SLOVENSKI STANDARD
oSIST prEN 1491:2021

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Ventili v stavbah - Ekspanzijski ventili - Preskusi in zahteve

Building valves - Expansion valves - Tests and requirements

Gebäudearmaturen - Sicherheitsventile für Expansionswasser - Prüfungen und Anforderungen

Robinetterie de bâtiment - Soupapes d'expansion - Essais et prescriptions

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ICS:

91.140.60 Sistemi za oskrbo z vodo Water supply systems

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EUROPEAN STANDARD

NORME EUROPÉENNE

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DRAFT
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ICS 91.140.60

Will supersede EN 1491:2000

English Version

Building valves - Expansion valves - Tests and requirements

Robinetterie de bâtiment - Soupapes d'expansion - Essais et prescriptions

Gebäudearmaturen - Sicherheitsventile für Expansionswasser - Prüfungen und Anforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 1491:2021) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1491:2000.

In comparison with the previous edition, the following technical modifications have been made:

— chapter on materials was completely revised;

— testing with disinfectant was introduced;

— torque test was added;

— testing of the expansion valve was changed and optimized;

— coating test procedure was revised;

— normative references were updated;

— editorial changes have been made throughout the entire document.

Introduction

With regard to potential adverse effect on the quality of water intended for human consumption, caused by the product covered by this document:

1) This document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA.

2) It should be noted that, whilst awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and or the characteristics of this product remain in force.

1 Scope

This document specifies dimensions, materials and performance requirements (including methods of test) for expansion valves, of nominal sizes from DN 15 to DN 32, having working pressures[1]) from 0,1 MPa (l bar) to 1,0 MPa (10 bar).

Expansion valves are intended for fitting to the cold potable water supply of storage water heaters, having a maximum distribution temperature of 95 °C, for all energy sources.

Expansion valves do not control the temperature and alone do not constitute the protection required for storage water heaters. Expansion valves limit pressure, in the water heaters to what they are fitted, that is produced by thermal expansion of the water.

NOTE The use of the device specified in this document does not override the need to use controls (e.g. thermostats and cut-outs) which act directly on the power sources of water heaters (for more information see Annex A).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1254-2, *Copper and copper alloys - Plumbing fittings - Part 2: Fittings with compression ends for use with copper tubes*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads - Dimensions, tolerances and designation*

EN ISO 6509 (all parts), *Corrosion of metals and alloys - Determination of dezincification resistance of brass (ISO 6509)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227)*

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1 All pressures are gauge unless otherwise stated.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

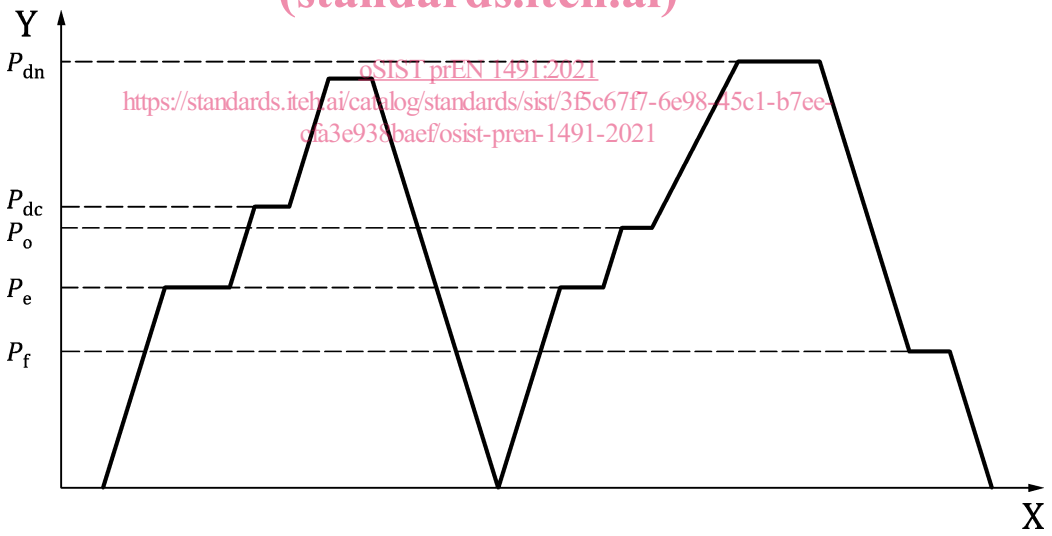
— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
expansion valve
valve that limits the pressure of the water in the water heater to a predetermined value by discharging water to drain

3.2
air break to drain
device that prevents discharged water from returning to the expansion valve and thus to the water heater

3.3
nominal set pressure
P_{nr}
pressure of the expansion valve which is set on production

Note 1 to entry: The "nominal set pressure" (P_{nr}) is often called "set pressure".



Key
Y pressure
X time

Figure 1 — Pressures

3.4
water tightness pressure
P_e
pressure up to which the expansion valve is closed

Note 1 to entry: See Figure 1.

3.5
initial opening pressure
P_{dc}
pressure at which the expansion valve opens for the first time, as indicated by the first droplet of water at the outlet of the expansion valve, after a period of storage

Note 1 to entry: See Figure 1.

3.6
opening pressure
P_o
pressure at which the expansion valves opens as indicated by the appearance of water at the outlet of the expansion valve

Note 1 to entry: See Figure 1.

3.7
rating pressure
P_{dn}
pressure at which the discharged flow is above the limit

Note 1 to entry: See Figure 1 and Table 2.

3.8
closing pressure
P_f
pressure at which the expansion valve closes after having reached the rating pressure

Note 1 to entry: See Figure 1.

4 Materials and surface finishes

4.1 General

The selection of materials is the responsibility of the manufacturer, provided they satisfy the following requirements:

a) materials and coatings shall not contaminate the potable water;

b) in a technical document, the manufacturer shall state the nature of the materials and coatings used;

c) materials with insufficient corrosion resistance (e.g. cast iron, aluminium) shall have additional protection;

d) the materials used shall be suitable for the temperatures specified in the tests in this document;

e) the materials, and in particular copper alloys, for which recommendations or international standards exist, shall comply with the relevant recommendations or international standards.

4.2 Materials

All materials coming into contact with water intended for human consumption shall present no health risk nor cause any change to the water in terms of quality, appearance, smell or taste.

NOTE It is pointed out that while awaiting the adoption of verifiable European criteria for testing materials in contact with water intended for human consumption, existing national regulations concerning the use and/or the characteristics of these products remain in force.

Copper-zinc alloys containing more than 10 % zinc are subject to dezincification when submitted to water capable of dezincification. In the countries where the use of products made of dezincification resistant materials is required, the materials used shall guarantee a dezincification depth less than 200 µm in any direction. For this purpose materials shall be tested in accordance with EN ISO 6509 (all parts) and the product shall be marked in compliance with the indications according to Clause 11.

4.3 Detection of residual stress

4.3.1 General

This test shall be performed for bodies made out of brass materials and with female threads according to EN 10226-1 and compression ends according to EN 1254-2.

4.3.2 Test

This test is based on ISO 6957. Its purpose is to verify the resistance to cracking under stress corrosion in ammonia medium (as described in 4.3.3, b).

The test entails exposing test specimens consisting of the assembled expansion valve in an atmosphere loaded with ammonia vapour.

4.3.3 Test method (Procedure)

The paragraph below details ISO 6957.

Test solution:

a) Use solutions of analysis quality and of distilled water.

b) Solution of ammonia at 20 % (in weight).

c) The pH of the test solution is to be adjusted to 9,5 by using hydrochloric acid.

d) The test temperature is to be (23 ± 2) °C with a measurement uncertainty of ± 1 °C.

Test specimen:

e) The test specimen consists of three samples of a single assembled product. The test specimen is inserted into the test enclosure under no stress.

Instructions:

f) Rinse the test specimens with a clean non-chlorinated solvent (for example, ethanol).

g) Let it dry in the air.

h) Insert the test specimens into the test enclosure along with the ammonia solution. The volume of the container made of glass (e.g. desiccator) is to be minimum (10 ± 1) l.