SBGI INNOVATION AWARD 2009

MB SERIES

MB Series

Prefabricated Modular Heating System
60kW – 1150kW

Working towards a cleaner future

POTTERTON COMMERCIAL

heating specialists

MB Series

Prefabricated Modular Heating System
60kW – 1150kW

Background

Potterton Commercial has developed a modular condensing heating system for installation into existing and new build plant rooms.

The Potterton Commercial modular prefabricated condensing heating system is available in outputs from 60kW – 1150kW.

The MB Series includes an integral intelligent control system that allows modulation of the boilers down to extremely low outputs to match the system load and maintain optimum system efficiency.

Available with either stainless steel Sirius WH boilers or aluminium silicon Paramount two boilers.

Key benefits

• **Award winning** – 2009 Winner of the institute of the gas industry (SBGI) award for innovation.

• **A complete heating system** including boilers, system pumps, pressurisation system and heating controls.

• **High efficiency modulating condensing boilers** – Aluminium/Silicon alloy heat exchanger with a 10 year warranty*. A modulating combustion system which delivers exceptional efficiency of up to 109% net.

• **Modular design** – the system is supplied in individual modules to allow easy manual handling, with maximum module weight of 160kg. Designed to provide easy access for maintenance and replacement of all components.

• **Compact and flexible design** – minimises site space required for installation, with maximum module width of 620mm, allowing it to pass through a standard doorway.

• **Quality materials** – designed and built for a 25 year operating life, incorporating corrosion resistant materials including galvanised mounting frames and zinc plated pipe work.

• **Comprehensive control system** – incorporates an integral control panel SIL rated to IEC 61508 with automatic and manual operation of the boilers and pumps. Control options include optimum start/stop, frost protection and direct weather compensation for compliance with Part L2 of the Building Regulations. Suitable for connection to BEMS (Building Energy Management Systems) for remote enable and fault indication.

• **Proven product design** – backed by the extensive experience and expertise of our mechanical and electrical design engineers. Proven design and compatibility of assembled components.

• **Service support** – dedicated mechanical and electrical field support engineers from our service organisation provide commissioning, service and maintenance on the complete modular heating system to maintain maximum system efficiency and reliability throughout the life of the installation.

• **Full technical support package** – comprehensive operating manual and operator training provided along with telephone technical support.

• **Fuel flexibility** – supplied for use with natural gas or LPG (Propane) applications.

• **Installation** – Fast track installation. Reduction in on site construction time, minimising site management costs and exposure to health and safety risks.

• **Warranty**
– 5 year warranty* on parts and labour on Sirius MB Series
– 2 year warranty* on parts and labour on Paramount MB Series
– 10 year warranty* on Paramount Heat Exchanger

**Terms and conditions apply (excludes expansion vessel)*

MB Series


Flow/return and gas isolation valves
Plug and socket wiring harness
Prefabricated pressure switch assembly
Class “A” rated Grundfos Magna twin head pump
Optional intermediate heat exchanger
Boiler safety valves piped to low level


Twin compartment control panel. Dedicated 24V low voltage controls compartment
100 litre expansion vessel
3-way valve for checking expansion vessel cold charge pressure
Individual boiler isolation valves
Pressure pump rated for continuous use
Segregated mains power compartment
Low level header/ mixing tank

MB Series
The modules

Pump Module – Features and Benefits

- Pre-assembled zinc plated header pipework on heavy duty, self supporting galvanised frame

- Twin head variable speed Grundfos Magna D Pumps which are ECA listed and class “A” rated to improve reliability and energy efficiency. Can reduce energy consumption by over 70% compared to standard rated pumps

- Electronic soft start – Low noise

- Class “A” pump – Low Energy

- Auto changeover for equal duty and flow failure

- 100mm temperature and pressure gauges complete with gauge isolation valves

- PN 16 Isolation valves for easy on site connection

- Automatic air vent

- System drain valve

- Pressure board incorporating
  – High, Low and Control Pressure switches with alarms
  – Differential pressure flow proving switch
  – Switch test and calibartion facility

- Differential by-pass valve to maintain minimum boiler flow on operation of external flow reducing devices

- Wiring harness for all components

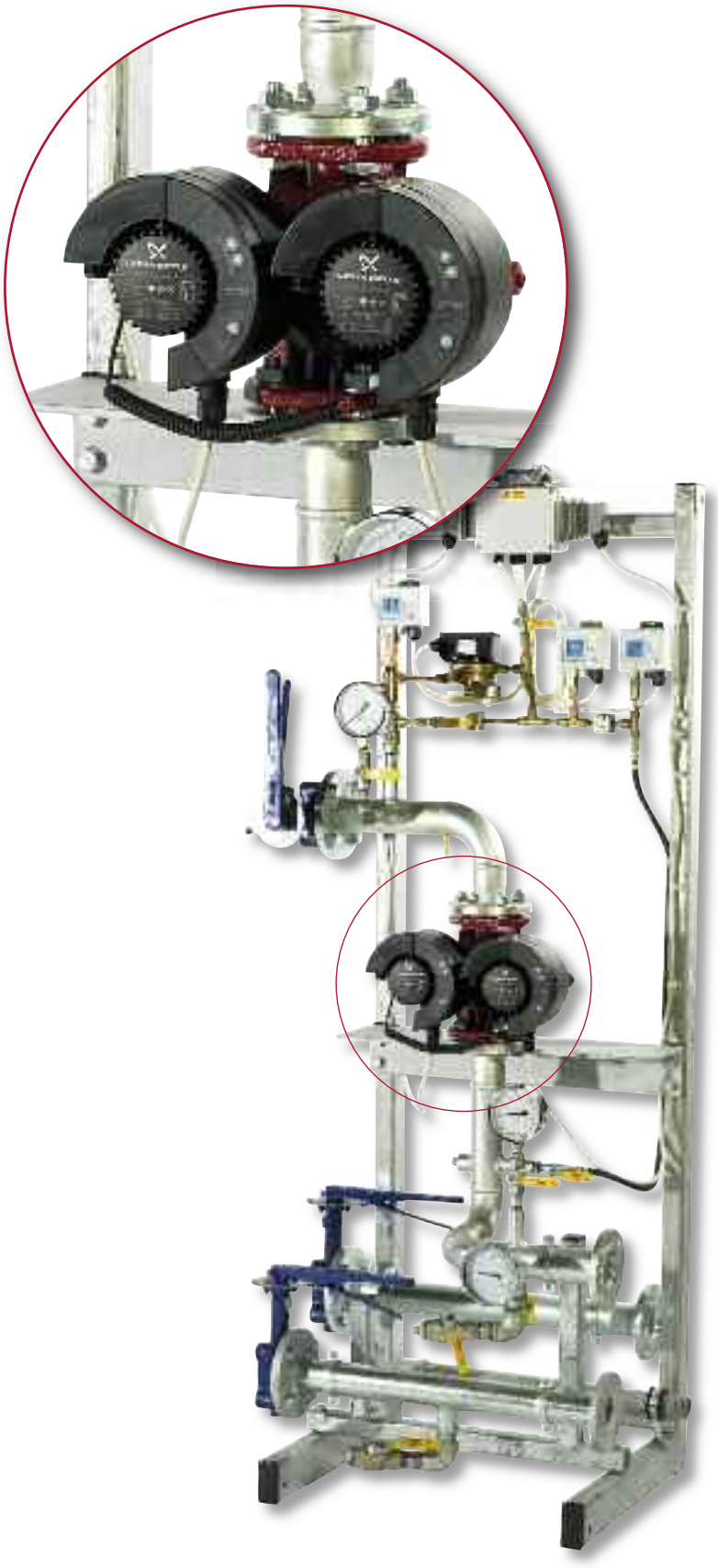


Plate heat exchanger module

The MB Series can be supplied with an optional plate heat exchanger and secondary pump module that provides complete hydraulic separation between the new boilers and the existing heating system.

Key benefits

- New boilers protected from existing heating system
- Secondary circuit can operate at a greater pressure range
- Secondary circuit suitable for open vented systems

Key features

- Duplex secondary heating pumps with load scheduling and flow proving for complete redundancy
- Secondary pump control interfaced from the MB Series control panel
- In line strainer on secondary return to prevent clogging of the plate heat exchanger from system debris
- 100mm pressure and temperature gauges located on secondary flow and return pipe work

MB Series
The modules

Boiler Module

- Paramount two or Sirius WH commercial boilers self supporting supplied on a self supporting galvanised frame

- Heavy duty frames allow supply of boiler factory mounted frames, minimising on site assembly, increasing speed of installation

- Zinc plated steel pipe headers for gas flow and return pipework pre-fixed to a self supporting galvanized frame

- Pre-assembled condensate drain pipework

- Flexible stainless steel connections from headers to boiler for easy alignment

- Flexible flueing options
  – Open Flue
  – Room Sealed
  – Common Header

- Individual isolating valves for boiler gas and water connections including quick release fittings

- Gas valve includes integral safety thermal cut off at 98°C

- Individual boiler pressure relief valve

- Integral cable tray

- Wiring harness with plug and socket connection for fast on site assembly

Sirius WH boiler module

Paramount two boiler module

Control Module

• Control panel and pressurisation pump installed on a heavy duty self supporting galvanized frame

• Supplied with a wiring harness with plug and socket connections for all electrical equipment

• 230v power compartment for boilers and pumps with MCB protection for each individual circuit

• Electrical isolation provided by separate lockable isolators for each boiler and pump

• Emergency shutdown switch

• System Control Panel
  – Manual Off – Automatic switches for boilers and pumps
  – Low voltage (24V DC) control section
  – Fault and run lamps for boilers and pumps
  – Auto sequencing of pumps and boilers
  – Pump flow proving and alarm
  – Pressurisation control
  – Low and high pressure interlocks in accordance with HSE document PM5

• Remote alarm connections

• Flexible Control Options
  – Constant water temperature by integral water temperature controller
  – Compensated heating by integral weather compensator
  – Remote modulation by BMS

MB Series
The modules

Pressurisation Module

• Expansion vessel and mixing tank mounted on a heavy duty self supporting galvanized frame

• 100 litre Integral expansion vessel supplied as standard
  – Connection point for additional expansion vessel
  – 3 way valve with drain back facility for expansion vessel maintenance

• Low level break tank for system filling and dosing
  – Clear acrylic for easy visual inspection
  – Mains cold water supply connection with automatic fill valve
  – Integral strainer on pump inlet
  – Low water level switch with alarm
  – Drain valve

• Pressurisation pump (mounted on control module)
  – Continuously rated for initial system filling
  – Stainless steel impellor to prevent seizure
  – Isolating valves
  – Pressure gauge
  – Pump test facility
  – Overload protection with remote alarm

• Simple mains water break tank system.
No requirement for RPZ Valve for system filling

Configuration overview

As you can see from the drawings shown on the following pages, there are numerous configurations for the MB series. The modular construction has been designed to be as flexible as possible and giving the maximum number of installation solutions.

Please follow the guide notes below for choosing the correct package and correct fitting packs to install the MB Series heating system.

General
For sufficient space for access, service and maintenance, there must be a minimum of 800 mm of unobstructed space in front of each module.

Right/Left hand units
The number and size of the boilers is dependent on the heat requirement for each site. Regardless of configuration, the boiler modules are the same with maximum dimensions of W=620 D=750 H=1850.

The boilers are fitted in a line with the pump module at one end and the pressurisation unit and control module at the other. The hydraulic connections to the system come from the pump module. As you look at the front of the boilers, is the pump to be on the left or right hand side?

Ensure when you select an MB heating system that you select the part number for the correct handing of the MB Series. Your quotation will indicate part numbers for both right and left handed options

Choosing the configuration style
The options available are shown on pages 12-13. The diagrams shown are examples; the number of boilers can vary from 2 to 10 and the dimensions altered accordingly, by adding to or reducing the dimensions by 620mm.

Corner units
There are two corner packs for the MB Series to allow flexible installation configuration.

If a corner pack is required to create a corner between two boilers, or a boiler and a pump unit, then corner pack A is required as shown on page 13. If the corner is required between a boiler and the control module then corner pack B (electrical) is needed.

Back To Back layout
Page 13 shows a back to back configuration which is available when more then 6 boilers are required.

Part numbers for the optional corner packs are shown on your quotation.

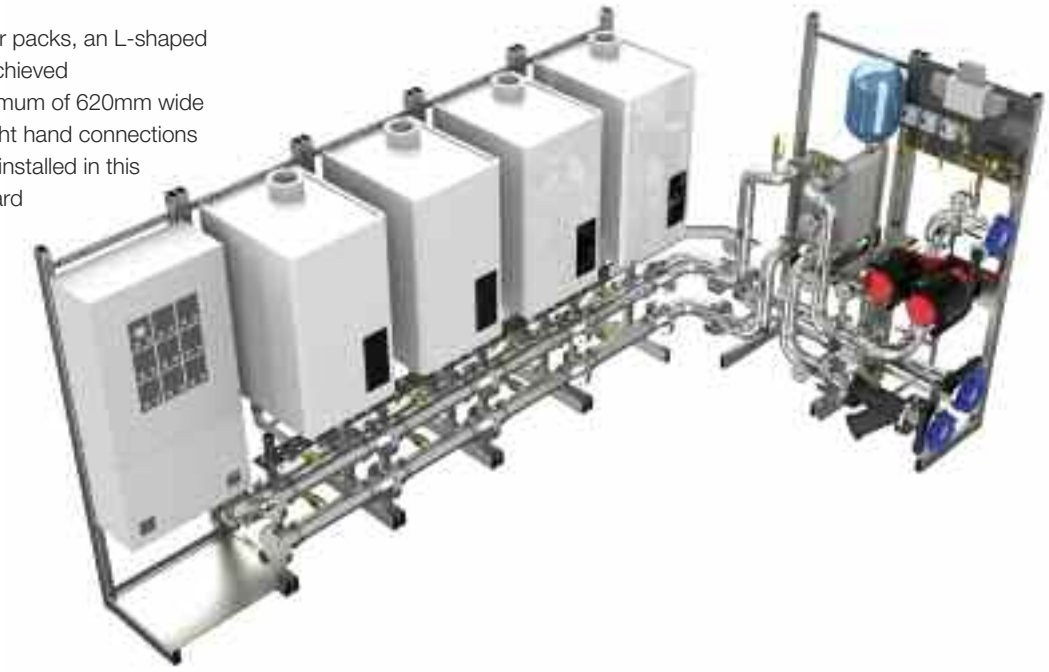
MB Series
Configurations

Configuration overview – inline

- Each module is a maximum of 620mm wide
- Available with left or right hand connections
- Up to 6 boilers can be installed in an inline assembly as standard

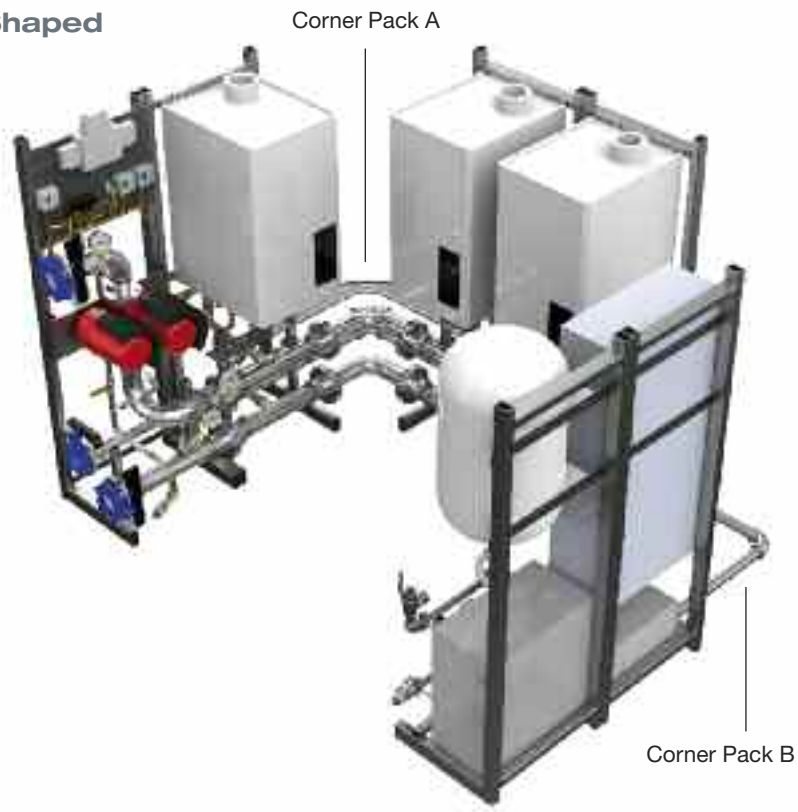
Configuration overview – L-Shaped

- Using one of our corner packs, an L-shaped configuration can be achieved
- Each module is a maximum of 620mm wide
- Available with left or right hand connections
- Up to 6 boilers can be installed in this configuration as standard



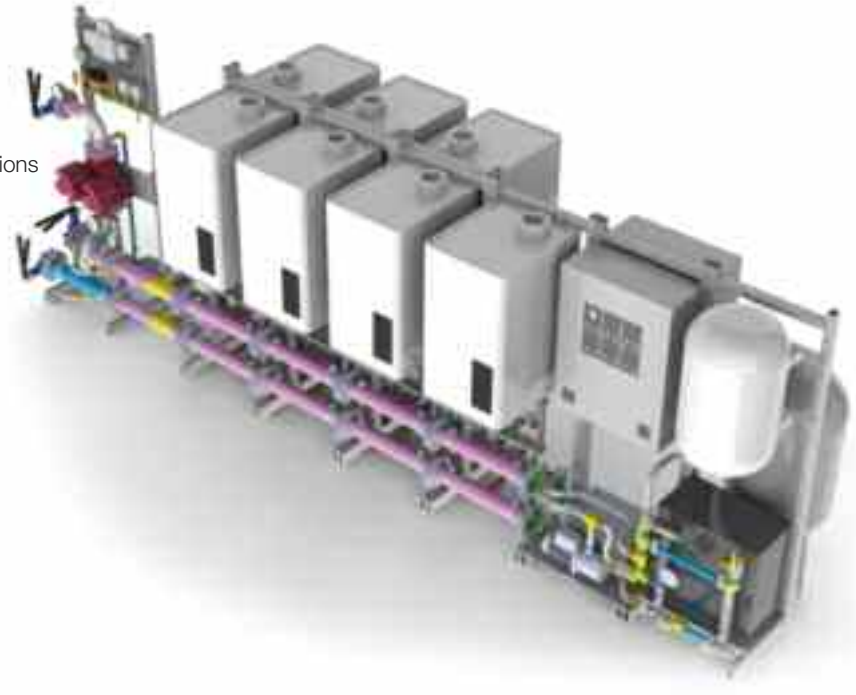
Configuration overview – U-Shaped

- Using two of our corner packs, an U-shaped configuration can be achieved
- Each module is a maximum of 620mm wide
- Available with left or right hand connections
- Up to 6 boilers can be installed in this configuration as standard
- A minumum of 800mm must be allowed in the centre section for maintenance and service



Configuration overview – Back-to-Back

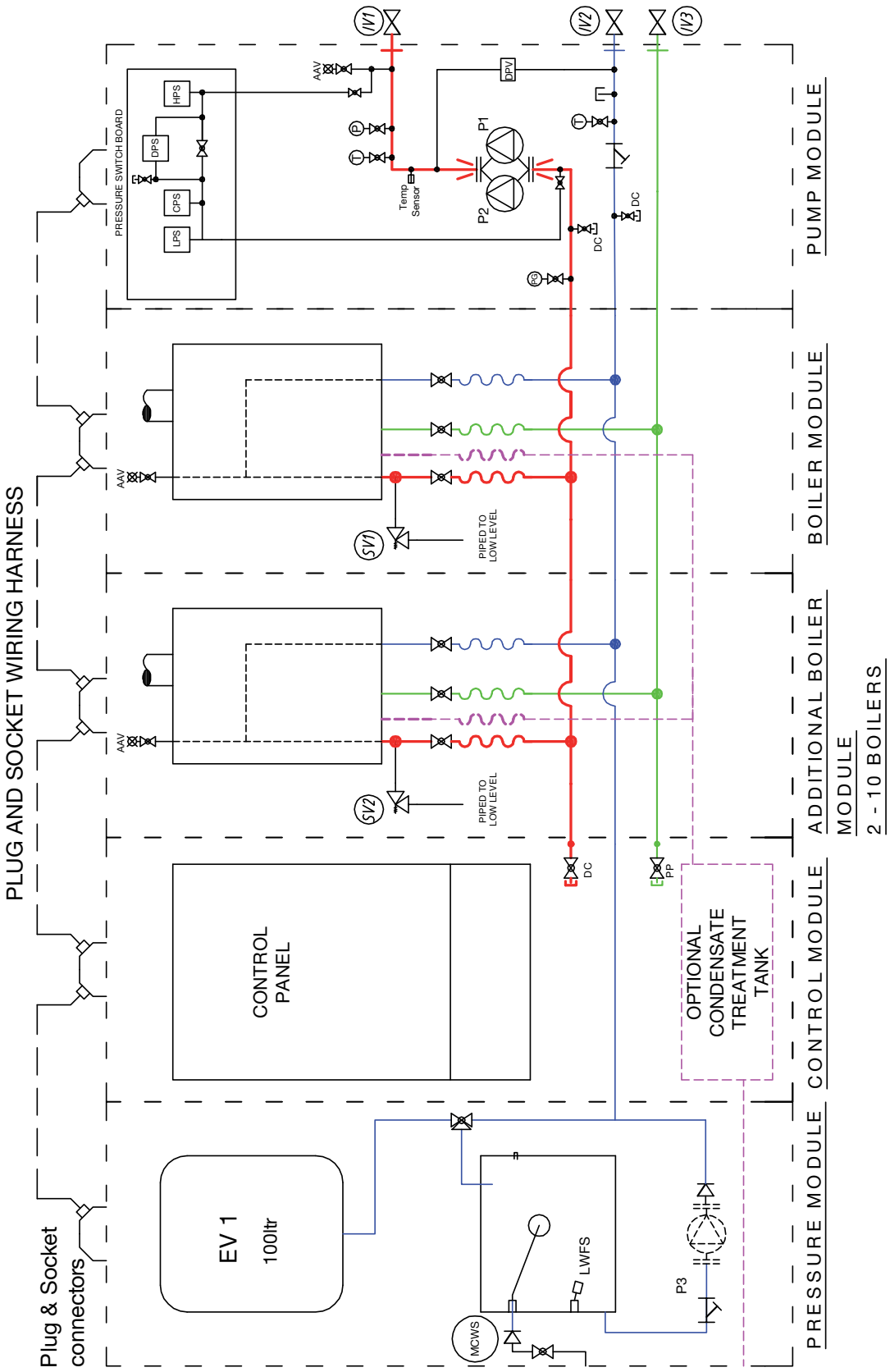
- For 7 boilers and above a back to back confuguration is supplied as standard
- This configuaration is suitable for up to 10 boilers
- Available with left or right hand connections
- A minumum of 800mm must be allowed in front of each boiler allow for maintenance and service



MB Series
Schematics

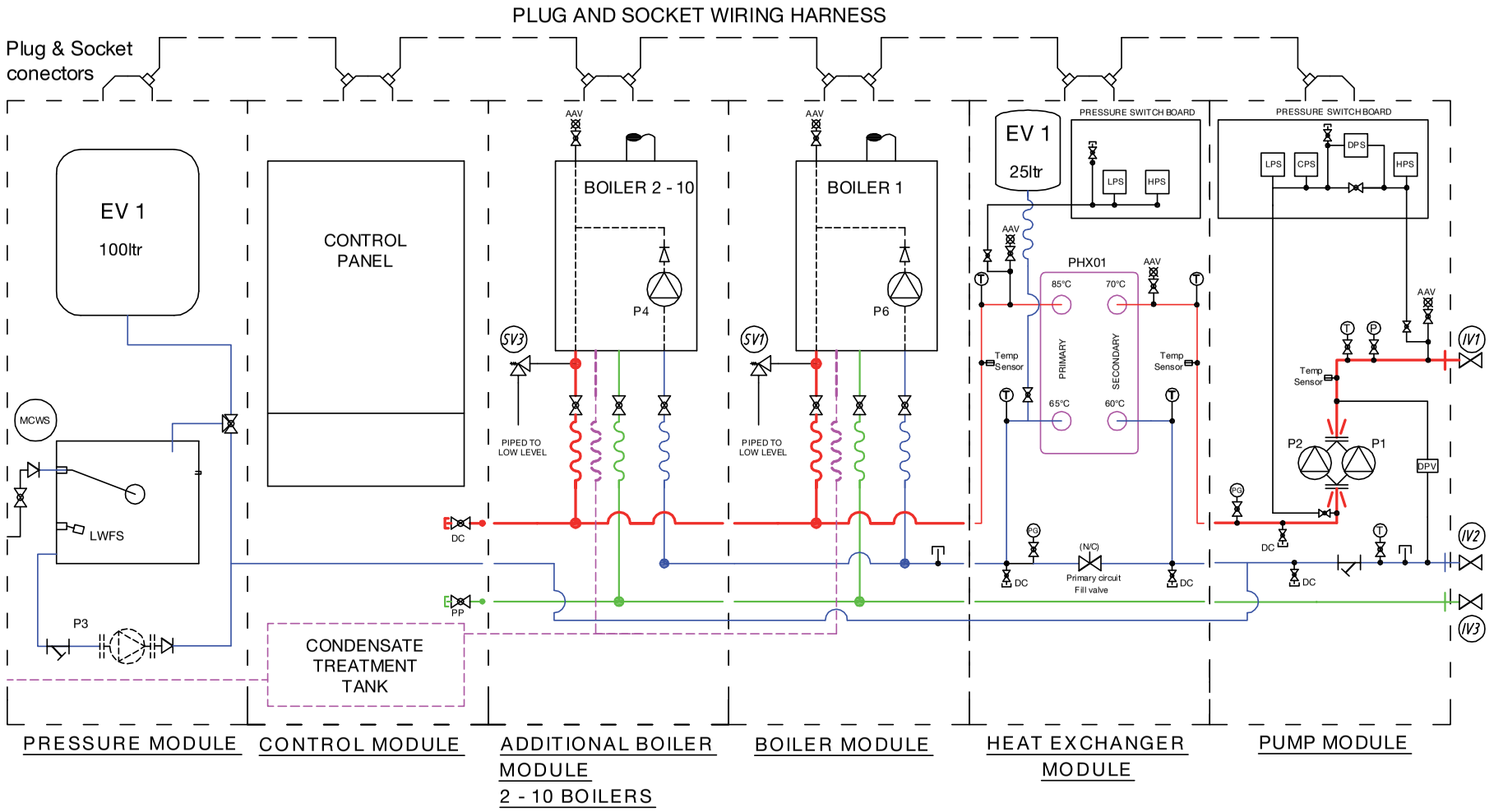
Schematic 1 – Standard MB Heating only

Designed for direct system connection
Supplied with system pumps



Schematic 2 – Intermediate Plate Heat Exchanger

Supplied with primary boiler pumps
Supplied with secondary/system pumps
Hydraulic separation for primary and secondary circuits.
Secondary circuits suitable for open vent systems.



MB Series

Typical assembly procedure for a 2 boiler module

Site Assembly

Control module and pressurisation module positioned in boiler plant room
5 mins

Control module and pressurisation module assembled together
10 mins

First boiler module moved into position
15 mins

Additional boiler modules installed
NB: Approximately 10 mins per module
35 mins

Pump module connected to boiler module
45 mins

1st boiler module connected to control module

25 mins

Electrical harness installed

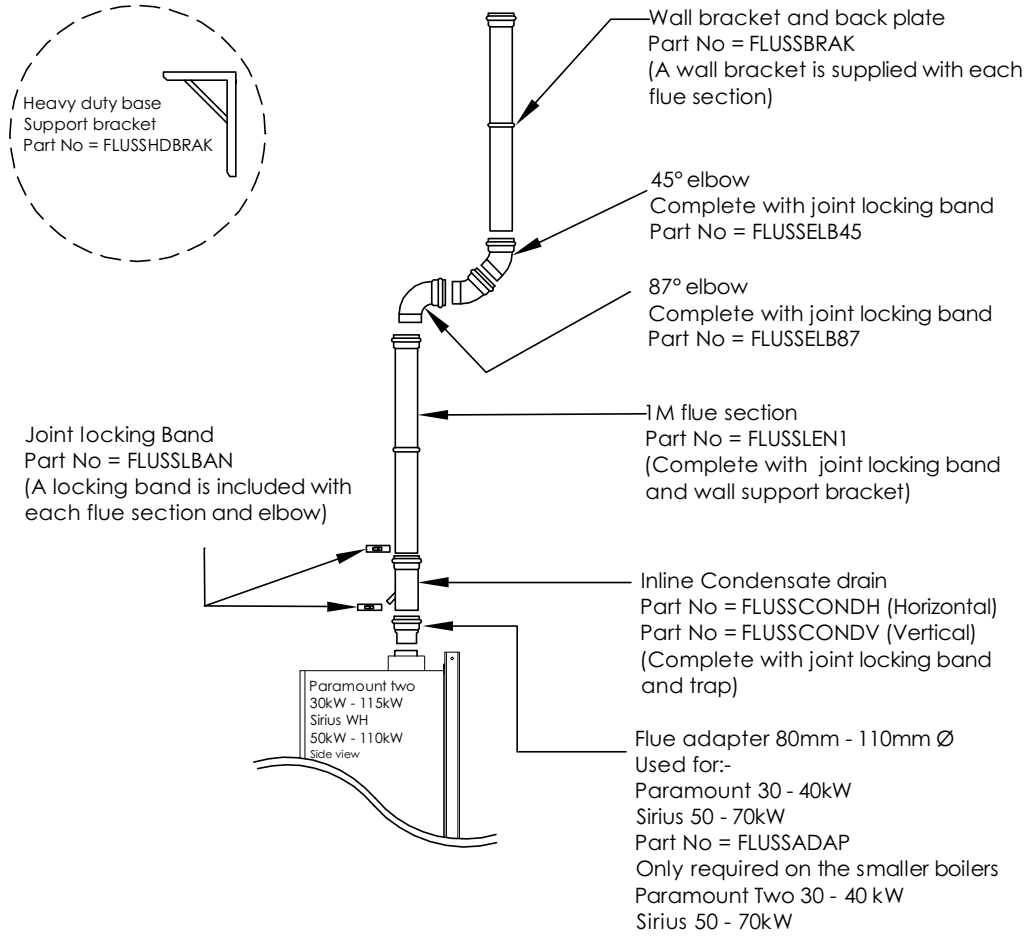
50 mins

Complete heating system assembled

1 hrs

MB Series
Flueing

Open flue



Boiler Type	Boiler Size	Maximum total flue length	Maximum horizontal flue length	Maximum number of bends
Sirius WH	50 kW	59.5m	3m	4
Sirius WH	70 kW	59.5m	3m	4
Sirius WH	90 kW	19.5m	3m	2
Sirius WH	110 kW	19.5m	3m	2
Paramount two	30 kW	20m	3m	3
Paramount two	40 kW	20m	3m	3
Paramount two	60 kW	25m	3m	3
Paramount two	80 kW	16m	3m	3
Paramount two	95 kW	20m	3m	2
Paramount two	115 kW	20m	3m	2

Each 87° bend reduces the total flue length by 1000mm. Each 45° bend reduces the total flue length by 500mm. The condensate drain also reduces the overall flue length by 1000mm. All horizontal flues should be installed ensuring there is a 3° rise along its length. A condensate drain must be installed as close to the boiler as possible.

Balanced horizontal flue

The part numbers for the Sirius WH 50 – 70kW and the Paramount two 30 – 40kW are shown in red.

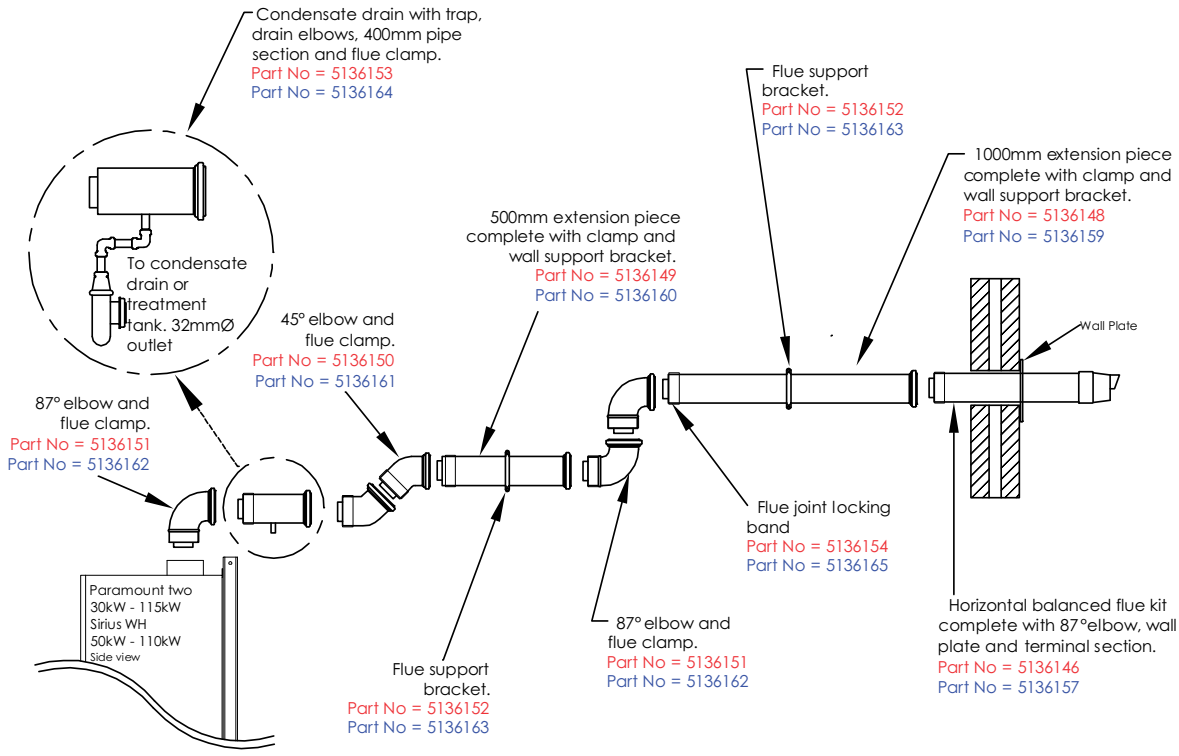
The part numbers for the Sirius WH 90 – 110kW and the Paramount two 60 – 115kW are shown in blue.

All components come with a joint locking band, although additional bands are available using the part numbers below.

All flue lengths and terminal pieces include a flue support bracket although additional brackets are available using the part numbers below.

The horizontal terminal section comes complete with a wall tidy plate.

For Sirius WH boilers from 90 – 110kW and the Paramount two 60 – 115kW boilers require an adaptor to be fitted directly on to the boiler before using the flue components below. This adaptor is included in each horizontal flue terminal kit.

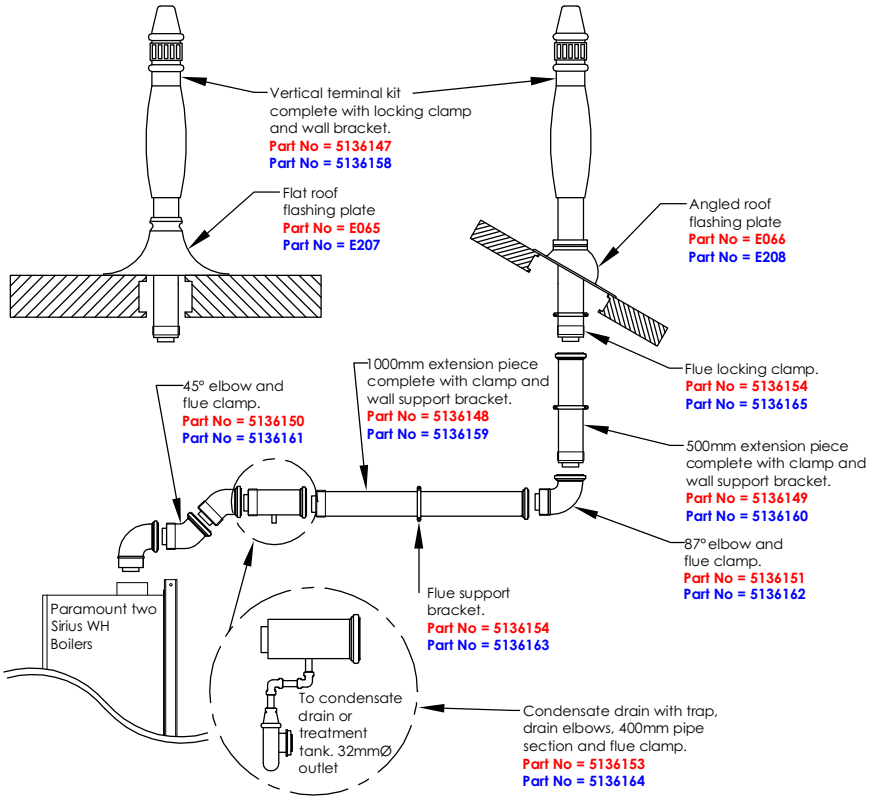


Boiler Type	Boiler Size	Maximum total flue length	Maximum number of 87° bends	Flue size InletØ – OutletØ
Sirius WH	50 – 70 kW	9m	4	80 – 125mmØ
Sirius WH	90 –110 kW	9m	4	100 – 150mmØ
Paramount Two	30 – 40 kW	10m	2	80 – 125mmØ
Paramount Two	60 – 110 kW	5m	2	100 – 150mmØ

Each 87° bend reduces the total flue length by 1000mm. Each 45° bend reduces the total flue length by 500mm.
All horizontal flues should be installed ensuring there is a 3° rise along its length.
Each condensate drain reduces the total flue length by 1000mm.

MB Series
Flueing

Balanced vertical flue



The part numbers for the Sirius WH 50 – 70kW and the Paramount two 30 – 40kW are shown in red.

The part numbers for the Sirius WH 90 – 110kW and the Paramount two 60 – 115kW are shown in blue.

All components come with a joint locking band although additional bands are available using the part numbers below.

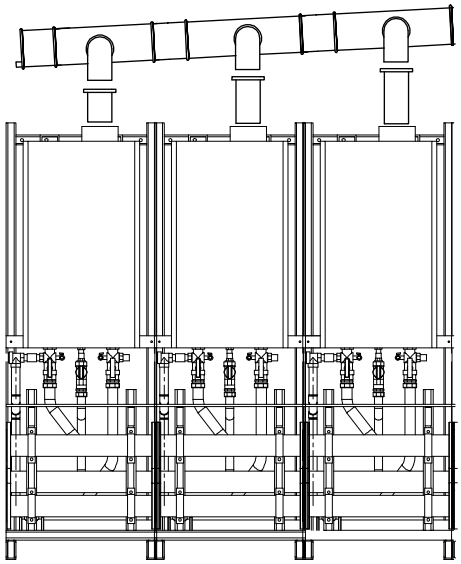
All flue lengths and terminal pieces include a flue support bracket although additional brackets are available using the part numbers below.

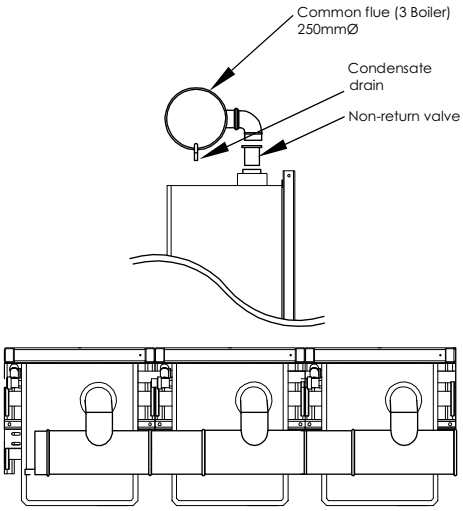
For Sirius WH boilers from 90-110kW and the Paramount two 60 – 115kW boilers, an adaptor is required to be fitted directly on to the boiler before using the flue components below. This adaptor is included in each vertical flue terminal kit.

Boiler Type	Boiler Size	Maximum total flue length	Maximum horizontal flue length	Maximum number of 87° bends
Sirius WH	50 – 70 kW	9m	3m	4
Sirius WH	90 – 110 kW	9m	3m	4
Paramount Two	30 – 40 kW	7m	3m	2
Paramount Two	60 – 110 kW	7m	2m	2

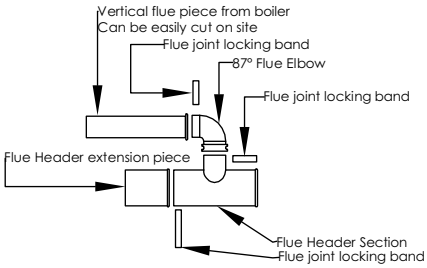
Each 87° bend reduces the total flue length by 1000mm. Each 45° bend reduces the total flue length by 500mm.
All horizontal flues should be installed ensuring there is a 3° rise along its length.
Each condensate drain reduces the total flue length by 1000mm.
A condensate drain must be fitted as close as possible to the boiler before any long runs of flue.

Common flue headers

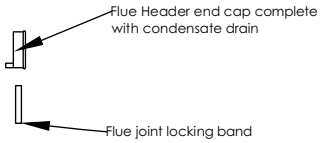




Boiler Components (per boiler)



End Pack Components (per header)



Non Return Valve (per boiler)

Non Return valves for each boiler are includec
when a common flue header is ordered

- Common flue header kits are available for the full range of MB units. 3 – 6 boilers are available as a single header and the larger 7 – 10 boilers kits come with 2 separate header kits.
- The common flue header kits come complete with all components shown above for the first boiler and all components shown in the additional boiler kit above for each additional boiler.
- The Sirius common flue header kits come complete with a non return valve which must be installed before each boiler enters the header.
- All flue support brackets come with a flue support clamp and back plate. Thread bar would be required to complete the installation and is not included in the above packs.
- Please see overleaf for common flue header part numbers and supporting data.

MB Series
Part numbers

Common flue headers

Paramount two MB Series

MB Size (kW)	Common flue header kit part numbers	Header size (mm)	Total number of boilers
60	CFHSSP60	180mm	2
80	CFHSSP80	180mm	2
120	CFHSSP120	180mm	2
160	CFHSSP160	180mm	2
190	CFHSSP190	180mm	2
230	CFHSSP230	180mm	2
345	CFHSSP345	250mm	3
460	CFHSSP460	250mm	4
575	CFHSSP575	250mm	5
690	CFHSSP690	300mm	6

Sirius WH MB Series

100	CFHSSS100	180mm	2
120	CFHSSS120	180mm	2
140	CFHSSS140	180mm	2
180	CFHSSS180	180mm	2
220	CFHSSS220	180mm	2
330	CFHSSS330	250mm	3
440	CFHSSS440	250mm	4
550	CFHSSS550	250mm	5
660	CFHSSS660	300mm	6

Twin common flue header packs

MB units that consist of 7 or more boilers use a twin header pack. By ordering the part numbers below both headers will be supplied. These headers will include 2 of the headers above as shown in the table below.

Paramount two MB Series

MB Size (kW)	Common flue header kit part numbers	Header 1	Header 2
805	CFHSSP805	As for Paramount two 345	As for Paramount two 460
320	CFHSSP320	As for Paramount two 460	As for Paramount two 460
1035	CFHSSP1035	As for Paramount two 460	As for Paramount two 575
1150	CFHSSP1150	As for Paramount two 575	As for Paramount two 575

Sirius WH MB Series

MB Size (kW)	Common flue header kit part numbers	Header 1	Header 2
770	CFHSSS770	As for Sirius WH 330	As for Sirius WH 440
880	CFHSSS880	As for Sirius WH 440	As for Sirius WH 440
990	CFHSSS990	As for Sirius WH 440	As for Sirius WH 550
1100	CFHSSS1100	As for Sirius WH 550	As for Sirius WH 550

continued next page ➤

Common flue headers – Part numbers

Common Flue Continuation Components – Part Numbers

Diameter / Connection Size (mm)	2 Boiler Kits 180	3 – 5 Boiler Kits 250	6 Boiler Kits 300
Flue support bracket	FLUSS180BRAK	FLUSS250BRAK	FLUSS300BRAK
1000mm Flue length	FLUSS180LEN1	FLUSS250LEN1	FLUSS300LEN1
87° Elbow	FLUSS180ELB87	FLUSS250ELB87	FLUSS300ELB87
45° Elbow	FLUSS180ELB45	FLUSS250ELB45	FLUSS300ELB45
Heavy duty flue base support	FLUSSHDBRAK	FLUSSHDBRAK	FLUSSHDBRAK
Flue joint locking band	FLUSS180LBAN	FLUSS250LBAN	FLUSS300LBAN
135° Tee – End cap – Drain point – Syphon	FLUSS180TEE135	FLUSS250TEE135	FLUSS300TEE135
90° Tee – End cap – Drain point – Syphon	FLUSS180TEE90	FLUSS250TEE90	FLUSS300TEE90

MB Series

Paramount two MB Ranges

Description	Hydraulic Corner Pack Part No if req	Number of boilers	Part No
Paramount two MB 60	MBCORH55	2 x 30 kW	MBPAR60
Paramount two MB 80	MBCORH55	2 x 40 kW	MBPAR80
Paramount two MB 120	MBCORH55	2 x 60 kW	MBPAR120
Paramount two MB 160	MBCORH55	2 x 80 kW	MBPAR160
Paramount two MB 190	MBCORH55	2 x 95 kW	MBPAR190
Paramount two MB 230	MBCORH55	2 x 115 kW	MBPAR230
Paramount two MB 345	MBCORH85	3 x 115 kW	MBPAR345
Paramount two MB 460	MBCORH85	4 x 115 kW	MBPAR460
Paramount two MB 575	MBCORH85	5 x 115 kW	MBPAR575
Paramount two MB 690	MBCORH88	6 x 115 kW	MBPAR690
Paramount two MB 805	No Corner required	7 x 115 kW	MBPAR805
Paramount two MB 920	No Corner required	8 x 115 kW	MBPAR920
Paramount two MB 1035	No Corner required	9 x 115 kW	MBPAR1035
Paramount two MB 1150	No Corner required	10 x 115 kW	MBPAR1150

Sirius WH MB Ranges

Sirius WH MB 100	MBCORH55	2 x 50 kW	MBSIR100
Sirius WH MB 120	MBCORH55	2 x 60 kW	MBSIR120
Sirius WH MB 140	MBCORH55	2 x 70 kW	MBSIR140
Sirius WH MB 180	MBCORH55	2 x 90 kW	MBSIR180
Sirius WH MB 220	MBCORH55	2 x 110 kW	MBSIR220
Sirius WH MB 330	MBCORH85	3 x 110 kW	MBSIR330
Sirius WH MB 440	MBCORH85	4 x 110 kW	MBSIR440
Sirius WH MB 550	MBCORH85	5 x 110 kW	MBSIR550
Sirius WH MB 660	MBCORH88	6 x 110 kW	MBSIR660
Sirius WH MB 770	No Corner required	7 x 110 kW	MBSIR770
Sirius WH MB 880	No Corner required	8 x 110 kW	MBSIR880
Sirius WH MB 990	No Corner required	9 x 110 kW	MBSIR990
Sirius WH MB 1100	No Corner required	10 x 110 kW	MBSIR1100

MB Series

Optional extras

MB Series heat exchanger module

Complete with primary and secondary pumps

Description	Part No
Paramount two MB 60	MBPARHX60
Paramount two MB 80	MBPARHX80
Paramount two MB 120	MBPARHX120
Paramount two MB 160	MBPARHX160
Paramount two MB 190	MBPARHX190
Paramount two MB 230	MBPARHX230
Paramount two MB 345	MBPARHX345
Paramount two MB 460	MBPARHX460
Paramount two MB 575	MBPARHX575
Paramount two MB 690	MBPARHX690
Sirius WH MB 100	MBSIRHX100
Sirius WH MB 120	MBSIRHX120
Sirius WH MB 140	MBSIRHX140
Sirius WH MB 180	MBSIRHX180
Sirius WH MB 220	MBSIRHX220
Sirius WH MB 330	MBSIRHX330
Sirius WH MB 440	MBSIRHX440
Sirius WH MB 550	MBSIRHX550
Sirius WH MB 660	MBSIRHX660

Factory Fitted Insulation

Description	Part No
2 Boiler	MBFFI2
3 Boiler	MBFFI3
4 Boiler	MBFFI4
5 Boiler	MBFFI5
6 Boiler	MBFFI6
7 Boiler	MBFFI7
8 Boiler	MBFFI8
9 Boiler	MBFFI9
10 Boiler	MBFFI10

Prefabricated enclosures inclusive of guttering

Description	Part No
2 Boiler	MBENC2
3 Boiler	MBENC3
4 Boiler	MBENC4
5 Boiler	MBENC5
6 Boiler	MBENC6
7 Boiler	MBENC7
8 Boiler	MBENC8
9 Boiler	MBENC9
10 Boiler	MBENC10

Hydraulic Corner Packs

Flow/Return Header Pipe Size	Gas Header Pipe Size	Part No
50mm	50mm	MBCORH55
80mm	50mm	MBCORH85
80mm	80mm	MBCORH88

Electrical Corner Packs

Flow/Return Header Pipe Size	Gas Header Pipe Size	Part No
N/A	N/A	MBCORE00

Control Options

Description	Part No
Weather Compensation	MBCONWC
Constant Flow Temperature	MBCONCF

Condensate Options

Description	Part No
Condensate Treatment Tank	MBCONDTRE1

Potterton Commissioning

Description	Part No
Potterton Commissioning 2 – 4 Boiler	MBPOTCOM
Potterton Commissioning 5 – 10 Boiler	MBPOTCOM2

Enclosures

- Designed to specific application requirements
- A 25 year design life
- Full electrical installation to BS7671 including Distribution board and lighting
- Lockable louvered security doors
- Ventilation to BS6644
- A galvanised base and superstructure to BS EN 10210
- Architectural insulated building panels fire rated to BS 476
- Removable rubber matting on all walkways
- Guttering and down pipes to collect rain water from the roof

Boiler House Enclosure Construction

The MB Series can be supplied with an integral steel or GRP enclosure as detailed below.

- 2 & 3 Boiler MB series are supplied in a 2.5m x 4m x 2.9m High enclosure
- 4 to 6 Boiler MB series are supplied in a 3m x 4m x 2.9m High enclosure
- 7 to 10 Boiler MB series are supplied in a 3.7m x 6m x 2.9m High enclosure.
- The building is be designed to withstand wind loading in accordance with BS 6399 Part 2, and superimposed loads as specified in BS 6399 Part 1.

All loading and superimposed load calculations, welding and painting procedures are supplied within the documentation packages prior to manufacture.

The enclosure is sufficiently sized to allow unhindered access for repair, maintenance or removal of all items of equipment within the boiler house without the need to remove cladding panels.

The enclosure comprises of a heavy gauge galvanised mild steel base frame. A galvanised superstructure is fitted to the base frame for support of cladding panels and pipe work. The structure is designed to withstand the full operating load of the installation. The base is hot dipped galvanised internally and externally to BS EN ISO 1461.

Steel floor plates are fixed to the base frame and painted. The undersides of the floor plates are insulated to prevent the formation of condensation.

All walkways are fitted with removable rubber matting for paint protection and matting to prevent slipping hazards.

The walls and mono pitch roof of the enclosure are clad with proprietary architectural roof and wall insulated building panels manufactured by Kingspan.

The wall panels and the roof panels are from the KS1000 RW range with a GRP MK roof light.

The walls and roof of the enclosure have a fire resistance rating to BS 476 Part 20 and 22, Part 3 Class AA, Part 12 and BS 4735 – DIN – 4102.

Boiler house ventilation is provided in accorance with BS 56644:2008.

Ventilation grilles are colour matched to the external enclosure colour.

Lighting, in accordance with the CIBSE code, are provided within the boiler house to give a minimum of 150 Lux, and shall consist of fluorescent luminaries with non maintained emergency back up. Removable lifting points are fixed to the base frame. NDT certificates for lifting pad welding are provided. Following delivery to site the lifting lugs are removed and retained by Potterton Commercial.

The door is sized to allow removal or addition of individual skids or equipment within the boiler house if required for maintenance or repair. The doors are powder coated to a colour to match the external enclosure.

LZC Technology

Baxi Ecogen™

What is micro-CHP?

Electricity from the national grid is generated by large, remote power stations which every year waste enough energy to heat most of our buildings. This huge waste of energy results in very inefficient and very expensive grid supplied electricity.

Micro-Combined Heat and Power (CHP) is the simultaneous generation of heat and electricity, close to the point of use. By locating micro-CHP equipment in or close to a building, the electricity generated and the heat produced can be used in the building with little energy wastage.

Carbon saving technology

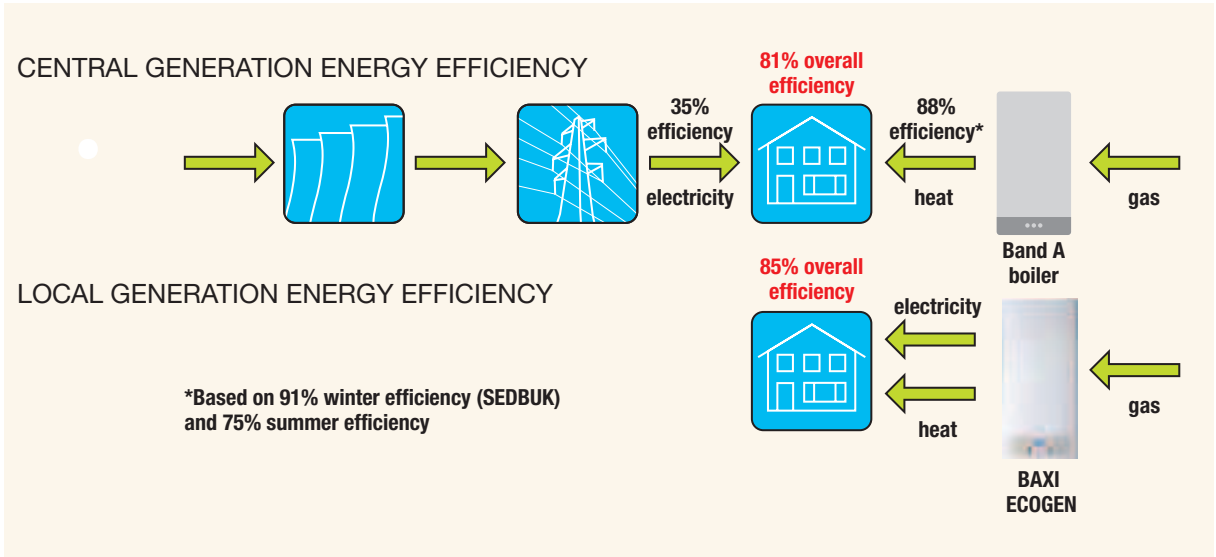
Micro-CHP is a key microgeneration technology which can deliver carbon savings of 20%-30%. It is a mature, reliable technology which delivers very attractive financial benefits and can play a big part in gaining compliance with planning and Building Regulations.

Micro-CHP Functions

The Baxi Ecogen micro-CHP incorporates a Stirling engine unit which, when fired, modulates its output between 4kW and 6kW thermal, whilst generating up to 1.1kW of electricity. The electricity which is generated from the Baxi Ecogen is offset against the customer's electricity bills providing substantial running cost savings.

The onboard control system is configured to use the Baxi Ecogen engine as the lead appliance to maximise the benefits of using small scale micro generation and maximise the reduction in carbon emissions. If the load is greater than 6kW, the main boiler is then brought in to operation to satisfy this demand. At peak times the auxiliary burner on the Baxi Ecogen will then be brought in to operation to provide a final heat source.

Energy efficiency comparison



Baxi Ecogen micro-CHP Option

The modular boiler system can be provided with an integral Baxi Ecogen micro-CHP unit. This reduces the carbon footprint of the system by displacing the CO_2 emissions associated with gas fired power generation of electricity. The Baxi Ecogen reduces the operational cost of the site by reducing the electrical requirement purchased from the electrical supplier. The control system automatically utilises the Baxi Ecogen as the lead boiler to maximise the carbon reduction associated with micro-CHP technology.

Baxi Ecogen Performance Details

- 6kW Thermal output @ 1.1kW Electrical output
- 18kW additional thermal output from additional burner
- 90% overall operating efficiency
- Low noise <45dB(A) @ 1M
- Maintenance free sealed sterling engine

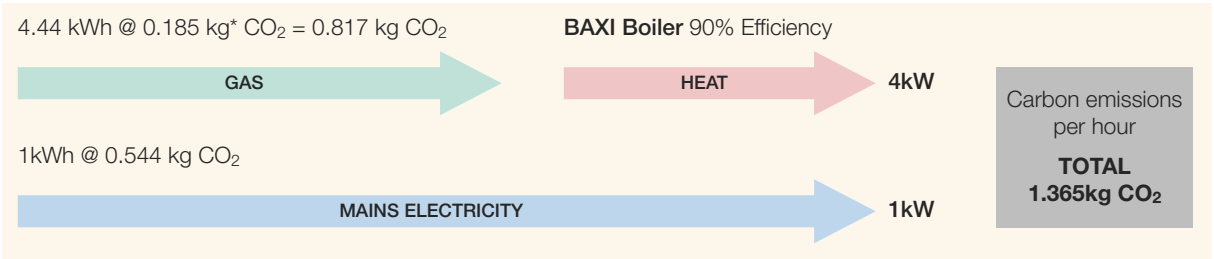
Baxi Ecogen CO_2 Emission Reduction

- 0.359kg/Hr CO_2 reduction at 6kW base load
- Annual CO_2 reduction up to 3,136 Kg

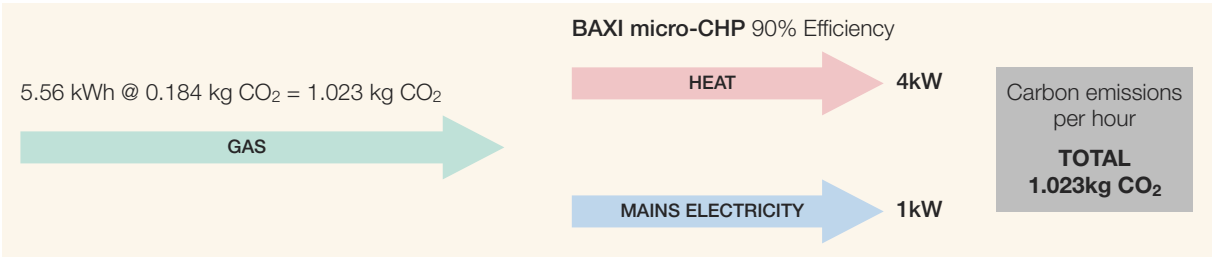
Electrical Grid Reduction

- 8,760kWh per annum at 6kW thermal base load
- Annual saving at £0.12p kWhr = £1,051

Conventional set-up



Set-up with Baxi Ecogen



*CO_2 emission inex figures sourced from Carbon Trust (Feb 2011)

Paramount two MB Series

Paramount two MB Data Table

Model			MB 60	MB 80	MB 120	MB 160
Boilers (N°/Output)		kW	2 x 30	2x40	2x60	2x80
Number of modules	Boilers		2	2	2	2
	Control		1	1	1	1
	Pump		1	1	1	1
	Pressurisation		1	1	1	1
Nominal heat input net		kW	60	76	116	154
Nominal heat input gross		kW	66.6	84.36	128.8	170.9
Maximum heat output 80/60°C		kW	58.2	73.6	112.4	149.2
Maximum heat output 50/30°C		kW	62.62	78	119	158.2
Gas consumption NG		m^3/h	6.4	8	12	16
Gas consumption LPG		m^3/h	2.54	3.22	4.92	6.42
Nominal inlet gas pressure NG		mbar	20	20	20	20
Nominal inlet gas pressure LPG		mbar	37	37	37	37
Conventional flue spigot size		mm	80	80	110	110
Horizontal balanced flue size (Exhaust / Inlet)		mm	80/125	80/125	110/160	110/160
Vertical balanced flue size (Exhaust / Inlet)		mm	80/125	80/125	110/180	110/180
High level ventilation BS6644 2005 for Conventional Flue		cm^2	120	152	232	308
Low level ventilation BS6644 2005 for Conventional Flue		cm^2	240	304	464	616
High level ventilation BS6644 2005 for Balanced Flue		cm^2	120	152	232	308
Low level ventilation BS6644 2005 for Balanced Flue		cm^2	120	152	232	308
CO_2 content NG		%				
CO_2 content LPG		%				
NO_X		ppm				
Flue gas volume @ STP per boiler		m^3/h	43	53	82	108
External pump head available @ 20°CΔT		Kpa	103	95.3	96.9	85.1
Pump make & model Grundfos Magna UPED			40 – 120	40 – 120	40 – 120	40 – 120
Flow rate @ 20°CΔT		l/s	0.72	0.96	1.44	1.91
Electrical supply		V	230	230	230	230
Maximum electrical power consumption start		A	15.25	15.25	15.25	15.25
Normal electrical power consumption run		A	2.74	2.76	2.8	2.95
Expansion vessel size		litre	100	100	100	100
Maximum system water volume**		litre	856	856	850	849
Minimum system water pressure		bar	1	1	1	1
Maximum system water pressure		bar	3	3	4	4
Safety valve setting (per boiler)		bar	3	3	4	4
Maximum flow temperature		°C	82	82	82	82
Cold water connection size		mm	15	15	15	15
Gas connection size (PN16)		mm	50	50	50	50
Heating flow & return connection size (PN16)		mm	50	50	50	50
Condensate connection size O/D (Plastic)		mm	40	40	40	40
Maximum module dimensions/weight						
Water content		litre	115.3	115.3	121.3	122.9
Maximum condensate discharge rate		l/h	4.2	5.6	8.4	11.2
Estimated annual condensate discharge rate (Usage : 2000 h/annum)		litre	2520	3360	5040	6720
Ph value of discharged condensate		PH				

MB 190	MB 230	MB 345	MB 460	MB 575	MB 690	MB 805	MB 920	MB 1035	MB 1150
2x95	2x115	3x115	4x115	5x115	6x115	7x115	8x115	9x115	10x115
2	2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1
190	230	345	460	575	690	805	920	1035	1150
210.9	255.3	382.9	510.6	638.2	765.9	893.6	1021.2	1148.8	1276.5
184.4	223.4	335.1	446.8	558.5	670.2	781.9	893.6	1005.3	1117
196.6	237.2	355.8	474.4	593	711.6	830.2	948.8	1067.4	1186.0
20.2	24.4	36.6	48.8	61	73.2	85.4	97.6	109.8	122
7.72	9.34	14.01	18.68	23.35	28.02	32.69	37.36	42.03	46.7
20	20	20	20	20	20	20	20	20	20
37	37	37	37	37	37	37	37	37	37
110	110	110	110	110	110	110	110	110	110
110/160	110/160	110/160	110/160	110/160	110/160	110/160	110/160	110/160	110/160
110/180	110/180	110/180	110/180	110/180	110/180	110/180	110/180	110/180	110/180
380	460	690	920	1150	1380	1610	1840	2070	2300
760	920	1380	1840	2300	2760	3220	3680	4140	4600
380	460	690	920	1150	1380	1610	1840	2070	2300
380	460	690	920	1150	1380	1610	1840	2070	2300
		8.3 – 8.8							
		9.5 – 10.0							
		<20							
135	163	163	163	163	163	163	163	163	163
74.5	57.0	81.5	58.2	49.5	31.22	53.1	45.5	36.7	27.85
40 – 120	40 – 120	50 – 120	50 – 120	65 – 120	65 – 120	80 – 120	80 – 120	80 – 120	80 – 120
2.27	2.75	4.13	5.50	6.88	8.25	9.63	11.00	12.38	13.76
230	230	230	230	230	230	400	400	400	400
15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25	15.25
3.24	3.65	6.3	7.45	8.6	9.75	7.01	7.01	8.16	8.16
100	100	100	100	100	100	100	100	100	100
845	845	814	795	778	760	743	731	701	683
1	1	1	1	1	1	1	1	1	1
4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
82	82	82	82	82	82	82	82	82	82
15	15	15	15	15	15	15	15	15	15
50	50	50	50	50	80	80	100	100	100
50	50	80	80	80	80	100	100	100	100
40	40	40	40	40	40	40	40	40	40
		620(W) x 710(D) x 1800(H) / 160kg							
126.9	126.9	158.4	176.2	194.1	211.8	229.1	240.6	270.9	288.7
13.3	16.1	24.1	32.2	40.2	48.3	56.3	64.4	72.4	80.5
7980	9660	14490	19320	24150	28980	33810	38640	43470	48300
		6.0 – 8.0							

Sirius WH MB Series

Sirius WH MB Data Table

Model			SMB 100	SMB 120	SMB 140	SMB 180
Boilers (N°/Output)		kW	2 x 50	2 x 60	2 x 70	2 x 90
Number of modules	Boilers		2	2	2	2
	Control		1	1	1	1
	Pump		1	1	1	1
	Pressurisation		1	1	1	1
Nominal heat input net		kW	92.8	113.4	134	174.4
Nominal heat input gross		kW	103	125.8	148.8	191.9
Maximum heat output 80/60°C		kW	90	110	130	170
Maximum heat output 50/30°C		kW	97.4	119	140.6	183.2
Gas consumption NG		m^3/h	9.82	12.18	14.16	18.44
Gas consumption LPG		m^3/h	3.78	4.7	5.48	7.12
Nominal inlet gas pressure NG		mbar	20	20	20	20
Nominal inlet gas pressure LPG		mbar	37	37	37	37
Conventional flue spigot connection size		mm	80	80	80	110
Horizontal balancedflue size (Exhaust / Inlet) per boiler		mm	80/125	80/125	80/125	110/160
Vertical balanced flue size (Exhaust / Inlet) per boiler		mm	80/125	80/125	80/125	110/180
High level ventilation BS6644 2005 for Conventional Flue*		cm^2	185.6	232	268	348.8
Low level ventilation BS6644 2005 for Conventional Flue*		cm^2	371.2	464	536	697.6
High level ventilation BS6644 2005 for Balanced Flue*		cm^2	185.6	232	268	348.8
Low level ventilation BS6644 2005 for Balanced Flue*		cm^2	185.6	232	268	348.8
CO_2 content NG		%	8.7	8.7	8.7	8.7
CO_2 content LPG		%	10.2	10.2	10.2	10.2
NO_X per boiler		Mg/kwh	38.4	33.9	37.7	36.9
Flue gas flow volume @ STP per boiler		m^3/h	67	81.5	96	126
Circulating pump make / model Grundfos Magna UPED			40 – 120	40 – 120	40 – 120	40 – 120
External pump head available @ 20°CΔT		Kpa	95.1	85.57	82.08	64.9
Flow rate @ 20°CΔT		l/s	1.19	1.35	1.67	2.15
Electrical supply		V	230	230	230	230
Maximum electrical power consumption start		A	15.25	15.25	15.25	15.25
Normal electrical power consumption run		A	5.89	5.93	6.33	6.55
Expansion vessel size		litre	100	100	100	100
Maximum external system water volume**		litre	853	852.18	843	833
Minimum system water pressure		bar	1	1	1	1
Maximum system water pressure		bar	4	4	4	4
Safety valve setting (per boiler)		bar	4	4	4	4
Maximum flow temperature		°C	82	82	82	82
Cold water connection size		mm	15	15	15	15
Gas connection size (PN16)		mm	50	50	50	50
Heating flow & return connection size (PN16)		mm	50	50	50	50
Condensate connection size O/D (Plastic)		mm	40	40	40	40
Maximum module dimensions/weight						
Sirius MB Series water content		litre	122	123	129.2	139
Maximum condensate discharge rate		l/h	7	8.4	9.8	12.6
Estimated annual condensate discharge rate (Usage: 2000 h/annum)		litre	4200	5040	5880	7560
Ph Value of discharged condensate*		PH				

- Ventilation sizes show free grille areas for conventional flue applications located in a boiler room.
- ** The maximum system water volume has been calculated with cold fill pressure of 1.5 bar and a maximum system operating temperature of 85°C. If the system volume is greater than detailed in the above table then an additional expansion vessel will need to be installed, a connection point is supplied on the pressurisation module.

SMB 220	SMB 330	SMB 440	SMB 550	SMB 660	SMB 770	SMB 880	SMB 990	SMB 1100
2 x 110	3 x 110	4 x 110	5 x 110	6 x 110	7 x 110	8 x 110	9 x 110	10 x 110
2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1
210	315	420	525	630	735	840	945	1050
230.8	346.2	461.6	577	692.4	807.8	923.2	1038.6	1154.0
204	306	408	510	612	714	816	918	1020
220.6	330.9	441.2	551.5	661.8	772.1	882.4	992.7	1103
22.2	33.3	44.4	55.5	66.6	77.7	88.8	99.9	111
8.58	12.87	17.16	21.45	25.74	30.03	34.32	38.61	42.9
20	20	20	20	20	20	20	20	20
37	37	37	37	37	37	37	37	37
110	110	110	110	110	110	110	110	110
110/160	110/160	110/160	110/160	110/160	110/160	110/160	110/160	110/160
110/180	110/180	110/180	110/180	110/180	110/180	110/180	110/180	110/180
440	630	840	1050	1260	1470	1680	1890	2100
880	1260	1680	2100	2520	2940	3360	3780	4200
420	630	840	1050	1260	1470	1680	1890	2100
420	630	840	1050	1260	1470	1680	1890	2100
8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
151	151	151	151	151	151	151	151	151
40 – 120	50 – 120	50 – 120	65 – 120	65-120	80 – 120	80 – 120	80 – 120	80 – 120
54.05	74.7	55.4	45.9	30.7	47.7	42.1	39.5	28.1
2.63	3.95	5.26	6.58	7.89	9.21	10.53	11.84	13.92
230	230	230	230	230	400	400	400	400
15.25	15.25	15.25	15.25	15.25	15.75	15.75	15.75	15.75
6.99	9.36	10.23	11.5	12.37	8.92	8.92	9.79	9.79
100	100	100	100	100	100	100	100	100
819	780	755	736	681	650.5	625.7	582	501
1	1	1	1	1	1	1	1	1
4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4
82	82	82	82	82	82	82	82	82
15	15	15	15	15	15	15	15	15
50	50	50	50	80	80	80	100	100
50	80	80	80	80	100	100	100	100
40	40	40	40	40	40	40	40	40
620(W) x 710(D) x 1800(H) / 160kg								
153	192	216.6	241.3	291	321.5	346.2	389.3	470.6
15.4	23.1	30.8	38.5	46.2	53.9	61.6	69.3	77
9240	13860	18480	23100	27720	32340	36960	41580	46200
		6.0 – 8.0						

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Technical: 0845 070 1057
Fax: 0845 070 1059
e-mail: potterton.commercial@baxicommercialdivision.com
web: www.pottertoncommercial.co.uk

Spares

Potterton Commercial spares are available nationwide through the interpart network of approved stockists. Alternatively please contact:-

Interpart
Brooks House
Coventry Road
Warwick CV34 4LL

Tel: 0844 871 1540

Applications & Installations

Our experienced technical support team are available to offer advice on any aspect of heating system design and boiler installation.

Please contact: 0845 070 1073

Commercial service offices

Our service organisation covers the whole of the UK to look after your needs for all Potterton Commercial products.
Our service office offers a wide range of specialised services including:

- Burner commissioning for all fuels
- Boiler service contracts
- Breakdown and repair services
- Burner and boiler replacement
- Oil/gas conversions
- Water treatment and descaling
- Packaged units

All descriptions and illustrations contained within this leaflet have been carefully prepared, but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information in this leaflet.

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