



# Hamworthy Purewell Classic

Cast Iron, Atmospheric  
Gas Fired Modular Boilers  
Single Boiler Outputs 40kW to 120kW  
Multiple Boiler outputs 80kW to 720kW



Heating *at work.*

# Purewell Classic

Cast Iron Atmospheric  
Gas Fired Modular Boilers  
Natural Gas or LPG

Hamworthy's atmospheric Purewell Classic fully automatic boiler range is available with outputs from 40kW to 120kW and in modular configurations can satisfy loads up to 720kW.

Setting them aside from other commercial atmospheric boilers, the Purewell Classic can be controlled at low fire and a primary flue damper provides increased control of the combustion air, enabling a low fire efficiency of up to 85% gross (94% nett), which is 5% above the high fire efficiency.

Throughout its development, the Purewell Classic has retained the traditional atmospheric boiler and draught diverter principles of operation, offering simple and reliable solutions that are easy to use and straightforward to maintain.

The entry-level permanent pilot models provide an alternative to the fully automatic range of boilers and again there are eight models with outputs ranging from 40kW to 120kW.

Completing the Purewell Classic package is a range of optional pipework kits to simplify design and procurement. The pipework kits are available for 2, 3 or 4 boilers, close coupled in a multiple casing modular arrangement.

## Options

- **Single or multiple casings**
- **Pipework kits**
- **Sequence controller**
- **Hours run meters**
- **Pump over-run timer**
- **LPG propane**
- **Permanent Pilot models**

- **Simple design, reliable performance**
- **Fully controllable at low fire for sequencing**
- **More accurate load matching**
- **Compatible with condensing models**
- **Standby losses virtually eliminated**
- **Lower servicing & maintenance costs**

BENEFITS

**The Purewell Classic offers a simple and reliable solution that's easy to use and straightforward to maintain.**



*Purewell Classic modular boilers with multi-casing arrangement.*

## Achieving high efficiency with atmospheric boilers

Atmospheric boilers, by design, draw combustion air through the boiler by natural draught on the flue system. The flue is sized for maximum full load conditions, therefore, when an atmospheric boiler fires at part load there will be an excess volume of combustion air, and this leads to reduced boiler efficiency.

In 2000, Hamworthy identified the need to improve part load efficiencies on atmospheric boilers and through research and development, introduced an innovative solution.

The Purewell Classic fully automatic boiler range is equipped with a two-stage primary flue damper which is fully interlocked with the boiler control system.

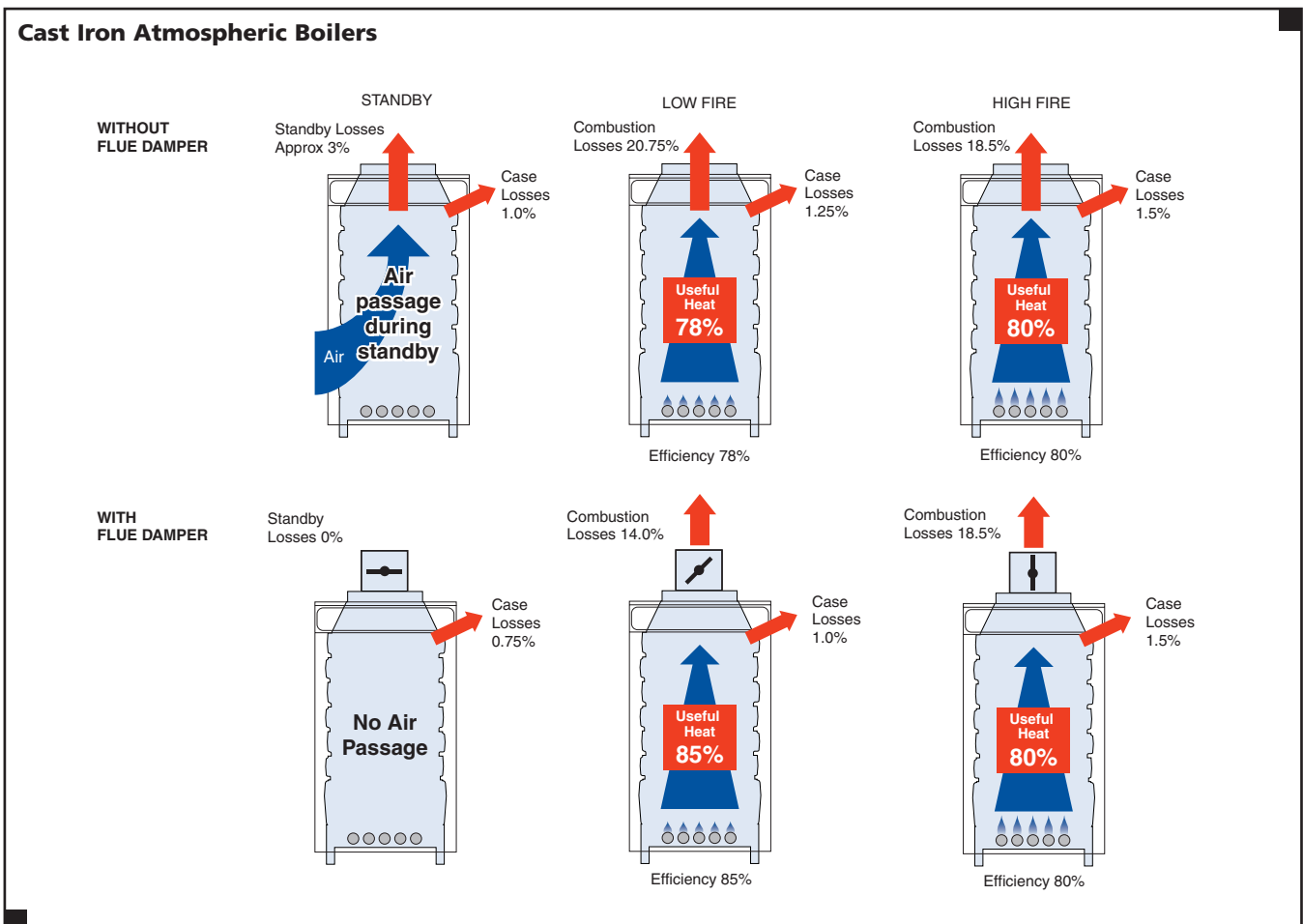
The two-stage damper is able to control the combustion air on the boiler for increased efficiency performance at low fire.

This enables Hamworthy atmospheric boilers to achieve gross efficiencies up to 85% at part load.

In addition to increasing the firing efficiency, the damper also serves to isolate the boiler from the chimney when at standby, thereby preventing the flow of air through the boiler and virtually eliminating standby losses.

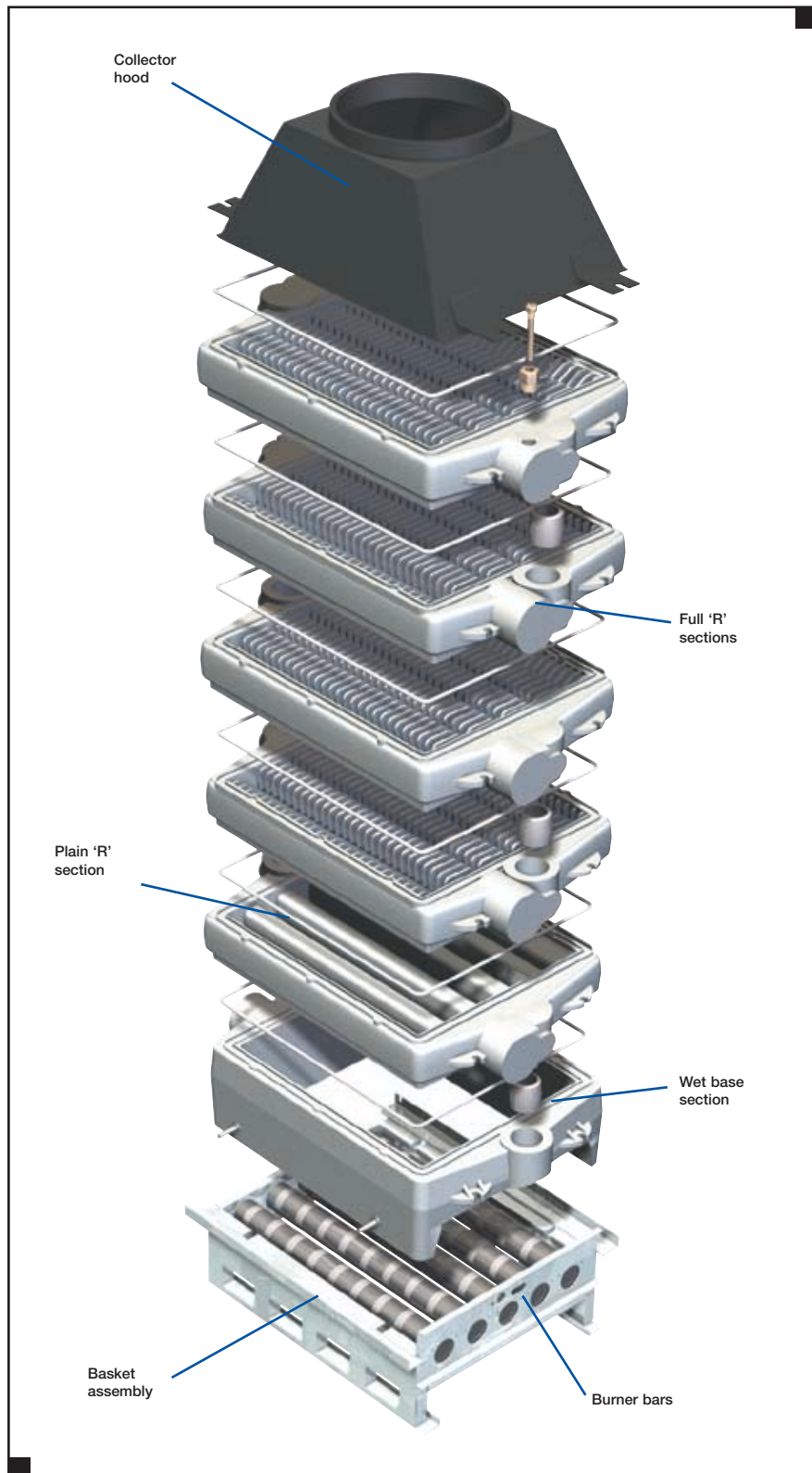
The Hamworthy method of reducing standing losses using the primary flue damper, in preference to shunt pumps, enables a constant water flow to be maintained through the boiler, improving the hydraulic performance of the installation. Experience has shown that maintaining a constant flow in the primary hot water circuit provides a more controllable system from which the secondary heating circuits can be taken.

Individual shunt pumps are not required on Hamworthy Purewell boilers and therefore the capital and running costs can be reduced on multiple boiler installations.



# Improved Efficiency

The Purewell Classic heat exchanger has been developed to maximise heat transfer, satisfying the efficiency requirements laid down within the European Boiler Efficiency Directive, whilst retaining a very robust construction for long life.



## Heat exchanger

Using up to date casting technology, Hamworthy has a reliable proven design for the "series flow" heat exchanger, that has been developed specifically for the Purewell range of boilers.

- Each individual section has been designed exclusively to suit boiler input.
- The section design incorporates an increased finned surface area generating a highly efficient gas to water heat transfer.
- Each individual heat exchanger is nipped at alternate ends eliminating the problem of thermal stress.
- The Purewell is also designed specifically to operate at low water return temperatures for prolonged periods.

The wet base section is a crucial part of the heat exchanger and is therefore designed to optimise overall efficiency.

- The Purewell has a deep wet base section positioned close to the burner bars. This enables the bottom of the boiler to remain cool whilst absorbing heat normally wasted, thereby improving boiler efficiency.

Once assembled the heat exchanger is covered with an insulation jacket which retains heat within the boiler minimising radiant heat losses.

### Sequencing multiple atmospheric boilers

The Purewell Classic boiler has been developed with energy efficiency as a fundamental part of the design philosophy.

The unique primary flue two-stage damper performs two important roles. Firstly it controls the combustion air at part load to improve efficiency performance and secondly, when the boiler is in standby mode, it isolates the chimney from the boiler, and virtually eliminates standing losses. The two-stage damper is fitted as standard to all fully automatic models.

### A new approach to sequencing

Traditionally, two-stage atmospheric boilers have been operated in high/low mode, something that Hamworthy has advocated for many years. In a multiple boiler installation, this approach would switch on the lead boiler, igniting at low fire and modulating to high fire to meet demand. If more heat is required, then second boiler ignites at low fire and modulates to high fire, and so on until either the demand for heat is met or all the boilers are operating at high fire (full load).

The advent of the primary flue damper and its effect on performance has resulted in a new approach to sequencing, which achieves even greater efficiency benefits.

Now that the Purewell Classic boilers achieve higher efficiency at part load (low fire), it is apparent that in a multiple boiler installation there are benefits to be had in changing the sequencing.

The chart shown opposite, illustrates the efficiency performance of a multiple installation comprising 4 boilers.

When the demand for heat is signalled, boiler No. 1 ignites at low fire. When further heat input is required, boilers 2, 3 and 4 each ignite in turn at low fire. When still more heat is required then boiler No. 1 switches to high fire and so on until all boilers are firing at high fire.

Heating systems operate more often than not at less than full load, therefore where this system of sequencing is adopted, then the part load performance will be greatly improved.

### Purewell Classic Primary Flue Damper



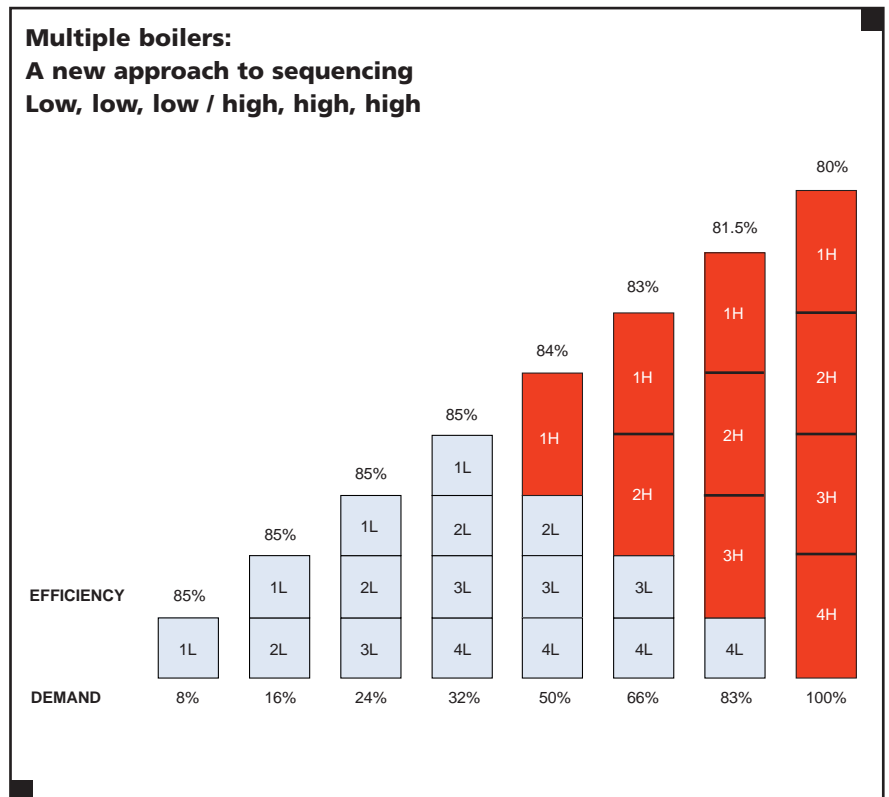
Fully closed

Low fire

High fire

The two-stage damper arrangement consists of two concentric damper blades that are each driven by an independent actuator. This concentric design allows precise control of the damping effect.

The damper blades are securely keyed to the drive shaft and fully interlocked with the boiler controls. This ensures that the damper is always in the correct position before the boiler ignites or increases firing rate.



In addition to the efficiency benefits, there is the added advantage of sharing the load more evenly across each module.

Making more use of the low fire capability can reduce wear and tear on the boiler. Closely modulating the output to match the load will reduce the number of times the boilers switch on and off, reducing the work of the ignition system and its components. The responsiveness of the system is also improved because each boiler can more readily switch from low fire to high fire and back without switching the boiler off.

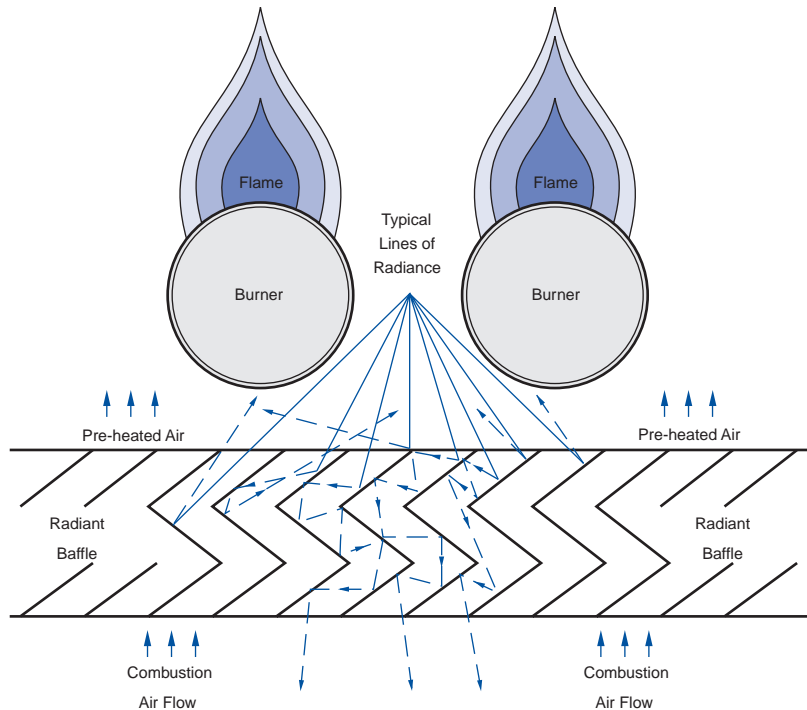


### Radiant baffle

The patented baffle is constructed such that it reflects radiant heat back into the combustion chamber, consequently minimising heat losses from the boiler.

- The combustion air is pre-heated by extracting heat, as it passes through the baffle.
- By pre-heating the air, efficiency is improved which assists the process of combustion.
- The air travels in a convoluted pattern cooling the baffle in the process by impacting air onto the steel surface.
- The baffle ensures that there are very low temperatures beneath the boiler which protects the floor and provides a safer environment for servicing purposes.
- The baffle removes the need for ceramic insulation and its associated problems.

### Radiant baffle schematic



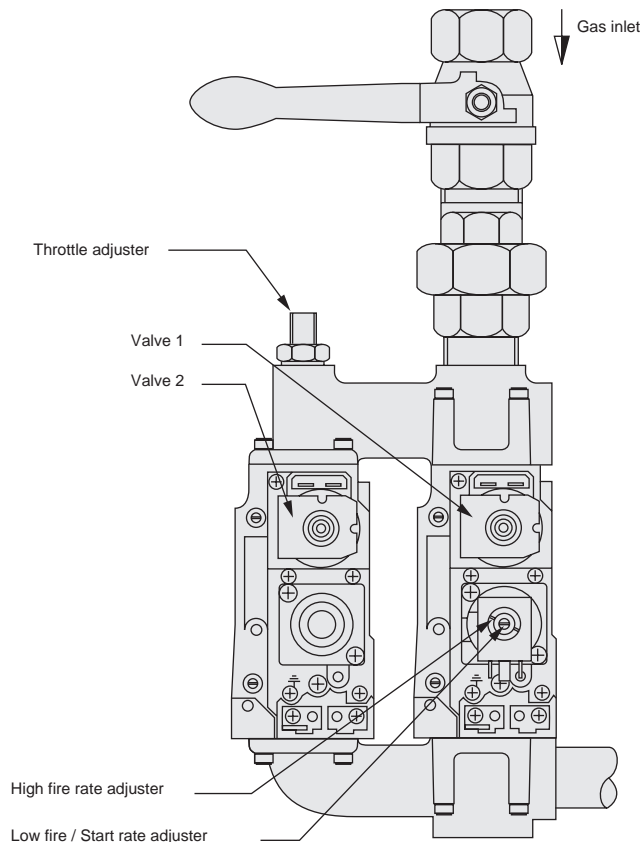
### High flow gas valves

For 95kW models and above, the Purewell fully automatic boiler has a unique patented flow sharing gas valve system demonstrating Hamworthy's skilled proficiency in design engineering.

- The flow share system enables a specified quantity of gas to be passed economically through small valves, whilst retaining the required degree of downstream pressure control.

All Purewell fully automatic boilers have a low fire start rate which ignites across all burners at a given percentage of total output. This ensures a safer light up which is fully compliant with the Gas Appliance (Safety) Regulations.

### High flow gas valve assembly



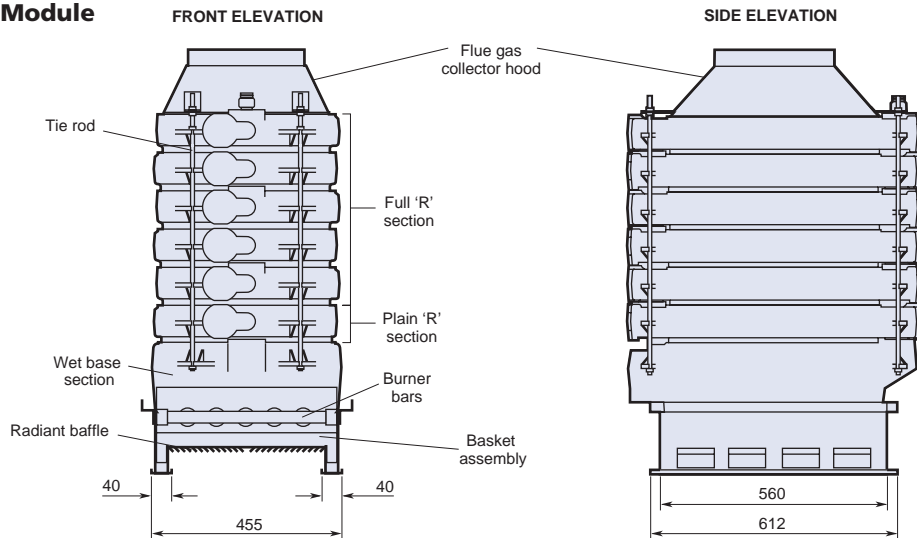
Note: Purewell 95,105 & 120kW models only

# Purewell Classic

Fully Automatic  
Typical Layout



## The Heat Exchanger Module



| Boiler Model   | PC 40 | PC 50 | PC 60 | PC 70 | PC 80 | PC 95 | PC 105 | PC 120 |
|----------------|-------|-------|-------|-------|-------|-------|--------|--------|
| Base Sec.      | 1     | 1     | 1     | 1     | 1     | 1     | 1      | 1      |
| Tie Rods       | 4     | 4     | 4     | 4     | 4     | 4     | 4      | 4      |
| Burners        | 4     | 4     | 4     | 4     | 4     | 5     | 5      | 5      |
| Plain 'R' Sec. | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 1      |
| Half 'R' Sec.  | 0     | 0     | 1     | 1     | 1     | 1     | 1      | 0      |
| Full 'R' Sec.  | 3     | 3     | 3     | 3     | 3     | 4     | 4      | 5      |

# Specification

## Heat exchanger

Each individual boiler has a heat exchanger manufactured from horizontal cast iron sections which when pressed together with nipples at alternate ends, produce a proven horizontal series water flow pattern. During assembly each heat exchanger is pressure tested to 14bar (203 psi). The Purewell is tested to the latest boiler standards covering working pressure up to 6bar (87 psi).

The boiler sections are positioned onto a fabricated galvanised mild steel basket assembly which houses the burner bar and igniter assembly. The burner bar and gas train assemblies are attached by two nuts to the basket emphasising serviceability and ease of inspection.

## Layout

The Purewell boiler can be installed as a single unit or in modular form where a 'multi' casing maximises available floor space.

It is recommended that a maximum of 6 boilers can be positioned on 533mm (21") centres if required. Larger numbers should be split into two or more banks with 150mm (6") between each bank.

The positioning of the boilers on 533mm (21") centres can be done with a high level of accuracy. To complete a modular formation, the baskets are butted against each other which ensures that distances cannot be sized incorrectly.

(For further information on multiple casings see page 11).

The Purewell is supplied on a dismantlable wooden pallet giving improved ease of installation.

The basket assembly incorporates runner type feet which increases the overall manoeuvrability of the boiler for final site positioning.

It is recommended that under normal circumstances a maximum of six boilers should be connected to one flue header with up to eight boilers being served by a single chimney.

## Burner

The burner arrangement of the boiler comprises a tried and tested reliable burner bar system with 4/5 burner bars depending on thermal input. This system has been specifically designed to provide clean and efficient combustion.

## Radiant Baffle

A patented radiant baffle assembly is positioned beneath the burner bars, this both protects the floor underneath the boiler and improves overall efficiency. The baffle assembly is extremely durable, constructed from coated steel, and obviates the need to use ceramic insulation. (For more detailed information refer to page 6).

## The draught diverter

The Purewell Classic has a low level stainless steel draught diverter, engineered specifically to optimise the performance of each boiler model.

Down draught needs to be dispersed before reaching the primary flue, otherwise boiler performance and the combustion process can be effected, producing carbon monoxide. This is achieved by a double cone arrangement, which directs down draught outside the boiler and hence does not affect boiler operation and efficiency. For up draught conditions the situation is reversed. The twin cone design pulls air through without effecting the primary flue.

## Boiler casing

Careful consideration has been given to casing design. The panels are of robust construction and mounted to the boiler giving greater rigidity to the unit. Due regard has been given to serviceability and easy access to the boiler. A deep removable front door panel provides the user with ease of inspection and maintenance. Boilers can be supplied with either an individual single casing for each boiler, or with a multiple casing arrangement for applications where the boilers stand immediately together, side by side. Where a multiple casing

arrangement is specified, outer side panels are supplied for each end boiler and the intermediate boilers are equipped with steel frames to support the top and front. Side panels are not required between the boilers with a multiple casing arrangement.

**Note: The type of casing arrangement must be specified at time of order.** (See page 11 for further details).

## Thermostats

All Purewell Classic boilers are supplied as standard with a temperature limiter that has a range of 90-110°C, this will normally be factory set to 100°C.

Permanent pilot boilers have a control stat supplied as standard with a range of 0-120°C. Fully automatic boilers are fitted with a dual stage electronic temperature control, which has a standard range of 65-90°C.

The difference between the high limit stat setting and the control stat should not be less than 10°C.

## The gas train

The gas train is completely detachable. Major items can be removed during servicing within 2-3 minutes if required. The gas train comprises a service cock, union connection, gas valve(s) and injector manifold.

## Pipework Kits

To simplify the pipework arrangement at the back of the boilers, Hamworthy manufacture reverse return pipework header kits. These cover 2, 3 or 4 boilers in a multiple casing arrangement and include isolating valves, fittings and interconnecting pipework which can be cut to finished size on site. The design incorporates Primofit compression type fittings which means there is no need for pipework threading on site.

The factory made pipework kits from Hamworthy are available for modules comprising all Purewell boilers, all Warmwell (condensing) boilers or mixed combinations of Purewell and Warmwell boilers.

(See page 14 for details).

### Hot Surface Ignition

Fully Automatic boilers have a direct burner ignition system that ignites the burners each time the boiler is called to fire. This is achieved using a hot surface ignition element that reaches a temperature of approximately 1300°C. This highly effective and reliable form of ignition requires less maintenance than conventional spark ignition, and eliminates the electrical interference sometimes associated with that type of system. Flame proving is achieved using a flame rectification probe.



*Hot surface ignition on the fully automatic models*

### Boiler Controls

Fully automatic boilers are fitted with a fabricated steel control panel, which houses the main electronic control system. The control panel has a drop down fascia to facilitate access for servicing and a simple mimic display allows the user to monitor the current operating status of the boiler. All fully automatic boilers are fitted as standard with volt free contacts which allow for remote monitoring of the boiler status, indicating boiler run, lockout & high temperature conditions. The boiler can be controlled remotely from a Building Management System or timeclock controller using the remote start/stop circuit. The high/low operation can also be controlled remotely in a similar manner.

### Boiler Firing

On fully automatic high/low models, the boiler lights at the low fire rate with the first stage of the flue damper open. Once the flame has stabilised, and if there is sufficient demand in the system, the second stage of the damper will open, followed by the second stage of the gas valve and the boiler will fire at full rate. As the system approaches full temperature, the boiler will return to its low fire settings for greater energy efficiency. The high/low operation provides an effective form of control for single boiler installations, however for modular applications full sequence control is more appropriate.

### Sequence Control

Using a number of smaller boilers (modules) in order to match more accurately the required load is acknowledged as an excellent approach to heating system design. In order to get the full benefit from a multiple boiler installation it is essential to fit some form of sequence controller, to regulate the firing of each module.

Higher system efficiencies can be achieved by controlling a multiple Purewell Classic installation at low fire before stepping up to high fire. (Refer to page 5 for further details.)

### Time clock control

Where boilers are operated from time clocks, to avoid overheating and progressive calcium deposition at zero flow conditions, provision should be made for a 5 minute circulating pump over run after the last boiler has ceased firing.

### Electrical details

Supply 230V 50Hz, single phase. Wiring external to the boiler must be installed in accordance with IEE Regulations and any local regulations which apply. Wiring must be completed in heat resistant 3 core cable, ( size 1.0 mm<sup>2</sup> c.s.a.). Fascia fuse rating is 2 amp. External fuses should be 6 amp for all single boiler sizes.

### Permanent Pilot Models

Permanent pilot models operate in on/off mode of control. The gas supply to the burner is controlled using a multifunctional valve with a permanent pilot ignition system. The operation of the gas valve is directly controlled from the boiler thermostat, which is connected via a pre-wired flying lead with plug & socket connections.

Flame monitoring is achieved using a simple thermocouple, which is connected via an energy cut-off (ECO) lead to a manual reset limit thermostat that will interrupt the signal to the pilot valve in the event of flame failure. A piezo spark ignitor unit is fitted to the boiler in order to light the permanent pilot.

The control and limit thermostats are both housed within a fabricated steel control box that is accessed by removing the front door panel. The main electrical connection to the boiler is made using the fused 3-pin IEC plug supplied with the control box. The permanent pilot models may be supplied with an optional primary flue single-stage damper system. The damper will be interlocked with the control thermostat to ensure that the damper is fully open before firing the boiler.

The on/off damper arrangement consists of a single damper blade driven by a single actuator. It is designed to enable permanent pilot boilers to benefit from the reduction in standing losses that can be achieved by isolating the boiler from the flue system when it is not firing.

### Commissioning

Hamworthy Heating Ltd strongly recommend that all boilers are commissioned by their service department who will issue a boiler log-book that details the initial operating settings and can be used to record future maintenance work.

*For more information on commissioning contact Hamworthy Heating Service Department:*

**0845 450 2866.**

## Gas

Supply pipes must be fitted in accordance with BS6891 or IGE/UP/2 (formerly IM/16) as appropriate. Pipe work must be of adequate size. Pipes should not be of a smaller size than the boiler gas connections. The complete installation must be purged and tested for soundness as described in BS6891 or IGE/UP/1 (formerly IM/2) and IGE/UP/1A (formerly IM/5) as appropriate.

Advice and guidance on the capacity of gas meters and available gas pressure can be obtained from local or regional British Gas offices.

The table opposite expresses pipe lengths from gas meter to appliance which will produce approx. 1mbar pressure loss. This table **must** be used in conjunction with losses of various fittings shown in the table below.

### Reductions for fittings (metres)

| Type of fitting | Per elbow | Per tee | Per 90° bend |
|-----------------|-----------|---------|--------------|
| 20mm            | 0.5       | 0.5     | 0.3          |
| 25mm            | 0.5       | 0.5     | 0.3          |
| 40mm            | 1.0       | 1.0     | 0.3          |
| 50mm            | 1.5       | 1.5     | 0.5          |
| 65mm            | 2.0       | 2.0     | 0.5          |
| 80mm            | 2.5       | 2.5     | 1.0          |
| 100mm           | 3.5       | 3.5     | 1.5          |

For example: Purewell boilers with an output totalling 240kW being fed by 2½" pipe with 6 elbows between gas meter and boiler header can have a maximum length of 72m - (6x2m) = 60 metres run to achieve a 1mbar loss.

**Note: These tables are based on IM/16, which has been replaced by IGE/UP/2, and information is provided for guidance only.**

## Gas flows in pipes

| Purewell Boiler Power (output) kW | Maximum length of gas pipe (Metres) |      |      |      |      |      |       |
|-----------------------------------|-------------------------------------|------|------|------|------|------|-------|
|                                   | 20mm                                | 25mm | 40mm | 50mm | 65mm | 80mm | 100mm |
| 40                                | 10                                  | 42   | -    | -    | -    | -    | -     |
| 50                                | -                                   | 25   | 180  | 820  | -    | -    | -     |
| 60                                | -                                   | 16   | 120  | 540  | -    | -    | -     |
| 70                                | -                                   | 11   | 85   | 380  | -    | -    | -     |
| 80                                | -                                   | -    | 62   | 280  | 900  | -    | -     |
| 95                                | -                                   | -    | 42   | 185  | 580  | -    | -     |
| 100                               | -                                   | -    | 37   | 170  | 520  | -    | -     |
| 105                               | -                                   | -    | 33   | 145  | 470  | -    | -     |
| 120                               | -                                   | -    | 25   | 110  | 345  | -    | -     |
| 140                               | -                                   | -    | 17   | 78   | 245  | -    | -     |
| 150                               | -                                   | -    | 15   | 66   | 210  | -    | -     |
| 160                               | -                                   | -    | 12   | 56   | 180  | -    | -     |
| 180                               | -                                   | -    | -    | 44   | 140  | 820  | -     |
| 190                               | -                                   | -    | -    | 38   | 120  | 750  | -     |
| 200                               | -                                   | -    | -    | 35   | 110  | 650  | -     |
| 210                               | -                                   | -    | -    | 30   | 96   | 600  | -     |
| 240                               | -                                   | -    | -    | 22   | 72   | 440  | -     |
| 250                               | -                                   | -    | -    | 21   | 66   | 390  | -     |
| 280                               | -                                   | -    | -    | 16   | 52   | 300  | -     |
| 285                               | -                                   | -    | -    | 15   | 47   | 290  | -     |
| 300                               | -                                   | -    | -    | 14   | 45   | 260  | -     |
| 315                               | -                                   | -    | -    | 11   | 37   | 235  | -     |
| 320                               | -                                   | -    | -    | -    | 37   | 235  | -     |
| 350                               | -                                   | -    | -    | -    | 31   | 180  | -     |
| 360                               | -                                   | -    | -    | -    | 27   | 170  | 810   |
| 380                               | -                                   | -    | -    | -    | 24   | 150  | 730   |
| 400                               | -                                   | -    | -    | -    | 23   | 135  | 640   |
| 420                               | -                                   | -    | -    | -    | 19   | 115  | 570   |
| 475                               | -                                   | -    | -    | -    | 16   | 90   | 440   |
| 480                               | -                                   | -    | -    | -    | 14   | 86   | 430   |
| 500                               | -                                   | -    | -    | -    | 14   | 80   | 380   |
| 525                               | -                                   | -    | -    | -    | 11   | 71   | 340   |
| 570                               | -                                   | -    | -    | -    | -    | 60   | 280   |
| 600                               | -                                   | -    | -    | -    | -    | 51   | 245   |
| 630                               | -                                   | -    | -    | -    | -    | 46   | 220   |
| 720                               | -                                   | -    | -    | -    | -    | 34   | 165   |

## Pumps

Hamworthy Heating is the exclusive distributor of Biral pumps in the UK. With a wide range of models available, you can closely match pump performance to suit your requirements.

The high quality design with innovative features include:

- Unique Can system – no seals to leak
- Low, medium and high speed ranges
- High torque starting
- Ultra low power consumption
- Flat performance curves – less system noise
- Operating pressures up to 16 bar
- Temperatures from -20°C to 140°C
- Whisper quiet pump operation



**Talk to HAMWORTHY BIRAL your partners in pumps**

### Using multiple boiler references

Purewell Classic boilers can be supplied with a single casing on each boiler or with multiple casings to enclose a complete module.

The multiple casing arrangement removes the need for an external casing panel between each boiler.

When specifying or ordering a boiler installation using multiple casings, the pre-fix to the model reference is MPC.

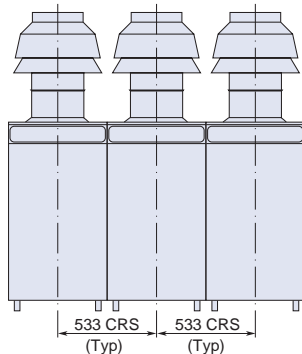
#### Multiple Boiler References - Example: MPC 360 / 3 / 120

| MPC                       | 360                        | / | 3                      | / | 120                      |
|---------------------------|----------------------------|---|------------------------|---|--------------------------|
| Multiple Purewell Classic | Total kW output of modules |   | Number of boilers used |   | kW output of each boiler |

In the example, shown above, the selection is for 3 boilers in a multi casing modular installation. The total output is 360kW, using 120kW boilers.

In this multiple casing arrangement, there will be an external side - casing panel for each end boiler, but there is no need for casing panels between each boiler.

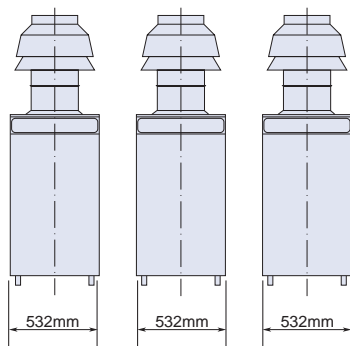
#### Multiple Casing Arrangement



There may be occasions where each boiler is going to be placed further apart and in such circumstances the boilers should be specified or ordered as single boilers with individual casings.

For the example shown, where single casings are required, the reference would be 3 No. PC 120 boilers.

#### Single Casings Arrangement



| Model Reference                         | No. of Boilers | Boiler Model | kW Output to Water | Btu/h x1000 |
|---|----------------|--------------|--------------------|-------------|
| <b>Single Boiler - Casings</b>          |                |              |                    |             |
| PC 40                                   | 1              | PC 40        | 40                 | 137         |
| PC 50                                   | 1              | PC 50        | 50                 | 171         |
| PC 60                                   | 1              | PC 60        | 60                 | 205         |
| PC 70                                   | 1              | PC 70        | 70                 | 239         |
| PC 80                                   | 1              | PC 80        | 80                 | 273         |
| PC 95                                   | 1              | PC 95        | 95                 | 324         |
| PC 105                                  | 1              | PC 105       | 105                | 358         |
| PC 120                                  | 1              | PC 120       | 120                | 410         |
| <b>Two Boilers - Multiple Casings</b>   |                |              |                    |             |
| MPC 80/2/40                             | 2              | PC 40        | 80                 | 273         |
| MPC 100/2/50                            | 2              | PC 50        | 100                | 341         |
| MPC 120/2/60                            | 2              | PC 60        | 120                | 409         |
| MPC 140/2/70                            | 2              | PC 70        | 140                | 478         |
| MPC 160/2/80                            | 2              | PC 80        | 160                | 546         |
| MPC 190/2/95                            | 2              | PC 95        | 190                | 648         |
| MPC 210/2/105                           | 2              | PC 105       | 210                | 717         |
| MPC 240/2/120                           | 2              | PC 120       | 240                | 819         |
| <b>Three Boilers - Multiple Casings</b> |                |              |                    |             |
| MPC 120/3/40                            | 3              | PC 40        | 120                | 410         |
| MPC 150/3/50                            | 3              | PC 50        | 150                | 512         |
| MPC 180/3/60                            | 3              | PC 60        | 180                | 614         |
| MPC 210/3/70                            | 3              | PC 70        | 210                | 716         |
| MPC 240/3/80                            | 3              | PC 80        | 240                | 819         |
| MPC 285/3/95                            | 3              | PC 95        | 285                | 973         |
| MPC 315/3/105                           | 3              | PC 105       | 315                | 1075        |
| MPC 360/3/120                           | 3              | PC 120       | 360                | 1229        |
| <b>Four Boilers - Multiple Casings</b>  |                |              |                    |             |
| MPC 160/4/40                            | 4              | PC 40        | 160                | 546         |
| MPC 200/4/50                            | 4              | PC 50        | 200                | 682         |
| MPC 240/4/60                            | 4              | PC 60        | 240                | 819         |
| MPC 280/4/70                            | 4              | PC 70        | 280                | 955         |
| MPC 320/4/80                            | 4              | PC 80        | 320                | 1092        |
| MPC 380/4/95                            | 4              | PC 95        | 380                | 1297        |
| MPC 420/4/105                           | 4              | PC 105       | 420                | 1433        |
| MPC 480/4/120                           | 4              | PC 120       | 480                | 1638        |
| <b>Five Boilers - Multiple Casings</b>  |                |              |                    |             |
| MPC 200/5/40                            | 5              | PC 40        | 200                | 683         |
| MPC 250/5/50                            | 5              | PC 50        | 250                | 853         |
| MPC 300/5/60                            | 5              | PC 60        | 300                | 1024        |
| MPC 350/5/70                            | 5              | PC 70        | 350                | 1194        |
| MPC 400/5/80                            | 5              | PC 80        | 400                | 1365        |
| MPC 475/5/95                            | 5              | PC 95        | 475                | 1621        |
| MPC 525/5/105                           | 5              | PC 105       | 525                | 1792        |
| MPC 600/5/120                           | 5              | PC 120       | 600                | 2048        |
| <b>Six Boilers - Multiple Casings</b>   |                |              |                    |             |
| MPC 240/6/40                            | 6              | PC 40        | 240                | 819         |
| MPC 300/6/50                            | 6              | PC 50        | 300                | 1024        |
| MPC 360/6/60                            | 6              | PC 60        | 360                | 1228        |
| MPC 420/6/70                            | 6              | PC 70        | 420                | 1433        |
| MPC 480/6/80                            | 6              | PC 80        | 480                | 1638        |
| MPC 570/6/95                            | 6              | PC 95        | 570                | 1945        |
| MPC 630/6/105                           | 6              | PC 105       | 630                | 2150        |
| MPC 720/6/120                           | 6              | PC 120       | 720                | 2457        |

# Technical Data

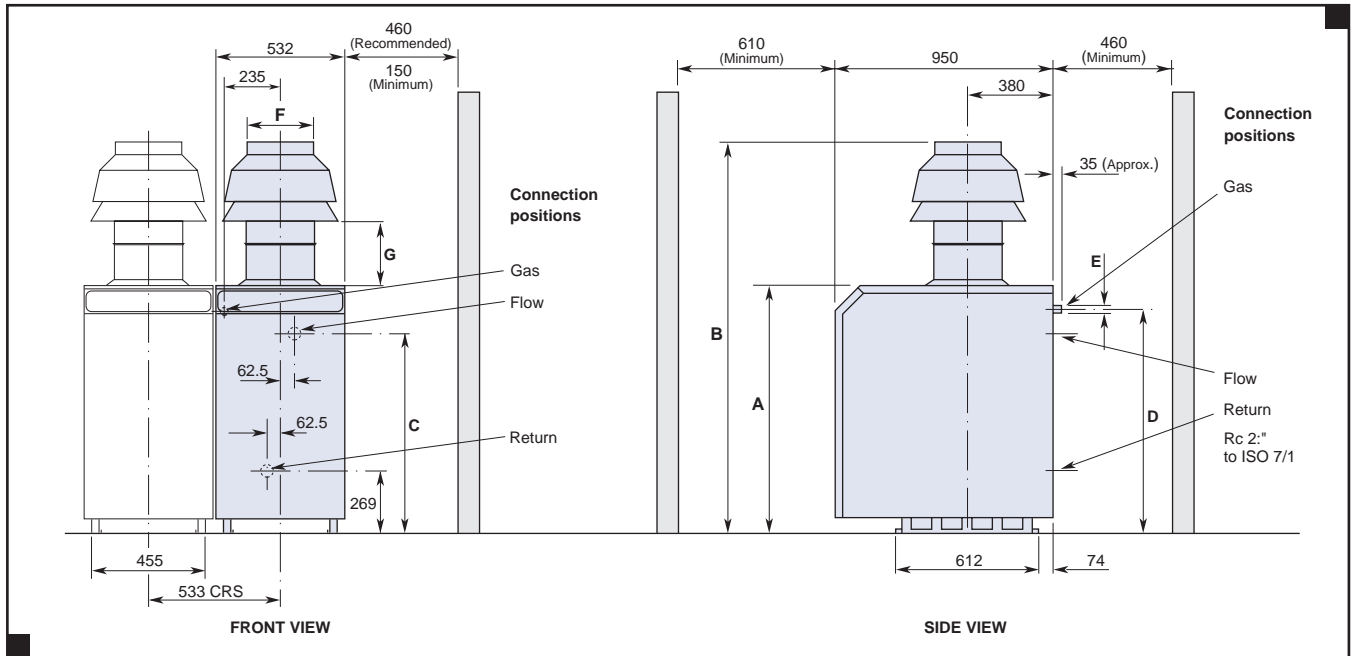
## Purewell Classic - Performance and General Data Information

| Boiler Model  |   | PC 40                              | PC 50         | PC 60 | PC 70 | PC 80 | PC 95 | PC 105      | PC 120 |       |  |
|---|---|------------------------------------|---------------|-------|-------|-------|-------|-------------|--------|-------|--|
| Energy  | Boiler output                                     | kW                                 | 40            | 50    | 60    | 70    | 80    | 95          | 105    | 120   |  |
|   |   | Btu/h x 1000                       | 136.5         | 170.6 | 204.7 | 238.8 | 273.0 | 324.2       | 358.3  | 409.5 |  |
|   | Boiler output* (Low fire)                         | kW                                 | 32.5          | 31.4  | 31.6  | 29.2  | 31.6  | 34.4        | 38.0   | 38.7  |  |
|   |   | Btu/h x 1000                       | 110.9         | 107.1 | 107.8 | 99.6  | 107.8 | 117.4       | 129.7  | 132.0 |  |
| Boiler input (Gross)  | kW  | 49.3                               | 63.4          | 74.5  | 88.4  | 101   | 120   | 132         | 150    |       |  |
|   | Btu/h x 1000                                      | 168.2                              | 216.3         | 254.2 | 301.6 | 344.6 | 409.5 | 450.4       | 511.8  |       |  |
| Boiler input (Nett)   | kW  | 44.4                               | 57.1          | 67.1  | 79.6  | 90.9  | 108.5 | 118.8       | 135    |       |  |
|   | Btu/h x 1000                                      | 151.5                              | 194.8         | 229.0 | 271.6 | 310.2 | 370.2 | 405.4       | 460.6  |       |  |
| Water   | Water content                                     | l                                  | 30            | 30    | 37.1  | 37.1  | 37.1  | 44.2        | 44.2   | 51.3  |  |
|   |   | UK gal                             | 6.6           | 6.6   | 8.2   | 8.2   | 8.2   | 9.7         | 9.7    | 11.3  |  |
|   | System design flow rate                           | l/s                                | 0.87          | 1.08  | 1.30  | 1.52  | 1.74  | 2.06        | 2.28   | 2.60  |  |
|   | @ 11°CΔt across module                            | UK gal/min                         | 11.5          | 14.3  | 17.2  | 20.1  | 22.9  | 27.2        | 30.1   | 34.3  |  |
|   | Minimum flow rate at any time @ 22°CΔt rise       | l/s                                | 0.43          | 0.54  | 0.65  | 0.76  | 0.87  | 1.03        | 1.14   | 1.30  |  |
|   |   | UK gal/min                         | 5.7           | 7.1   | 8.6   | 10.0  | 11.5  | 13.6        | 15.1   | 17.2  |  |
|   | Waterside pressure loss @ 11°CΔt                  | mbar                               | 5.10          | 7.84  | 15.69 | 20.59 | 26.47 | 37.25       | 50.00  | 84.31 |  |
|   |   | in wg                              | 2.0           | 3.1   | 6.3   | 8.3   | 10.6  | 15.0        | 20.1   | 33.9  |  |
| Maximum water pressure                                      | bar   | 6                                  |               |       |       |       |       |             |        |       |  |
|   | psig  | 87                                 |               |       |       |       |       |             |        |       |  |
| Minimum water pressure modular application 82°C flow 11°CΔt | bar   | 0.42                               |               |       |       |       |       |             |        |       |  |
|   | psig  | 6.1                                |               |       |       |       |       |             |        |       |  |
| Gas   | Input rate natural gas                            | m3/h                               | 4.73          | 5.92  | 7.1   | 8.27  | 9.44  | 11.19       | 12.36  | 14.1  |  |
|   |   | ft3/h                              | 167.0         | 209.1 | 250.7 | 292.1 | 333.4 | 395.2       | 436.5  | 497.9 |  |
|   | Nom.gas inlet pressure at boiler natural gas      | mbar                               | 20            |       |       |       |       |             |        |       |  |
|   |   | in wg                              | 8             |       |       |       |       |             |        |       |  |
| Max.gas inlet pressure at boiler natural gas                | mbar  | 25                                 |               |       |       |       |       |             |        |       |  |
|   | in wg   | 10                                 |               |       |       |       |       |             |        |       |  |
| Gas setting pressure standard module natural gas            | mbar  | 13.4                               | 12.5          | 11.9  | 11.0  | 9.5   | 11.5  | 11.2        | 11.0   |       |  |
|   | in wg   | 5.4                                | 5.0           | 4.8   | 4.4   | 3.8   | 4.6   | 4.5         | 4.4    |       |  |
| Flue  | Approx flue gas volume @ 9% CO2 @ NTP             | m3/h                               | 62.9          | 78.8  | 94.5  | 110.0 | 125.6 | 148.9       | 164.4  | 187.6 |  |
|   |   | ft3/h                              | 2221          | 2783  | 3337  | 3884  | 4435  | 5258        | 5807   | 6625  |  |
|   | Approx flue gas temp. nett (primary flue)         | °C                                 | 190           | 200   | 190   | 220   | 230   | 200         | 215    | 205   |  |
|   | °F  | 365                                | 385           | 365   | 423   | 442   | 385   | 413         | 394    |       |  |
| Connection  | Water flow/return Connections                     |                                    | Rc2 " ISO 7/1 |       |       |       |       |             |        |       |  |
|   | Gas inlet Connection                              |                                    | R3/4" ISO 7/1 |       |       |       |       | R1" ISO 7/1 |        |       |  |
|   | Flue connections to draught diverter nominal dia. | mm                                 | 206           |       |       |       |       | 256         |        |       |  |
|   | in  | 8.11                               |               |       |       |       | 10.1  |             |        |       |  |
| Electrical supply   |   | 230v 50Hz Single phase, 6 amp fuse |               |       |       |       |       |             |        |       |  |

\*Fully automatic boiler only

# Dimensional Data

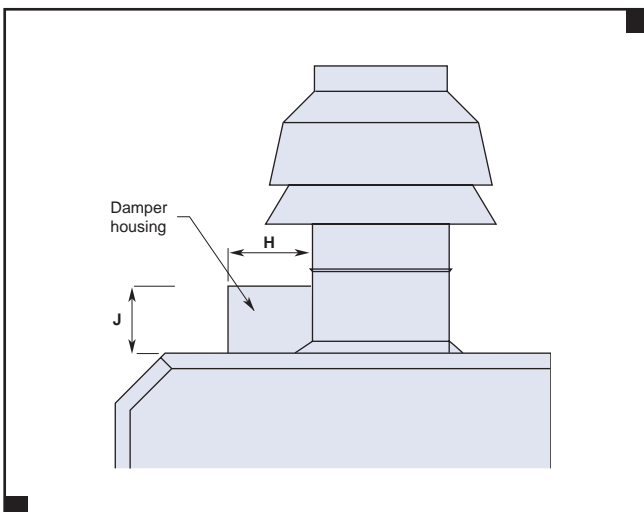
## Purewell Classic - Boiler Dimensions/Clearances



### Single units

| Model                               | PC 40/50          | PC 60/70/80       | PC 95/105 | PC 120 |
|-------------------------------------|-------------------|-------------------|-----------|--------|
| Approx. dry weight kg.              | 235               | 285               | 345       | 400    |
| A - Boiler height (Casing) mm.      | 870               | 870               | 1060      | 1060   |
| B - Flue height from floor mm.      | 1383              | 1475              | 1577      | 1671   |
| C - Flow connection height mm.      | 580               | 667               | 761       | 855    |
| D - Gas connection height mm.       | 769               | 769               | 957       | 957    |
| E - Gas connection size - BSPT Male | R $\frac{3}{4}$ " | R $\frac{3}{4}$ " | R1"       | R1"    |
| F - Flue outlet Dia. mm. (nominal)  | 206               | 206               | 256       | 256    |
| G - Primary flue height mm.         | 190               | 285               | 190       | 285    |

**Note:** The 533 centres relates to boilers close coupled in modular form. For stand alone applications, a minimum of 150mm should be allowed between casings. (Space baskets 200mm apart).



| Model    | PC 40/50 | PC60/70/80 | PC95/105 | PC120 |
|----------|----------|------------|----------|-------|
| <b>H</b> | 297      | 297        | 335      | 335   |
| <b>J</b> | 89       | 160        | 86       | 180   |

All dimensions in mm.

# Pipework kits

## Reverse return headers Purewell Classic and Warmwell boilers

Designed to save time and simplify procurement, optional pipework kits are available from Hamworthy. The latest kits enable Purewell Classic boilers to be integrated in a multiple boiler arrangement with Warmwell condensing boilers.

The independent flow and return headers are prefabricated in the factory and are available in three sizes for connection to two, three or four boilers, close coupled in a multiple casing modular arrangement. Refer to page 11 for details of multiple casings.

The kits include isolating valves, fittings and interconnecting pipework which can be cut to finished size on site. With these kits, there is no need for pipework threading on site after cutting to finished size.

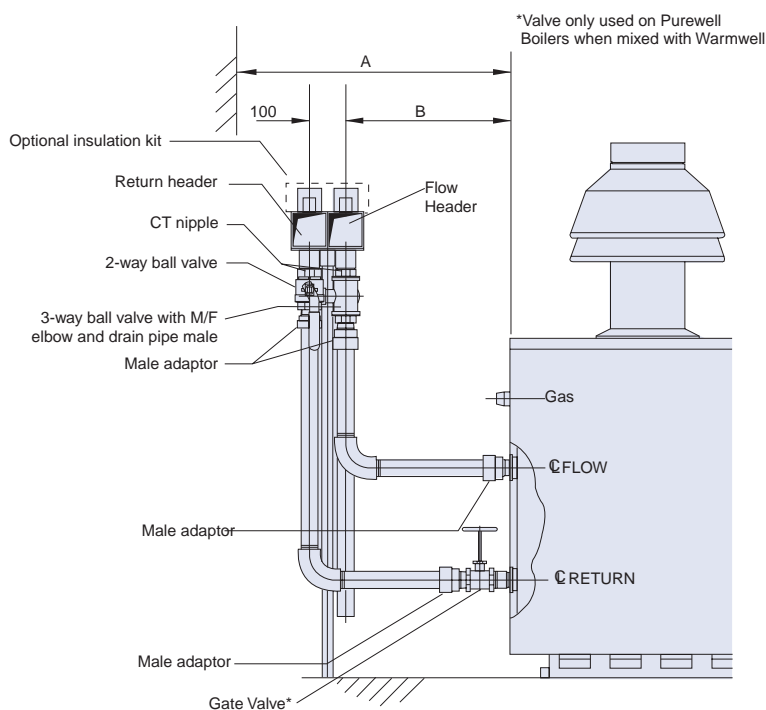
Connections are provided on each header for fitting a relief valve, instrumentation and sensors. (Not supplied by Hamworthy).

A connection is available at either end of each header for the water flow and return pipework, giving a choice for pipework layout. It should be noted, however, that to achieve the reverse return principle, the direction of water flows must be concurrent.

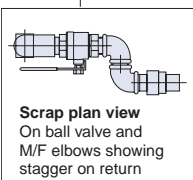
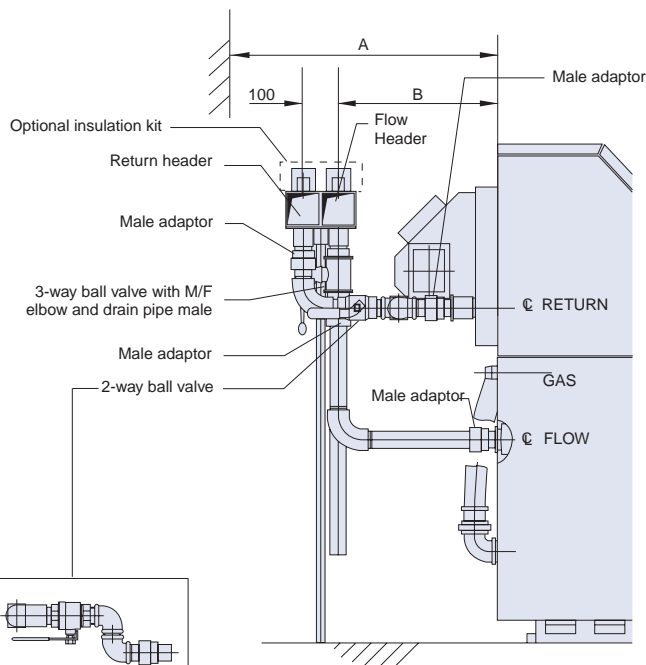
Each header incorporates an integral bracket which interlocks with the other header and additional support is provided by adjustable legs to the floor.

The three sizes of header are available with an optional insulation kit. Designed to complement the neat appearance of the boilers, the insulation kit comprises three easy to fit sections and is lined with Rockwool RW2, 30mm thick (typical).

### Typical arrangement (side view) Purewell Classic Boilers

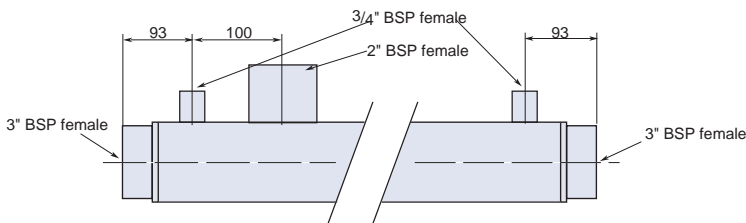


### Typical arrangement (side view) Warmwell Boilers



# Dimensions & Layout

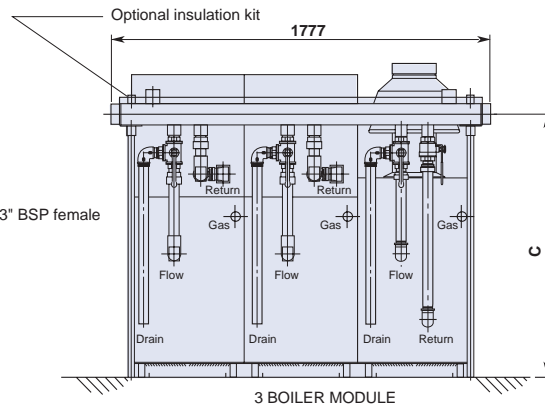
Dimensions shown are nominal and will be subject to normal manufacturing tolerances.



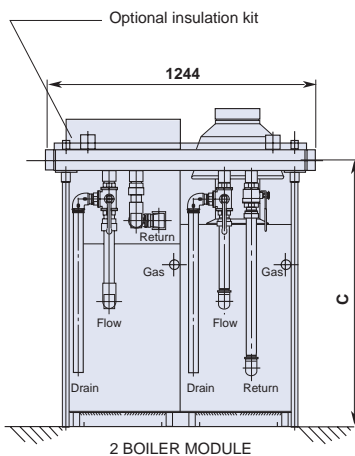
Connections shown for flow header.  
Return header connections will be opposite arrangement.

Note:  
When Purewell boilers are installed with Warmwell condensing boilers, an additional valve is supplied in the kit for each Purewell boiler. This is to balance the hydraulic resistance of the system. The mix of boilers must be stated at the time of ordering (Refer to section on water systems, page 16.)

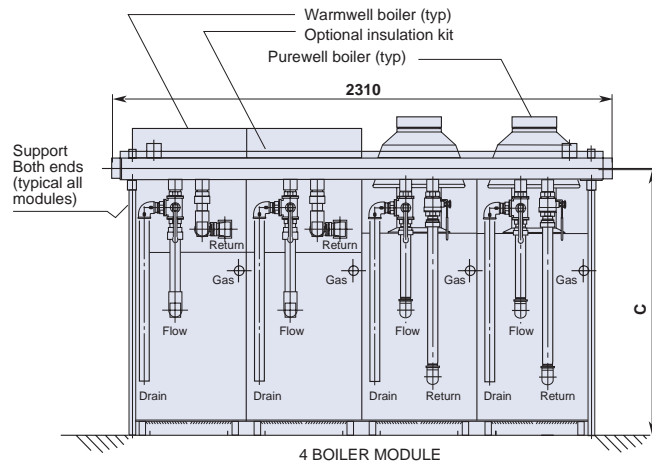
Dimensions in mm



3 BOILER MODULE



2 BOILER MODULE



4 BOILER MODULE

## Purewell / Warmwell Pipework Kits

| Boiler model                           | Dimensions A (Min) | Dimensions B | Dimensions C |
|--|--------------------|--------------|--------------|
| <b>Purewell Classic (only)</b>         |                    |              |              |
| PC 40 / PC 50                          | 460                | 243          | 1061         |
| PC 60 / PC 70 / PC 80                  | 460                | 243          | 1110         |
| PC 95 / PC 105                         | 460                | 243          | 1204         |
| PC 120                                 | 460                | 243          | 1298         |
| <b>Warmwell (only)</b>                 |                    |              |              |
| W 60                                   | 678                | 453          | 1235         |
| W 80                                   | 678                | 453          | 1330         |
| W 95                                   | 678                | 453          | 1330         |
| W 120                                  | 678                | 453          | 1452         |
| W 140                                  | 678                | 453          | 1522         |
| <b>Purewell Classic &amp; Warmwell</b> |                    |              |              |
| PC 40 / PC 50 with W 60                | 678                | 453          | 1235         |
| PC 60 / PC 70 / PC 80 with W 80/95     | 678                | 453          | 1330         |
| PC 95 / PC 105 with W 120/140          | 678                | 453          | 1522         |
| PC 120 with W 120/140                  | 678                | 453          | 1522         |

# Application & System Data

The installation of all boilers MUST be in accordance with the relevant requirements of Gas Safety Regulations, I.E.E. Regulations and the bye-laws of the local water undertaking. It should also be in accordance with any relevant requirements of the local gas region, local authority and relevant recommendations of the following documents:

## British Standards

**CR 331.3** Low pressure installation pipes.

**BS 5449.1** Forced circulation hot water systems.

**BS 5446** Installation of gas hot water supplies for domestic purposes.

**BS 5440.1** Flues (for gas appliances of rated input not exceeding 60kW).

**BS 5440.2** Air supply (for gas appliances of rated input not exceeding 60kW).

**BS 6798** Boilers of rated input not exceeding 60kW.

**BS 6644** Installation of Gas Fired Hot Water Boilers, 70kW to 1.8MW (nett input).

**BS 6700** Design, installation, testing and maintenance of services supplying water for domestic use.

**BS 6880** Part 1,2 & 3 Code of practice for low temperature hot water heating systems of output greater than 45kW.

**BS 6891** Installation of low pressure gas pipework of up to 28mm in domestic premises.

**BS 7074** Part 1 Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Part 2 Code of practice for low and medium temperature hot water systems.

**BS EN 60335** Part 1 Safety of household and similar electrical appliances - general requirement.

## I. Gas E. Publications

**IGE/UP/1** Soundness testing and purging of industrial and commercial gas installations.

**IGE/UP/1A** Soundness testing and direct purging of small low pressure industrial and commercial natural gas installations.

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

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

## Health and Safety Executive:

Guidance note PM5 - Automatically controlled steam and hot water boilers.

## CIBSE Publications:- "CIBSE Guide"

It is impractical in this document to specify all relevant information, but the following extracts from the above references are emphasised since failure to comply with these requirements will almost certainly result in an unsatisfactory installation.

## Boiler base

Purewell boilers should be positioned on a level non combustible surface that is capable of adequately supporting its weight (when filled with water) and any ancillary equipment. Adequate space for installation and servicing should be considered. This should not normally be less than 460mm at the rear, for flow and return connections. Also allow at least 460mm on one side, the other side must be no less than 150mm. Allow 610mm (minimum) in front of the boiler for servicing.

## Water systems - Modular installations

Flow and return headers should be connected in a "reverse return" arrangement (i.e. the water flow in each header follows the same direction) thus providing equal flow through each boiler. This also ensures that pressure loss across any number of boilers will never be greater than the head loss across one boiler plus local pipework losses.

When installing Purewell boilers as part of a mixed modular system with Warmwell boilers, balancing valves should be fitted to the Purewell boilers.

Balancing valves are required in order to compensate for extra pressure drop through the Warmwell's condensing section.

## Adequate water flow

The Purewell boiler is designed as a quick response, low water content unit to run continuously with minimal operating problems. Care should be taken in the initial design and layout, having due regard for adequate water flow through the boilers and the influence of the system control. Refer to technical data table for minimum water flows required. The control system and valves, where fitted, should be regulated to avoid lower flows occurring. The flow corresponding to 22°C temperature rise across the boiler is the minimum recommended flow at any time. A minimum return temperature of 30°C should be maintained. For boiler pressure drop refer to page 12 technical data table.

## System feed water quality

If the boiler feed water has a high degree of hardness, it is recommended that the water be treated to prevent precipitation of scale or sludge in the boiler water passages. Details of additives can be obtained from any specialist water treatment manufacturer or local water authority.

## Open vent pipe and cold feed pipe

| Boiler      | Open vent size | Cold feed size |
|-------------|----------------|----------------|
| <60kW       | 25mm (1in)     | 19mm (¾ in)    |
| 60kW-150kW  | 32mm (1¼ in)   | 25mm (1in)     |
| 150kW-300kW | 38mm (1½ in)   | 32mm (1¼ in)   |
| 300kW-600kW | 50mm (2in)     | 38 (1½ in)     |

## Pressure relief valve

Each boiler, or in the case of a modular installation, each bank of boilers must be fitted with a pressure relief valve to BSEN1504126-1 and sized as shown in BS6644. BS6644 provides comprehensive information for the selection and location of safety valves and attention is drawn to the higher capacity requirements of safety valves for pressurised hot water systems.

## System Head

### Guidance Note PM5 Health and Safety Executive

This note states that “hot water boilers should have an automatic control apparatus to cut off fuel to the burners of gas fired plant when the water at or near the boiler flow outlet rises to a pre-determined temperature. This should provide a margin of at least 17°C below the temperature of saturated steam corresponding to the pressure at the highest point of the circulation system above the boiler.” To comply with this recommendation, the minimum system pressure is dependant on system design flow temperatures and in the case of modular installations, the temperature rise across each module.

### Single installations

The minimum pressure must be equal to the gauge pressure equivalent to the saturated steam temperature obtained by adding 17°C to the required boiler flow temperature. The highest point of the circulation system above the boiler should never be less than 2m (6.5ft).

|  |       |
|--|-------|
| Required flow temperature              | 95°C  |
| Safety margin                          | 17°C  |
| Equivalent saturated steam temperature | 112°C |

**From steam tables corresponding gauge pressure - 0.50 bar (7.3 psi) - 5.1m (16.7ft) head of water.**

### Modular installations

The minimum pressure should be equal to the gauge pressure equivalent to the saturated steam temperature. This is obtained by adding 17°C to the sum of the required mixed flow temperature plus the temperature rise across the modules.

|  |       |
|--|-------|
| Required mixed flow temperature                      | 82°C  |
| Temperature rise across modules at minimum flow rate | 11°C  |
| Safety margin  | 17°C  |
| Equivalent saturated steam temperature               | 110°C |

**From steam tables corresponding gauge pressure 0.42 bar (6.1 psi) - 4.3m (14ft) head of water.**

### Air Supply and Ventilation

An adequate supply of fresh air for combustion and ventilation must be provided in accordance with BS 6644.

**The air supply should be free from contamination such as building dust and insulation fibres from lagging. To avoid unnecessary cleaning and servicing of the burner, we recommend that the boilers are not fired whilst building work is being undertaken.**

The air supply should be achieved using:

- Natural ventilation supplying air with a low level opening and discharge through a smaller sized high level opening.
- A fan to supply air to a low level opening with natural discharge through a high level opening.
- A fan to supply air to a low level opening and discharged by means of a fan at a high level.

**Note: Fans must be selected such that a negative pressure is not created in the boiler house relative to outside air pressure.**

The air supplied for boiler house ventilation should be such that the maximum temperatures within the boiler house are as follows:

- At floor level 25°C (or 100mm above the floor level)
- At mid level 32°C (1.5m above floor level)
- At ceiling level 40°C (or 100mm below ceiling level)

Where natural ventilation is used suitable permanent openings at low level and high level connected directly to the outside air should be provided. These openings must be fitted with grilles that cannot be blocked or flooded.

The free area of the grilles should be as follows:

- Low Level (Inlet)**  
4cm<sup>2</sup> per kW of net heat input.
- High Level (Outlet)**  
2cm<sup>2</sup> per kW of net heat input.

### Ventilation

Where a boiler installation is to operate throughout the summer months, e.g. for domestic hot water production for more than 50% of the time, then additional ventilation allowances are required. Refer to BS6644 for more detailed information.

### Delivery

Each boiler is despatched as a fully assembled heat exchanger and burner basket complete with gas train and valve. The assembly is positioned on a timber frame to facilitate movement on site and shrink wrapped for protection.

The following items are supplied packed in separate cardboard containers:

- Boiler casing complete with assembly instructions
- Boiler control panel
- Primary flue complete with damper assembly, where applicable
- Draught diverter

All Hamworthy products are delivered to site on a tail-lift vehicle, and deliveries are closely co-ordinated with the customer, to suit the site construction programme. Standard delivery is to ground level from the tail-lift of the vehicle.

To enquire about special delivery services, please contact our customer services team.

### Limited Access

For sites where access to the plant room is limited or difficult, Hamworthy can arrange for heat exchangers to be supplied loose for site assembly.

In addition, we offer a service of site assembly for many of our products.

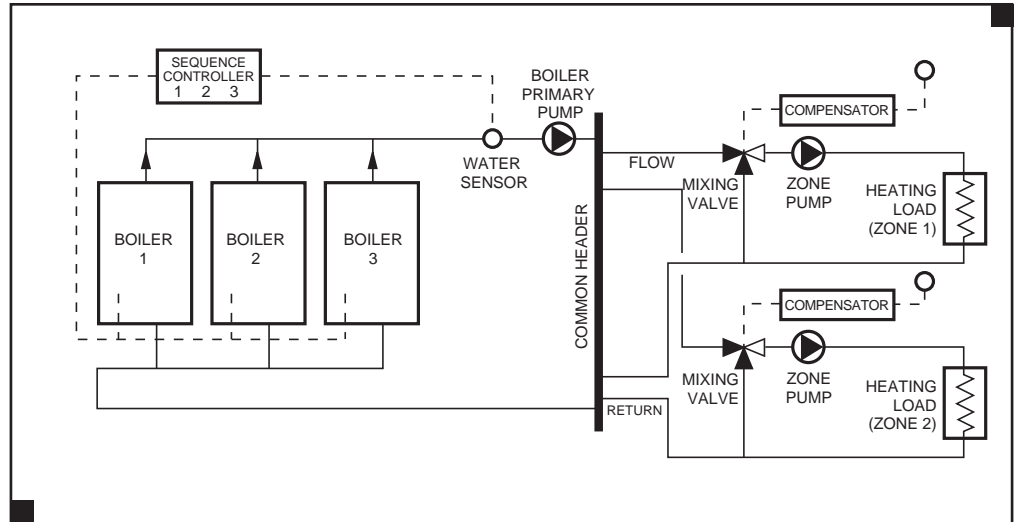
Using our trained people we can offer a high quality of build and the assurance of a boiler built and tested by the manufacturer. Heat Exchangers assembled by Hamworthy include parts and labour under the two-year warranty.

# System Design

The installation of modular boilers in commercial and industrial heating and hot water systems offer a wide choice of design options and applications. The following systems shown are typical and should be considered for general guidance.

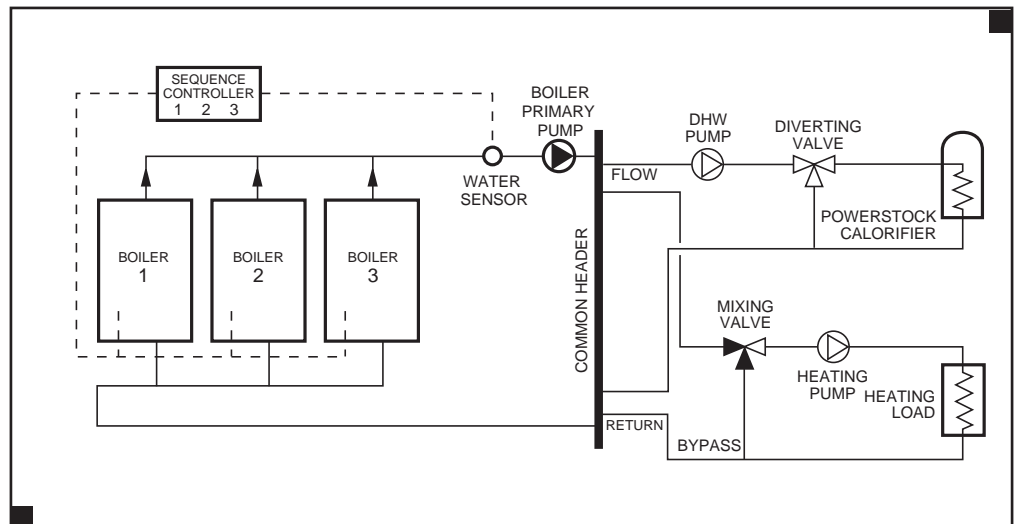
## Example 1

Heating only; with separate temperature compensation on each zone.



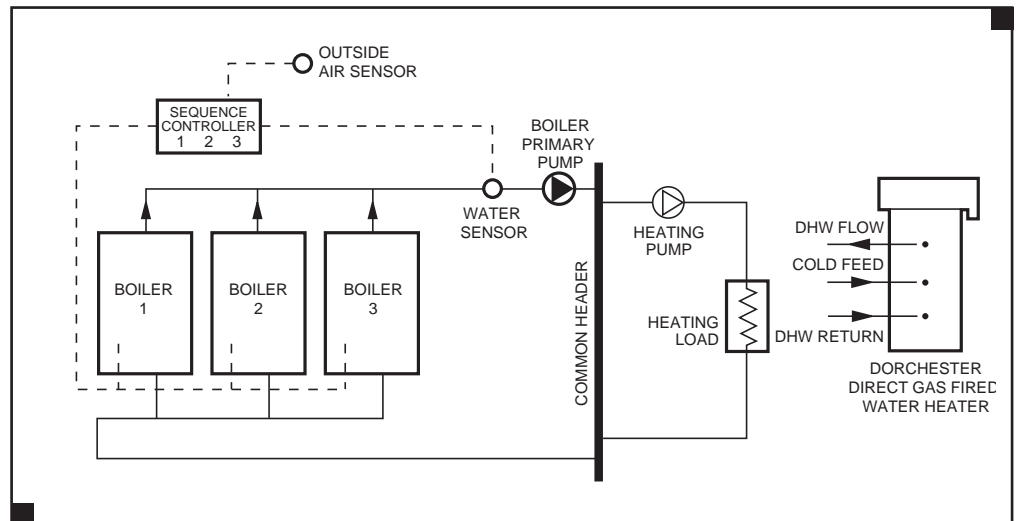
## Example 2

Combined heating and domestic hot water with diverting valve on DHW and mixing valve on heating.



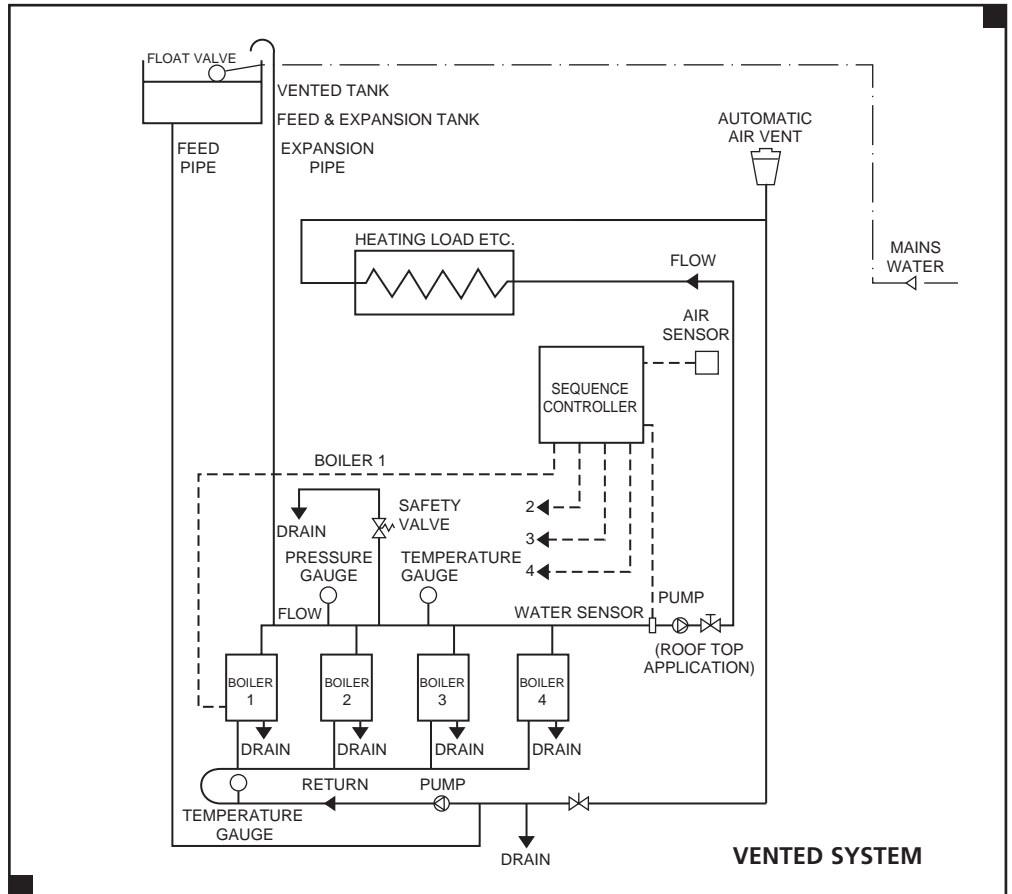
## Example 3

Split system. Completely separate heating and DHW systems. Multiple boilers under direct temperature compensation and a decoupled heating circuit, which may have a variable flow. DHW generated by direct gas fired water heaters.



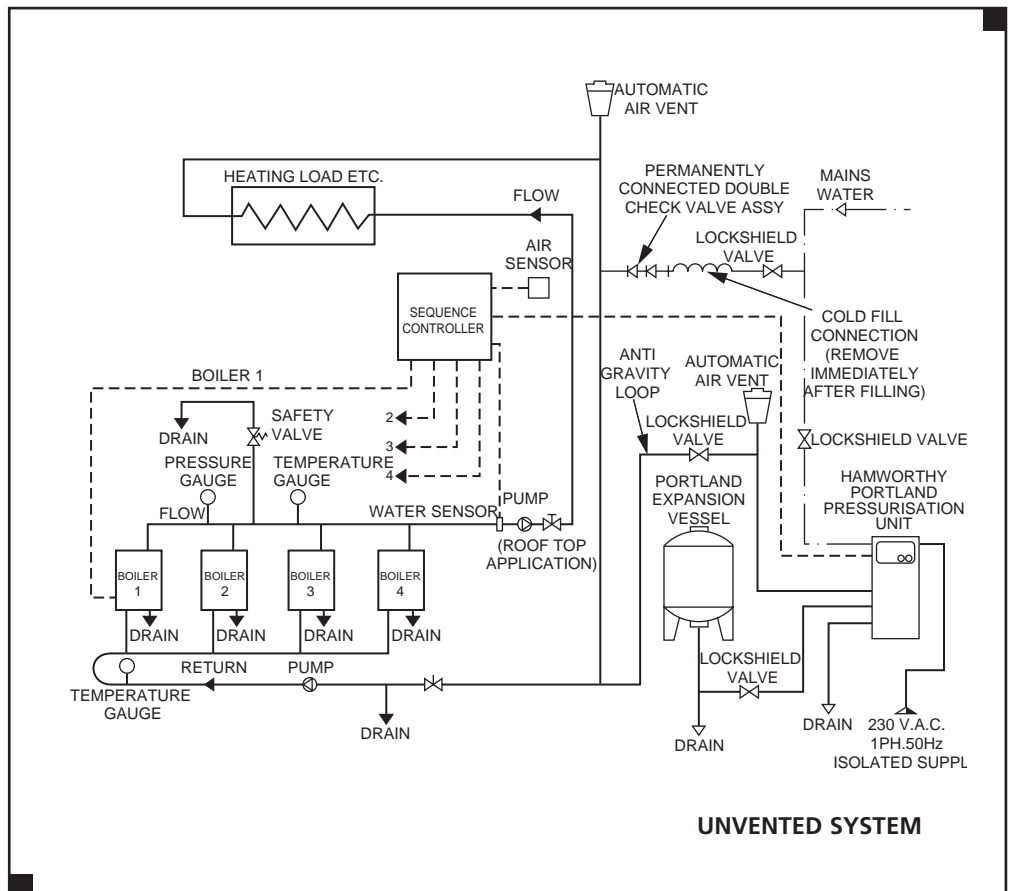
**Example 4**

Boiler installation (typical) vented system.



**Example 5**

Boiler installation (typical) unvented system.



**General notes**

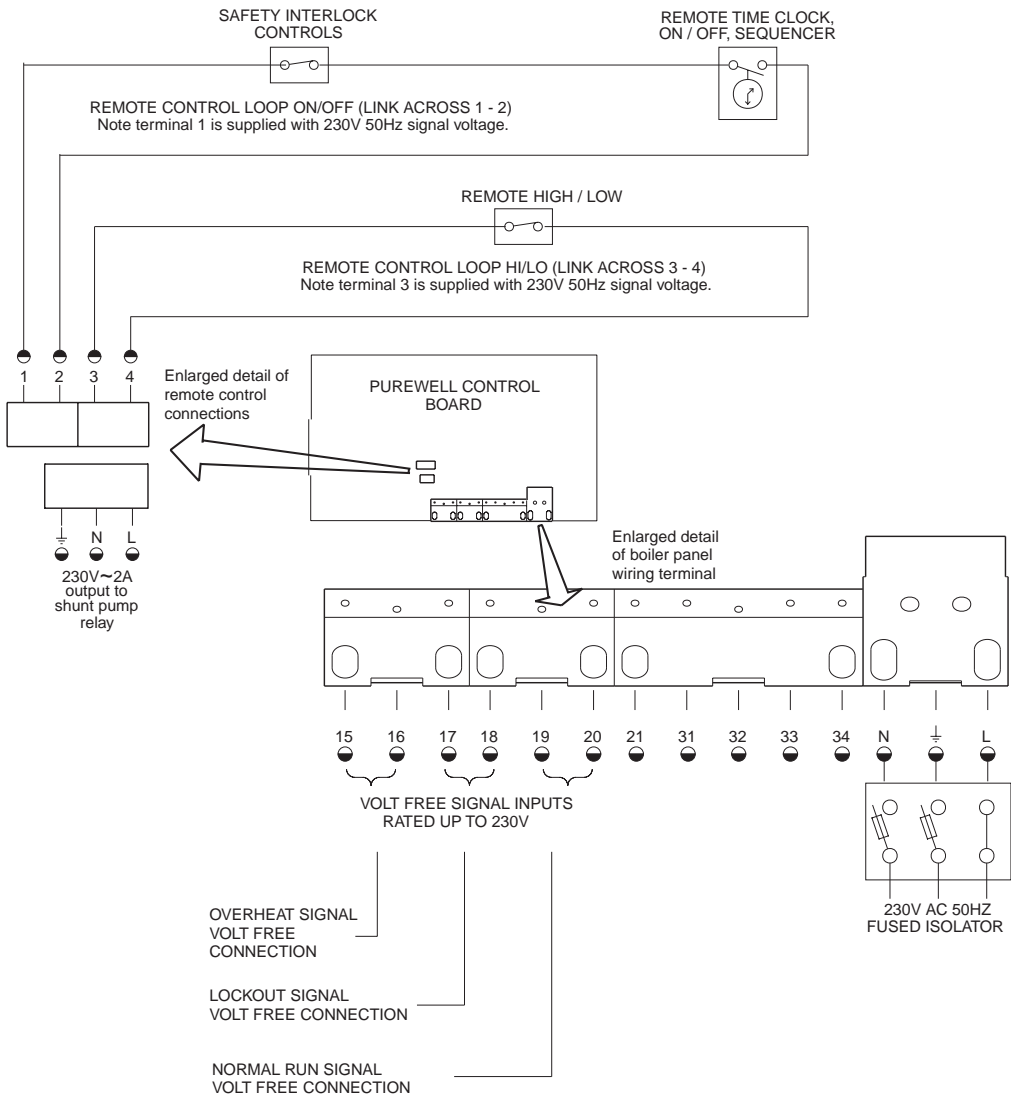
In any single or modular system, it is important that the water flow rate through each firing boiler does not fall below the minimum required flow rate for that size of boiler (see table page 12).

In applications where the minimum flow rate will not be met a shunt pump should be installed, sized to provide the minimum stated flow rate per boiler at the equivalent boiler pressure drop plus pipework resistance.

Both heating and shunt pumps should be controlled to provide an overrun period to dissipate residual heat.

# Wiring Diagram

Purewell Classic - Fully Automatic



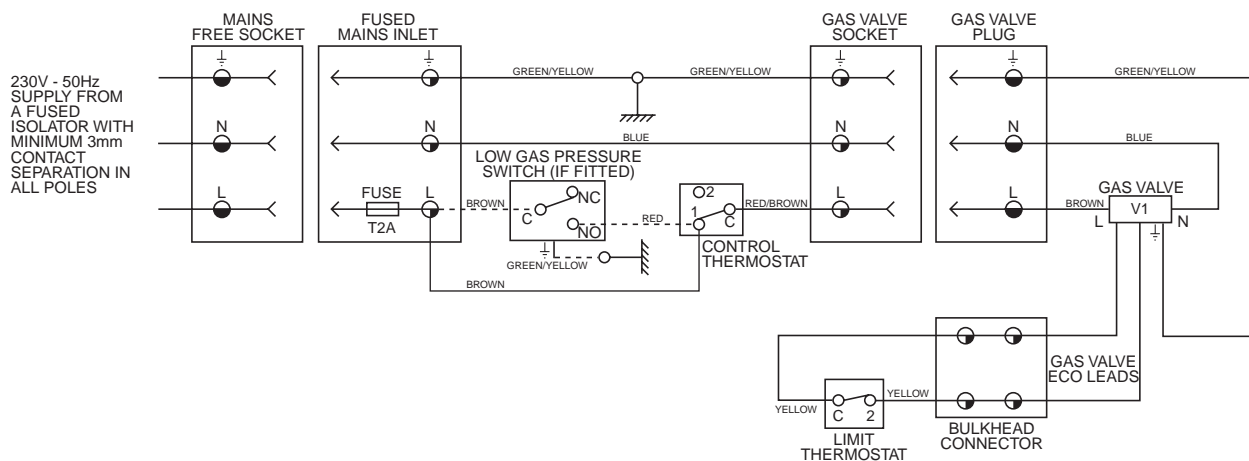
**Operating Voltage**  
230 V 50 HZ AC

**Operating Current**  
Start and run  
0.4A

# Wiring Diagram

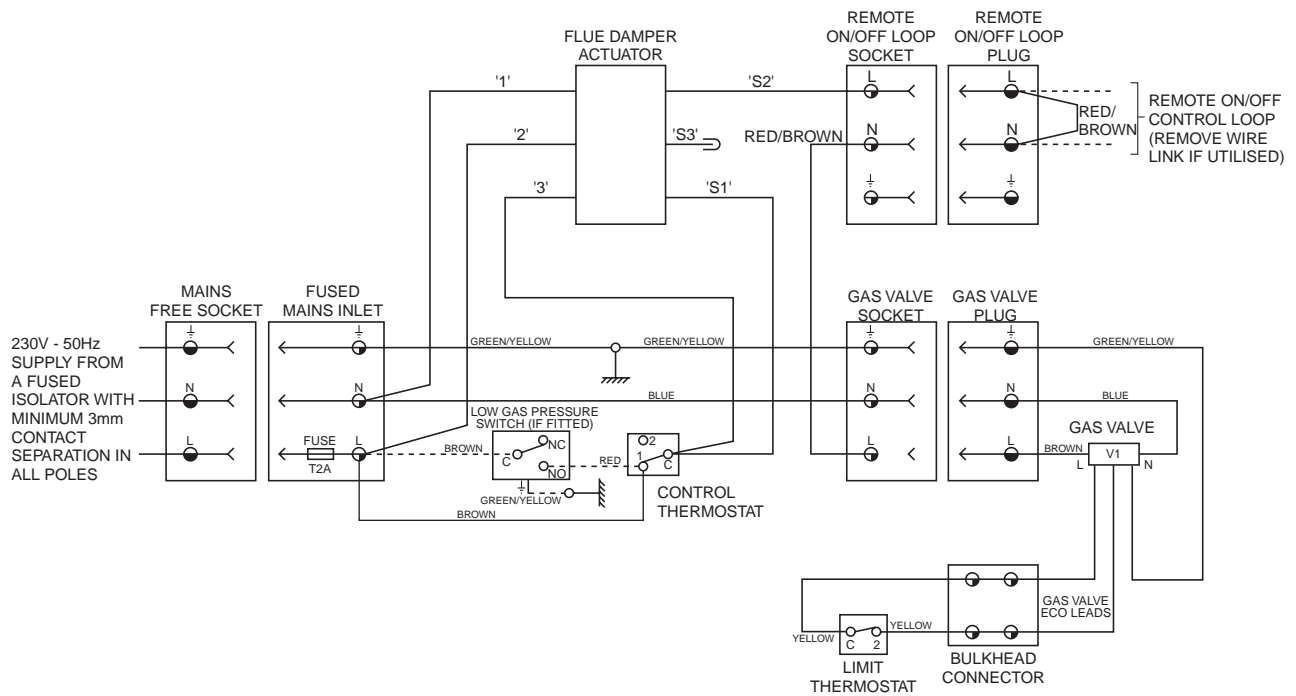
Purewell Classic - Permanent Pilot

## Standard Controls Wiring Diagram Schematic



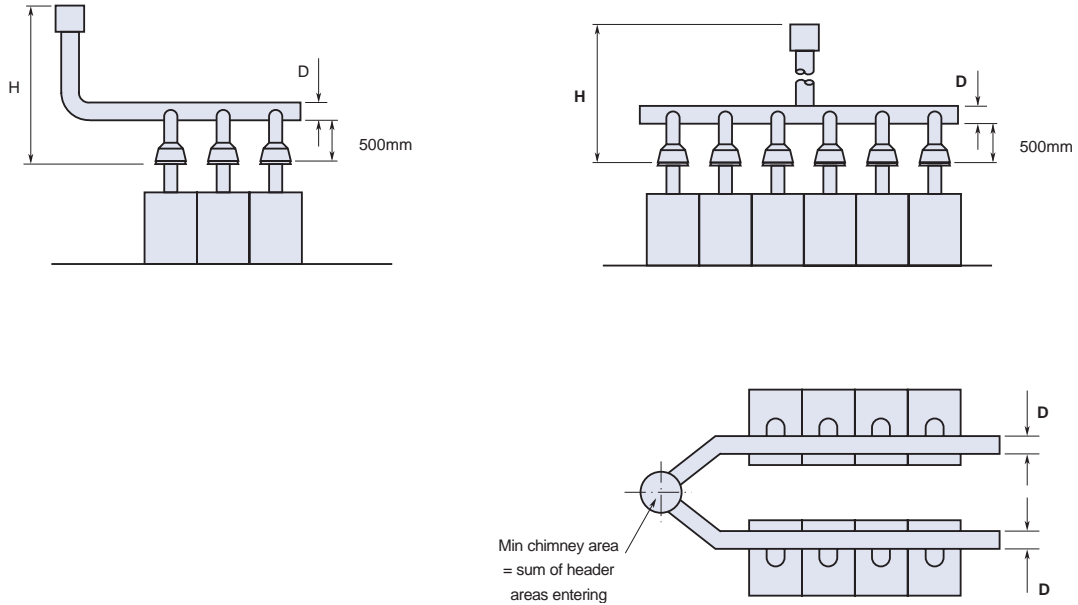
Note: Any timeclock controls or interlocks should be wired to interrupt the supply to the boiler.

## Standard Controls Wiring Diagram Schematic (with optional on/off damper)



Note: Any timeclock controls or interlocks should be wired to interrupt the supply to the boiler.

## Guide to flue and header diameters



For any atmospheric gas fired boiler system, certain factors must be taken into account to ensure the correct efficient and safe removal of flue gas. The table opposite gives diameters for a selection of standard typical arrangements, and is for guidance only. Engineered flue solutions from Hamworthy may well result in a reduction in sizes providing an efficient system at lower cost.

| Power (Output) kW | No. of Boilers   | Height of chimney above draught diverter H m |     |     |     |     |     |
|-------------------|--|--|-----|-----|-----|-----|-----|
|                   |  | 2m   | 3m  | 6m  | 10m | 15m | 20m |
|                   |  | Recommended Header Diameters D mm            |     |     |     |     |     |
| 40                | Single Boilers<br><br>consult technical department at Hamworthy Flue Products for multiple boiler applications | 203  | 203 | 203 | 203 | 203 | 203 |
| 50                |  | 203  | 203 | 203 | 203 | 203 | 203 |
| 60                |  | 203  | 203 | 203 | 203 | 203 | 203 |
| 70                |  | 203  | 203 | 203 | 203 | 203 | 203 |
| 80                |  | 203  | 203 | 203 | 203 | 203 | 203 |
| 95                |  | 254  | 254 | 254 | 254 | 254 | 254 |
| 100               |  | 254  | 254 | 254 | 254 | 254 | 254 |
| 105               |  | 254  | 254 | 254 | 254 | 254 | 254 |
| 120               |  | 254  | 254 | 254 | 254 | 254 | 254 |
| 160               | Multiple Boilers<br><br>Consult Hamworthy Midtherm flues with details of application design. Refer to page 23  |  |     | 305 | 254 | 254 | 254 |
| 190               |  |  |     | 356 | 305 | 305 | 254 |
| 210               |  |  |     | 356 | 305 | 305 | 305 |
| 240               |  |  |     | 356 | 356 | 305 | 305 |
| 285               |  |  |     | 406 | 356 | 356 | 356 |
| 315               |  |  |     | 406 | 356 | 356 | 356 |
| 360               |  |  |     | 457 | 406 | 406 | 356 |
| 380               |  |  |     | 457 | 406 | 406 | 406 |
| 420               |  |  |     | 457 | 457 | 406 | 406 |
| 480               |  |  |     | 508 | 457 | 457 | 406 |
| 525               |  |  |     | 559 | 457 | 457 | 457 |
| 600               |  |  |     | 559 | 508 | 508 | 457 |
| 630               |  |  | 559 | 508 | 508 | 457 |     |
| 720               |  |  | 610 | 559 | 559 | 508 |     |

# Flue System

Hamworthy Purewell boilers are designed to be used with natural draught flue systems, which should be designed in accordance with current regulations.

The following points should be noted:

- Each boiler must have its correct draught diverter fitted in an unmodified condition before connection to the flue system.
- The bottom of the flue header should be at least 500mm (20") above the draught diverter skirt bottom.
- The flue system should be designed to achieve a negative suction at all times at the draught diverter outlet on all modules in a bank. For optimum boiler performance, draught conditions should be between 0.05 to 0.125 mbar. The boilers are suitable for connection to a fan diluted system.
- The flue system must be self supporting and facilitate access for cleaning and maintenance near the boiler connection.
- When designing the flue system, care must be taken to ensure that any condensate that may form within the system can be drained safely to a suitable waste point, and that the flue and drain materials are resistant to the corrosive effect of condensate.
- Purewell Classic boilers are suitable for installation in a balanced compartment in accordance with the requirements of **BS 6644**.



## Flues from Hamworthy

The Masterflue MF system from Hamworthy is a modular, twin wall, insulated, fully welded flue solution, optimised for high efficiency and condensing boiler applications.

### Leak-Free

- Unique factory fitted tri-lip silicone gasket as standard- leak proof, high temperature seal, impervious to water and vapour
- All components fully welded and pressure tight, including traditionally troublesome elbows

### Corrosion-Free

- Premium grade stainless steel construction for inner and outer walls
- 87 degree elbows and tees to ensure condensate drains effectively

### Worry-Free

- Fast, push-fit assembly with no need for additional sealants
- Precision finished, reliable components for high quality installation
- Range of 'Tru-Align' adjustable wall brackets for simplifying alignment, achieving a faster installation and neater finish
- Continuous insulation from base to stub
- Fire resistant - 4 hour fire rated
- Stress-free thermal expansion
- CE mark accredited to meet 2005 legislation

Hamworthy also have the Masterflue ME flue component range which is a single wall construction, fully welded flue system. The Masterflue ME range is totally compatible and interchangeable with the Masterflue MF twin wall range.

## Design & Install or Supply Only

Hamworthy's extensive knowledge of combustion systems, and the flue requirements for each boiler, makes a boiler and flue package the perfect solution for every project.

Offering a comprehensive range of flue and chimney equipment for natural draught, fan assisted and fan dilution applications, Hamworthy works in partnership with Midtherm Engineering to provide a comprehensive flue design and installation package.

Alternatively, Hamworthy can provide components on a supply only basis for the contractor to install.

Speak with Hamworthy Midtherm about your flue requirements and get peace of mind on your next project - guaranteed.

**Tel: 0845 450 2867**  
**Email: hamworthy@midtherm.co.uk**



**Customer Service Centre**

Hamworthy Heating Limited  
Fleets Corner, Poole,  
Dorset BH17 0HH

Telephone: **0845 450 2865**  
Email: **[sales@hamworthy-heating.com](mailto:sales@hamworthy-heating.com)**  
Web: **[www.hamworthy-heating.com](http://www.hamworthy-heating.com)**

Hamworthy reserves the right to make changes and improvements which may necessitate alteration to the specification without prior notice.