

Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems —

**Part 1: Code of practice for domestic
heating and hot water supply**

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- Association of Manufacturers of Domestic Unvented Supply Systems Equipment (MODUSSE)
- British Marine Equipment Council
- Building Services Research and Information Association
- Chartered Institution of Building Services Engineers
- Heating and Ventilating Contractors' Association
- HEVAC Association
- Institute of Domestic Heating Engineers
- Sealed Expansion Vessel Association
- Waterheater Manufacturers' Association

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Foreword

This British Standard code of practice has been prepared under the direction of the Refrigeration, Heating and Air Conditioning Standards Policy Committee.

The code complements BS 4814 and gives recommendations in its three Parts for the installation of expansion vessels in domestic heating and supply systems (Part 1); low and medium temperature hot water heating systems (Part 2); chilled water and condenser systems (Part 3) and boosted hot water supply systems¹⁾.

The code deals with the work involved in the general planning, designing and installation of the various systems when the expansion and contraction of the system water is catered for in a sealed diaphragm type vessel. In all other respects the customary design process should be followed for the appropriate system.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ Planned.

Section 1. General

1 Scope

This Part of BS 7074 gives recommendations on the application of expansion vessels for use in individual domestic premises. It includes description, design considerations and types of application.

Sections 1 and 2 cover domestic heating systems using expansion vessels complying with BS 4814 and include recommendations on:

- a) the application and use of ancillary equipment and
- b) testing, commissioning and maintenance.

Section 3 makes reference to domestic hot water supply systems.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 7074 the following definitions apply.

2.1

charging pressure

the initial pressure to which the gas/air side of the vessel is charged which is equal to the initial system design pressure

2.2

design acceptance factor (a)

the ratio of the volume of water due to expansion, to total vessel volume

2.3

diaphragm (or membrane)

the flexible means by which the chamber of an expansion vessel is partitioned to maintain separation between the expanding hot water and the gas or air which in consequence becomes compressed. It may be either a literal diaphragm clamped between two parts (or halves) of the vessel, or a bag located by its mouth which is secured to the point of the water connection to the vessel

2.4

expansion percentage (e)

the expansion percentage increase in volume when water is heated to maximum design system temperature

2.5

expansion volume (V_a)

the increase in volume of water due to expansion when heated to the maximum design system temperature

2.6

final system design pressure (P_f)

the pressure occurring at the mid-height of the expansion vessel at the maximum design system temperature

2.7

initial cold water fill temperature (t_i)

the basic reference temperature is taken to be 4 °C

2.8

initial system design pressure (P_i)

the pressure occurring at the mid-height of the expansion vessel at cold fill. This is equal to the static height pressure plus the pressure margin

2.9

lowest working pressure component (LWPC)

the component having the lowest working pressure in the system

2.10

maximum acceptance factor (A)

the ratio of maximum acceptance volume of the system to total volume

2.11

maximum acceptance volume (V)

the volume of water which the vessel may be allowed to contain

2.12

maximum vessel temperature

the maximum water temperature at which the vessel may be allowed to operate continuously

2.13

maximum vessel working pressure

the maximum pressure that the vessel may be allowed to contain in operation

2.14

pressure depth (P_d)

the vertical distance between the component being considered and the mid-height of the expansion vessel situated above it

2.15

pressure margin (P_s)

the additional pressure imposed on the circuit to prevent water vaporizing or boiling and/or to exclude air from the system at the highest point

2.16

safety valve set pressure (P_{max})

the pressure at which the safety valve is set for operation