



# SLOVENSKI STANDARD

## SIST EN 12729:2003

01-oktober-2003

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

**iTeh STANDARD PREVIEW**

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

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Dispositifs de protection contre la pollution par retour de l'eau potable - Disconnecteur a  
zone de pression reduite controlable - Famille B - Type A

**Ta slovenski standard je istoveten z: EN 12729:2002**

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### **ICS:**

13.060.20	Pitna voda	Drinking water
91.140.60	Sistemi za oskrbo z vodo	Water supply systems

**SIST EN 12729:2003**

**en**

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ICS 13.060.20; 91.140.60

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 par retour 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 European Standard was approved by CEN on 7 September 2002.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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## Foreword

This document (EN 12729:2002) has been prepared by Technical Committee CEN/TC 164 "Water supply", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

The annex A is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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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 standard:

- a) this standard 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 European Standard specifies the field of application, the dimensional, the physico-chemical, the design, the hydraulic, the mechanical, and the acoustic characteristics of controllable backflow preventer with reduced pressure zone Family B Type A.

This standard covers controllable backflow preventers of Family B Type A, with reduced pressure zones, intended to prevent backflow by backsiphoning or backpressure of water into the potable water distribution system whenever the pressure of the latter is lower than the system located downstream.

It is applicable to controllable backflow preventers in denominations DN 8 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 90 °C for 1 h maximum.

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

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 806-1:2000, *Specifications for installations inside buildings conveying water for human consumption - Part 1: General.*

EN 1092-1, *Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 1: Steel flanges.*

EN 1092-2, *Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 2: Cast iron flanges.*

EN 1717:2000, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow.*

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 3822-1:1999).*

EN ISO 3822-3:1997, *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 3822-3:1997).*

EN ISO 6509, *Corrosion of metals and alloys - Determination of dezincification resistance of brass (ISO 6509:1981).*

prEN 13959, *Anti-pollution check valves DN 6 to DN 250 inclusive-Family E-Type A, B, C and D.*

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designation.*

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

ISO 9227, *Corrosion tests in artificial atmosphere - Salt spray tests.*

### 3 Terms and definitions

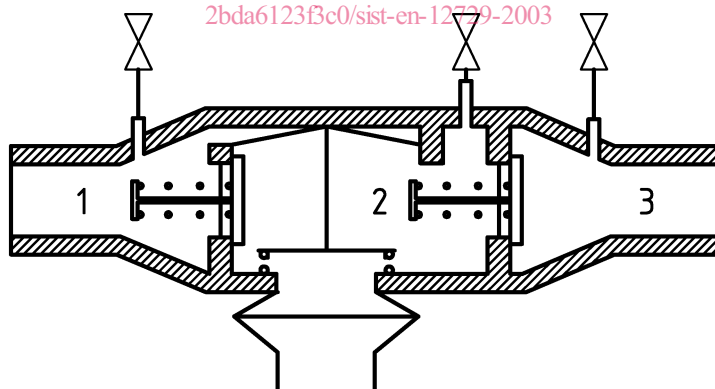
For the purposes of this European Standard, the terms and definitions of EN 1717 and EN 806-1 together with the following apply.

#### 3.1

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

the specific characteristics of this device called “BA”, (see Figure 1) 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  $p_1$  shall be up to 14 kPa (140 mbar);
- a minimum set discharge flow (backflow rate);
- devices that allow verification in every zone of the disconnection and the sealing of the protection devices (obturators, discharge valves).



#### Key

- 1 Upstream zone  $p_1$
- 2 Intermediate zone  $p_i$
- 3 Downstream zone  $p_2$

Figure 1 — Design principle

For the purposes of this standard «controllable backflow preventer BA» is hereafter referred to as «device».



## 4 Denomination

The denomination of the device is given in Table 1:

**Table 1 — DN versus threads and flanges**

<b>Denomination DN</b>	<b>8</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>32</b>	<b>40</b>	
Threads (designation in accordance with ISO 7-1)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	
Flanges (DN)							40	
<b>Denomination DN</b>	<b>50</b>	<b>65</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>150</b>	<b>200</b>	<b>250</b>
Threads (designation in accordance with ISO 7-1)	2							
Flanges (DN)	50	65	80	100	125	150	200	250

NOTE For specifications of threads and flanges see 9.4.

## 5 Designation

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

- its name;
- its family and its type;
- its denomination (see Table 1);
- its connection type;
- the material of its body;
- its surface finish (possible coating);
- the acoustic group (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, DN 32, G 1"1/4 x G 1"1/4, bronze, I, EN 12729.

Controllable backflow preventer with reduced pressure zone - Family B - Type A, DN100, 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):

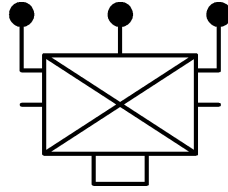


Figure 2 — Graphic symbol

## 7 Physico-chemical characteristics

### 7.1 Materials

The materials and the coatings used, liable to come normally or accidentally in contact with potable water, shall satisfy the EU regulations concerning water quality.

And therefore, they:

- shall be corrosion resistant;
- shall be prone to the least scaling possible;
- shall be in conformity with the European Standards and regulations;
- shall be compatible among themselves and:
  - with the water distribute;
  - with the fluids or matter liable to come into contact with them;
  - with the products normally used for disinfection operations of the networks : potassium permanganate and sodium hypochlorite.

### 7.2 Nature of the materials

- a) The choice of materials is left to the discretion of the manufacturer.

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 products have to guarantee a dezincification depth less than 200 µm in any direction, they have to be tested in accordance with EN ISO 6509 and have to be marked in compliance with the indications in clause 11;

NOTE This standard does not cover non-metallic bodies.

- b) neither the materials nor the coatings used shall, by normal or accidental contact with drinking water, cause any risk of affecting or modifying the water up to a temperature of 90 °C. The suitability of the water for human consumption is defined by national regulations;
- c) the manufacturer shall state in his technical and sales literature the nature of the materials and the coatings selected;
- d) the materials, and in particular copper alloys, for which recommendations or international standard exists shall comply with the relevant recommendations or international standards.

## 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 device installed. To devices DN < 15 this requirement is considered to be preferable. 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) the device shall comprise three pressure tapings permitting periodic verification of the function of the device ;

They are placed:

- upstream of the first check valve;
  - in the intermediate zone;
  - downstream of the second check valve.
- d) 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) the device shall be installed horizontally bearing specific requirements of manufacturers for devices DN ≤ 50 which can be installed in the vertical position. The tests shall be carried out in the prescribed positions bearing special indications in this standard.

### 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  $h$  (in disconnected position) shall be provided between the highest point of the seat of the relief valve and the lowest point of the seat of the upstream check valve:

- $h \geq 5$  mm for DN ≤ 15;
- $h \geq 10$  mm for 15 < DN ≤ 50;
- $h \geq 20$  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 the relief device shall be equal to or greater than 45 mm<sup>2</sup> with DN ≥ 15, or 12,5 mm<sup>2</sup> 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 of 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 device with an air break to drain fitted shall evacuate the full relief flow rate as defined in 9.7.7 without spilling to the outside.

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.

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.

## **9 Characteristics and tests**

### **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 Accuracy of measurements**

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In the absence of any particular specifications:

- flow rate and pressure:  $\pm 2$  % of the value specified;
- temperature : cold water  $\pm 5$  °C of the value specified;  
hot water  $\pm 2$  °C of the value specified;
- time  $\begin{matrix} +10\% \\ 0 \end{matrix}$  of the value specified.

#### **9.2.2 Accuracy of measuring instruments**

All the measuring instruments shall have an error limit of  $\pm 2$  % of the measured value.

### **9.3 Expression of the results**

The measured values shall be registered. These results can be expressed as a curve. See annex A for example.

### **9.4 Dimensional characteristics**

#### **9.4.1 Connections**

The connections shall be in conformity with the following standards:

- ISO 228-1;