# eres

heating expansion vessel

altecnic

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## Introduction

Eres are able to offer a complete range of expansion vessels to meet the requirements of most heating or cooling systems.

Eres expansion vessels are manufactured to meet the requirements of PED 97/23/EC Directive and BS EN 13831:2007 'Closed expansion vessels with built in diaphragm for installation in water'.

## Design

The vessel is fabricated by welding the various sections together which results in a very reliable structure suitable for internal pressures up to 5 or 6 bar.

Non-replaceable diaphragm held securely in place by a flange.

Water is never in contact with the steel vessel.

Epoxy coated and available in red.

The Eres diaphragm has been specially developed for heating applications.

Suitable for temperatures up to 100˚C, resistant to ethylene or propylene glycol mixtures and has low gas permeability.

## How It Works

In a closed heating system water cannot be compressed so any increase in volume, created by an increase in temperature, has to be accommodated by an expansion vessel.

When water is cold, the pre-charge pressure forces the diaphragm against the tank towards the inlet.

As the temperature increases, the expanded water volume pushes against the diaphragm creating additional volume for the water to enter.

When the temperature decreases, the pre-charge pressure forces the water from the tank and back into the main heating system.

This maintains a constant pressure within the heating system helping to reduce energy consumption.

In the event that the diaphragm within the expansion vessel could be subjected to temperatures above 100˚C, the vessel must be protected by an additional vessel.

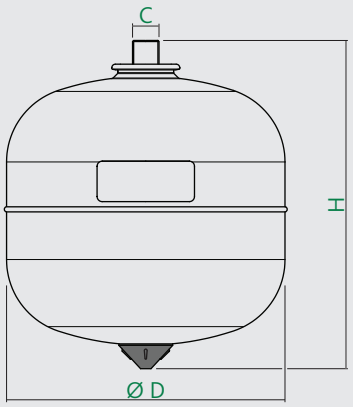
## Materials

| Component | Material |
|---|---|
| Shell | Carbon Steel |
| Connections | Carbon Steel |
| Diaphragm | Synthetic Elastomer |
| Coating | Powder Epoxy |

## Technical Specification

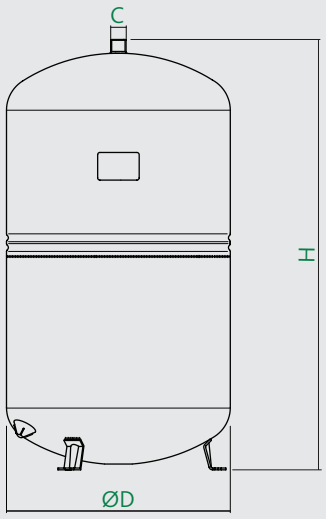
| | | |
|---|---|---|
| Max. working pressure | 5 to 25 litres | 5 bar |
| | 35 to 1000 litre | 6 bar |
| Operating range | | -10˚C to 100˚C |
| Factory pre-charge - air | | 1.5 bar |

## Dimensions




| Prod Code | Capacity | ØD | H | C | Wt |
|---|---|---|---|---|---|
| | litres | mm | mm | Connection | kg |
| ER-08LTVESS | 8 | 200 | 342 | G¾B | 2.5 |
| ER-12LTVESS | 12 | 270 | 310 | G¾B | 3.2 |
| ER-18LTVESS | 18 | 270 | 420 | G¾B | 4 |
| ER-24LTVESS | 25 | 320 | 432 | G¾B | 4.5 |

## Dimensions - with feet




| Prod Code | Capacity | ØD | H | C | Wt |
|---|---|---|---|---|---|
| | litres | mm | mm | Connection | kg |
| ER-35LTVESS | 35 | 360 | 480 | G¾B | 7 |
| ER-50LTVESS | 50 | 360 | 625 | G¾B | 7.5 |
| ER-80LTVESS | 80 | 485 | 570 | G1B | 16 |
| ER-100LTVESS | 100 | 485 | 650 | G1B | 18 |
| ER-300LTVESS | 300 | 600 | 1,235 | G1B | 49 |
| ER-500LTVESS | 500 | 600 | 1,445 | G1B | 63 |
| ER-1000LTVESS | 1,000 | 750 | 2,555 | G1B | 118 |

## Sizing Formula for Expansion Vessel

$$V_N \geq \frac{[(V_t \times e) + V_{res}]}{F_p}$$

- $V_N$ Minimum volume in litres of the required expansion vessel
- $V_t$ Total water volume in litres in the circuit including boiler, pipe, radiators etc.
- e Expansion coefficient of water for the maximum temperature of the system
- $V_{res}$ Reserve volume in litres = $0.2 \times V_t \geq 3$ litres, if less use 3 litres
- $F_p$ Pressure factor = $1 - \frac{(P_o + 1)}{(P_{max} + 1)}$
- $P_o$ Pre-charge pressure = $( H \div 10 ) + 0.2$ bar $\geq 1$ bar (minimum value = 1 bar)
- H Length in metres between the expansion vessel and the highest point in the circuit
- $P_{vs}$ Set pressure in bar of the safety valve
- $P_{max}$ Maximum pressure in bar of the system = $P_{vs}$ - 0.5 bar ($P_{vs} \leq 5$ bar)
  = $P_{vs} \times 0.9$ bar ($P_{vs} > 5$ bar)

E & O.E

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