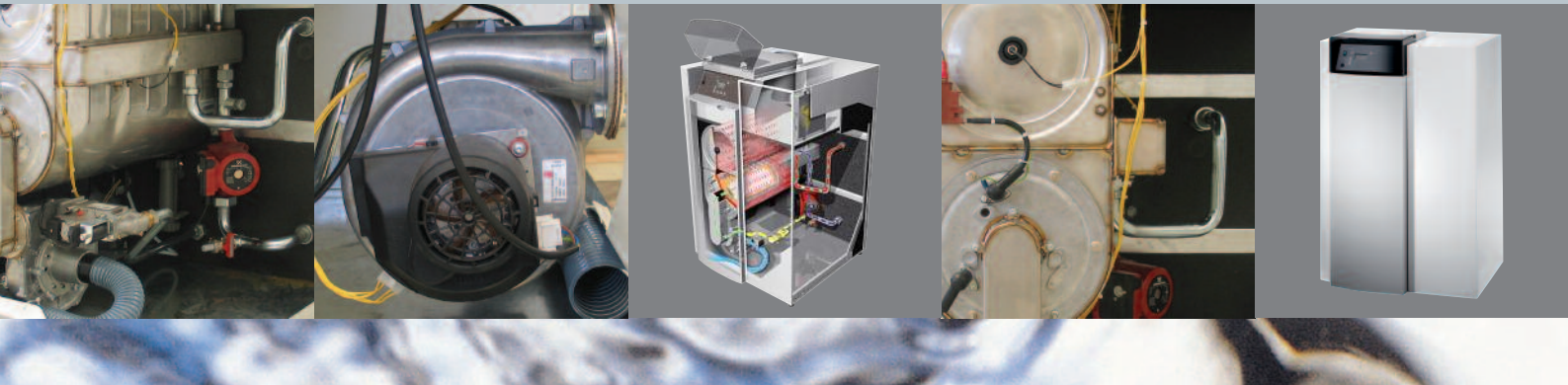


# Ultramax PB



Floor standing premix gas fired condensing boilers  
with outputs at 65, 85, 100 & 120kW

**MHS**  
BOILERS

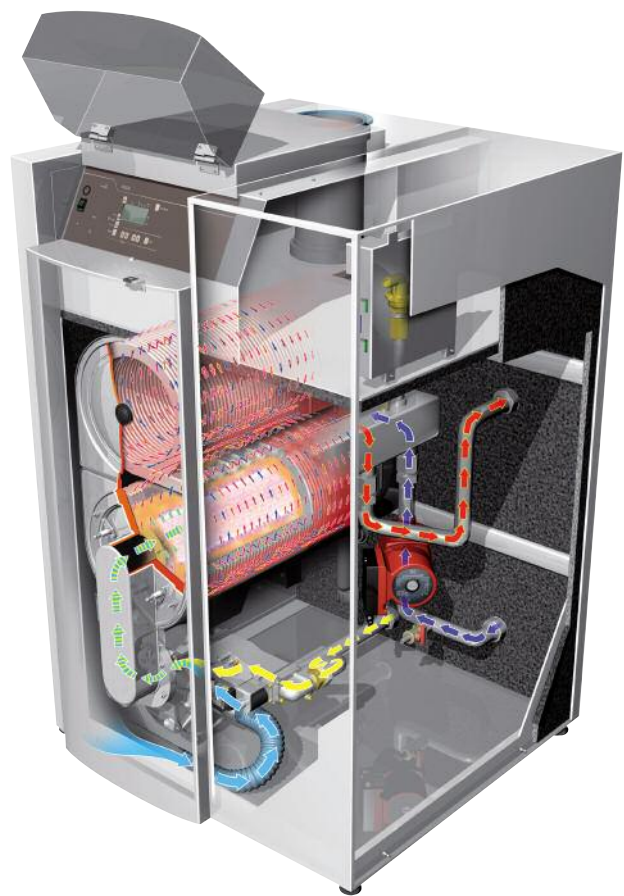
## Feature packed and powerful

Ultramax PB range of floor standing boilers includes four models with outputs at 65, 85, 100 and 120kW.

**Fully condensing and fabricated from durable stainless steel, these appliances return efficiency up to 109.8% with a modulation range up to 6.8:1. Low Noise and low NOx emissions are also prime features of the Ultramax PB Boiler.**

A comprehensive programmable boiler/system controller is included as standard which may be connected to intelligent room controls if desired. As an option, a low loss header can be incorporated into the boiler case as can a plate type heat exchanger to act as a separator to protect the boiler from the possible effects of dirt accumulation in older systems.

The flue connection allows for either room sealed or open type application with the capability for extensive lengths of flue to be accommodated. With the footprint area of the largest model at less than 0.51m<sup>2</sup>, the Ultramax PB Boilers are frugal on their space requirement making them a perfect choice where space constraints are a key factor in product selection.



## Put your mind at rest

It's easy to ignore your boiler and heating system - until it goes wrong or breaks down. A system failure, especially one caused by lack of maintenance, can be inconvenient and costly.

It isn't hard to imagine the difficulties that problems with your heating system can cause. And in some situations lack of heating and hot water can be critical. Similar to your car, a regularly maintained heating system will run more efficiently and any potential problems can be resolved before they develop into major system failure.

Financially, planned maintenance makes sense too. It avoids major capital outlay and the associated costs of system down time - plus it can keep your fuel costs down as well as ensuring you are minimising your emissions.

At MHS Boilers we provide a lifetime maintenance and service solution for your heating system - enabling you to rest safe in the knowledge that we'll take care of it. Go to **[www.mhsboilers.com](http://www.mhsboilers.com)** and download or request a copy of our **Maintenance and Service Solutions** brochure.



*Our highly skilled and trained service and technical support engineers are only a phone call away*

# Standard features

## Compact dimensions

With a common height and width of 1088mm and 710mm respectively and depths from 538mm to 718mm, the Ultramax PB Boilers pack a lot of power into a small space.

## Clean and quiet

Utilising state of the art premix combustion technology; NO<sub>x</sub> emission does not exceed 33mg/kWh thus easily meeting the stringent requirements for the highest BREEAM points score for (low) NO<sub>x</sub> pollution. The combustion system is also extremely quiet with noise levels not exceeding 48dBA.

## Comprehensive controls

Included is a control panel that not only manages the operation of the boiler but in addition, if required can control a heating and a hot water circuit with time and temperature scheduling. Alternatively, external controls by others may interface with and control the Ultramax PB Boiler.

## No need to worry about dirt contamination from old systems

As an alternative to the inclusion of a low loss header within the boiler, the appliance may as an option, be supplied with an in-built plate type heat exchanger. This is an ideal option when utilising the Ultramax PB as a retrofit unit onto an aged and possibly very dirty existing system. The plate heat exchanger acts as a positive barrier to any contamination of the new boiler from dirt or sludge that may have accumulated in the old network of pipes and radiators.

## Weather compensation

If required, for comfort and economy, the boiler may be set to operate with direct-on-boiler weather compensated flow temperatures, thus providing VT heating without the need for any additional system components such as mixing valves etc.

## Option of an in-built low loss header

In keeping with modern heating system design characteristics, the typical way of connecting an Ultramax PB Boiler to a heating system is via a low loss header. If desired, as an option, the boiler may be equipped with an internal low loss header thereby simplifying the installation

## Important information with regard to Part L2 of the Building Regulations

Calculated in accordance with the formula given in the Non-domestic heating, cooling and ventilation compliance guide (Compliance with Approved Documents L2A & L2B) the Ultramax PB Boilers have Gross Seasonal Efficiencies of:

Model 65 = 96.48%. Model 85 = 96.66%.

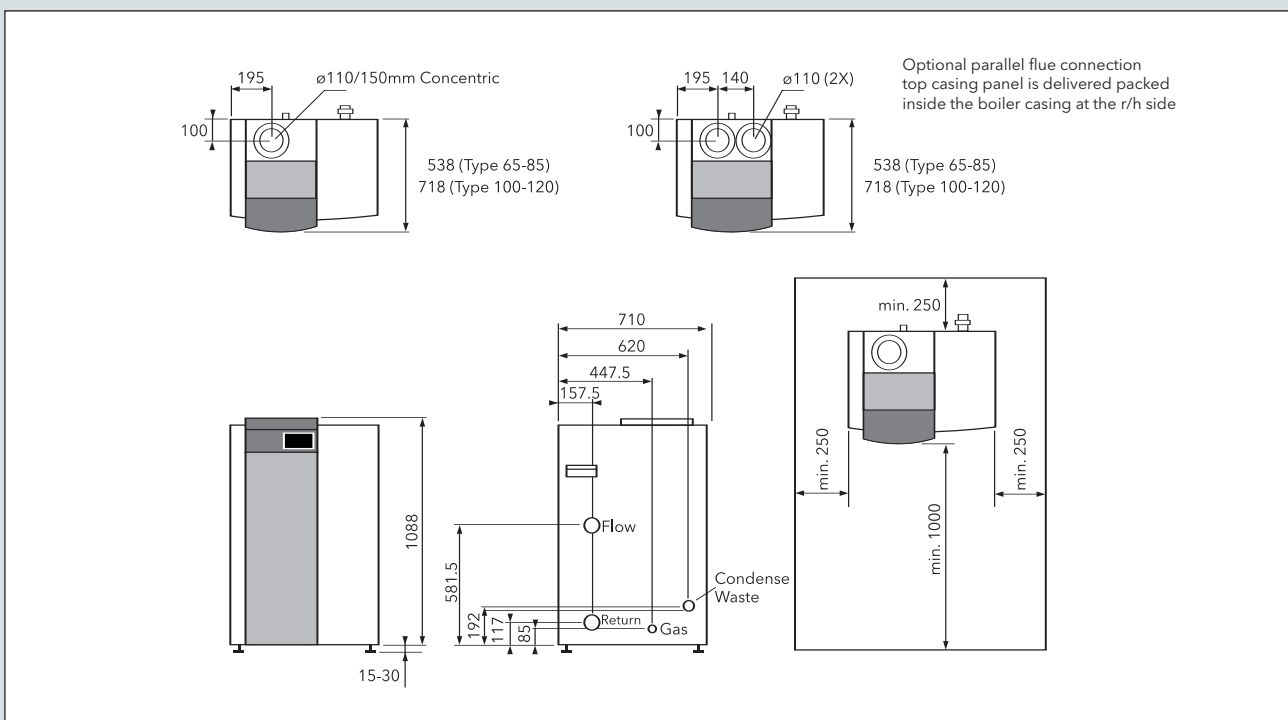
Model 100 = 96.66%. Model 120 = 96.84%.

## Warranty

The heat exchanger carries a 5 year guarantee; all other components carry a 12 month guarantee. All guarantees are against manufacturing or material defects only.

Extending your warranty with an MHS Boilers Maintenance and Service Plan will ensure long-term optimised heating while minimising your risk of liability beyond the statutory warranty period, and at clearly calculable costs.

# Dimensions and clearances



## Installation requirements

The Ultramax PB series of boilers must be installed in accordance with (as appropriate) the relevant requirements of the Building Regulations, Health and Safety Regulation PM5, IEE Regulations, Gas Safety (Installation & Use) Regulations, National Water Bylaws, Clean Air Act, and any Insurance Company requirements

## Codes of practice

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

**BS 6644** 2005. Specification for installation of gas-fired hot water boilers of rated inputs between 70kW (net) and 1.8MW (net) (2nd and 3rd family gases).

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

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

**CIBSE** Guide Sections B7, B11 and B13.

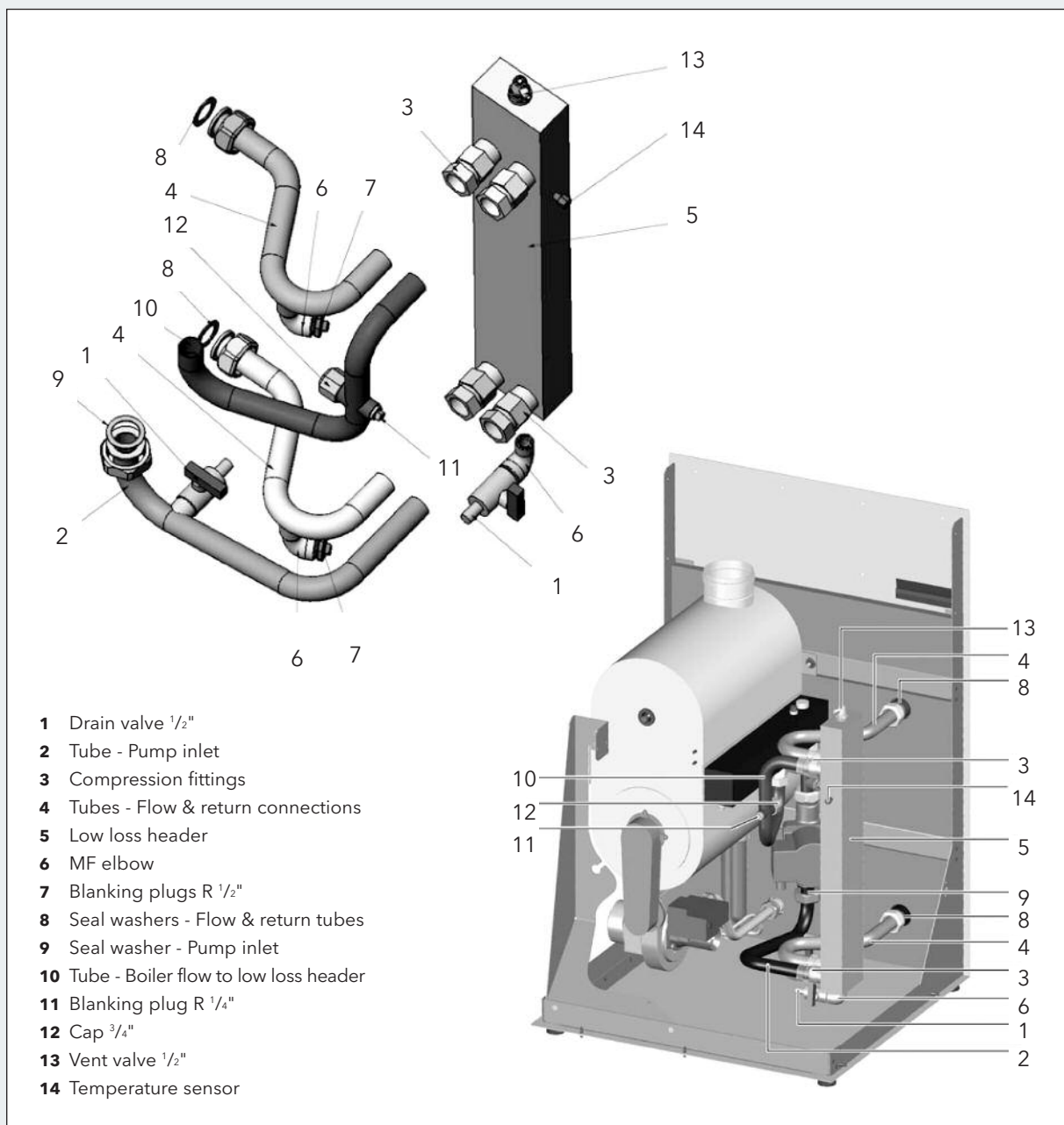
**LPG** When boilers are fired with LPG it is advisable that gas leakage detection equipment is installed at low level near the boiler/s.

## Optional hydraulic kits

The (base version) Ultramax PB Boiler as in Fig.1 (page10) is an appliance that includes an in-built pump (with residual head performance as detailed in the Technical Data Table on page 5) and can be (as appropriate) directly hydraulically coupled to the central heating system or via an external local low loss header. To enhance the boiler, optional Hydraulic Kits are available as described below. The kits are supplied separately for the installer to apply.

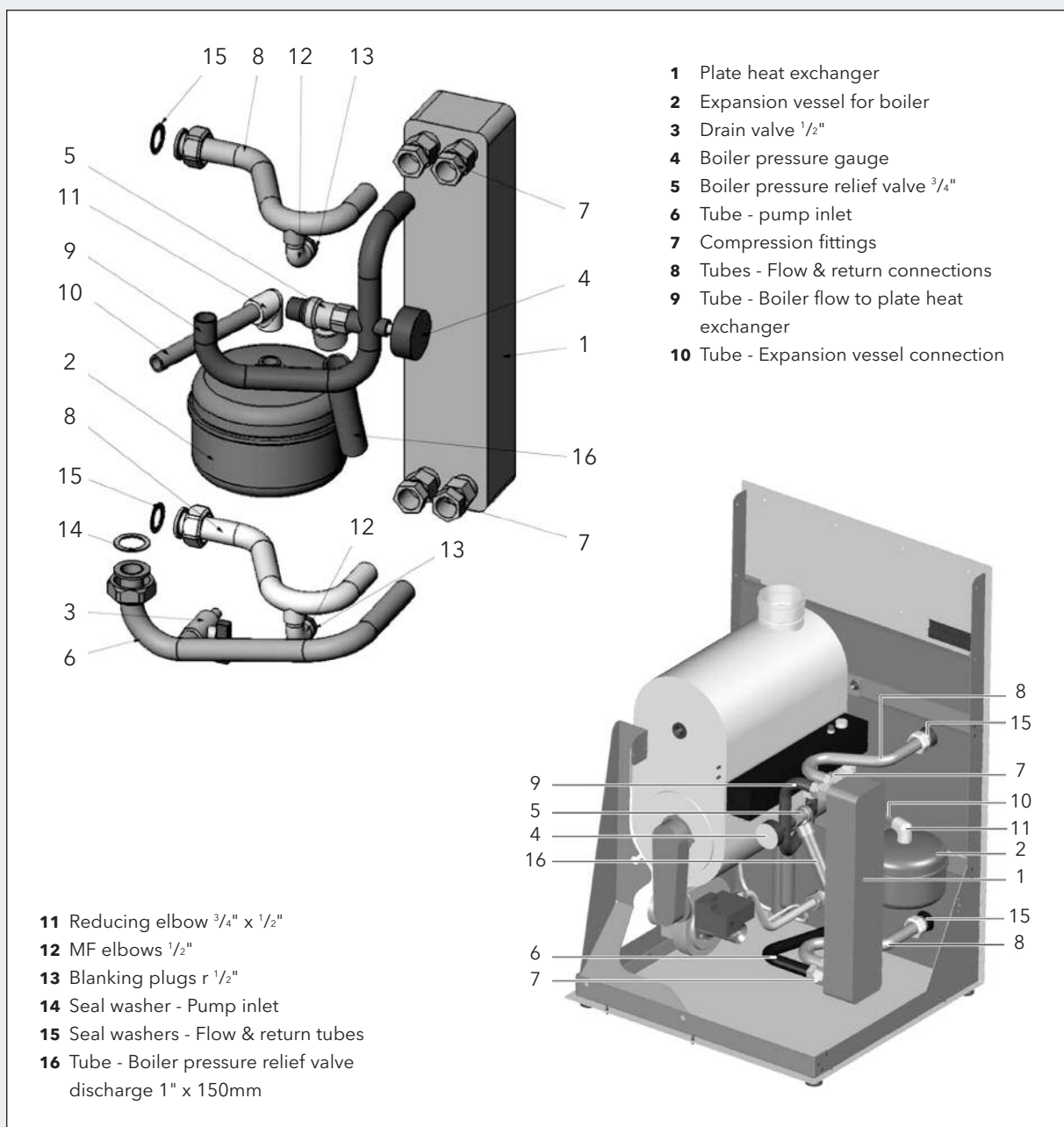
## Optional in-built low loss header

This kit provides a neat and speedy solution to the installation of a low loss header; installation time and space saving



# Optional in-built boiler protection plate heat exchanger

This option for the Ultramax PB Boiler is offered for use when the appliance is being used as a retrofit unit onto an aged system where the system may be contaminated with sludge etc which will cause damage to the new boiler if allowed to pass into the heat exchanger or pump etc. This device acts as a barrier to system contaminants, can also act as a pressure break and will also allow this sealed system type product to be applied to an old open vented existing system where there is risk associated with converting the old system to a sealed and pressurised type.



# Technical data

Ultramax Boiler Model		PB 65	PB 85	PB 100	PB 120
Product Identification Number		0063BQ3008			
Gas Category		112ELL3P / 112H3P			
Nominal Heat Output 80/60°C	kW	8.4 - 60.0	15.6-77.8	17.6-88.2	21.9-109.8
Nominal Heat Output 40/30°C	kW	9.4-65.0	17.0-85.0	19.2-96.3	24.0-120.0
Nominal Heat Input Net	kW	8.6 - 60.7	16.0 - 80.0	18.0 - 90.0	22.5 - 112.4
Gas Input Natural Gas G20	m3/h	6.28	8.28	9.32	11.65
Gas Input LPG G31	m3/h	2.42	3.2	3.6	4.6
Inlet Gas Pressure G20 Min/Max	mbar	20/25	20/25	20/25	20/25
Inlet Gas Pressure G31 Min/Max	mbar	30/50	30/50	30/50	30/50
Max Fluegas Mass G20	kg/h	111.6	147.6	165.6	208.8
Residual Flue Positive Pressure Max	Pa	230	230	230	230
Max Flow Temperature	°C	85	85	85	85
Water Pressure Min/Max	bar	1.0/3.0	1.0/3.0	1.0/3.0	1.0/3.0
Residual Pump Head (Standard Blr Version)	kPa	11	11	23	15
Flow/Return Connections	BSP	1 1/4"	1 1/4"	1 1/4"	1 1/4"
Gas Connection	BSP	1 1/4"	1 1/4"	1 1/4"	1 1/4"
Flue Connection Concentric	mm	110/150	110/150	110/150	110/150
Flue Connection Parallel	mm	2 x 110	2 x 110	2 x 110	2 x 110
Condense Waste Connection Tail	mm	25	25	25	25
Water Content	l	6.6	8.4	10.3	12.0
Weight Dry/Wet	kg	115/121.6	120/128.4	145/155.3	150/162.0
Electrical Supply Phases	Voltage / Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Power Consumption Max (inc. internal pump)	W	240	321	363	418
Design Water Flow Rate @ Δt20°C	l/s	0.71	0.93	1.10	1.31
Efficiency @ Full Load Gross/Net	%	87.8/97.5	87.5/97.2	87.5/97.2	87.5/97.2
Efficiency @ 30 % of Full Load Gross/Net	%	97.3/108.0	96.9/107.6	96.9/107.6	96.9/107.6
Flue Classification		B23, C13, C33, C43, C53, C63, C83			
<b>Optional Accessory Items</b>					
Weight of Low Loss Header	kg	9.1	9.1	9.1	9.1
Resistance of Boiler with Inbuilt Low Loss Header	kPa	5.3	9.0	13.0	18.0
Weight of Boiler Protection Plate Heat Exchanger	kg	14.5	14.5	14.5	16.4
Resistance of Secondary Side of Plate Heat Exchanger	kPa	9.5	15.9	21.8	18.6
Maximum Pressure - Secondary Side of Plate Heat Exchanger	bar	6.0	6.0	6.0	6.0



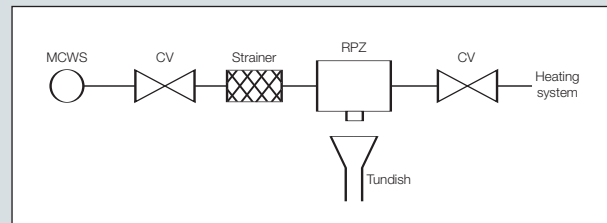
# Filling the system

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 the 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 4 systems

The approved method of filling must comprise of the following components in the arrangement shown;

- Control Valve, on the Mains Cold Water pipework.
- Strainer.
- Verifiable Backflow Device with Reduced Pressure Zone (RPZ Valve) Incorporating a 'Type BA' air gap.
- Tundish
- Control Valve, on the Heating System pipework.



# System water

Ultramax PB series boilers must only be installed onto sealed and pressurised systems with a minimum static pressure of 1bar. All systems must be thoroughly cleansed prior to the connection of the boiler and the system water must be dosed with a good quality treatment to prevent corrosion within the system and the formation of scale within the boiler waterways. The chloride content of the fill water must not exceed 200mg/l. Particular care must be taken when installing the boiler onto an old system, with consideration given to the installation of a dirt arrester/filter or the use of the plate heat exchanger option.

For specialist advice and water treatment products, contact: Fernox, Tandem House, Marlowe way, Beddington Farm Road, Croydon CR0 4XS. Tel: 0208 665 6666 or Betz Dearborn Ltd, Widnes, Cheshire WA8 8UD. Tel: 0151 495 186

# Flue system

The Ultramax PB Boilers have been tested using 110/150 Concentric Flue and as a result of the examination, the appliances may be used with up to 15m of Concentric Flue Pipe plus 4 x 93 degree bends plus a Concentric Terminal.

If planning to install a non room sealed flue; the following data will be of assistance:

Boiler Model		PB 65	PB 85	PB 100	PB120
Max Resistance of Flue	Pa	230	230	230	230
1m Length 110mm Ø PP Flue Gas Tube	Pa	1.25	2.25	3.0	4.0
110mm Ø 93° PP Bend	Pa	1.25	2.25	3.0	4.0
110mm Ø 45° PP Bend	Pa	1.0	1.8	2.4	3.2
110mm Ø Open Termination with Bird Mesh Guard	Pa	1.25	2.25	3.0	4.0

# Electrical connection

There are two terminal rails located in the upper right hand area of the boiler under a removable cover plate.

## Low Voltage Terminal Rail

### Terminal No's

- 50-51 = QAA 73 modulating room unit (optional extra)
- 52-53 = Volt free contact room thermostat (alternative to QAA 73)
- 54-55 = Factory fitted inlet gas pressure switch. Do not tamper.
- 56-57 = No function
- 58-59 = HWS sensor (QAZ 36) or thermostat
- 60-61 = Outside air temperature sensor (QAC34/101) Supplied as standard with boiler

## Mains Voltage Terminal Rail

### Terminal

- L1 = Supply Phase 220 - 240V 10A
- N = Supply Neutral
- E = Earth
- E = Earth
- E = Earth
- E = Earth
- 1-2 = External Safety Interlock (Remove link to connect a volt free external interlock device)
- 3 (L) - 4(N) = DHW Primary Pump (max 1Amp)
- 6(N) - 7 (L) = Factory Fitted Internal Boiler Pump.  
Do Not Tamper
- 8(N) - 9(L) = Heating Circuit Pump (max 1Amp)

# Optional additional control items

A number of optional extra control items are available to enhance the control and or monitoring of the Ultramax PB Boiler.

**BMS** volt free contact alarm interface - Clip-in Module "AGU2.5" (optional extra) will provide volt free contacts to monitor "run" and "fault alarm" status. In addition the AGU2.5 Module allows analogue control input (0-10Vdc & 0-20 m Amp) to be connected to a single boiler.

**QAA 73** Remote Room Unit, allows time and temperature scheduling of a (weather compensated if required) heating circuit and a hot water circuit, with room influence and optimization if required (For use with a single boiler only).

**AGU 2.500** Clip-In Module. Allows a 2nd heating circuit, with or without a mixing valve to be connected to a single boiler.

**RVA 63.280** A controller which provides time and temperature scheduling over two heating circuits (weather compensated if required) (with or without mixing valves) and a hot water circuit. Can be used with a single boiler in addition to the basic function of the boiler and in addition to the connection of an AGU 2.500, i.e. allowing control of up three or four heating circuits. Can also be used in conjunction with a multiple boiler installation by connection to a RVA47 Cascade Manager.

**RVA 47** A Cascade Manager with capability to control up to 12 boilers plus a heating circuit (weather compensated if required) and a hot water circuit. Note an OCI 420 Clip-in Module is required in each boiler of a multiple boiler installation for bus communication purposes.

**QAA 70** Remote Room Unit with similar features to the QAA73 Unit described above, but for use in conjunction with an RVA 47 or RVA 63.280 controllers.

**QAA50** Room sensor with temperature adjustment, can be used as an alternative to the QAA 70 described above.

**QAA10** Room sensor which can be used as an alternative to the QAA 70 unit described above. Provides tamper-proof room temperature sensing.

**QAZ36** Hot Water Temperature Sensor for use with a standard boiler or QAZ21 for use with the RVA47 and RVA63.280 Controllers.

For specific details on controls applications see the boiler installation manual or contact MHS.

# Hydraulic schemes

Typical single Ultramax PB (standard version) boiler schematic

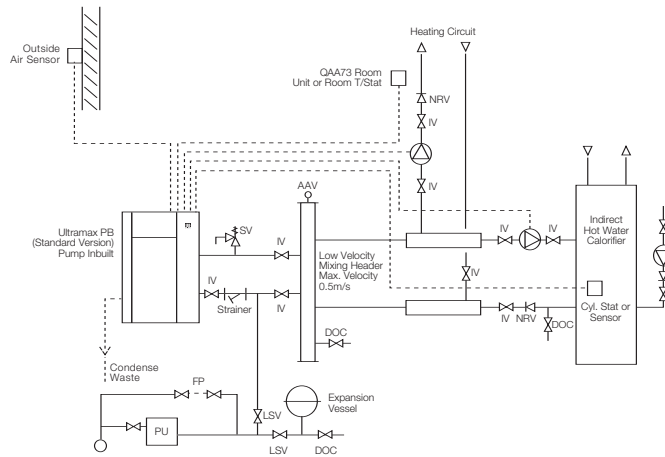
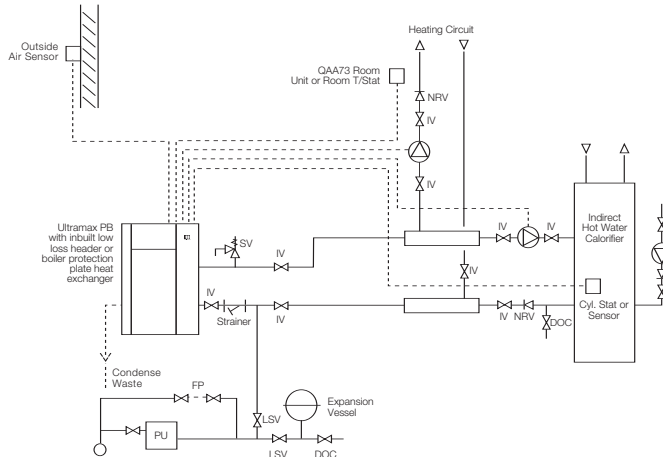


Fig.1

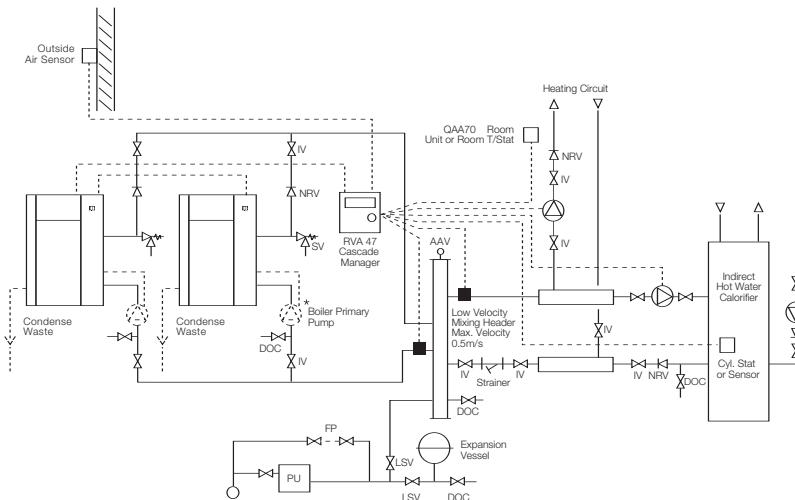
Typical scheme for single Ultramax PB boiler with inbuilt optional low loss header or boiler protection plate heat exchanger



Note: Boilers equipped with optional boiler protection plate heat exchanger must be provided with (temporary) provision for filling to fill point located within boiler casing

Fig.2

Typical multiple Ultramax PB installation schematic. If using RVA47 Cascade Manager + OCI420 Communication Clips within boilers from MHS - up to 12 boilers may be controlled



Note: Boilers equipped with optional boiler protection plate heat exchanger must be provided with (temporary) provision for filling to fill point located within boiler casing

\* Boiler primary pump - only required when boilers are equipped with boiler protection plate heat exchangers

Fig.3



**MHS**  
BOILERS

3 Juniper West, Fenton Way, Southfields Business Park,  
Basildon, Essex SS15 6SJ  
Tel: 01268 546700 Fax: 01268 888250  
[www.mhsboilers.com](http://www.mhsboilers.com)

