

General Instructions for the User

Zilmet Tanks

Description and use

ZILMET pressurized expansion vessels with fixed and interchangeable membranes are manufactured according to the safety essential requirements of 97/23/EC pressure equipment directive. These instructions for use have been prepared in accordance with the purpose of article 3.4 of Annex 1 of 97/23/EC Directive and are enclosed with the product when placed on the market.

The expansion vessels for which these instructions refer to have been designed and manufactured for the following purposes (please, see the following table) :

- ▲ The fixed membrane expansion vessels (OEM-pro) allow the expansion of not potable water and the pressure control in closed hydraulic heating systems, in refrigerating systems and in solar plants; these vessels can not be used for the production of sanitary/ potable water.
- ▲ The fixed membrane expansion vessels (Solar-pro, Hydro-pro, Water-pro, Inox-pro) allow water expansion and storage and pressure control in systems for the production of sanitary water, or potable water storage and lifting in pump systems; moreover, they can be used also in closed hydraulic heating systems.
- ▲ The interchangeable membrane pressure tanks (Ultra-pro, Inox-pro) allow storage and lifting of sanitary / potable water in pump systems; moreover, they can be used also in closed hydraulic heating systems.

All the vessels incorporate a flexible synthetic diaphragm to keep the system water or fluid from contacting the sealed in air cushion in the tank. In (Solar-pro, Hydro-pro, Water-pro) the internal surface in contact with water has a special epoxy coating suitable for use with potable water. Also the diaphragms of Models (Ultra-pro, Inox-pro, Solar-pro, Hydro-pro, Water-pro) are suitable for portable water applications.

Technical Characteristics

The technical characteristics of the expansion vessel are written on the identifying label applied to each product; among them, the most important information are : product identification, vessel volume, maximum working pressure and temperature (please, see the following table), pre-charge pressure (factory set or user set), production year, serial number. The label is firmly applied to the vessel and must not be removed or tampered or changed.

Model	Capacity (litres)-Max. Working Pressure kg/cm ²			Max. Working Temp		Use
				Diaphragm	System	
Cal-Pro	4-8 litres-5 kg/cm ²	12-50 litres-4 kg/cm ²	80-1000 litres-6 kg/cm ²	70°C	99°C	H-R
Oem-Pro	8-12 litres-10 kg/cm ²	18-25 litres-8 kg/cm ²	35-50 litres-6 kg/cm ²	100°C	110°C	S
	Special: All sizes -10 kg/cm ²			70°C	99°C	S
	Special: All sizes -10 kg/cm ²			70°C	99°C	SW
	7-18 litres(Dr.531)-3 kg/cm ²			70°C	99°C	H-R
Hydro-Pro	12-24 litres(Dr.P636/637)-3 kg/cm ²			70°C	99°C	H-R
	10/16 kg/cm ² according to models			70°C	99°C	SW-P-H
Inox-Pro	0.16 litres-15 kg/cm ²	0.5-18 litres-15 kg/cm ²		70°C	99°C	SW-P-H
Solar-Pro	10/16 kg/cm ² according to models			100°C	120°C	SW-P-H
Ultra-Pro	8-500 litres-10 kg/cm ²	750 litres-8/10 kg/cm ²	1000 litres-6/8 kg/cm ²	70°C	99°C	P-H
Inox-Pro	24-100 litres-10 kg/cm ²			70°C	99°C	P-H
Ultra-Pro 16	Special: All Sizes-16 kg/cm ²			70°C	99°C	P-H

KEY "Use"	
H	Heating
R	Refrigeration
S	Solar
SW	Sanitary/Potable water
P	Water Lifting/Pumps
<small>NOTE For updated technical characteristics, Please refer to the label on the vessel</small>	

Any use at sustained or instantaneous pressure and temperatures exceeding the prescribed limits is unsafe and can cause reduced vessel life, property damage, serious scalding and/or bodily injuries or result in death. The vessel may be utilized in systems having a maximum working temperature as in the table, providing all the means that ensure the temperature on the vessel is 70°C at maximum (Installation in the coldest part of the system, thermostatic control and so on). About the minimum temperature, the vessels may work, using proper antifreeze as ethylene glycol (with a percentage upto 50%), at a temperature not lower than -10°C. Due to the toxicity of such substances, the vessels may not be used for the production and storage of sanitary/ potable water. Moreover, all the proper means and precautions for avoiding dispersion in the environment and possible poisoning must be adopted. Please refer to local safety, occupational, health and environmental codes and standards.

⚠ Before the installation, it is mandatory to calculate & choose the correct type of vessel according to the system design, specification, instructions and operation requirements. Only qualified and licensed technicians may perform the calculation & the choice of the vessel according to local codes & standards. Only qualified and licensed personnel may install, operate & service this equipment in accordance with system design, specifications and instructions, operation requirements & local thermal, plumbing & electrical codes & standards. Moreover, all safety, occupational, health, environmental & whatever other applicable codes & standards must be followed. Please pass these instructions on the personnel in charge for installation, operation and service. All instructions must be carefully read before installing this expansion vessel. After the Installation, these instructions must be kept for future reference.

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Warning



- ▲ The system in which the expansion vessel is installed must have a pressure-limiting device (pressure relief valve).
- ▲ To Prevent Corrosion due to stray and galvanic currents, the system must be grounded properly according to local electrical and plumbing codes and standards and, if needed, the vessel may be provided with dielectric joints.
- ▲ Other possible causes for pin holing and corrosion phenomena have to be considered, for instance, water characteristics (included its temperature), presence of oxygen, melted salts, the use in the same system of devices made of different materials (e.g. carbon steel and stainless steel). All of these factors have to be considered by the manufacturer of the complete system and by the personnel in charge for the installation and maintenance, taking into account also all the local plumbing, electrical and safety standards and regulations.
- ▲ Do not use this vessel with chemicals, solvents, petroleum products, acids or any fluids that may be detrimental to the vessel itself.
- ▲ Do not use this vessel with water containing sand, clay or other solid substances that may damage the vessel (particularly the internal coating) and/or clog its connection.
- ▲ Proper means must be provided for preventing the air from accumulating, during the working of the plant, in the chamber of the vessel (Water Side) connected to the system.
- ▲ The vessel and the connected system must be protected against below freezing temperatures, for instance using proper antifreeze or installing the vessel in suitable areas.
- ▲ Do not use this expansion tank for any other purpose that it has been intended for.
- ▲ The expansion vessel, piping and connections may, in time, leak. Select a location to install the expansion vessel where a water leak will not damage the surrounding area and will not cause scalding injuries. **The manufacturer shall not be responsible for any possible damage to people and/or things and properties in connection with this expansion vessel.**
- ▲ The manufacturer of this vessel shall not be responsible for any possible damage to things and property and/or injuries to persons due to improper transport and/or handling of the tank itself.
- ▲ As in all plumbing products, bacteria can grow in this expansion vessel, especially during times of non use. The local plumbing official and the competent authorities must be consulted regarding any step the personnel in charge for service and maintenance takes to safety disinfect the plumbing system.
- ▲ It is forbidden to drill, open, heat with flames or tamper with the vessel in any way.
- ▲ Attention, for the pressure tanks which have the upper connection, please note this is opened to allow for the installation of a three way connection on which a manometer and a pressure relief valve may be installed.
- ▲ Should it be necessary to change the factory pre-charge, only specialised technical personnel should calculate or determine the new pre-charge. The calculation must ensure that, for all foreseeable working conditions, the specified limits (Particularly the maximum working pressure) are never exceeded and local codes and standards are observed. In any case it is advisable the pre charge does not exceed 50% of the maximum working pressure.

General Instructions For Installation

- ▲ Make sure all the suitable and required lifting and transport means are used and all the precautions are adopted when positioning and installing this expansion tank.
 - ▲ Do not install this vessel outdoors, but only in closed and well aerated areas, far from heat sources, electric generators and any other source that may be detrimental to the vessel itself.
 - ▲ Depending on the model, the weight of the expansion vessel filled with water is supported by the system piping. Therefore, it is important that, Where appropriate, the piping has suitable bracing (strapping, hanger, brackets). Moreover, if the vessel has not a support base and is installed horizontally, it must be properly supported.
 - ▲ Shut off the electric power and the water supply to the system. Make sure the system is cooled and not pressurised for avoiding scalding and/or serious bodily injuries
 - ▲ Before the installation, remove the plastic cap on the air valve of the vessel and check for the correct factory set pre-charge (with a tolerance of +20%) with a controlled manometer. Adjust the tank pre-charge to the required value; replace and tighten the plastic cap on the air valve.
 - ▲ Install the vessel at the point specified by the system design, specifications and instructions, preferably in vertical position and with the connection in downward direction and in the following positions:
 - (i) In systems for the production of sanitary hot water, install the vessel at a point between the water heater and the backflow preventer, check valve or pressure reducing valve.
 - (ii) In pump systems for storage and lifting of sanitary / potable water, after the backflow preventer at the exit of the pump.
 - ▲ After the installation of the vessel and the re-start of the plant, check it for leakage and remove all air from the system. Check to make sure that the system pressure and temperature are within a safe operating range; if necessary, remove system water to bring the system pressure within safe limits and/or adjust the temperature control up to the desired ending temperature.
- Please, note the above described installation is just a reference procedure and for this reason must be used taking into account the specifications and instructions of the plant on which the vessel is installed, the system design, the operation requirements and the local codes and standards.

Maintenance

Please, note that only qualified and licensed personnel may perform service and maintenance.

- ▲ To perform maintenance and control, make sure the system is off, cooled and not pressurised, all the electric parts are not energised and the vessel is completely empty.
- ▲ At least once every six months the expansion vessel has to be verified, checking that the pre-charge is within the value indicated on the label (Factory pre-charge or customer set pre-charge) with a tolerance of + 20%, if not otherwise stated.
- ▲ For a longer life of the expansion tank external protection, a periodical external cleaning shall be performed, only using water and soap.
- ▲ This expansion vessel includes components which undergo stresses; in the case such components should deteriorate in time, the vessel must be replaced.

Note; for ensuring the proper functioning of the system, the expansion vessel must be changed with a new one in case of excessive deterioration and anyway, at the latest 5 years from the installation date.

Flowmatics shall not be responsible for any damage to things, property and/or injuries to persons due to non observing all the above instructions and, particularly, to improper calculation and choice, installation, operation and maintenance of the itself and/or the connected system.