5516

de-aerator for heat pump systems

altecnic

CALEFFI group

5516 de-aerator for heat pump systems

Application

The Altecnic 5516 high-efficiency de-aerator is capable of discharging up to 99 % of the air contained within the thermal medium at the very first passage.

Circulating de-aerated water allows systems to operate under optimal conditions, free from any noise, corrosion, localised overheating or mechanical damage.

The Altecnic 5516 is designed for use in heat pump systems with end connections suitable for copper, steel and other fittings.

Its high efficiency also makes it suitable for installation in systems with a gas boiler heat source.

The de-aerator can be installed with horizontal, vertical or angled pipes.

Product Range

Ref No		Connection
551602	high efficiency de-aerator	22mm compression
551603	high efficiency de-aerator	28mm compression
551606	high efficiency de-aerator	1" thread female
551607	high efficiency de-aerator	1¼" thread female
551617	high efficiency de-aerator	1½" thread female

Technical Specification

Materials

Body:	polymer	PA66G30
Float:	polymer	PP
Float guide and stem:	brass	BS EN 12164 CW614N
Float lever and spring:	stainless steel	BS EN 10270-3 AISI 302
Seals:	elastomer	EPDM

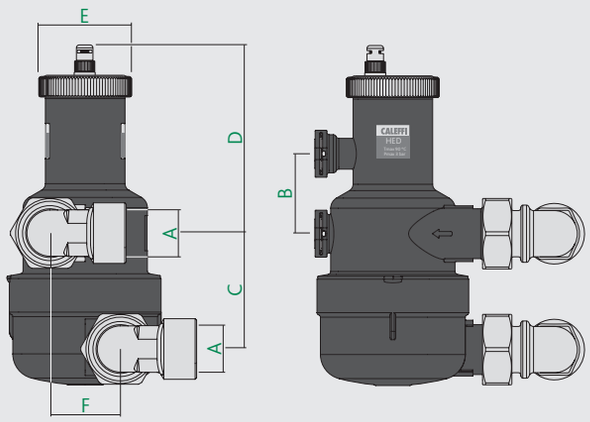
Materials

Medium:		water
Maximum working pressure:		3 bar
Maximum discharge pressure:		3 bar
Maximum working temperature:		0 to 90°C
Connections:	compression	BS EN 1254
	threaded	BS EN ISO 228-1
	1¼" threaded	with 'O' ring
Air vent:		hygroscopic cap

Insulation

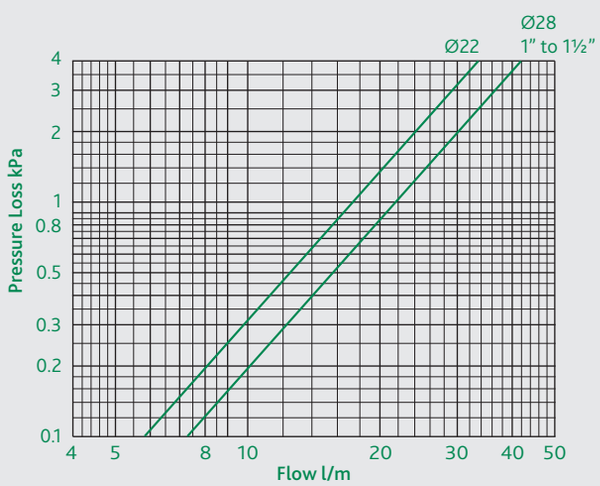
Material:	EPP
Density:	38 g/l
Thermal conductivity at 10°C:	0.039 W/(m.K)
Co-efficient of resistance to water vapour:	≥ 39700

Dimensions



Ref No	A	B	C	D	ØE	F
551602	Ø22	54.5	78	128	64	48
551603	Ø22	54.5	78	128	64	48
551606	G1	54.5	78	128	64	48
551607	G1¼	54.5	78	128	64	48
551617	G1½	54.5	78	128	64	48

Hydraulic Characteristics



Composite Material

The deaerator is made using a composite material specifically selected for heating and cooling system applications. Its basic features are:

- high strain strength while maintaining good ultimate elongation
- good resistance to crack propagation
- very low humidity absorption, which allows consistent mechanical behaviour
- high resistance to abrasion caused by continuous flow
- constant performance as the temperature varies
- compatibility with the glycols and additives used in circuits.

These basic features, combined with the appropriate shapes of the most highly stressed areas, allow comparison with the metals typically used in the construction of the de-aerators.

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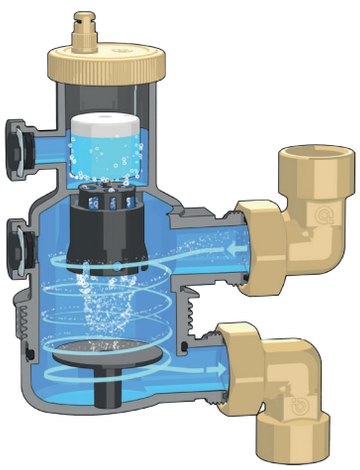
Operating Principles

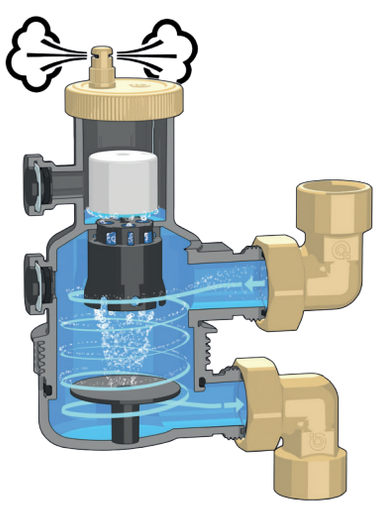
The Altecnic 5516 high-efficiency de-aerator is capable of discharging up to 99 % of the air contained within the thermal medium at the very first passage.

The specific positioning of the connections causes a rotary motion in the medium as it moves downwards from the top connection to the bottom connection.

A calm zone develops in the central part of the body; this is where the micro-bubbles of air present in the flow are concentrated, as they are lighter than the water driven towards the outer walls by the speed at which it is flowing.

Air separation and collection is maximised by the special patented internal shape of the product; the air tends to rise in the central part and collect in the float chamber so it can then be expelled.





Sizing

The maximum flow rate at which the device maintains optimal performance is 3 m^3/h = 50 l/s. Below this flow rate, the component can be sized according to the diameter of the pipe in which it is to be fitted.

DN	DN20	DN25	DN25	DN32	DN32
Connections	Ø22	Ø28	1" F	1¼" F	1½" F
Kv - m^3h	10	13	13	13	13

Maximum recommended flow rates

DN	DN20	DN25	DN25	DN32	DN32
Connections	Ø22	Ø28	1" F	1¼" F	1½" F
l/s	28.7	45.8	27.7	45.8	45.8
m^3h	1.72	2.75	1.72	2.75	2.75

Pressure drops

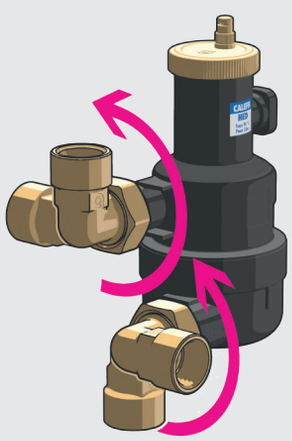
DN	DN20	DN25	DN25	DN32	DN32
Connections	Ø22	Ø28	1" F	1¼" F	1½" F
kPa*	2.05	5.25	2.05	5.25	5.25

* refers to the maximum recommended flow rates

Construction Details

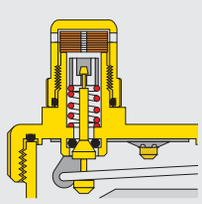
Adjustable connections

The two adjustable brass elbows allow de-aerator installation on horizontal, vertical and angled pipes.



Hygroscopic cap

The operating principle of the hygroscopic safety cap is based on the properties of the cellulose fibre disks forming the sealing cartridge.
These discs increase in volume by 50% when they come into contact with water, thus closing the valve.
This avoids any damage in the event of water leakage.



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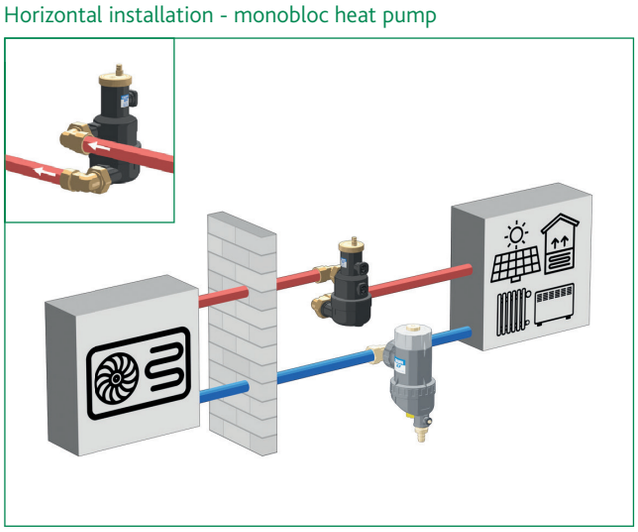
Installation

The de-aerator must only be installed in a vertical position.

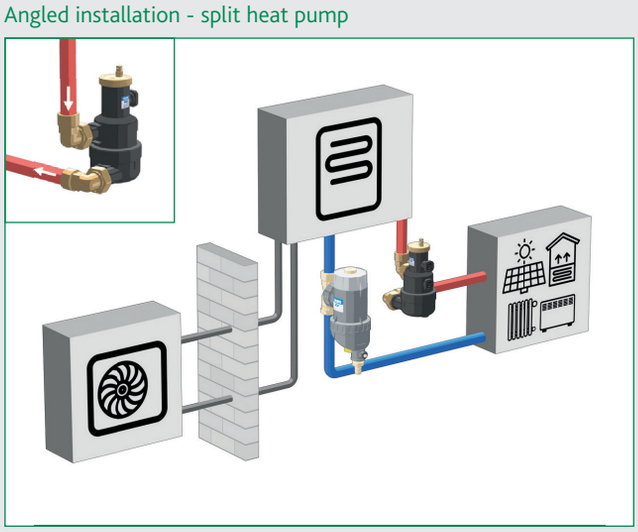
For the component to work properly, the flow direction indicated by the relevant arrow on the body must be observed.

It can be installed on horizontal pipes, vertical pipes and in an angled setup.

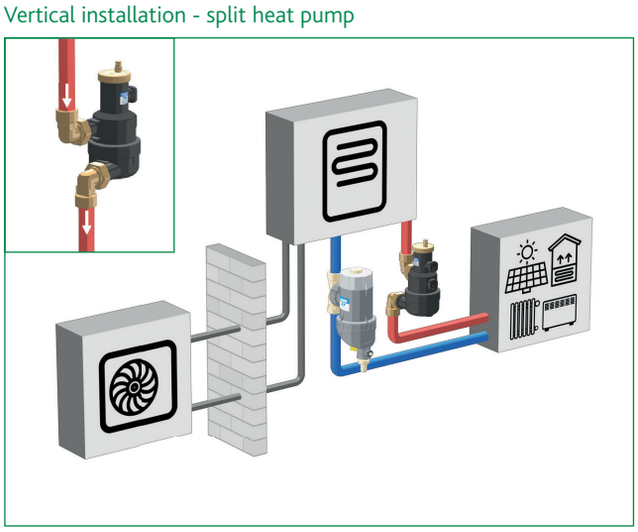
Horizontal installation - monobloc heat pump



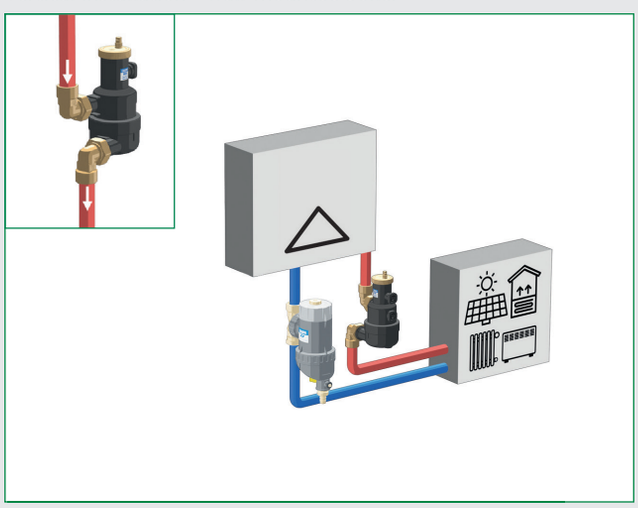
Angled installation - split heat pump



Vertical installation - split heat pump



Vertical installation - wall-mounted boiler



Use with flammable refrigerant gases

If the system has a heat pump which uses flammable refrigerant gases (for example R290), it is essential that the Altecnic de-aerator is installed in a ventilated environment (such as the heating unit or a technical room), so that any gas entering the hydraulic circuit as a result of a heat exchanger malfunction and separated by the de-aerator is dispersed outside.

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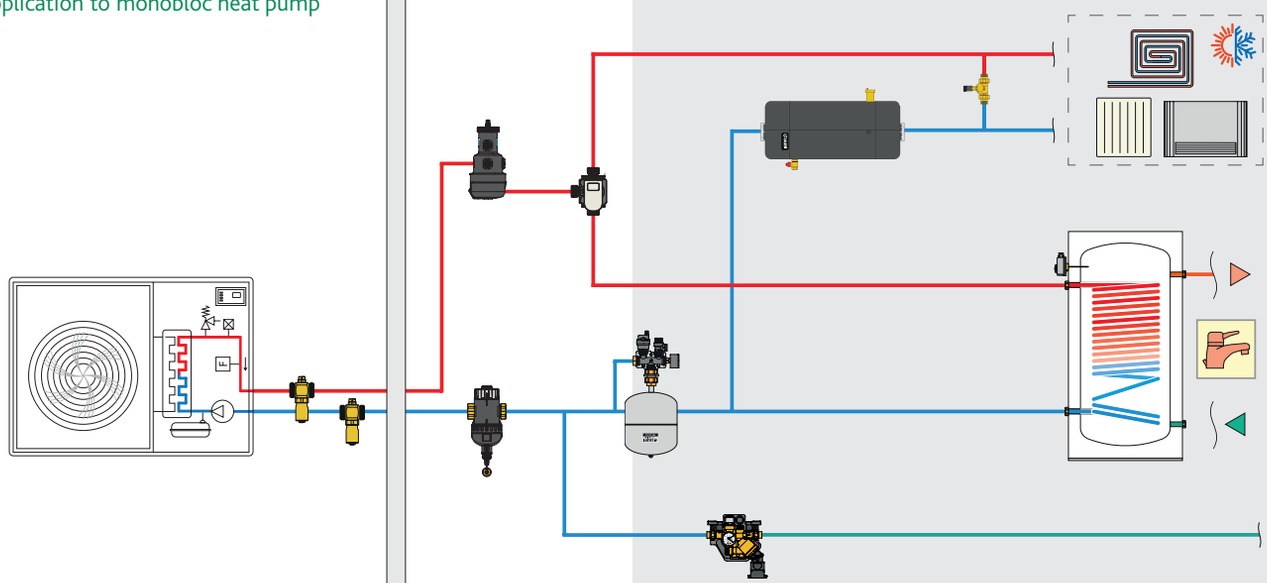
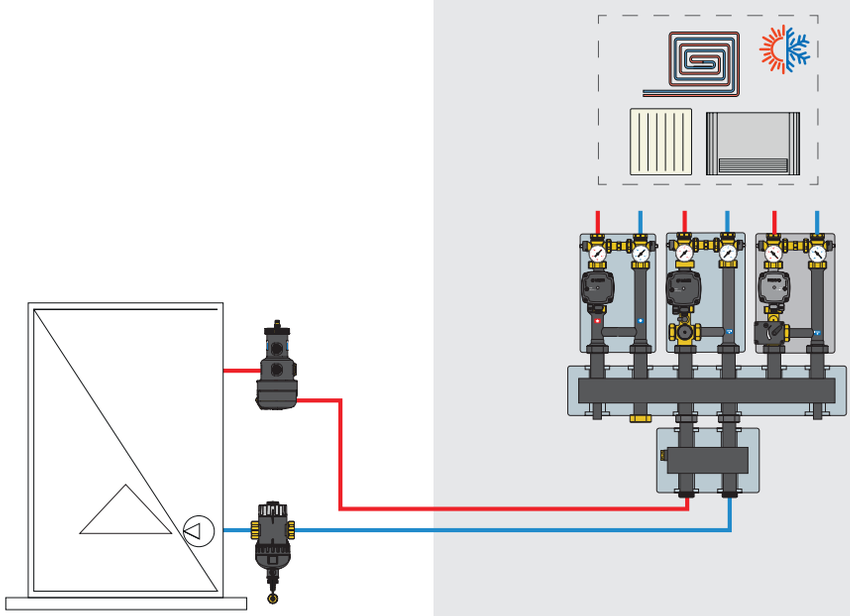
Application Diagrams

Application to monobloc heat pump



Application to boiler



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Accessories

Insulation for high-efficiency de-aerator

Ref No. CBN551602

Pressure gauge

0 to 4 bar, 50 diameter

Ref No. F0002253

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