleaning point cap at the base of the boiler, with a suitable receptacle directly 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.
- j) 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.
- k) 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.)
- l) Clean with abrasive material and inspect the ignition electrode. Replace if necessary. Adjust the spark gap to 4mm.
- m) 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.**
- n) Re-fit the Burners, in the reverse order of dismantling, ensure that all electrical connections are correctly and securely connected.
- o) 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.
- p) 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.
- q) Via the tappings 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.
- r) With the use of a suitable Flue Gas Analyser, check and adjust the combustion settings, as detailed in Section 13.2.
- s) Inspect the general condition of the flue system, including the termination, repair as necessary or advise on any remedial action as required.
- t) service message with the following three operating lines are reset:
 - Expert _ maintenance / special mode _ 7041 Burner run hours since maintenance
 - Expert _ maintenance / special mode _ 7043 Burner starts since maintenance
 - Expert _ maintenance / special mode _ 7045 Time since maintenance
 - Confirm the selection with the OK button
 - The display "Reset" Flashes Select YES using the rotary knob.
 - Confirm the selection with the OK button
 - The counter starts again at zero
 - Repeat steps for the operating line 7043

15.0 Exploded Spares Diagram









Notes