TRADE-TEC

Potable Water Expansion Vessels

TRPVES

Installation and Maintenance Instructions

Intatec Ltd
Airfield Industrial Estate
Hixon
Staffordshire
ST18 0PF

Tel: **01889 272 180**
Fax: **01889 272 181**
email: **sales@intatec.co.uk**
web: **www.intatec.co.uk**

In this procedure document we have endeavoured to make the information as accurate as possible.
We cannot accept any responsibility should it be found that in any respect the information is inaccurate or incomplete or becomes so as a result of further developments or otherwise.

TRADE-TEC

Introduction

This installation guide has been produced for the TradeTec expansion vessels for potable water. These instructions cover the installation, operation and maintenance. Please read the enclosed instructions before commencing the installation of this product, please note;

We recommend that the installation of any product is carried out by an approved installer.

The installation must be carried out strictly in accordance with the Water Supply (Water Fitting) Regulations 1999 and any local authority regulations.

If in doubt we recommend that you contact WRAS - Water Regulations Advisory Scheme on Tel: 0333 207 9030, your local water authority - details available on the WRAS website or the Chartered Institute of Plumbing and Heating Engineers on Tel: 01708 472 791.

All products **MUST** be re-commissioned to suit site conditions to ensure optimum performance levels of the product are obtained.

It is recommended, especially in hard water areas, that a water softener such as the ActivFlo or ActivFlo lite be fitted to reduce the risk of calcium deposits forming.

Products

TradeTec 8 litre potable expansion vessel c/w wall bracket	TRPVES08
TradeTec 12 litre potable expansion vessel c/w wall bracket	TRPVES12
TradeTec 18 litre potable expansion vessel c/w wall bracket	TRPVES18
TradeTec 24 litre potable expansion vessel c/w wall bracket	TRPVES24
TradeTec 35 litre potable expansion vessel	TRPVES35
TradeTec 50 litre potable expansion vessel floor standing	TRPVES50
TradeTec 80 litre potable expansion vessel floor standing	TRPVES80
TradeTec 100 litre potable expansion vessel floor standing	TRPVES100

Check Content

Before commencing remove all components from packaging and check each component with the contents list.

Ensure all parts are present, before discarding any packaging. If any parts are missing, do not attempt to install your TradeTec expansion vessel until the missing parts have been obtained.

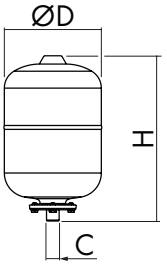
Technical Specification

Max. working pressure:		8 bar
Max. working temperature:		99˚C
Max. membrane temperature:		70˚C
Pre-charge pressure:	8 to 24 litre	2.5 bar
	35 to 100 litre	1.5 bar

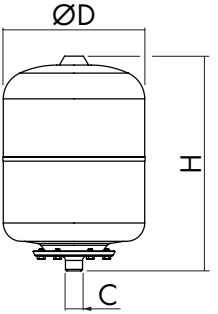
TRADE-TEC

Dimensions

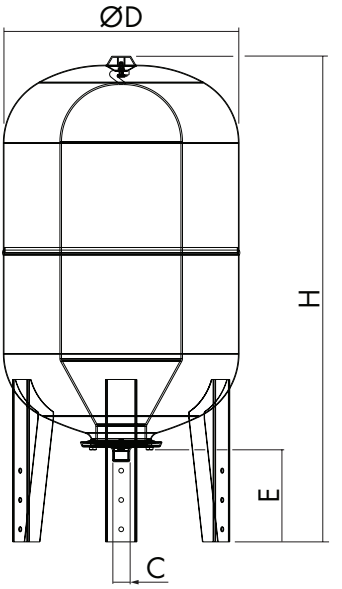
8 litre



12 - 35 litre



50 - 100 litre



Code	H	ØD	E	C
TRPVES08	342	199		G¾
TRPVES12	310	270		G¾
TRPVES18	411	270		G1
TRPVES24	485	270		G1
TRPVES35	420	380		G1
TRPVES50	788	380	180	G1
TRPVES80	848	450	153	G1
TRPVES100	929	450	153	G1

Operation Overview

The TradeTec range of expansion vessels is specifically designed for unvented potable water systems to deal with increased water volume resulting from heat expansion, resolving issues of "water hammer" or reducing number of pump operations.

The 100 litres vessel has a second water connection point at the top of the vessel which can be used as an accessory port.

Operation overview for Heat Expansion Purposes

The purpose of these vessels is to accommodate the increased liquid volume which occurs during system heating in an unvented system.

A pressurised membrane allows inflow or outflow of liquid during periods of heating / cooling thus providing space for the expanded fluid volume and prevent system pressure increase.

The contraction of system water volume during cooling periods is enabled by means of a compressed air cushion which returns this temporarily expanded volume to the system.

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

Careful consideration of the pre-charge pressure must also be made as this is dependant on the application of the vessel. The large size range available accommodates the larger systems and is also compatible with chilled water systems.

Installation

The expansion vessel may be fitted on a very wide range of systems with different sources of heat.

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

The physical sighting and commissioning of the vessel should always be in accordance with the instructions relating to any associated equipment as each application may have a number of acceptable sighting options or locations.

Make sure the system is cooled and not pressurised for avoiding scalding and/or serious bodily injuries during installation.

Expansion vessels should always be installed in a vertical orientation with the water connection at the bottom.

The expansion vessel should be installed in a way that allows future access, and ideally be in the coolest available part of the system to assist with longevity of the membrane.

For wall mounting the 8 to 24 litre vessels use the bracket and strap provided, the bracket must be fixed to a structural sound wall or fabricated fitting.

The weight of the expansion vessel filled with water should be supported by the wall bracket. It is important where appropriate that suitable support is given to the adjacent pipework (strapping, hanger, brackets).

The floor standing vessels 35 to 100 litre must only be located on a floor capable of withstand the weight of the vessel when full of water and adjacent pipework.

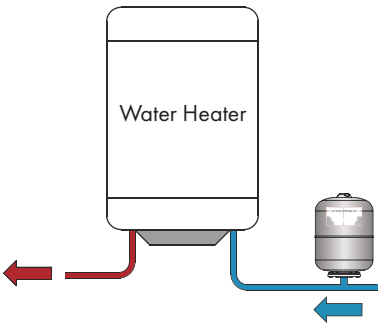
Before the installation, remove the plastic cap on the air valve of the expansion vessel and check for the correct factory set pre-charge (with a tolerance of ± 20%) with a pressure gauge.

Adjust the tank pre-charge to the required value; replace and tighten the plastic cap on the air valve.

After installation and start-up of the system, check 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.

Do not over-tighten the threaded connection.



Sizing

The appropriate sizing of an expansion vessel must be undertaken by a qualified engineer.

Temperature	10°C	20°C	30°C	40°C	50°C	55°C	60°C	65°C
e Value	0.00025	0.00174	0.00426	0.00782	0.01207	0.01450	0.01704	0.01980
Temperature	70°C	75°C	80°C	85°C	90°C	95°C	100°C	
e Value	0.02269	0.2580	0.02899	0.03240	0.03590	0.03960	0.04343	

$$V = \frac{e \times C}{1 - Pi/Pf}$$

V = expansion vessel size

e = expansion co-effiecient corresponding to the difference between the cold water system temperature and the maximum working pressure

Typical values:

e = 0.02244 (Tmax 70°C - Tmin = 10°C)

C = total water capacity of system in litres

Pi = initial charge pressure - absolute

this pressure should equal the value of the static system pressure minus 0.2 bar

Pf = maximum operating pressure - absolute of the safety relief valve, taking into account any difference in height between the vessel and the safety relief valve.

Example

C = 300 litres

Pi = 3.3 barg - 4.5 bar absolute

Pf = 6 barg - 7.0 bar absolute

$$V = \frac{0.02244 \times 300}{1 - 4.3/7.0}$$

V = 17.4 litre

Nearest size with this capacity 18 litres

Maintenance

Please note that only qualified 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 expansion vessel is completely empty.

At least once every year 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.

The vessel must be visibly inspected for pinholes in the metal body and for a longer life of the expansion tank's external protection, a periodical external cleaning shall be performed using only water and soap.

If a significant drop in the pre-charge pressure may signify that the vessel's membrane is nearing the end of its life and may require replacing.

Intatec Ltd shall not be responsible for any damage to property and/or injuries to personnel due to not observing all the above instructions and particularly to improper calculations and selection, installation, operation and maintenance of the tank itself and/or the connected system.

TRADE-TEC

Please leave this Manual for the User

To activate your product warranty please visit

www.intatec.co.uk

and click on Product Registration

Intatec Ltd
Airfield Industrial Estate
Hixon
Staffordshire
ST18 0PF

Tel: **01889 272 180**
Fax: **01889 272 181**
email: **sales@intatec.co.uk**
web: **www.intatec.co.uk**

E & O.E

10-04-24