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### DESCRIPTION

Dead water expansion vessels are used to compensate for the expansion of water in a closed circuit. The correct sizing of the vessel is very important, otherwise the safety valve may open and shut down the system. The water expands as it heats up. The bladder made of SBR synthetic rubber absorbs the change in volume. When the water cools down, the air pressure in the bladder returns the water to the heating circuit.

For installation, a shut-off valve with a drain valve is required for maintenance purposes (checking the vacuum pressure).

## CHOICE OF THE VESSEL

### Data needed for the calculation:

- $V_A$  : Volume of the installation (in litres)
- $H$  : Static height of the installation (in m)
- $P_{s\text{oup}}$  : Opening pressure of the valve (in bar)
- $e$  : Expansion coefficient (depending on the Delta T max of the installation, in %)

Tmax (°C)	e (%)	Tmax (°C)	e (%)
10	0.01	60	1.69
20	0.16	70	2.26
30	0.42	80	2.88
40	0.77	90	3.57
50	1.19	100	4.32

### Formulas:

$$V_e = V_A \times e \text{ (expansion volume in liters)}$$

$$V_v = 0.5\% \times V_A \text{ (stock volume in liters)}$$

$$V_N = (V_e + V_v) \times [(0.9 P_{s\text{oup}} + 1) / (0.9 P_{s\text{oup}} - (H/10) - 0.3)] \text{ (expansion vessel nominal volume)}$$

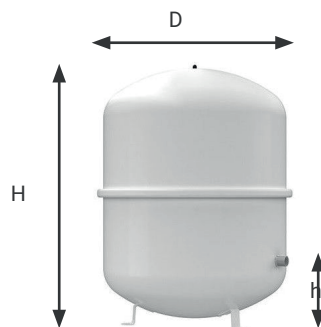
The bladder pressure must be adjusted before the system is put into operation. This pressure can be calculated using the following formula:

$$P_i = H/10 + 0.3 + \Delta_p$$

with  $H$  : static height of the installation (in m)

$\Delta_p$  : differential pressure generated by a pump = 0 if the vessel is placed on the suction side.

## DIMENSIONS



Code item	Nominal volume VN (liters)	Diameter D (mm)	Height H (mm)	Tapping height h (mm)	Tapping size	Max. pressure (bar)	Preloaded pressure (bar)
104.184	80	480	565	166	R1	6	1,5
104.185	100	480	670	166	R1	6	1,5
104.186	140	480	912	175	R1	6	1,5
104.187	200	634	758	205	R1	6	1,5
104.188	250	634	888	205	R1	6	1,5
104.189	300	634	1.092	235	R1	6	1,5
104.190	400	740	1.102	245	R1	6	1,5
104.191	500	740	1.312	245	R1	6	1,5
104.192	600	740	1.531	245	R1	6	1,5
104.193	800	740	1.996	245	R1	6	1,5
104.194	1000	740	2.406	245	R1	6	1,5