



SLOVENSKI STANDARD
oSIST prEN 12729:2020

01-september-2020

**Naprave za varovanje pred onesnaženjem pitne vode zaradi povratnega toka -
Sistemski ločevalnik z nadzorovanim območjem znižanega tlaka - Družina B - Tip A**

Devices to prevent pollution by backflow of potable water - Controllable backflow
preventer with reduced pressure zone - Family B - Type A

Sicherungseinrichtungen zum Schutz des Trinkwassers gegen Verschmutzung durch
Rückfließen - Systemtrenner mit kontrollierbarer druckreduzierter Zone - Familie B - Typ
A

Dispositifs de protection contre la pollution de l'eau potable - Disconnecteur à zone de
pression réduite contrôlable - Famille B - Type A

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ICS:

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91.140.60	Sistemi za oskrbo z vodo	Water supply systems

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 12729

July 2020

ICS 13.060.20; 91.140.60

Will supersede EN 12729:2002

English Version

Devices to prevent pollution by backflow of potable water - Controllable backflow preventer with reduced pressure zone - Family B - Type A

Dispositifs de protection contre la pollution de l'eau
potable - Disconnecteur à zone de pression réduite
contrôlable - Famille B - Type A

Sicherungseinrichtungen zum Schutz des Trinkwassers
gegen Verschmutzung durch Rückfließen -
Systemtrenner mit kontrollierbarer druckreduzierter
Zone - Familie B - Typ A

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.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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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 12729:2020) 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 12729:2002.

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Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this document:

- a) 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;
- b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

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1 Scope

This document specifies the field of application, the dimensional, the physico-chemical, the design, the hydraulic, the mechanical, and the acoustic characteristics of controllable backflow preventers with reduced pressure zone Family B Type A.

This document covers controllable backflow preventers of Family B Type A, with reduced pressure zones, intended to prevent pollution of potable water by backflow, caused by backsiphonage or by backpressure.

It is applicable to controllable backflow preventers in denominations DN 6 up to DN 250.

It covers controllable backflow preventers of PN 10 that are capable of working without modification or adjustment:

- at any pressure, up to 1 MPa (10 bar);
- with any pressure variation, up to 1 MPa (10 bar);
- in permanent duty at a limited temperature of 65 °C and for maximum 1 h at 90 °C.

It specifies also the test methods and requirements for verifying their characteristics, the marking and the presentation at delivery.

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 806-1, *Specifications for installations inside buildings conveying water for human consumption — Part 1: General*

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

EN 10310:2003, *Steel tubes and fittings for onshore and offshore pipelines — Internal and external polyamide powder based coatings*

EN 13828, *Building valves — Manually operated copper alloy and stainless steel ball valves for potable water supply in buildings — Tests and requirements*

EN 14901, *Ductile iron pipes, fittings and accessories — Epoxy coating (heavy duty) of ductile iron fittings and accessories — Requirements and test methods*

EN ISO 3822-1, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 1: Method of measurement (ISO 3822-1)*

EN ISO 3822-3:2018, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 3: Mounting and operating conditions for in-line valves and appliances (ISO 3822-3:2018)*

EN ISO 6509-1, *Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc — Part 1: Test method (ISO 6509-1)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1717 and EN 806-1 and the following 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

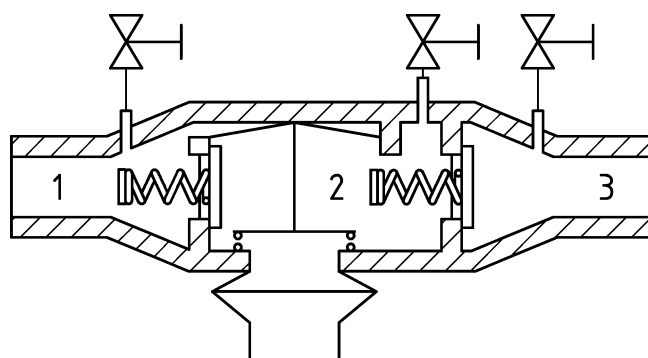
controllable backflow preventer with reduced pressure zone-Family B-Type A

specific characteristics of this device called “BA”, are as follows:

- 3 pressure zones such that upstream $p_1 >$ intermediate $p_i >$ downstream p_2 (static no flow and under water flow conditions);
- $p_1 - p_i > 14$ kPa (140 mbar);
- connection from the intermediate pressure zone (p_i) to the atmosphere when $p_1 - p_i \leq 14$ kPa (140 mbar);
- disconnection by venting the intermediate pressure zone (p_i) to the atmosphere when $p_1 < 14$ kPa (140 mbar);
- a minimum set discharge flow (backflow rate);
- devices that allow verification in every zone of the disconnection and of the sealing of the protection devices (check valves, discharge valve)

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Note 1 to entry: see Figure 1



Key

- 1 upstream zone p_1
- 2 intermediate zone p_i
- 3 downstream zone p_2

Figure 1 — Design principle

Note 2 to entry: For the purpose of this document, “controllable backflow preventer BA” is hereafter referred to as “device”

3.2**in line device**

installed within the pipework where the downstream flow of water supplies one or more points of use

3.3**incorporated device**

integrated in appliances e.g. cleaning apparatus, heating boilers

3.4**end of line device**

installed at the end of the pipework at the point of use for a specific purpose e.g. filling heating system, jetwasher machine, ...

4 Denomination

For the purpose of this document for the devices the nominal size DN is a function of the minimum flow rate given in Table 6.

5 Designation

A controllable backflow preventer with reduced pressure zone-Family B-Type A is designated by:

- its name;
- its family and its type;
- type of installation (in line, end of line or incorporated device);
- its denomination;
- its size of end connection;
- the material of its body;
- its surface finish (possible coating);
- the acoustic group I, II or nc (for $DN \leq 32$);
- the reference to the present standard.

Examples for a designation:

Controllable backflow preventer with reduced pressure zone — Family B — Type A, in line, DN 32, R 11/4 × R 11/4, bronze, I, EN 12729.

Controllable backflow preventer with reduced pressure zone — Family B — Type A, in line DN 100, flanged, cast iron, epoxy coated, EN 12729.

6 Symbolization

The graphic representation of the controllable backflow preventer with reduced pressure zone-Family B-Type A is as follows (see Figure 2):

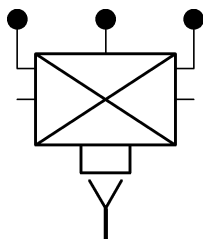


Figure 2 — Graphic symbol

7 Physico-chemical characteristics

7.1 General

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

- materials and coatings shall not contaminate the potable water;
- in a technical document, the manufacturer shall state the nature of the materials and coatings used;
- materials with inadequate corrosion resistance shall have additional protection;
- the materials used shall be suitable for the temperatures specified in the tests in this document;
- the materials, and in particular copper alloys, for which recommendations or international standards exist, shall comply with the relevant European standards.

7.2 Materials

All materials in accordance with national regulations of the European Community and/or European standards may be used.

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 6509-1 and the product shall be marked in compliance with the indications according to Clause 10.

7.3 Surface coating

7.3.1 General

The outside and inside surfaces of the device may or may not contain a coating. Such coating shall not impair the functional characteristics of the device.

The coating for protection of the basic material against corrosion can be either realized by epoxy coating or by polyamide powder based coating.

7.3.2 Epoxy Coating

Epoxy coating shall fulfill the requirements as described in Annex A based on EN 14901.

7.3.3 Polyamide Powder based Coating

Polyamide powder coating shall fulfill the requirements as described in Annex A based on EN 10310.

8 Design

8.1 General

- a) The internal components of the device shall be accessible for inspection, repair or replacement. These operations shall be possible on the installed device. Mandatory maintenance can also be done by removing the device from the pipework for sizes $DN \leq 20$. By design, the components shall be able to be refitted at their initial place, without ambiguity (impossibility of reversal, interchange of obturators, diaphragms, springs ...). A visible mark is not sufficient;
- b) the settings of the springs shall be fixed and not adjustable;
- c) in line devices and incorporated devices shall comprise three pressure tappings, upstream, intermediate, downstream, permitting periodic verification of the function of the device;
- d) end of line devices shall comprise at least two pressure tappings, upstream and intermediate permitting periodic verification of the function of the device.

They are placed:

- upstream of the first check valve;
- in the intermediate zone;

It shall be possible to vent the air which can accumulate inside the device at the highest point of the device;

- e) only the pressure of the water of the supply network can operate the control of the internal components of the device;
- f) possible additional control devices (electric, pneumatic, ...) shall not adversely affect the backflow protection function;
- g) normally the device shall be installed horizontally. Devices $DN \leq 50$ may, be installed in the downward vertical orientation in accordance with the design of the valve and the manufacturers' instructions while satisfying all the criteria in this document. If this orientation influences the function of the devices the tests shall be carried out in all possible orientations.

8.2 Relief valve

The design of the relief valve operation shall be such that when the differential pressure over the upstream check valve is less than 14 kPa (140 mbar) the relief valve shall be open to ensure positive safety.

An internal vertical distance h , as shown in the figure x and y (in disconnected position) shall be provided between the upstream check valve seat and the seat of relief valve:

- $h \geq 5$ mm for $DN \leq 15$;
- $h \geq 10$ mm for $15 < DN \leq 50$;

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- $h \geq 20$ mm for DN > 50.

In all the installation positions indicated by the manufacturer, any water retention shall not be possible within the intermediate zone.

The cross sections of the passage orifices and of the pilot tube for operation of the relief device shall be equal to or greater than 45 mm² with DN \geq 15, or 12,5 mm² with DN < 15. No dimension for the calculation of the cross section shall be less than 4 mm. The outside pilot tube shall be made so as not to be subject to any permanent deformation or rupture under outside stresses.

An air break to drain shall exist between any waste drain and any means of collecting the discharged water (floor, tundish, curb, sink).

The air break to drain shall meet the dimensional requirements as specified in EN 1717. This air break to drain shall be:

- either directly incorporated into the device;
- or factory fitted;
- or supplied with the device,
- or guaranteed by the installation.

In the latter case, the relief orifice of the device shall permit, neither the fitting of a standardized threaded pipe, nor the connection of a standardized pipe or shape, be it by glue, welding or interlocking.

If applicable on the dimension "G" of the outlet of the air break to drain (see in EN 1717), it shall be possible to fit a standardized drain pipe (Standard EN 1329-1 PVC compact and EN 1453-1 PVC with structured walls).

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9 Characteristics and tests

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9.1 General

Performance tests shall be carried out on the device as installed in accordance with the manufacturer's technical documents, subject to dimension h being complied with.

If not specified, all tests shall be performed with water at an ambient temperature.

9.2 General tolerances

9.2.1 Tolerance of set parameters

In the absence of any particular specifications:

- flow rate and pressure: ± 2 % of the value specified;
- temperature: cold water: ± 5 °C of the value specified;
hot water: ± 2 °C of the value specified;
other values: ± 2 °C of the value specified;
- time $\frac{10}{0}$ % of the value specified.