



Solar-Plus Installation & Operations Guide



Installation & Maintenance Guide

Operation

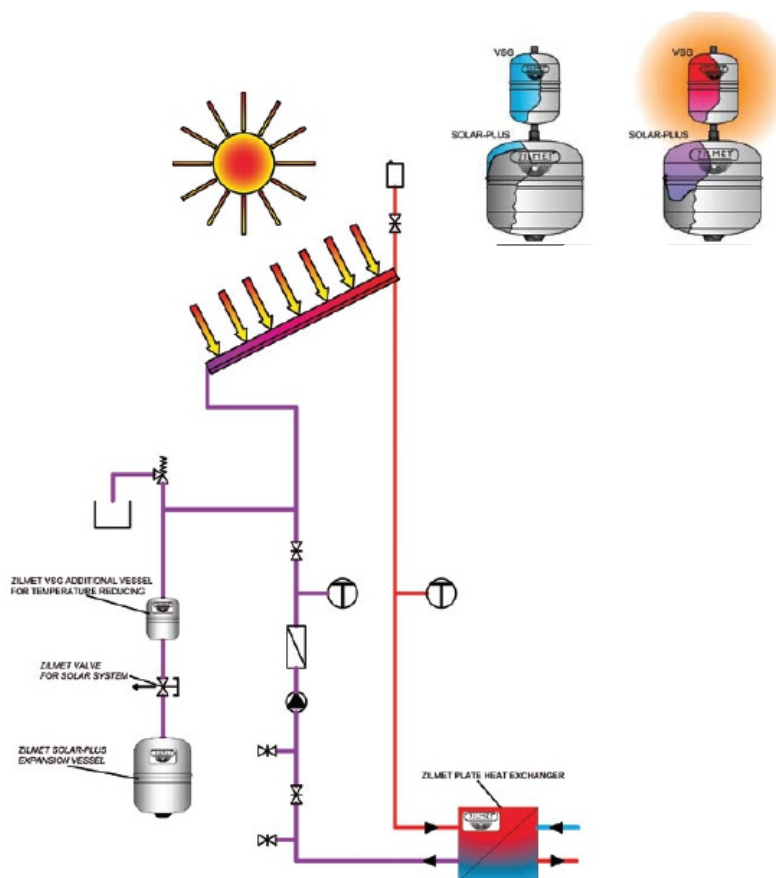
The SOLAR PLUS range of Expansion Vessels is specifically designed for Unvented Heating Systems to deal with increased water volume resulting from heat expansion.

The purpose of these vessels is to accommodate the increased liquid volume which occurs during system heating in an Unvented Circuit augmented by Solar Thermal Heating. 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

Different sources of heat are applied to Unvented Heating Systems, and as long as the temperature is controlled within normal limits, the SOLAR PLUS will be compatible in it's application. It may be necessary to fit an Intermediate VSG Vessel between the Solar Thermal Circuit and the SOLAR PLUS vessel in order to lower the temperature of the liquid in direct contact with the SOLAR PLUS membrane.





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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 Solar Thermal Applications we assume a "blanket value" of 0.09 (or 9%). We recognise and accept that other sizing methods exist for the sizing of Solar Thermal Expansion Vessels but find this is the simplest.

In standard plants:-

$$e = 0.09$$

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.

Example

C = 300 Litres

P_i = 3.3 Bar (4.5 Bar atmospheric)

P_f = 6 Bar (7 Bar Atmospheric)

$$V = \frac{0.09 \times 300}{1 - (4.3 / 7)}$$

V = 70 Litres (Nearest Equivalent Vessel Size 80 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 its life span and may require replacement. Some provision should be made within the installation area 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

Membrane: ZILAN Solar Membrane

Max Pressure: 10 Bar

Colour: 12 - 50 Litre White

80 105 Litre Red or White

150 - 600 Litre Red

Operating Temperature: -10°C - 110°C

Code	Capacity	Diameter	Height	Connection Height "E"	Pmax	Pre charge	Connection
11A2001210	12	270	264	-	10	2.5	3/4"G
11A2001802	18	270	349	-	10	2.5	3/4"G
11A2001811	18	270	349	-	10	2.5	3/4"G
11A2002503	24	270	392	-	10	2.5	3/4"G
11A2002506	24	270	392	-	10	2.5	3/4"G
11A2003304	35	300	367	125	10	2.5	3/4"G
11A2005002	50	380	505	155	10	2.5	3/4" G
11A2008001	80	450	608	150	10	2.5	1" G
11A2010500	105	500	665	165	10	2.5	1" G
11A2015000	150	500	897	216	10	2.5	1" G
11A2020000	200	600	812	225	10	2.5	1" G
11A2025000	250	630	957	245	10	2.5	1" G
11A2030000	300	630	1105	245	10	2.5	1" G
11A2040000	400	630	1450	245	10	2.5	1" G
11A2050000	500	750	1340	290	10	2.5	1" G
11A2060000	600	750	1555	290	10	2.5	1" G



Notes

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SOLARPLUS



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