ZILMET®
DEI FRATELLI BENETTOLO

# SOLAR PLUS SAFE
# Installation & Operations Guide

# Installation & Maintenance Guide

## Operation

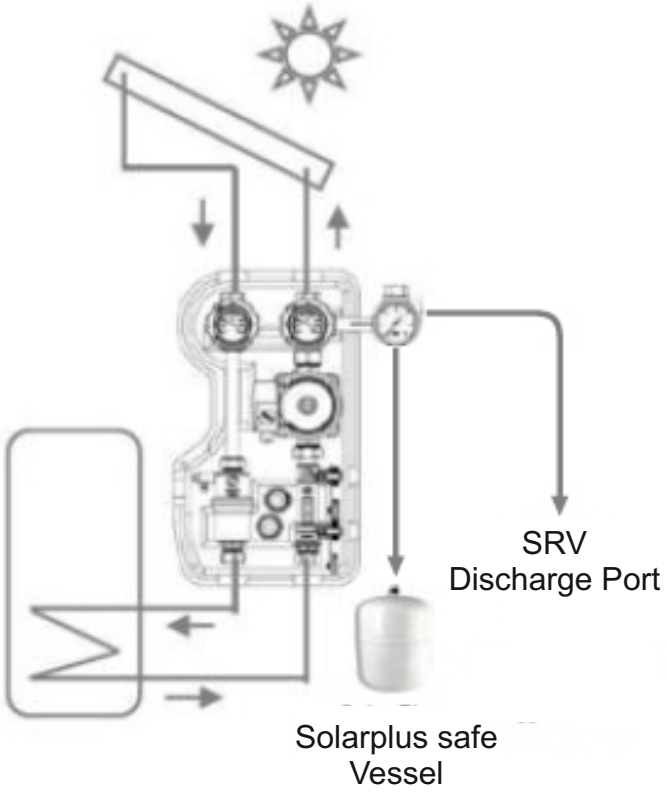
The correct size of vessel must be considered prior to installation and installed by appropriately trained engineers.

Long periods of high temperature fluid in the expansion vessel has the effect of shortening its useful life - ultimately causing premature failure of the diaphragm. To avoid this situation, an additional “flow-through” expansion vessel is recommended when the fluid volume between the collector and the expansion vessel is approx 50% or less than the 'wet' side volume (between the expanded diaphragm and the vessel inlet). This approach is covered by European directive VDI 6002.

The SolarSafe range provides a new and comprehensive solution for this type of installation - and especially where space is at a premium. The SolarSafe combines a primary high specification Solar Plus solar expansion vessel with a VSG solar inline vessel, reducing the amount of space required by 40% and the time taken for fitting by 50%.

## Installation Siting

The physical siting of the vessel should always be in accordance with best practise, although typically most pump stations feature a system connection port for nearby mounting of the vessel.



# Installation & Maintenance Guide

## Sizing

The appropriate sizing of an expansion vessel must be undertaken by qualified or appropriately trained engineers. The method is exactly the same as for sizing a normal Solar Expansion Vessel

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

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

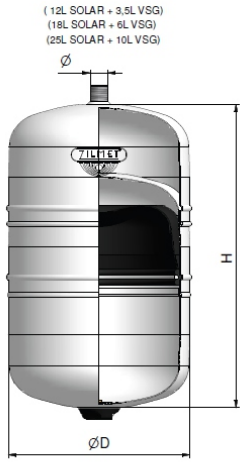
The vessel requires inspection at least once a year (or as and when a drop in performance is noted from the system). The vessel must be visibly inspected for pinholes in the metal body of the vessel and the air pressure must be checked against the required pre-charge. Some pressure loss is to be expected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

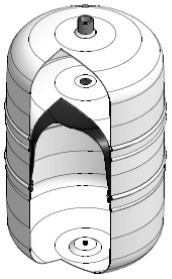
The air pressure may only be inspected when the vessel is either detached completely from the system or when the system itself is de-pressurised to atmospheric pressure.

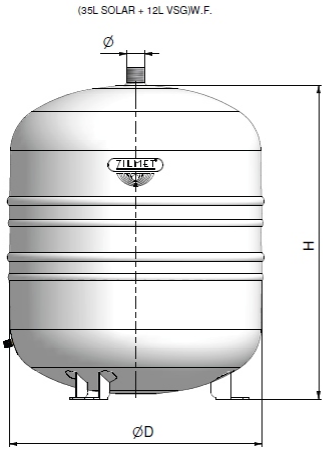
# Installation & Maintenance Guide

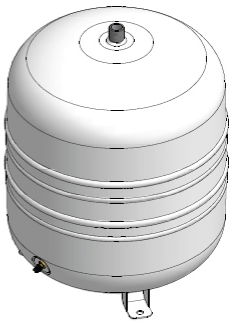
## Materials

Shell: Carbon Steel
Connection: Carbon Steel
Membrane: EPDM





| Code | Capacity | Diameter | Height | Pmax | Pre charge | Connection |
|---|---|---|---|---|---|---|
| | (Litres) | (mm) | (mm) | (Bar) | (Bar) | (BSP) |
| 11A2001822 | 18+6 | 270 | 453 | 10 | 2.5 | 3/4"G |
| 11A2002522 | 25+10 | 270 | 526 | 10 | 2.5 | 3/4"G |
| 11A2003319 | 35+12 | 300 | 480 | 10 | 2.5 | 3/4"G |
| 11A2005010 | 50+15 | by request | by request | 10 | 2.5 | 3/4"G |

Available in White only.

08/2012

# Notes


ZILMET®

Zilmet UK Ltd. Airfield Industrial Estate, Hixon,
Staffordshire, ST180PF
t: 01889272185, F: 01889272191
web: www.zilmet.co.uk, E Mail: sales@zilmet.co.uk

E & OE