

## The MIKROVENT Valve

Water contains dissolved air particles, the quantity of the air contained within the water can be determined using a physical law, known as Henry's Law. The pressure and temperature of the water will influence the release or absorption of air particles in the water.

The graph in Fig 1. shows how air in solution can vary with the change in pressure and temperature. For example - with a pressure of 2 bar with an increase in temperature from 20°C to 80°C, approximately 18 litres of air is released per 100 litres of water, whilst at 120°C all the air will be released.

All flanged models are air and dirt separators, and for boiler applications should be installed in the return pipework to protect the boiler plant. Threaded units are air separators only.

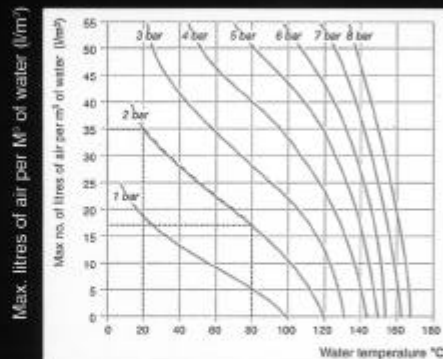


Fig 1. Water temperature °C

## The Air Formation Process

When you consider how air and water can be combined, it can be seen that the maximum quantity of air that is released is at the hottest point of the system, for example, on the walls of a boiler heat exchanger.

Another factor that will contribute to the formation of air or "cavitation" are micro bubbles that form when flowing water reaches a high velocity, for example, around a pump impeller or in areas of the system where restriction is present such as balancing valves etc.

During the normal operation of a heating system, the fluid that circulates around the system conveys micro bubbles of air.

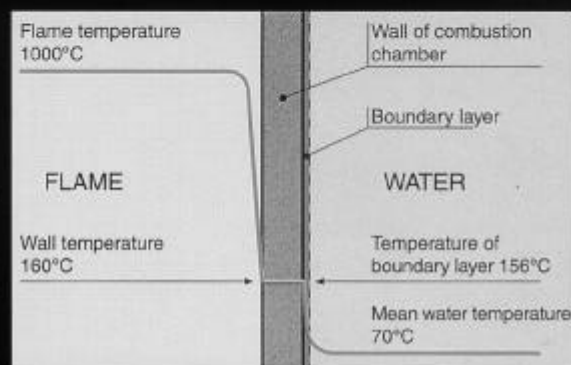
It can be difficult to remove air from conventional systems using the normal method of an automatic air vent. The use of a mikrovent deaerator is the most efficient method for the removal of air from within heating circuits.

As a heating system cools, the system water will absorb any air particles, which may still be present within the heating circuit. As the water within the heating system is again heated due to system demands, air will begin to release as system water rises in temperature. Again micro air bubbles will be released from system water passing through the mikrovent unit.

## Problems Created by Air in System

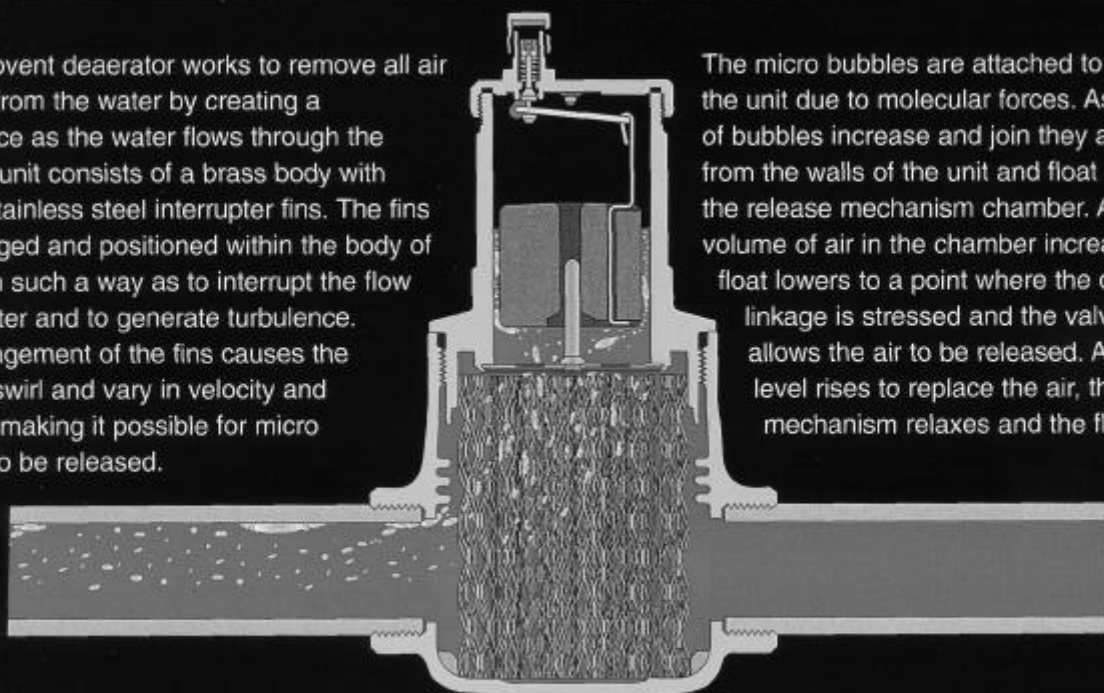
The presence of air within a heating system will create both short term and long term problems such as:

- System overheat
- Excessive noise levels within the circuit
- Reduction in system efficiency
- System corrosion
- Increased pump wear and cavitation
- Reduced water circulation and heat transfer
- Increased system maintenance costs



# The Operation of the MIKROVENT Deaerator

The mikrovent deaerator works to remove all air particles from the water by creating a disturbance as the water flows through the unit. The unit consists of a brass body with integral stainless steel interrupter fins. The fins are arranged and positioned within the body of the unit in such a way as to interrupt the flow of the water and to generate turbulence. The arrangement of the fins causes the water to swirl and vary in velocity and pressure making it possible for micro bubbles to be released.

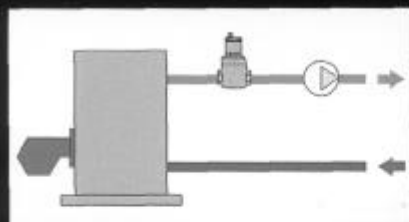


The micro bubbles are attached to the wall of the unit due to molecular forces. As the volume of bubbles increase and join they are released from the walls of the unit and float upward to the release mechanism chamber. As the volume of air in the chamber increases the float lowers to a point where the discharge linkage is stressed and the valve opens and allows the air to be released. As the water level rises to replace the air, the release mechanism relaxes and the float rises.

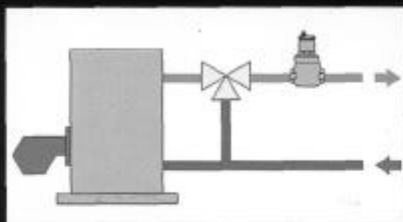
## Typical Application & Installation

The mikrovent can be used in applications, such as:

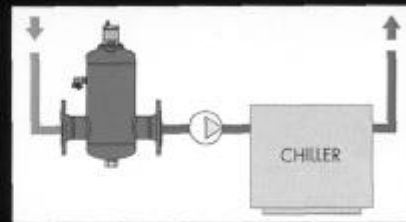
Air Conditioning & Cooling System, Radiant Panel Heating System, Central Heating Systems



The mikrovent installed vertical, preferably on the negative side of the pump



Installation in conjunction with a three way valve.



Installation in conjunction with a chiller unit.

## Technical Data & Material Specification

Maximum Operating Pressure	:	10 Bar
Maximum Operating Temperature	:	120°C
Threaded Connections	:	3/4", 1", 1 1/4", 1 1/2"
Flanged Connections	:	DN50, DN65, DN80, PN100 : PN10
Welded Connections	:	DN50, DN65, DN100 : PN10
Threaded Version	:	PcuZn50Pb2 Brass Body
Flanged Version	:	Epoxy Coated Steel Body
Seals	:	Ethylene-propylene rubber
Separator	:	Stainless Steel

# MIKROVENT Installation & Cleaning

Due to the special design of the mikrovent, maintenance and cleaning can be carried out without the unit being removed from the system.

The air release mechanism is accessed by removal of the upper cover (all models).

The full unit can be dis-assembled by unscrewing the main body housing to access the stainless steel separators (thread models).

## Installation and cleaning of the Flanged Mikrovent

The flanged version of the mikrovent is fitted with a drain (A), which has two functions. Firstly, to release air from the system during the filling and secondly to assist in the removal of any impurities which may float at water level. A drain valve is also fitted to the base of the unit, which can be used to remove any deposits from the bottom of the unit.

## Dosing pot facility

All flanged models can be utilised as dosing pots with the addition of a tundish kit

