



## Air source heat pump systems

## Innovators in heating technology

For more than 150 years, Baxi has been at the forefront of heating technology – a renowned and respected brand, which has consistently led the way with new and pioneering heating solutions.

Today, our dedication to innovation is greater than ever as we look to new ways to heat homes and businesses; ways that will utilise renewable sources of energy and can play their part in protecting the planet for future generations.

Interest in low carbon technology has grown significantly over the last few years and we recognise the increasingly important role this technology will play in the future.

To meet this growing demand, Baxi offers a comprehensive range of heating solutions that can be added to an existing property or installed during construction or major refurbishment. Choosing the right solution for each property is crucial to ensure it can support the system and perform to optimum capability and efficiency.





## Creating heat from thin air

Baxi Ambiflo™ is an air to water heat pump, providing central heating for domestic properties.

Outside air contains a reliable level of heat that can be captured by this one piece air source heat pump for use in the home. Baxi Ambiflo™ air source heat pumps take the latent heat from outside air and use this energy to provide heating within the home.

Air source heat pumps can offer substantial carbon savings compared to other heating sources such as electric storage heaters and oil boilers. Under typical conditions, air source heat pumps operate at efficiencies of between 200% and 400%. Efficiency is commonly termed as coefficient of performance (COP)<sup>1</sup>. This means that for every kW of (electrical) energy input, they provide between 2kW and 4kW of (heat) energy output.

The efficiency of heat pumps varies depending on the difference between the outside air temperature and the central heating water temperature. The smaller the difference, the greater the efficiency. For this reason, air source heat pumps are ideally suited to lower temperature central heating systems – so the design of the heating circuit is important.

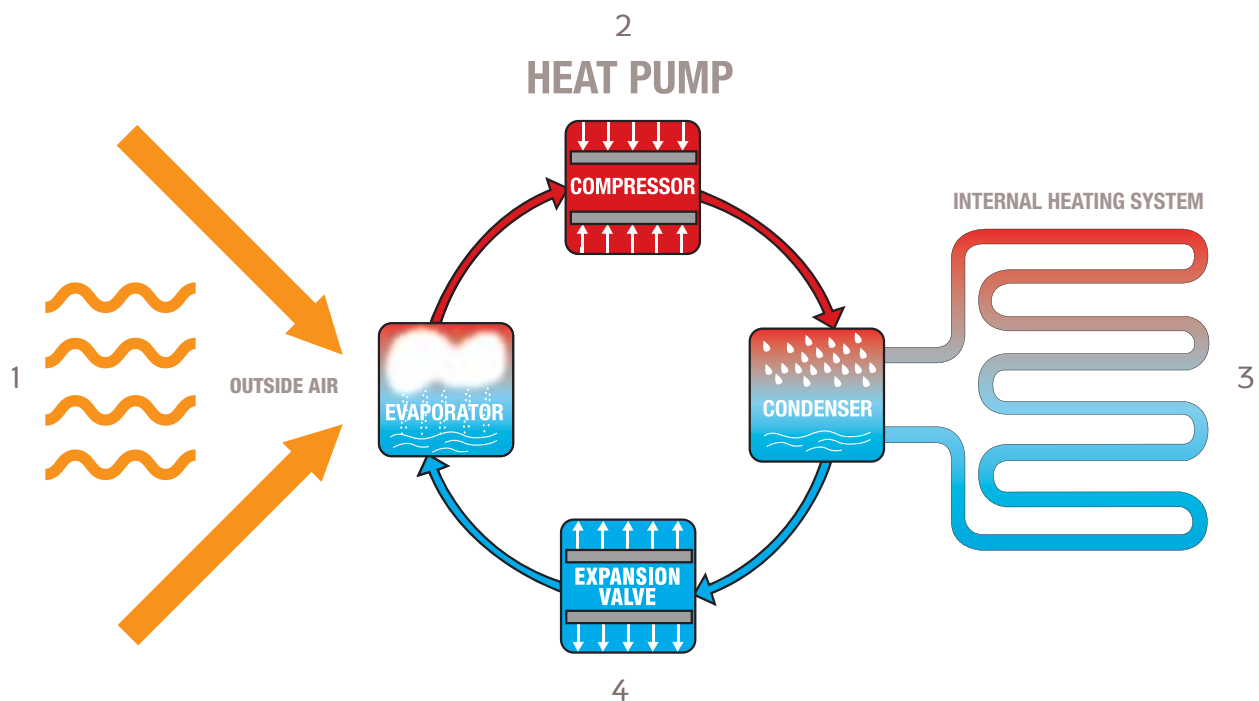
Baxi Ambiflo™ air source heat pumps are highly efficient and offer one of the quietest in class. They are ideal for adequately insulated properties with underfloor heating or low temperature radiator systems, which have an outdoor area for siting the heat pump. They are ideally suited for new developments and refurbishments especially in areas with no mains gas supply.

1 e.g. 200% = 2COP and 400% = 4COP.

# BAXI How do air source heat pumps work?

Air source heat pumps work on the same basic principles as a refrigerator (but in reverse), taking heat from the air and converting it into usable heat for the home.

A heat pump typically consists of four main components; evaporator, compressor, condenser and expansion valve. A refrigerant is circulated around these components.



## How it works

1. Outside air is drawn over the evaporator. The refrigerant absorbs heat from the air and changes from a liquid to a vapour.
2. The refrigerant then passes through a compressor, increasing the pressure and consequently the temperature of the vapour. This higher temperature is now suitable for domestic heating.
3. The higher temperature refrigerant then passes through the condenser heat exchanger, transferring heat to the heating system.
4. With the heat now removed, the refrigerant returns to liquid. The liquid refrigerant then passes through the expansion valve, returning the refrigerant to its original state ready to repeat the cycle.



The Baxi Ambiflo™ is externally sited and ideal for central heating. This one piece heat pump has a closed and pre-charged refrigeration circuit – so there's no need for refrigerant handling during installation.

Designed for heating system temperatures between 25°C and 45°C, the Baxi Ambiflo™ can fulfil all the central heating needs of a domestic property down to low outside temperatures. Suitable heat emitters include low temperature panel radiators, skirting radiators, fan convector radiators, underfloor heating or oversized high temperature panel radiators.\*

The Baxi Ambiflo™ air source heat pump is available in a choice of three nominal outputs -7.5kW, 9.0kW and 10.5kW.\*\* Each model is supplied as part of a system pack, containing the heat pump, an auxiliary 5kW electric heater, a programmable room thermostat, an outdoor sensor and flexible connection hoses.

\* Baxi only recommend the use of the Baxi Ambiflo™ with existing conventional radiators if the heat output at the lower system temperature can provide the necessary level of comfort (e.g. 21°C indoors) under design load conditions (e.g. -3°C outside).

\*\* The outputs are based on a typical air temperature of 7°C and a typical water flow temperature of 45°C.

\*\*\* Please note that any use of the auxiliary electric heater will affect fuel bills.

The system pack has been purposely designed to provide optimum comfort and efficiency, including room and outdoor temperature compensation to optimise flow and return temperatures. The system also intelligently controls any operation of the auxiliary electric heater (if necessary) during extremely low outdoor temperatures.\*\*\* Defrost is achieved efficiently by reverse cycle of the refrigeration circuit.

The Baxi Ambiflo™ can also be used together with Baxi Solarflo™ thermal domestic hot water system to provide a total heating and hot water solution from one supplier. Therefore reducing carbon emissions and fuel bills from the property and achieving CSH home requirements for new build properties. For further details on the Baxi range of low carbon technologies, please see page 14.

The system packs include all the necessary components to control and link to a standard heating circuit. A range of accessories is also available to suit other types of heating circuits (see page 12 for further details).

By providing a complete package from one supplier, Baxi makes the whole experience easier, from enquiry and purchase through to use and after sales support:

- Enquiry** – A single point of contact
- Application support** – Site assessment and system selection advice. Design service available
- Purchase** – All components on **one** order, with **one** point of sale and **one** delivery from **one** supplier
- Installation** – Integrated and compatible components, designed to enhance performance and reliability
- Assistance** – All enquiries answered by the dedicated Baxi technical helpline
- Commissioning** – The complete package only requires one commission and one set of user instructions. Baxi also offers a set up and check service
- Customer support** – Baxi warranty across all components, supported by a dedicated service team (**heateam**)

Important: Installation should be carried out by an installer who has successfully completed the Baxi Ambiflo training course.



## Baxi Ambiflo™ and Buffer Pack

The Ambiflo™ Buffer Pack contains:

- Heat pump
- Auxiliary electric heater
- Heater connection kit
- Flexible connection hoses
- Flow regulator
- Supplementary flow/return sensors
- Programmable room thermostat
- Outdoor sensor
- Megaflo buffer vessel



The use of a buffer vessel is recommended in low to medium volume systems.\* The additional volume reduces cycling which enhances efficiency. It also provides a defrost heat source and allows customers to take advantage of off peak electric tariffs.

\* For radiators, system volumes lower than 70 litres with all automatic valves closed.  
For underfloor, system volumes lower than 200 litres with all automatic valves open.

## Baxi Ambiflo™ and Heater Pack

The Ambiflo™ Heater Pack contains:

- Heat pump
- Auxiliary electric heater
- Heater connection kit
- Flexible connection hoses
- Flow regulator
- Supplementary flow/return sensors
- Programmable room thermostat
- Outdoor sensor



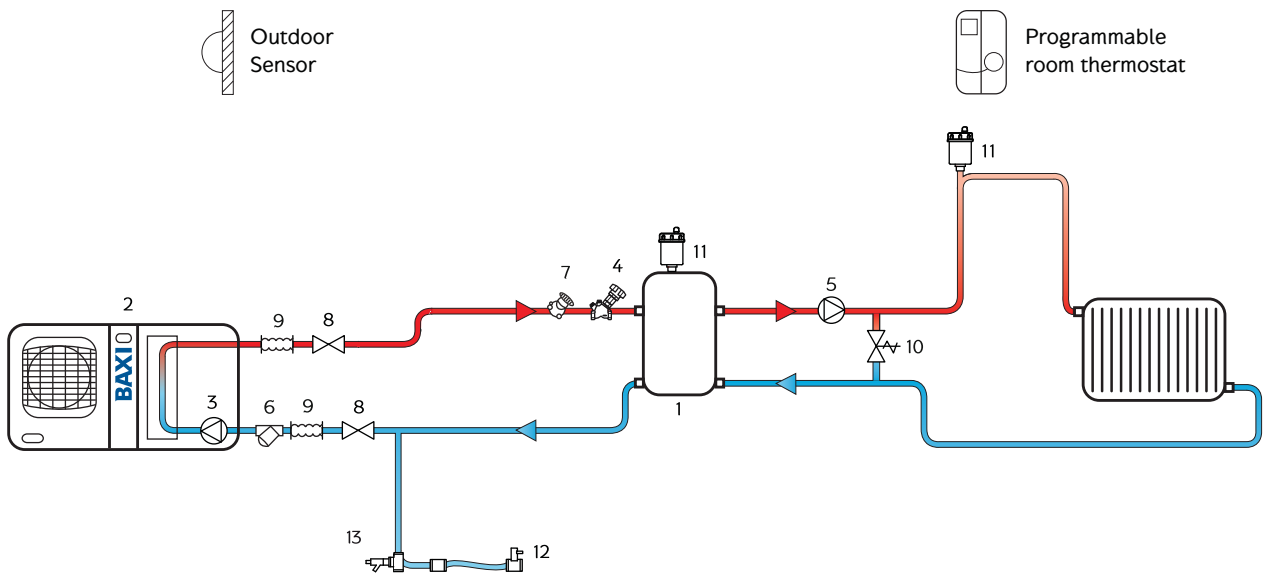
The Ambiflo™ and heater pack (without buffer vessel) is available for heating circuits with large system volumes.\*

\* For radiators, system volumes greater than 70 litres with all automatic valves closed.  
For underfloor, system volumes greater than 200 litres with all automatic valves open.

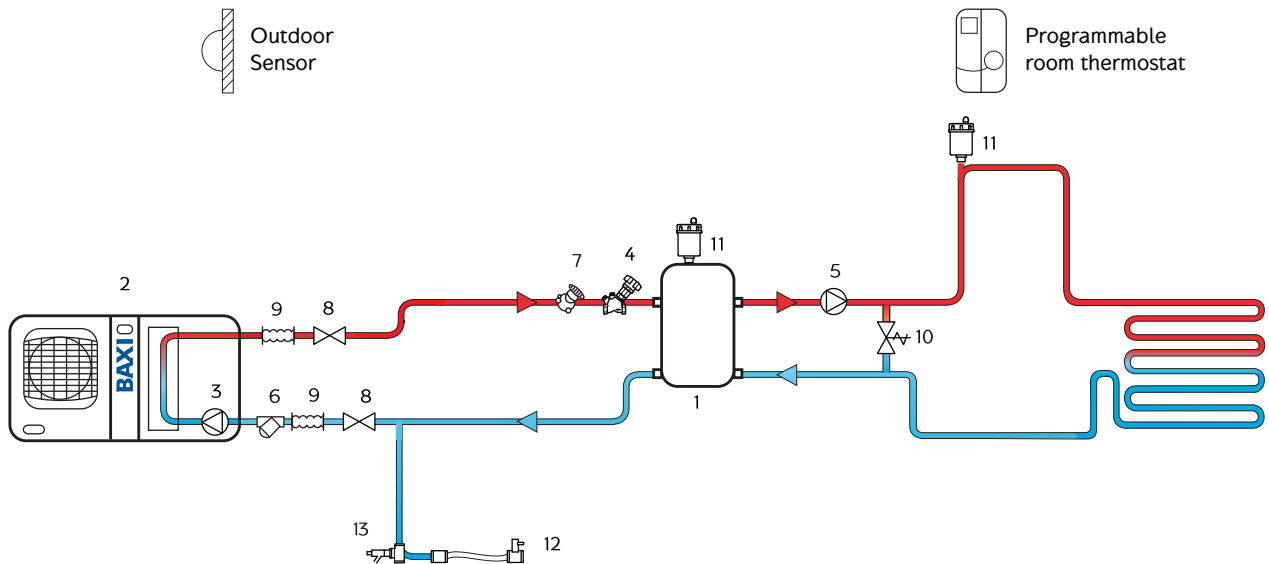


The Baxi Ambiflo™ is suitable for heating systems that use low temperature panel radiators, skirting radiators, fan connector radiators, underfloor heating or oversized high temperature panel radiators. Typical applications are shown below:

## Radiator heating system



## Underfloor heating system



- |  |   |
|--|---|
| 1. 100 litre buffer vessel                   | 8. Isolation valves                                       |
| 2. Auxiliary electric heater <sup>1</sup>    | 9. Flexible connection hoses <sup>1</sup>                 |
| 3. Primary pump located in unit <sup>2</sup> | 10. Automatic bypass valve or unrestricted towel radiator |
| 4. Flow regulator <sup>1</sup>               | 11. Automatic air vent                                    |
| 5. System pump <sup>2</sup>                  | 12. Quick fill loop                                       |
| 6. Water filter <sup>1</sup>                 | 13. Drain cock  |
- <sup>1</sup> Supplied as standard      <sup>2</sup> system pump can be controlled by Baxi Ambiflo controls

## System

- Heating only unit, easily sited externally without taking up useful indoor space
- Self-contained, one piece heat pump with a closed and pre-charged refrigeration circuit – no need for external refrigerant pipe work or refrigerant handling during installation
- Output choice of 7.5kW, 9.0kW and 10.5kW to match the heat load requirements of the property<sup>1</sup>
- Compact and low weight for easy installation in various locations including load bearing flat roofs
- Baxi Ambiflo™ can be fitted on an optional wall mounting bracket for siting flexibility<sup>1</sup> (available as an accessory)
- Quiet operation, allowing siting flexibility in urban or rural areas
- Automatic defrost by reverse cycle
- Optional buffer vessel, will allow defrost without compromising comfort
- Condensate sump heater included as standard
- Anti-vibration feet to reduce operating noise



<sup>1</sup> Wall mounting brackets should be suitable for the load – use tamper proof through wall fixings.

<sup>1</sup> The outputs are based on a typical air temperature of 7°C and a typical water flow temperature of 45°C

<sup>2</sup> An additional expansion vessel may be required depending on the system volume and temperature

<sup>3</sup> Alternative time and temperature controls must include a setback or reduced setting

<sup>4</sup> Baxi recommends that a load diversity calculation is carried out. Add the heat pump and electric heater operating current to this to verify suitability of the main incoming fuse. For further information, please contact a qualified electrician



## Hydraulics

- 3 speed circulation pump and flow regulator allows accurate setting of flow rate for efficiency
- Integral circulation pump reduces the number of, or eliminates the need for, external pump(s)
- Integral 2 litre expansion vessel, pressure gauge and pressure relief valve protect the system and provide ease of installation<sup>2</sup>

## Electrics

- Single phase with soft starter suitable for standard domestic electrical supplies (eg 80A)
- Optional relay board for external 230V demand signal enables use with alternative time and room temperature controls or alternative underfloor systems<sup>3</sup>
- Alternative 230v room control suitable for social housing application is available
- Optional current limiter recommended when main incoming fuse rating is insufficient<sup>4</sup> – isolates auxiliary electric heater in high load conditions to prevent nuisance tripping of fuses



## Electric heater



Performance	Unit	
Output	kW	2x2.5
Dimensions and weight		
Height	mm	425
Width	mm	250
Depth	mm	200
Weight	kg	9
Connections		
Power supply	V (Hz)	230 (50)
Cable min core diameters <sup>1</sup>	mm <sup>2</sup>	6
Room controls	V DC	5
Cable min core diameters	mm <sup>2</sup>	0.5
CH flow <sup>2</sup>	inch	1
CH return <sup>2</sup>	inch	1
Operating conditions		
Max operating current	A	22

<sup>1</sup> Reference should also be made to current regulations.

<sup>2</sup> Heater connection kit, flexible hoses and 15mm or 22mm compression fittings adapters are included in the system pack as standard.

## Megafllo buffer vessel



Performance	Unit	
Capacity	l	100
Heat loss	kW/24hr	1.14
Dimensions and weight		
Height	mm	850
Diameter	mm	550
Weight empty	kg	40
Weight full	kg	140
Connections		
Heat pump flow	mm	22
Heat pump return	mm	22
CH flow	mm	22
CH return	mm	22
Operating conditions		
Max water temp	°C	85
Max water pressure	Bar	2.5

## A guide to selecting your Ambiflo™ pack is provided below:

IMPORTANT: Before ordering, a design heat load calculation must be carried out based on information from drawings or collected during a site assessment, contact Baxi for further information. Selection of the appropriate Ambiflo™ system must be based on the calculated heat load value.

Selecting in line with these tables will ensure optimum use of the Ambiflo down to sub zero temperatures. Below 1°C outside temperature a small integral supplementary heater is enabled.

Alternatively, a separate supplementary heater can be used such as a Valor electric fire or a Valor wood burning stove (required a suitable chimney).

Sizing of the radiators for the lower average system temperature is also important. Excessive oversizing can lead to overheating problems.

### Radiator heating system



Max heat loss at -3°C outside (kW)	Typical dwelling (adequately insulated)	Radiators at 45°C flow temp		
		Ambiflo™ 75 (5.8kW at 0°C)	Ambiflo™ 90 (7.3kW at 0°C)	Ambiflo™ 105 (9.0kW at 0°C)
3		✓		
3.5		✓		
4		✓		
4.5		✓		
5		✓		
5.5		✓		
6		✓		
6.5		✓		
7		✓		
7.5		✓		
8			✓	
8.5			✓	
9			✓	
9.5			✓	
10				✓
10.5				✓
11				✓
11.5				✓
12				✓
12.5				✓

### Underfloor heating system



Max heat loss at -3°C outside (kW)	Typical dwelling (adequately insulated)	Ambiflo™ 75 (6.3kW at 0°C)	Ambiflo™ 90 (7.8kW at 0°C)	Ambiflo™ 105 (9.6kW at 0°C)
		3		✓
3.5		✓		
4		✓		
4.5		✓		
5		✓		
5.5		✓		
6		✓		
6.5		✓		
7		✓		
7.5		✓		
8		✓		
8.5		✓		
9			✓	
9.5			✓	
10			✓	
10.5			✓	
11				✓
11.5				✓
12				✓
12.5				✓
13				✓
13.5				✓
14				✓
14.5				✓
15				✓
15.5				✓
16				✓

Contact Baxi before selecting and ordering an Ambiflo pack

The above is provided for reference only. Baxi strongly recommends accurate calculation and assessment of the heat load, in accordance with the relevant standards and best practice by a competent person. If the maximum heat loss at -3°C outside temperature is higher than shown for the type of dwelling, the property may not be adequately insulated. Please contact Baxi for further advice.



IMPORTANT: Before ordering, a design heat load calculation must be carried out based on information from drawings or collected during a site assessment, contact Baxi for further information. Selection of the appropriate Ambiflo™ system must be based on the calculated heat load value.  
Sizing of the radiators for the lower average system temperature is also important. Excessive oversizing can lead to overheating problems.

## System packs

	Baxi Ambiflo™ and buffer pack			Baxi Ambiflo™ and heater pack		
	Ambiflo™ 75 & buffer pack	Ambiflo™ 90 & buffer pack	Ambiflo™ 105 & buffer pack	Ambiflo™ 75 & heater pack	Ambiflo™ 90 & heater pack	Ambiflo™ 105 & heater pack
<b>Sales code</b>	5131495	5131533	5131534	5131492	5131493	5131494
Ambiflo™ 75 heat pump	✓			✓		
Ambiflo™ 90 heat pump		✓			✓	
Ambiflo™ 105 heat pump			✓			✓
Auxiliary electric heater	✓	✓	✓	✓	✓	✓
Programmable room thermostat	✓	✓	✓	✓	✓	✓
Outdoor sensor	✓	✓	✓	✓	✓	✓
Flow regulator	✓	✓	✓	✓	✓	✓
Supplementary flow/return sensors	✓	✓	✓	✓	✓	✓
Heater connections kit 3/4"	✓	✓		✓	✓	
Flexible connection hoses 3/4"	✓	✓		✓	✓	
Heater connections kit 1"			✓			✓
Flexible connection hoses 1"			✓			✓
Buffer vessel 100l	✓	✓	✓			

## Accessories

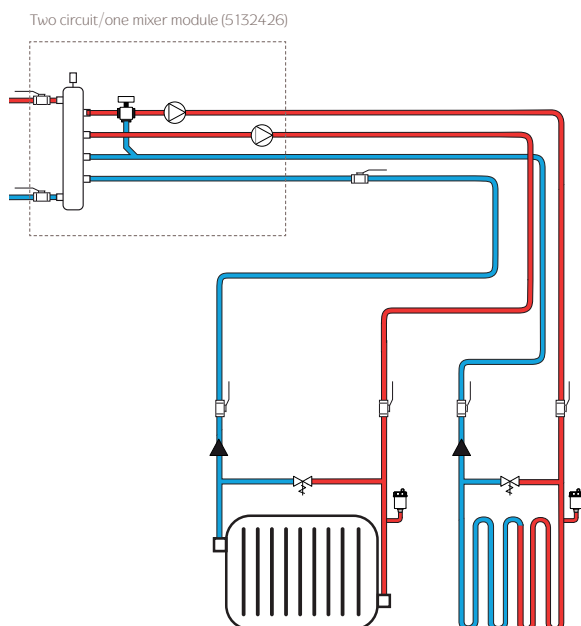
	Sales code
Dirt separator <sup>1</sup>	5133750
Current limiter	5132431
230V controls relay board	5132432
Wall mounting bracket (75 & 90)	5134517

	Sales code
Two circuit / one mixer module	5132426
Two zone / two mixer module	5132427
Additional room sensor	5132429
Direct buffer vessel 35l	5131503

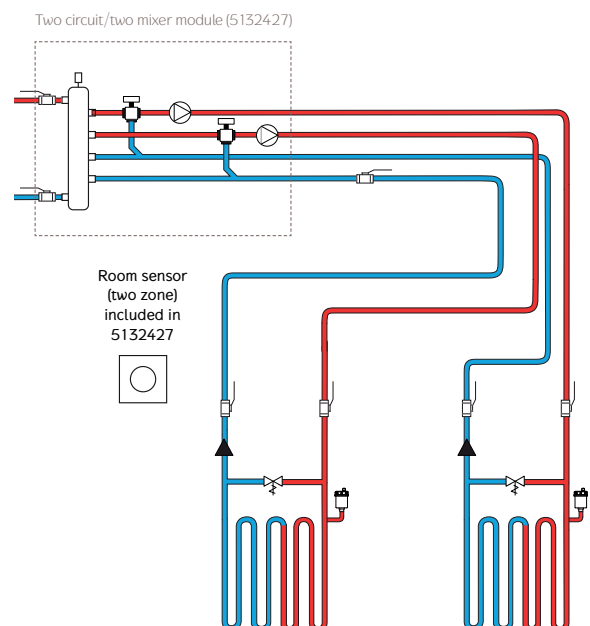
<sup>1</sup> A water filter is supplied with the Baxi Ambiflo™ as standard. However, when retrofitting to existing systems (pipe work and/or emitters), the dirt separator is strongly recommended

Alternative applications incorporating the optional mixer modules to those on page 6 are shown below:

### One zone, two circuit heating system



### Two zone, two circuit heating system



## A guide to selecting your Ambiflo™ pack is provided below:

IMPORTANT: Before ordering, a design heat load calculation must be carried out based on information from drawings or collected during a site assessment, contact Baxi for further information. Selection of the appropriate Ambiflo™ system must be based on the calculated heat load value.

Selecting in line with these tables will ensure optimum use of the Ambiflo down to sub zero temperatures. Below 1°C outside temperature a small integral supplementary heater is enabled.

Alternatively, a separate supplementary heater can be used such as a Valor electric fire or a Valor wood burning stove (required a suitable chimney).

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### Radiator heating system



Max heat loss at -3°C outside (kW)	Typical dwelling (adequately insulated)	Radiators at 45°C flow temp		
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3.5		✓		
4		✓		
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5		✓		
5.5		✓		
6		✓		
6.5		✓		
7		✓		
7.5		✓		
8			✓	
8.5			✓	
9			✓	
9.5			✓	
10				✓
10.5				✓
11				✓
11.5				✓
12				✓
12.5				✓

### Underfloor heating system



Max heat loss at -3°C outside (kW)	Typical dwelling (adequately insulated)	Ambiflo™ 75 (6.3kW at 0°C)	Ambiflo™ 90 (7.8kW at 0°C)	Ambiflo™ 105 (9.6kW at 0°C)
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3.5		✓		
4		✓		
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6		✓		
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7		✓		
7.5		✓		
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10			✓	
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11				✓
11.5				✓
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12.5				✓
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Outdoor sensor	✓	✓	✓	✓	✓	✓
Flow regulator	✓	✓	✓	✓	✓	✓
Supplementary flow/return sensors	✓	✓	✓	✓	✓	✓
Heater connections kit 3/4"	✓	✓		✓	✓	
Flexible connection hoses 3/4"	✓	✓		✓	✓	
Heater connections kit 1"			✓			✓
Flexible connection hoses 1"			✓			✓
Buffer vessel 100l	✓	✓	✓			

## Accessories

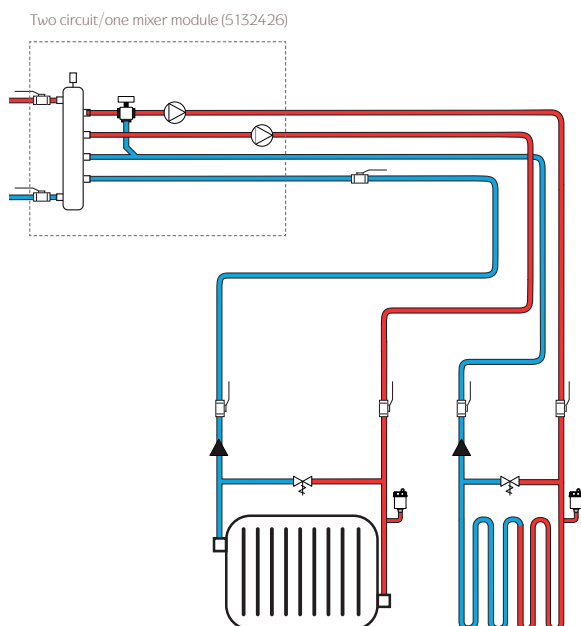
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Dirt separator <sup>1</sup>	5133750
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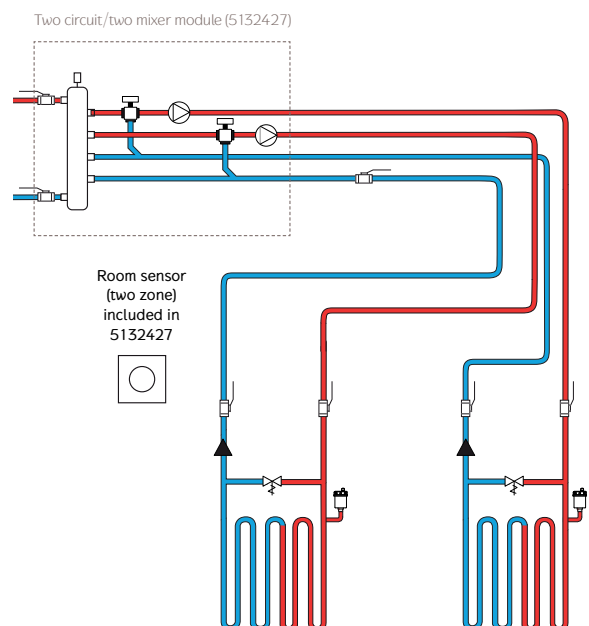
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Alternative applications incorporating the optional mixer modules to those on page 6 are shown below:

### One zone, two circuit heating system



### Two zone, two circuit heating system



## Customer training

Baxi offers a one day product awareness course covering theory, systems, product, application, installation, commissioning, and servicing. Please contact Baxi training on 0845 600 7402 for further details.

## Design service

Our *New Design* team offers a dedicated service for developers, architects, local authorities and housing associations. We can provide accurate heat load calculations to assist in Baxi Ambiflo™ product specifications. We can also tailor CAD designs and offer advice in SAP, CSH and planning requirements.

## Warranty

The Baxi Ambiflo™ has a one year parts and labour warranty. This can be extended by a further three months when the Baxi Ambiflo™ product is registered with **heateam**. The buffer vessel comes with a 25 year parts guarantee for the stainless steel shell.

The warranty is subject to:

- 1) Registration of the product with **heateam**
- 2) Installation by an installer who has successfully completed the Baxi Ambiflo™ training course
- 3) Completion of a suitable commissioning document which must be left on site for the householder
- 4) Set up and check of the product by **heateam** or its approved agent
- 5) Use of a suitable dirt separator and/or use of a magnetic cleaning device on all applications
- 6) If necessary for a **heateam** visit, provision of safe access to any parts of the unit mounted above two metres

Full terms and conditions apply, contact **heateam** for details.

## Set up and check

The terms of the Baxi Ambiflo™ warranty require the product is set up and checked by one of our **heateam** engineers. Set up and check is carried out following installation of the product and filling of the heating circuit by the installer. The service includes adjustment of parameters and checking of the flow rate to ensure correct operation and optimum efficiency. This service is chargeable and can be arranged, via the telephone, directly with **heateam**. Further details can be found in the literature pack within the Baxi Ambiflo™ packaging. **heateam** can normally set up and check within 7 days of the request.

## Technical support

Our team of expert technical advisers is readily available. Mon to Fri 8am to 6pm / Sat 8.30am to 2pm.

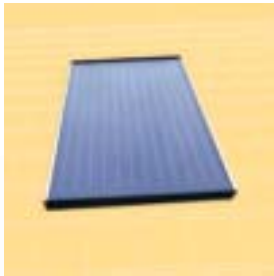
Contact the team on 0844 871 1568.

We offer advice on heat pump location, electrical supply, heat emitters, system design and product selection. Before ordering, a design heat load calculation must be carried out based on information from drawings or collected during a site assessment. Selection of the appropriate Ambiflo™ system must be based on the calculated heat load value.

visit  
[www.baxi.co.uk/ambiflo](http://www.baxi.co.uk/ambiflo)



## From solar heating to micro-generation heating technology



Baxi Solarflo™



Baxi Geoflo™



Baxi Biomass™  
Solid Fuel Heating



Baxi Ambiflo™



Baxi DACHS mini-CHP™



Baxi Ecogen™

Baxi is fast becoming one of the UK's leaders in renewable energy for domestic heating. In addition to Baxi Ambiflo™, Baxi has one of the largest ranges of low carbon energy products available including; solar, biomass, micro-CHP and ground source heat pumps. Don't forget our extensive range of HE boilers – with their impressive energy efficient ratings, you'll find a model to suit all situations.

For further details on the Baxi renewables range, please contact Baxi.

# Contact us

For all enquiries, please call  
**0844 871 1568**

Open Monday - Friday, 8am - 6pm  
Saturdays & Bank Holidays, 8.30am - 2pm  
We are closed on Christmas Day & New Year's Day

Please note calls may be monitored or recorded.

355282/03

# BAXI

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