

High-efficiency deaerator CALEFFI HED®

5516 series



Function

CALEFFI HED® high-efficiency deaerator is capable of discharging up to 99 % of the air contained within the thermal medium at the very first passage.

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

CALEFFI HED® is designed for use in heat pump systems, in versions with copper pipes (codes 551602 and 551603) and iron pipes (codes 551606 – 551607 – 551617) alike.

Its high efficiency also makes it suitable for application in systems with a gas boiler generator.

The deaerator can be installed with horizontal, vertical or angled pipes.

PATENT PENDING.

Product range

Code 551602	CALEFFI HED® high-efficiency deaerator	size DN 20 (Ø 22)
Code 551603	CALEFFI HED® high-efficiency deaerator	size DN 25 (Ø 28)
Code 551606	CALEFFI HED® high-efficiency deaerator	size DN 25 (1" F)
Code 551607	CALEFFI HED® high-efficiency deaerator	size DN 32 (1 1/4" F)
Code 551617	CALEFFI HED® high-efficiency deaerator	size DN 32 (1 1/4" M)

Code CBN551602 Insulation for CALEFFI HED® high-efficiency deaerator

Technical specifications

Materials

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

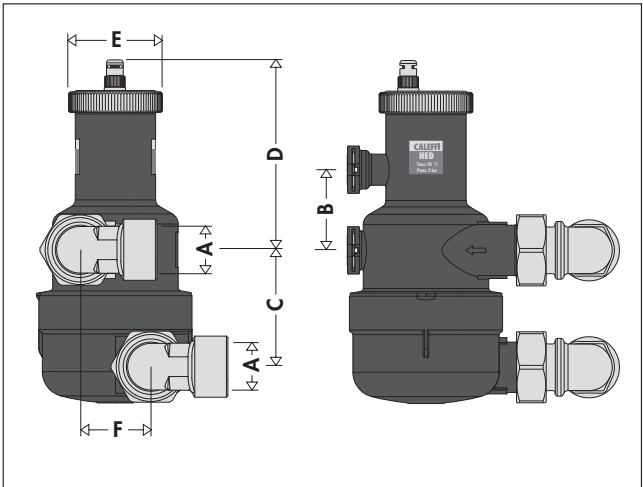
Performance

Medium:	water
Maximum working pressure:	3 bar
Maximum discharge pressure:	3 bar
Working temperature range:	0–90 °C
Connections:	Ø 22 mm, Ø 28 mm for copper pipe, 1" F (ISO 228-1), 1 1/4" F (ISO 228-1) 1 1/4" M (ISO 228-1) with O-Ring
Drain:	with hygroscopic cap

Technical specifications of insulation

Material:	EPP
Density:	38 g/l
Thermal conductivity (ISO 8301):	at 10 °C: 0,039 W/(m·K)
Coefficient of resistance to water vapour (DIN 52615):	≥ 39700

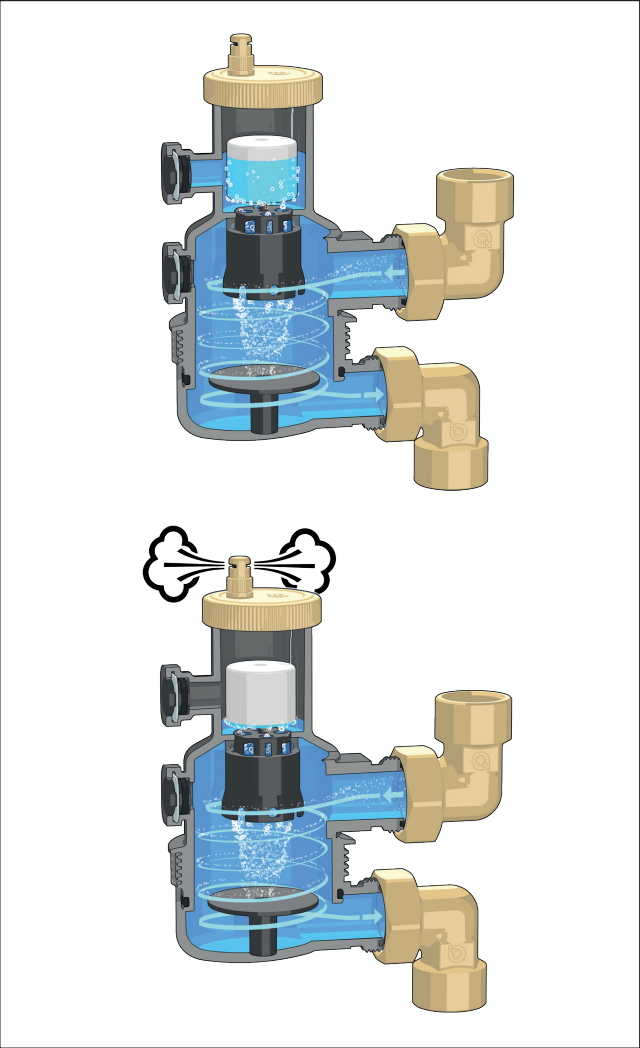
Dimensions



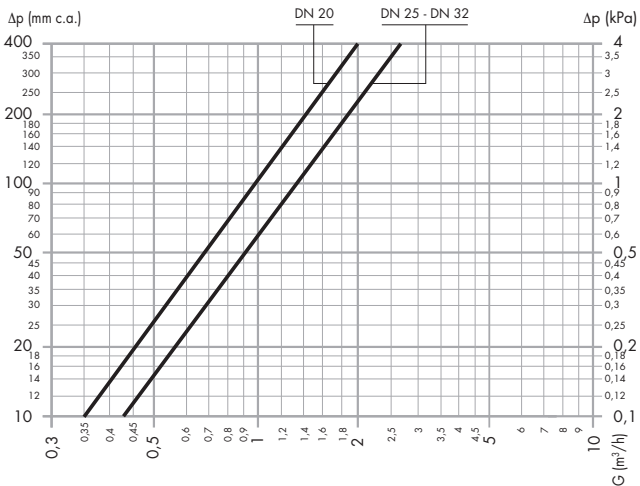
Code	A	B	C	D	E	F
551602	Ø 22	54,5	78	128	64	48
551603	Ø 28	54,5	78	128	64	48
551606	1" F	54,5	78	128	64	48
551607	1 1/4" F	54,5	78	128	64	48
551617	1 1/4" M	54,5	78	128	64	48

Operating principle

The CALEFFI HED® high-efficiency deaerator 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.



Hydraulic characteristics



Sizing

The maximum flow rate at which the device maintains optimal performance is 3 m³/h. Below this flow rate, the component can be sized according to the diameter of the pipe in which it is to be fitted.

DN	DN 20	DN 25	DN 25	DN 32	DN 32
Connections	Ø 22	Ø 28	1" F	1 1/4" F	1 1/4" M
Kv (m³/h)	10	13	13	13	13

Maximum recommended flow rates

DN	DN 20	DN 25	DN 25	DN 32	DN 32
Connections	Ø 22	Ø 28	1" F	1 1/4" F	1 1/4" M
l/min	28,7	45,8	27,7	45,8	45,8
m³/h	1,72	2,75	1,72	2,75	2,75

Pressure drops

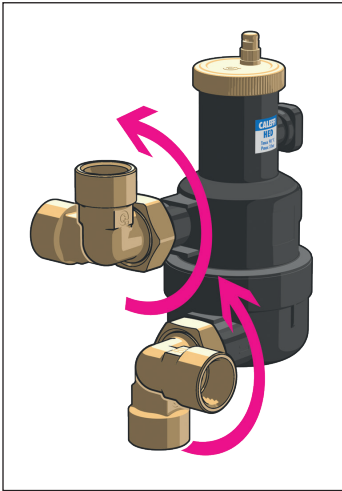
DN	DN 20	DN 25	DN 25	DN 32	DN 32
Connections	Ø 22	Ø 28	1" F	1 1/4" F	1 1/4" M
(kPa)*	2,05	5,25	2,05	5,25	5,25

* Refers to the maximum recommended flow rate

Construction details

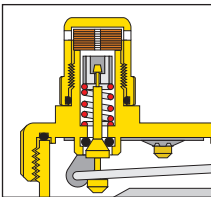
Adjustable connections

The two adjustable brass elbows allow deaerator 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.



Composite material

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

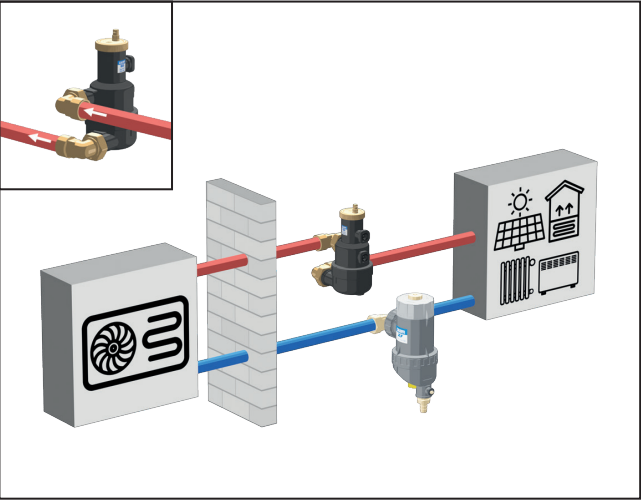
- high strain strength while maintaining good ultimate elongation;
- good resistance to crack propagation;
- very low humidity absorption, which allows consistent mechanical behaviour;
- high resistance to abrasion caused by continuous medium flow;
- constant performance as the temperature varies;
- 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 deaerators.

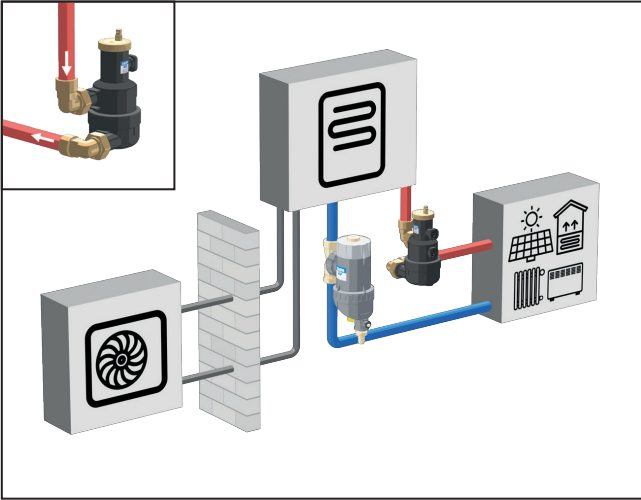
Installation

The deaerator 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.

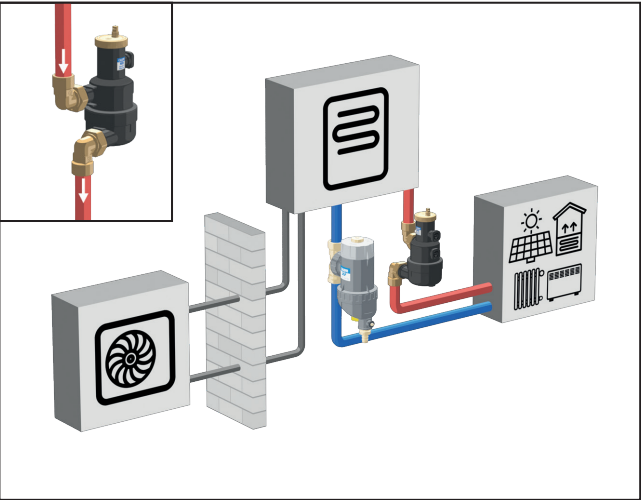
Horizontal installation - monobloc heat pump



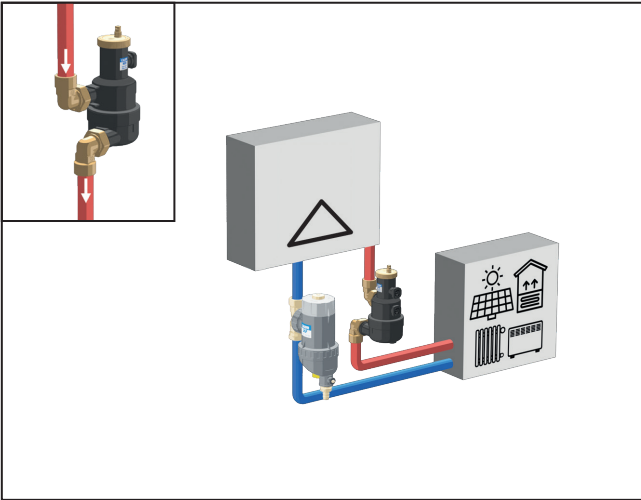
Angled installation - split heat pump



Vertical installation - split heat pump



Vertical installation - wall-mounted boiler



Accessories



Insulation for high-efficiency deaerators.

Code

CBN551602

Use with flammable refrigerant gases

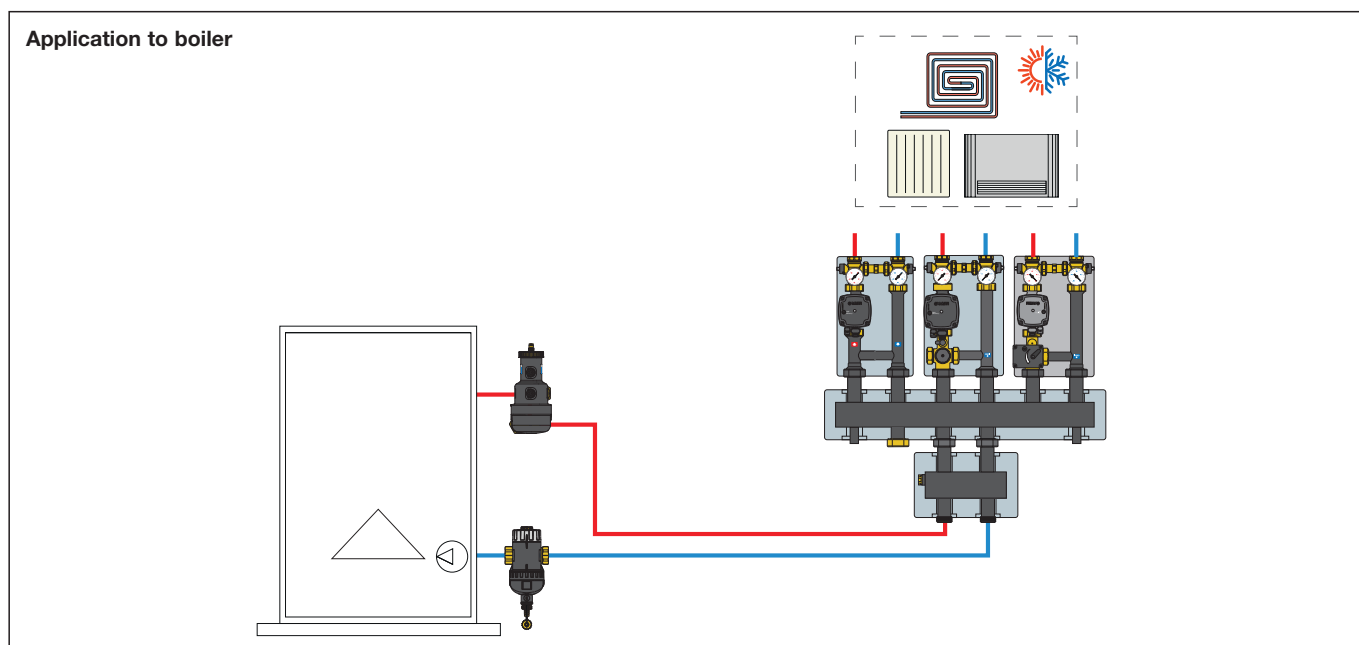
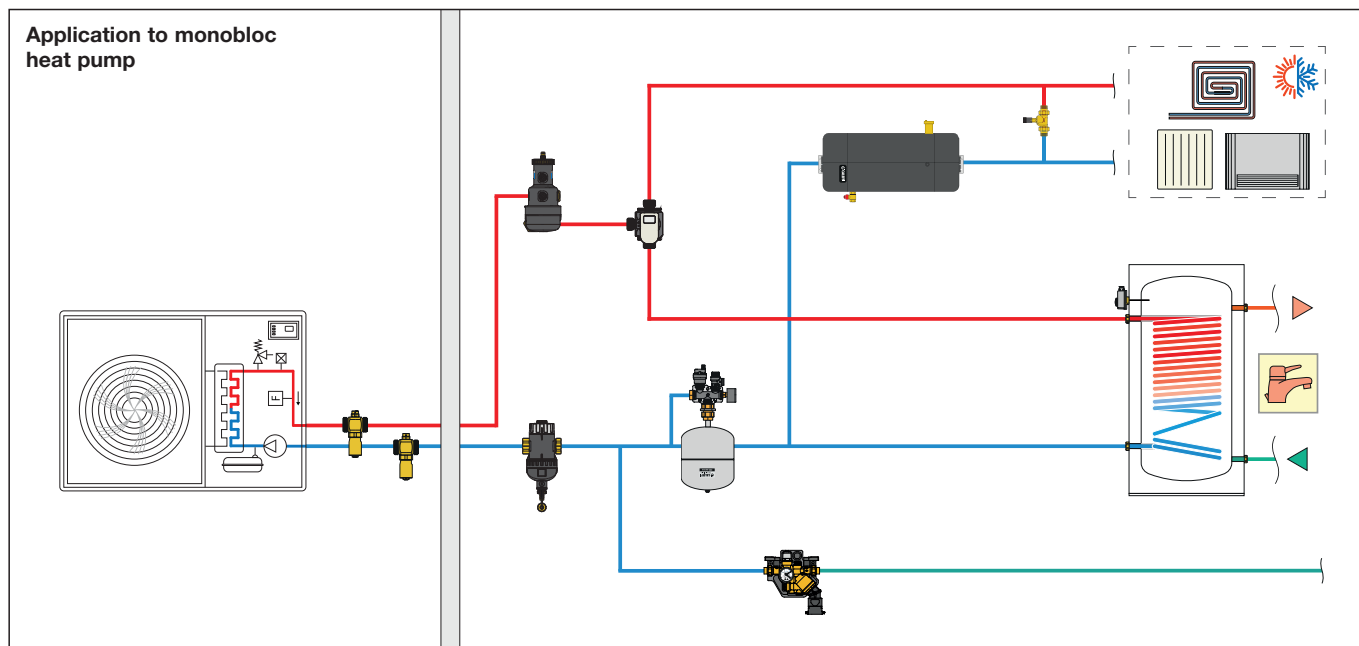
If the system has a heat pump which uses flammable refrigerant gases (for example R290), it is essential that the CALEFFI HED® deaerator is installed in a ventilated environment (such as the heating unit or a technical room), so that any gas entering the hydraulic circuit as a result of a heat exchanger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



Pressure gauge.

Code	bar	Connection	Pos.	Ø
F0002253	0–4	fixing clip	centr. station	50

Application diagrams



SPECIFICATION SUMMARY

5516 series CALEFFI HED®

CALEFFI HED® high-efficiency deaerator. size DN 20 (Ø 22), size DN 25 (Ø 28 - 1" F), size DN 32 (1 1/4" F - 1 1/4" M). PA66G30 body. Stainless steel internal element. PP float. Brass float guide and stem. Stainless steel float lever and spring. EPDM hydraulic seals. Medium: water. Maximum working pressure 3 bar. Maximum discharge pressure 3 bar. Working temperature range 0–90 °C. Hygroscopic safety cap. Composite material body. Sealing cartridge consisting of cellulose fibre discs; 50 % increase in volume on contact with water. PATENT PENDING.

Code CBN551602

Insulation for CALEFFI HED® high-efficiency deaerator. PPE shell. Density 38 g/l. Thermal conductivity at 10 °C: 0.039 W/(m·K). Coefficient of resistance to water vapour (DIN 52615): ≥ 39700.

We reserve the right to make changes and improvements to our products and the related technical data in this publication, at any time and without prior notice.

The website www.caleffi.com always has the most up-to-date version of the document, which should be used for technical verifications.