robokit extra

sealed system kit

Application Guide

altecnic

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Introduction

Sealed Systems are the most commonly used form of central heating used in Europe, and most of the other parts of the world.

Ease of installation makes it particularly attractive to the installer, alleviating the need to fit, feed and vent tanks in a central heating system.

A closed or sealed heating system must include an expansion vessel and other ancillary components (sealed system kit) to accommodate expansion of the water.

Principle of Operation

In a closed heating system water cannot be compressed so any increase in volume, created by an increase in temperature, has to be accommodated by an expansion vessel.

When water is cold, the pre-charge pressure forces the diaphragm against the tank towards the inlet.

As the temperature increases, the expanded water volume pushes against the diaphragm creating additional volume for the water to enter.

When the temperature decreases, the pre-charge pressure forces the water from the tank and back into the main heating system.

This maintains a constant pressure within the heating system helping to reduce energy consumption.

Robokit Extra Vessel and Sealed System Kit

The Robokit Extra consists of an expansion vessel with a sealed system kit which contains;

- Expansion vessel
- Wall mounting bracket
- Quattro 4 way connector
- Safety relief valve complete with pressure gauge
- Filling loop

NOTE: The expansion vessel must be sized to suit the volume change of water within the heating system.

Advantages

- System Flexibility - due to component siting alternatives.
- Cost Savings - due to considerably reduced installation time.
- No Feed and Expansion Tank - hence avoiding "pumping over" problems, risk of freezing up etc.
- Longer Life - due to virtual elimination of corrosion problems.
- Noise Reduction - due to higher system pressure, boiler noise (localised heating) is significantly reduced or eliminated.
- Low Maintenance Costs - as equipment is virtually maintenance free, other than for periodic operational checks.

Applicable Standards

Domestic sealed heating systems should take due account of the following British Standards.

BS 7074: Part 1: 1989 - "Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for domestic heating and hot water supply".

BS 7074: Part 2: 1989 - "Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Low and Medium temperature hot water heating systems".

BS EN 12828: 2003 - "Heating systems in buildings. Design for water based heating systems".

BS EN 14336: 2004 - "Heating systems in buildings. Installation and commissioning of water based heating systems".

Size of Expansion Vessel

The expansion vessel is the key component and should have an acceptance volume sufficient to accommodate the volume change (expansion) of the system water when heated from 10˚C up to full operational temperature or beyond under fault conditions.

Locations

The expansion vessel should be connected to the system at a point close to the pump inlet in order to maintain positive pressures throughout the system.

Suitable expansion vessel locations are given in Fig. 1, depending on pump location.

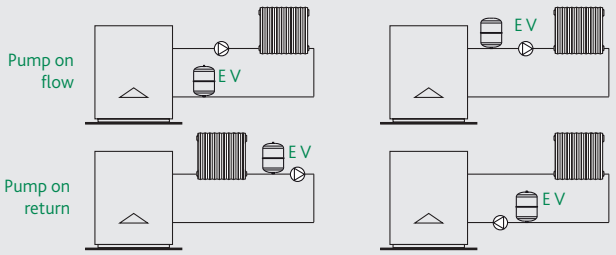

Fig. 1 - Expansion Vessel Location

Essential Components

The essential components of a sealed system kit are:

- Diaphragm expansion vessel complying with BS EN 13831
- Pressure relief valve
- Pressure gauge
- Filling loop

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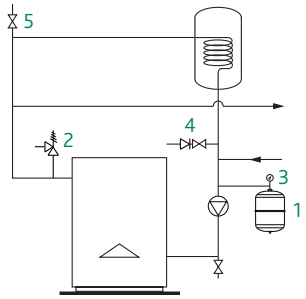
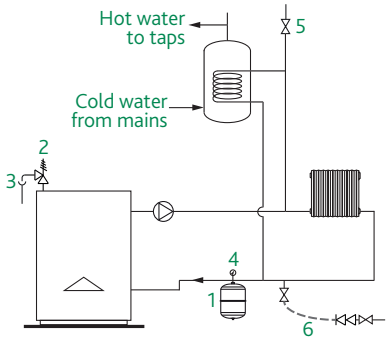
Typical Systems



1 Expansion vessel
2 Safety valve
3 Pressure gauge
4 Filling point
5 Automatic air vent

Fig. 2 - Typical System



1 Expansion vessel
2 Safety valve
3 Tundish
4 Pressure gauge
5 Automatic air vent
6 Filling loop

Fig. 3 - Typical System

- The Safety valve should be fitted either on, or close to the boiler on the flow pipe.
- The pressure gauge should be fitted preferably close to the expansion vessel and/or the boiler, in such a position that it can be easily read from the filling point.
- The filling Point should be near the key components, particularly the pressure gauge, and should be a temporary connection to allow filling from the water mains, incorporating a double check valve and isolating valves.

Main Components

Expansion Vessel

Altecnic's range of expansion vessels for heating systems are manufactured to meet the requirements of PED 97/23/EC Directive and BS EN 13831:2007 'Closed expansion vessels with built in diaphragm for installation in water'.

The two halves of the vessel and the diaphragm are retained by a crimped collar to give a pressure tight seal.

Non-replaceable diaphragm.

The water side is provided with a male threaded, for the expansion pipe.

The air side has an air charging valve of the kind used on tyres, protected by a large plastic cap.

The standard finish is an epoxy coated red.

The maximum working pressure is 4 bar and the maximum system temperature is 100˚C.

Altecnic expansion vessels are all tested according to the Pressure Systems Directive.

Safety Valve

Altecnic's range of safety valves are available in a range of sizes from ½" to 1" BSP and are available with either male or female connections.

For use in domestic installations Altecnic's range comes complete with compression nut and olive to make it easy for the installer to fix the discharge pipe without the need for necessary "expensive fittings".

Altecnic range of safety valves are used by leading manufacturers in the UK.

The range intended for use with potable and domestic hot water are WRAS approved products.

The Quattro

Altecnic have produced a neat, simple four way connector to make the installation as simple as possible.

The quattro facilitates the connection of the water inlet, safety valve, pressure vessel and the system.

It is supplied complete with a compression screw and olive for use with copper tube.

The quattro is the only four way connection which gives the installer the possibility for either left or right installation on the system.

Mounting Bracket

A robust zinc coated mounting bracket, which allows positive mounting of the expansion vessel, not leaving it unsupported on the pipework.

The bracket is designed to fit the Altecnic range of expansion tanks, up to 25 litres.

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Main Components

Ecofil Filling Loop

The Ecofil filling loop comprises a double check valve with integral ball isolating valve, flexible hose and a ball isolating valve.

The inlet connection to the double check and ball valve is supplied with a compression nut and olive for use with copper tube.

The Ecofil filling loop complies with water regulations and uses WRAS approved components.

Water regulation G24.1 and 24.2 compliant.

Robokit Extra Sealed System Kit

Altecnic have produced their own combination kit, the Robokit Extra, which contains all the essential components required for a sealed system installation.

It enables all the installation requirements detailed earlier to be meet.

The Robokit is the easiest kit to install and comprises of:

- safety relief valve complete with pressure gauge and 15mm compression outlet connection
- filling loop with braided hose,
- double check valve with integral ball isolating valve
- isolating valve
- pressure gauge
- four-way manifold with tappings for direct system connection via a 15mm nut and olive cone and connection for the expansion tank.
- wall mounting bracket for the expansion tank

Robokit Extra Accessories

There are many other accessories which are designed to be used with the Robokit Extra within a sealed system.

The following is just part of the extensive range.

Pressure reducing valve

Automatic Air Vent

Tundish

E & O.E

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