

# CA1 Air Separator

## Instructions



CA1 Air Separator  
Standard Flow



CA1 Air Separator  
High Flow



# 1. Introduction

## 1.1 About the device

The **Fernox CA1 Air Separator** improves the quality of your installation. To use your appliance more efficiently please read the operation instructions.

- For an overview of the product, refer to section 2.1.
- For the intended use, refer to section 2.3.

**CA1 Air Separator** is designed and manufactured according to the Sound Engineering Practice as stated in the Pressure Equipment Directive (2014/68/EU). This manual applies to all products listed below.

Product Code	Connection size (DN) code
<b>CA1 Air Separator Standard Flow</b>	
33006236/0050	050: DN50
33006236/0065	065: DN65
33006236/0080	080: DN80
33006236/0100	100: DN100
33006236/0125	125: DN125
33006236/0150	150: DN150
<b>CF1 Air Separator High Flow</b>	
33006237/0050	050: DN50
33006237/0065	065: DN65
33006237/0085	080: DN80
33006237/0100	100: DN100
33006237/0125	125: DN125
33006237/0150	150: DN150

## 1.2. Symbols

Throughout the instructions the following symbols are used:



**Warning** risk of injury or **caution** risk of damage



**Caution** risk of burns

# 2. Overview of the unit

## 2.1. Intended use

The **CA1 Air Separator** (fully) automatically removes all available bubbles and microbubbles from the water and water/glycol mixtures.

## 2.2. Operating conditions

The **CA1 Air Separator** is suitable for use in systems filled with water or mixtures of water and glycol up to 50%. The **CA1 Air Separator** can be used in combination with Fernox chemicals/inhibitors. Please check that the materials in the **CA1 Air Separator** are compatible with the materials and fluid used in your system. For more information contact your supplier. Operation in combination with other fluids may result in irreparable damage.



### Warning

The **CA1 Air Separator** cannot be used for drinking water, and dangerous or flammable substances, i.e. unit should be used within the limits of the technical specifications as given in chapter 3. If demineralised water is used to fill the system, a quality inhibitor such as **Fernox Protector F1** or **F9** must be used.

## 2.3. Scope of delivery

- 1 x **CA1 Air Separator**
- 1 x quick reference guide
- Each Quick reference guide has a QR-scan code with a direct link to this user manual

# 3. Technical specifications

## 3.1. Operating Characteristics

Item	All types
Working pressure (bar-g)	0-10
Working temperature (°C)	0-110
Nominal flow velocity (m/s)	1.5
Maximal flow velocity of high flow speed units (m/s)	3.0
Flange type of flanged units	PN16 (DIN 2633) (EN1092)

## 3.2. Quality control specifications

### 3.2.1. Leak test specifications

These are the specifications of the quality control at Fernox.

Item	All types
Test pressure (bar-g)	>15
Test medium	Water and air
Test time (sec.)	240
Approval criterion	No leakage

### 3.2.2. Functional test of the Automatic Air Vent

Item	All types
Valve opening test	Full bore venting
Valve closing test	Positive valve closure

### 3.2.3. Standards

Item	All types
Construction	Pressure Equipment Directive 2014/68/EU – Sound Engineering Practice
Quality, safety and environmental aspects	EN-ISO 9001 EN-ISO 14001 EN-ISO 45001

# 4. Safety

## 4.1. Safety Instructions



### Warning

- Installation and maintenance may only be carried out by a qualified installer.
- When working on the unit, always ensure there is no pressure in the unit, let it cool down and remove the water from the unit.



### Warning

- Do not touch the unit or the pipework when the system is in operation. The surfaces may be hot and cause burns.



### Caution

- Always install the unit body vertically, with the automatic air vent positioned on top.

## 5. Installation and commissioning

### 5.1. Installation conditions

- Install the unit in a frost-free, well-ventilated area.
- Install the unit in accordance with the local guidelines and rules.
- Install the unit stress free and with the body in vertical position.
- Do not use the unit as a support for pipe work.
- Do not weld the unit to the pipework.
- It is not allowed to modify the unit.
- Apply the separately supplied product labels if the labels on the product are not visible; for instance, after the unit has been insulated.
- The unit operates independent of the flow direction.
- Do not obstruct the automatic air vent and make sure that the automatic air vent is always easily accessible.

### 5.2. Installing the unit

#### 5.2.1 Mounting the unit

- Attach the pipework to the to the unit. Make sure that the unit is installed stress free.
- Tighten the fasteners to the correct torque value of the pipework.

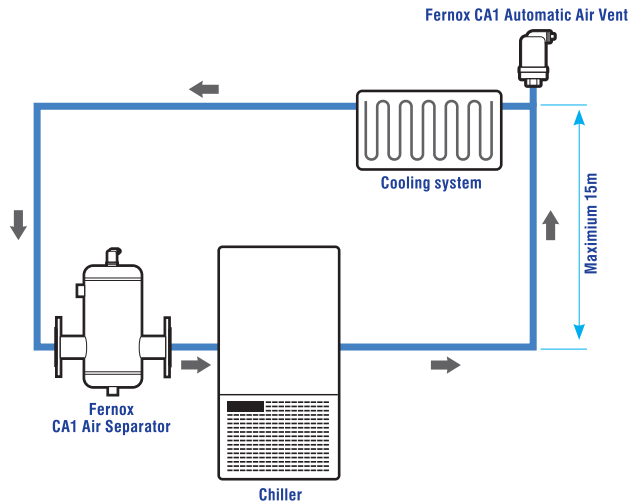
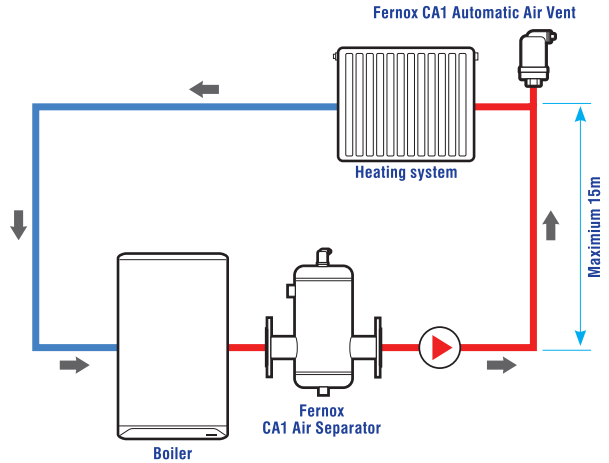


**Fernox CA1 Air Separator** must be installed at the highest part of the system for optimum performance. The static head must not exceed 15m in heating systems and 5m in cooling systems. The efficiency of the unit will be reduced if:

- The static head is exceeded
- The maximum flow velocity of 3 m/s is exceeded

In heating systems, the **Fernox CA1 Air Separator** should be installed on the flow line, preferably at the highest temperature point (close to the heat source) and at low pressure if possible.

The **CA1 Air Separator** should be installed after the boiler and on the pump suction side, as these locations have the highest concentration of microbubbles. In chilled water systems, the unit must be installed in the return line, close to the chiller.





#### Caution

### 5.3. Commissioning

If a cap R ½ was installed on the automatic air vent for the system test, make sure that cap R½ is removed before the commissioning of the system. The system must be commissioned and running to verify if the unit works properly.

At first use, the automatic air vent may temporarily release a small amount of moisture, which is normal and not a cause for concern. When the system is running, do the checks as follows:

- Leak check

## 6. Preventative maintenance

The air separator requires minimal maintenance during normal operation. To ensure reliable performance, the following checks are recommended:

#### • Visual Inspection

Periodically check the unit and connections for leaks, corrosion, insulation damage or external stress.

#### • Automatic Air Vent

Make sure the automatic air vent is not obstructed and can discharge air properly. Clean or replace it if air release is impaired.

#### • System Conditions

Ensure system pressure, flow velocity and temperature remain within the specified limits for optimum performance.

## 7. Warranty

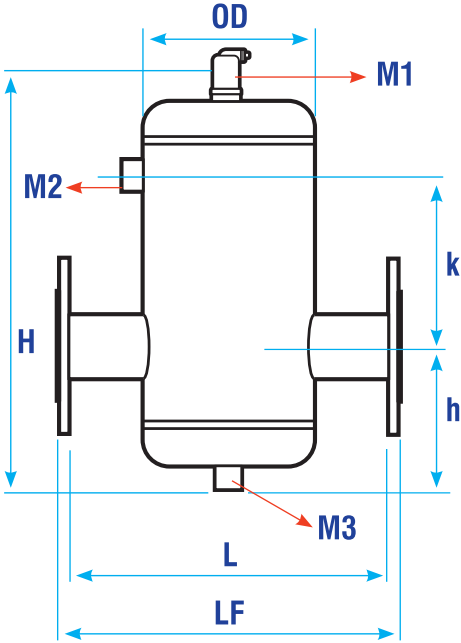
Fernox covers the product for a warranty period of 2 years as long as it is used in the correct manner and under the terms indicated in the technical specifications listed.

**To activate your warranty, please register your product by scanning the QR code.**

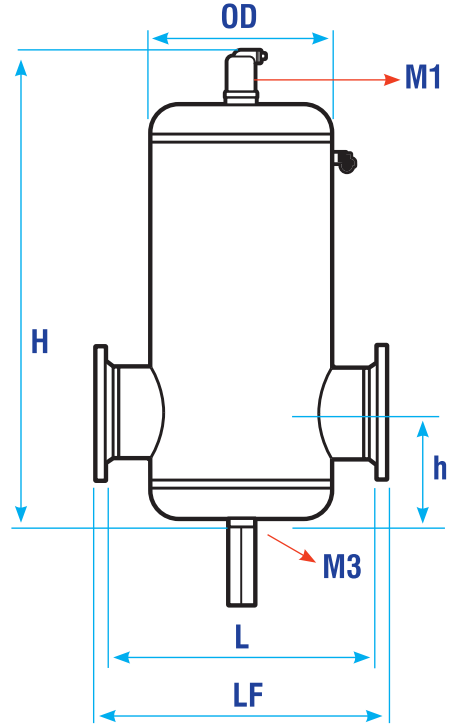


## 8. Product dimensions

Fernox CA1 Air Separator – Standard Flow



Fernox CA1 Air Separator – High Flow

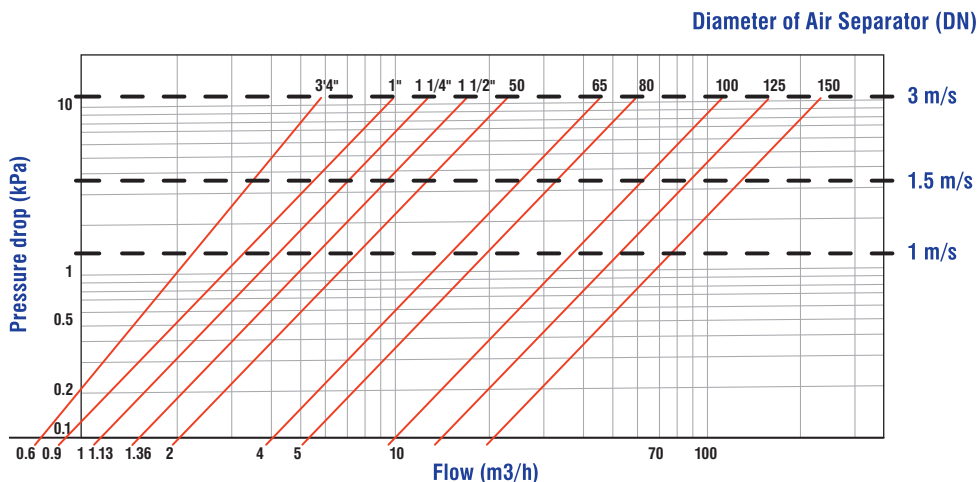


Connection DN	OD mm	L mm	LF mm	Standard flow: Nom. 1.5 m/s Nom. = 1.5 m/s					High flow: Nom. 3 m/s Max = 3 m/s					M1	M2	M3
				H mm	h mm	Max Flow L/s	Max Flow m <sup>3</sup> /h	Max Flow kPa	H mm	h mm	Max Flow L/s	Max Flow m <sup>3</sup> /h	Max Flow kPa			
50	168.3	330	350	632	265	3.3	12	3	880	370	5.8	21	11.8	1 3/4"	1/2" HM	1"
65	168.3	330	350	632	265	6.3	22.5	2.7	880	370	10.0	36	11.6	1 3/4"	1/2" HM	1"
80	219.1	450	470	791	345	8.3	30	2.9	1110	480	15.0	54	12.4	1 3/4"	1/2" HM	1"
100	219.1	455	475	791	345	12.5	45	3.7	1110	480	23.3	84	14.6	1 3/4"	1/2" HM	1"
125	323.9	615	635	1064	480	20.8	75	4.2	1540	700	36.7	132	16.8	1 3/4"	1/2" HM	1"
150	323.9	615	635	1064	480	31.3	112.5	4.9	1540	700	52.8	190	19.4	1 3/4"	1/2" HM	1"

Operating pressure: 0-10 bar

Fluid Temperature : 0-110 °C

## 9. Pressure drop chart



### Example:

When the water flow is 70 m<sup>3</sup>/h pressure drop for the DN 150 **CA1 Air Separator**:

1. From the 'Flow' axis at 70 m<sup>3</sup>/h at the point A, move vertically to the **CA1 Air Separator DN 150** curve at point B.

When the water flow is 70 m<sup>3</sup>/h pressure drop for the DN 150 **CA1 Air Separator**:

2. Move left from point B to meet the 'Pressure Drop' axis at point C, for this example Pressure Drop will be 1 kPa.