Hy-Pro Installation & Operations Guide

Installation & Maintenance Guide

Operation

The HY-PRO range of Expansion Vessels is specifically designed for Unvented Potable Systems to deal with increased water volume resulting from heat expansion.

The purpose of these vessels is to accommodate the increased liquid volume which occurs during system heating in an Unvented Circuit. A pressurised membrane allows ingress/egress of the liquid only during periods of heating / cooling.

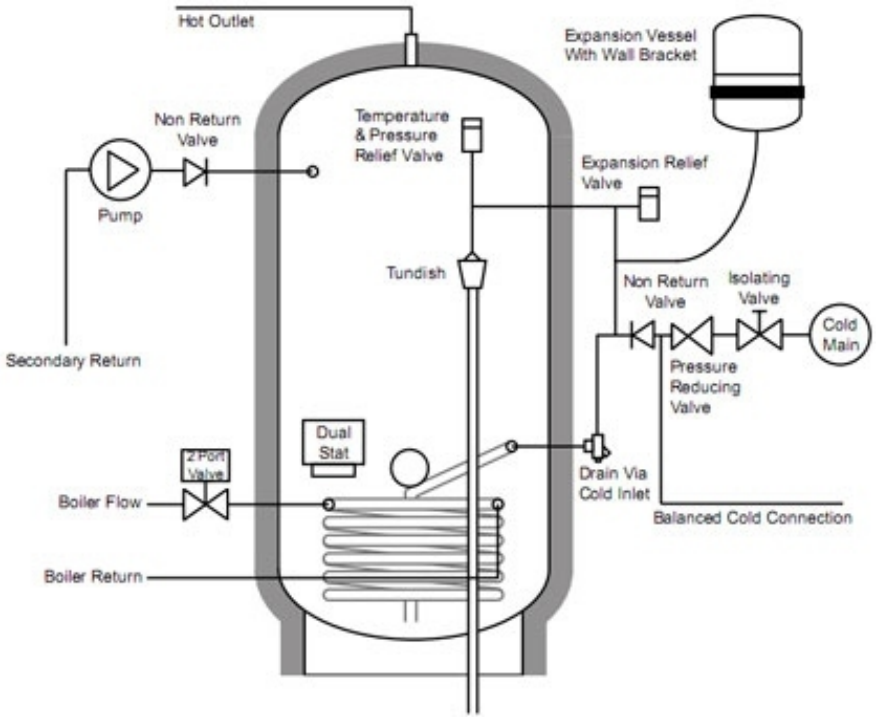
The correct size of vessel must be considered prior to installation and installed by appropriately trained engineers.

Installation Siting

The Expansion Vessel may be fitted to a very wide range of systems, different sources of heat are applied to Unvented Hot Water Systems, and as long as the temperature is controlled within normal limits, the HY-PRO will be compatible in it's application.

Installations where the heat source is augmented by Solid Fuel, Solar Thermal or other heat sources with potentially uncontrolled input temperatures are not compatible with these vessels and an alternative model should be specified.

The physical siting of the vessel should always be in accordance with the Cylinder manufacturers instructions as a variety of acceptable siting options is available.



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Sizing

The appropriate sizing of an expansion vessel must be undertaken by qualified or appropriately trained engineers.

$$V = \frac{e \times C}{1 - P_i/P_f}$$

V = Expansion Vessel Size

e = Expansion Co-efficient corresponding to the difference between the cold water system temperature and the maximum working pressure.

In standard plants:-

e = 0.02244

C = Total Water Capacity of the system in Litres

P_i = Initial charge pressure (Absolute) - This should equal the value of the static system pressure minus 0.2 Bar.

P_f = Maximum operating pressure (Absolute) of the Safety Relief Valve, taking into account any differences in height between the vessel and the safety relief valve.

Temp	e Value
0	0.00013
10	0.00025
20	0.00174
30	0.00426
40	0.00782
50	0.01207
55	0.01450
60	0.01704
65	0.01980
70	0.02269
75	0.02580
80	0.02899
85	0.03240
90	0.03590
95	0.03960
100	0.04343

Example

C = 300 Litres
P_i = 3.3 Bar (4.5 Bar atmospheric)
P_f = 6 Bar (7 Bar Atmospheric)

$$V = \frac{0.02244 \times 300}{1 - (4.3 / 7)}$$

V = 18.7

Nearest vessel size with this capacity = 24 Litres

Maintenance

The vessel requires inspection at least once a year (or as and when a drop in performance is noted from the system). The vessel must be visibly inspected for pinholes in the metal body of the vessel and the air pressure must be checked against the required pre-charge. Some pressure loss is to be expected and should be rectified to within 20% accuracy but a significant drop in air pressure may signify that the vessel is nearing the end of it's life span and may require membrane replacement. Some provision should be made within a wider piece of equipment for access and inspection.

The air pressure may only be inspected when the vessel is either detached completely from the system or when the system itself is de-pressurised to atmospheric pressure.

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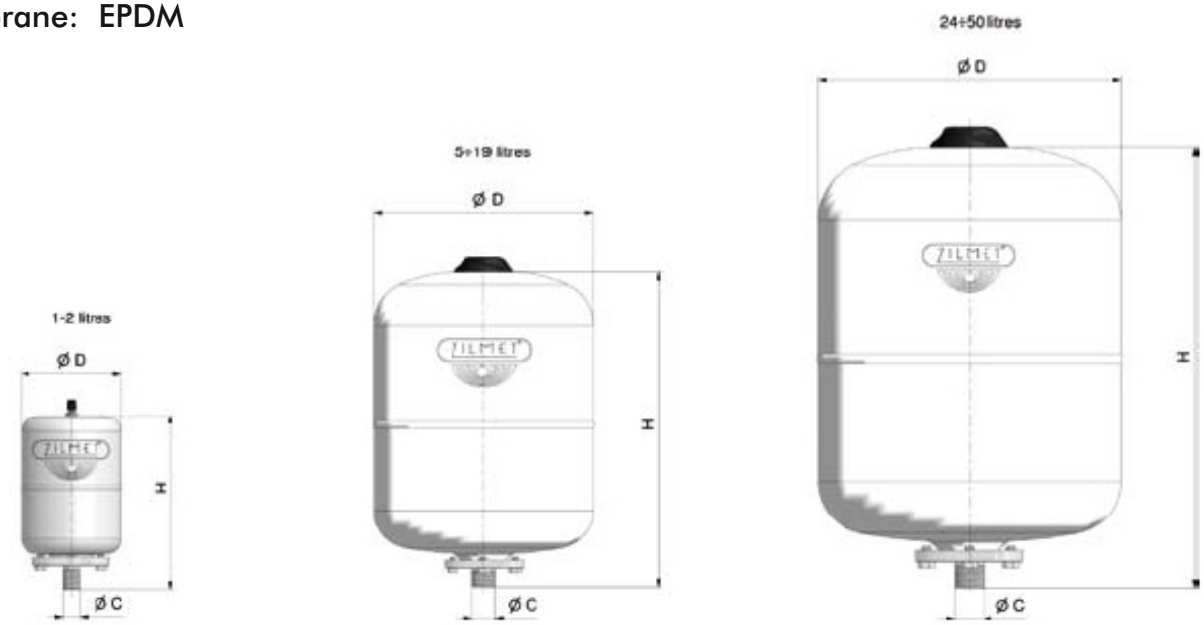
Materials

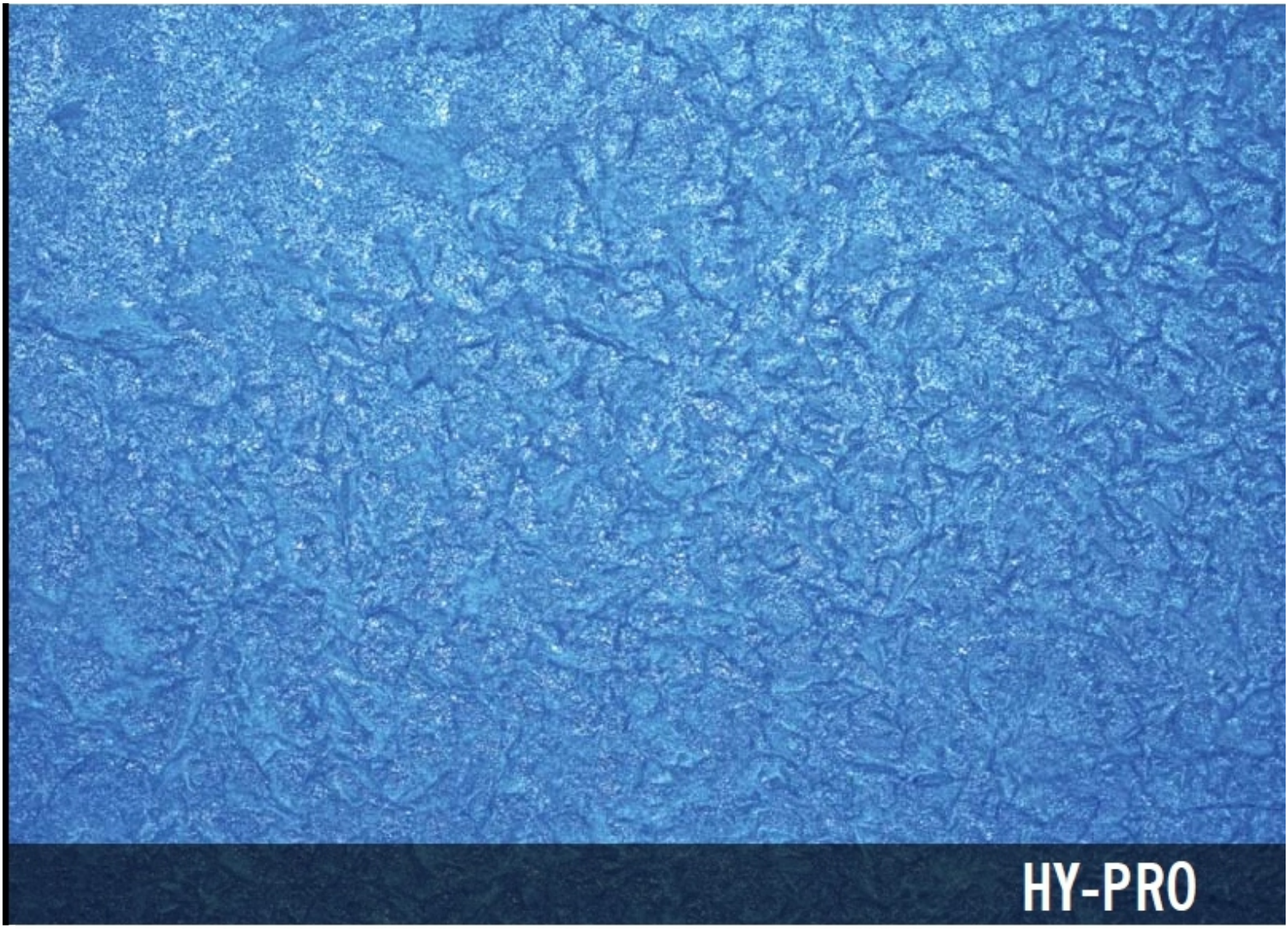
Shell: Carbon Steel
Flange: Galvanised /plastic
Membrane: EPDM



Code	Capacity	Diameter	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
11H0000200	2	125	214	10	1.5 - 3	1/2"G
11H0000803	8	200	322	10	1.5 - 3	3/4"G
11H0001202	12	270	295	10	1.5 - 3	3/4"G
11H0001902	19	270	390	10	1.5 - 3	3/4"G
11H0002402	24	270	470	10	1.5 - 3	3/4"G

Available in White only.

Notes



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