

Installation and Maintenance Instructions

Solar Expansion Vessels



CE

EN
v.2.2

Regulus

1. General Information

Expansion vessels with either fixed or exchangeable membrane made by VAREM S.p.a. meet the requirements set by the Directive of the European Parliament and Council 97/23/EC relating to pressure equipment (further "PED"). This instruction manual conforms to Art. 3.4. of Annex 1 of the a.m. Directive and accompanies each product.

2. Description and Use of the Product

VAREM R8 Pressure expansion vessels are safety devices designed to compensate for changes in fluid volume caused by temperature fluctuations. Working range of expansion vessels lies between -10 °C and +130 °C.

Expansion vessels shall not be used for other purposes than specified.

Expansion vessels consist of closed metal vessels made of high-quality steel welded according to valid technical standards.

Inside they are fitted with a bag-shaped nitrile rubber membrane resistant to propylene-glycols, fixed directly to the flange, which makes sure that no contact between the fluid and metal parts inside the vessel is possible. In order to maintain its elasticity, non-permeability and non-toxicity, the membrane is mounted inside its vessel only when the outer surface is completely finished. These bag-shaped membranes are precharged in production to 2.5 bar. A tyre valve located under a cover enables to add pressure to the membrane if necessary.

All the types of expansion vessels shown in Tab. 1 are designed for a max. solar fluid pressure of 6 bar.

3. Technical Data

Technical data for each VAREM expansion vessel are shown on its label (see Fig. 1) located on the vessel itself. The data involve CE marking, the product type, serial number, production date, volume, max. working temperature, precharge (factory gas pressure) and max. working pressure.

This label shall be neither removed nor changed. The product may be used exclusively respecting the technical data shown on the label, and the limits of these technical data shall not be exceeded under any circumstances.

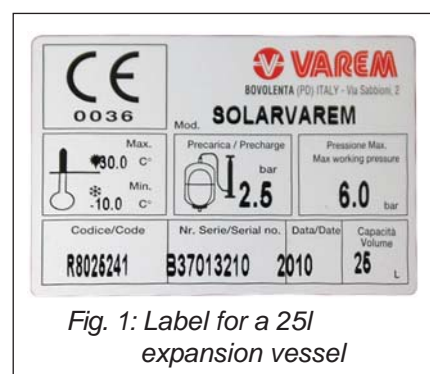




Fig. 1: Label for a 25l expansion vessel

3.1 Dimensions

	Model	Volume [l]	Diameter [mm]	Height [mm]	Connection size	Weight [kg]	Precharge [bar]	Max. working pressure [bar]
 IN LINE	R8 012 241	12	270	300	3/4 "	3,3	2,5	6
	R8 018 241	18	270	405	3/4 "	4,7	2,5	6
	R8 025 241	25	290	500	3/4 "	5,6	2,5	6
	R8 040 241	40	320	560	3/4 "	9	2,5	6
 LEGS	R8 060 286*	60	380	730	3/4 "	17	2,5	6
	R8 080 286*	80	450	735	3/4 "	20	2,5	6
	R8 100 386*	100	450	790	1 "	26	2,5	6
	R8 200 486*	200	550	1080	6/4 "	46	2,5	6
	R8 300 486*	300	630	1177	6/4 "	68	2,5	6

Tab. 2: Parameters of expansion vessels

*From 60l volume up, expansion tanks are fitted with replaceable membranes.

4. Installation

Prior to the installation, please make sure that the required volume of the expansion vessel has been calculated by an authorized designer!

VAREM pressure expansion vessels shall be properly sized and installed by an authorized person. If an expansion vessel is not sized properly, it may cause damage to life, health, property or environment. Before installing an expansion tank to a system, the precharge value shall be checked and adjusted to the value set by the designer, according to the solar system parameters. The vessel shall be connected to the return (cold) piping. The piping between a collector and expansion tank shall not contain a check valve or another shut-off valve not secured against unintentional closing. The vessel shall be installed in a position (membrane flooded) with inlet upwards, the wall-hung version shall be installed using a standard wall bracket with a service valve. A service valve shall be always installed between an expansion tank and pipes, so that the gas pressure inside the expansion tank can be checked without the need of bleeding the entire solar system.

VAREM pressure expansion vessels shall be checked by an authorized person at least once a year. The check shall focus esp. on the value of the filling pressure (see below – **Specification of expansion vessel annual checks**).

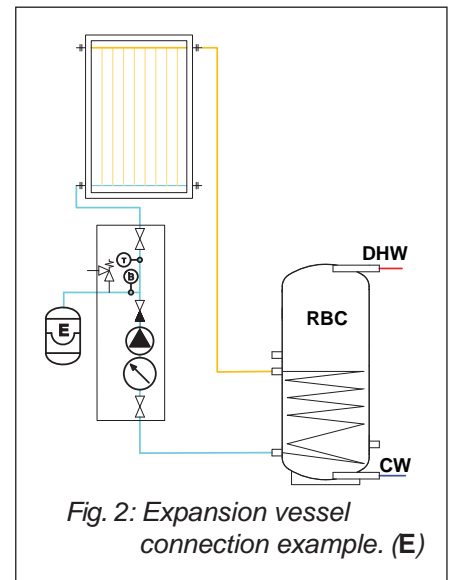


Fig. 2: Expansion vessel connection example. (E)

WARNING:

During the pressure check, the expansion vessel shall be completely free of liquid. If there is a pressure drop since the last check, the vessel shall be replenished with gas to the set value using the tyre valve.

5. Safety Measures

Failure to respect the following safety measures may cause a mortal injury, damage to property and destruction of the vessel. **The filling pressure shall not exceed the values shown on the vessel's label.**

Pressure expansion tanks shall not be drilled, welded or opened for whatsoever reason. It is forbidden to tamper with them during operation. The vessels shall not be operated under higher temperatures than shown on the label.

It is forbidden to use the vessels in contradiction with this Instruction manual. VAREM pressure expansion vessels are tested, checked and packed prior to dispatch.

Neither the manufacturer, nor the distributor bears any responsibility for damage caused by transport or undesired movement of the vessel if no adequate means were used to secure the integrity of the product and safety of the persons involved or passing by.

At the same time, they do not accept any responsibility for damage caused to persons, places or objects, caused by improper use, installation or working of the product or the connected system.

Manufacturer:

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Via del Santo, 207
35010 Limena (PD) ITALY
Tel.: +39 – 049 8840322
Fax: +39 – 049 8841399
E-mail: varem@verem.com
<http://www.varem.com>

Distributor:

REGULUS spol. s r.o.
Do Koutů 1897/3
143 00 Praha 4
Tel.: ++ 420 241 765 191
Fax: ++ 420 241 763 976
E-mail: sales@regulus.cz
<http://www.regulus.eu>

Specification of expansion vessel annual checks

(checks shall be done by an authorized person/company)

1. Check of the expansion vessel condition

Visual check of the vessel condition, filling gas pressure value, check of fluid pressure in the system and connection tightness.

Prior to the pressure check of the air compartment of the vessel, the pressure on the fluid side shall be released.

A similar procedure is used when an expansion tank shall be removed.

2. Cleaning and maintenance of the expansion vessel

Clean the outer surface using a damp cloth and a suitable detergent. Never use abrasive cleaners or solvents.

Annual check No. 1

Date:
Rubber stamp print and signature of the servicing person:

Annual check No. 2

Date:
Rubber stamp print and signature of the servicing person:

EC Declaration of Conformity

Manufacturer Identification:

VAREM S.p.A.
Via del Santo, 207
I-35010 Limena

Product Identification:

VAREM Expansion Vessels
Type: SOLARVAREM R8 (IN LINE, LEGS)

Description of the pressure equipment:

VAREM R8 Pressure expansion vessels are safety equipment designed to compensate for volume changes in solar thermal installations caused by temperature fluctuations.

Their working range is -10°C to +130°C. These expansion vessels consist of closed metal containers made of high-grade steel, welded in compliance with valid technical standards. Their bladders are factory pre-charged to 2.5 bar.

Conformity assessment procedure followed:

Module B+D/D1 for categories III. and IV.

TÜV SÜD Industrie Service GmbH EC Notified Body No. 0036 Westendstraße 199 D-80686 München	TÜV ITALIA S.r.L. EC Notified Body No. 0948 Via Giosue Carducci, 125 - Edificio 23 I-20099 Sesto San Giovanni
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Certificates:

Certificate No. Z-IS-DDK-MUC-10-07-408247-002 dtd. 14.07.2012

Certificate No. PED-0948-QSD/D1-347-11 dtd. 21.02.2012

Reference to the harmonized standards applied:

Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (PED)

Reference to the technical standards applied:

EN 13831:2007; AD-2000; TRD 702

Date and place of issue, name of the authorized signatory:

Limena 21.02.2012



Davide Rampazzo

WARRANTY CERTIFICATE

VAREM SOLAR EXPANSION VESSEL

Model:

Serial number:

Salesman: Date of purchase:

WARRANTY CONDITIONS

1. The Seller grants the Buyer a Guarantee period of 24 months from commissioning.
2. The product shall be installed and commissioned by a competent company or a person trained by the manufacturer.
3. When claiming warranty, this Warranty Certificate must be submitted together with the purchase receipt.
4. The warranty is valid only when the technical conditions set by the Manufacturer, installation manual and instructions in the documentation and on the product itself are maintained.
5. The warranty does not cover defects caused by external conditions or improper working conditions, defects caused by usual wear and tear, further when the product is not used in compliance with its purpose and when the defect was caused by mechanical damage to the product, improper handling, tampering by a third person, improper installation, improper stocking, natural disaster etc.

COMMISSIONING

Company:

Date:

Rubber stamp print and signature of the technician:

09/2012



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