



# SLOVENSKI STANDARD

## SIST EN 13077:2023

01-maj-2023

Nadomešča:  
SIST EN 13077:2018

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### Naprave za varovanje pred onesnaženjem pitne vode zaradi povratnega toka - Prosti iztok s prelivom nekrožne oblike (neoviran) - Družina A - Tip B

Devices to prevent pollution by backflow of potable water - Air gap with non-circular overflow (unrestricted) - Family A - Type B

Sicherungseinrichtungen zum Schutz des Trinkwassers gegen Verschmutzung durch Rückfließen - Freier Auslauf mit nicht kreisförmigem Überlauf (uneingeschränkt) - Familie A - Typ B

Dispositifs de protection contre la pollution de l'eau potable par retour - Surverse avec trop-plein non-circulaire (totale) - Famille A - Type B

Ta slovenski standard je istoveten z: **EN 13077:2023**

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#### **ICS:**

13.060.20	Pitna voda	Drinking water
23.060.99	Drugi ventili	Other valves
91.140.60	Sistemi za oskrbo z vodo	Water supply systems

**SIST EN 13077:2023** **en,fr,de**



EUROPEAN STANDARD

EN 13077

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2023

ICS 13.060.20

Supersedes EN 13077:2018

English Version

Devices to prevent pollution by backflow of potable water  
- Air gap with non-circular overflow (unrestricted) -  
Family A - Type B

Dispositifs de protection contre la pollution de l'eau  
potable par retour - Surverse avec trop-plein non-  
circulaire (totale) - Famille A - Type B

Sicherungseinrichtungen zum Schutz des Trinkwassers  
gegen Verschmutzung durch Rückfließen - Freier  
Auslauf mit nicht kreisförmigem Überlauf  
(uneingeschränkt) - Familie A - Typ B

This European Standard was approved by CEN on 23 January 2023.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

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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 (EN 13077:2023) 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 September 2023, and conflicting national standards shall be withdrawn at the latest by September 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13077:2018.

The main changes compared to the previous edition are listed below:

- a) terms and definitions have been amended;
- b) Figure 1, Figure 4 and Figure 5 have been updated and redrawn;
- c) Figure 6 has been added as an additional overflow arrangement;
- d) the dimension D has been redefined;
- e) 7.4 and 7.5 have been revised;
- f) Annex B has been deleted.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

**EN 13077:2023 (E)****Introduction**

With respect to 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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**(standards.iteh.ai)**

SIST EN 13077:2023

<https://standards.iteh.ai/catalog/standards/sist/87bcf22b-5ac5-47a8-aa36-f3614c840c59/sist-en-13077-2023>

## 1 Scope

This document specifies the characteristics and the requirements of air gap with non-circular overflow (unrestricted) Family A, Type B for nominal flow velocity not exceeding 3 m/s. Air gaps are devices for protection of potable water in water installations from pollution by backflow. This document applies to air gaps in factory-assembled products and to constructed air gaps *in situ* and specifies requirements and methods to verify and ensure compliance with this document during normal working use.

The fluid in the receiving vessel is assumed to have similar properties to water. Where this is not the case, additional care or tests could be required to verify the efficacy of the solution in practical use.

The AB device is intended to be used in potable water installations according to EN 806 (all parts).

## 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 806-5:2012, *Specifications for installations inside buildings conveying water for human consumption - Part 5: Operation and maintenance*

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

## 3 Terms and definitions

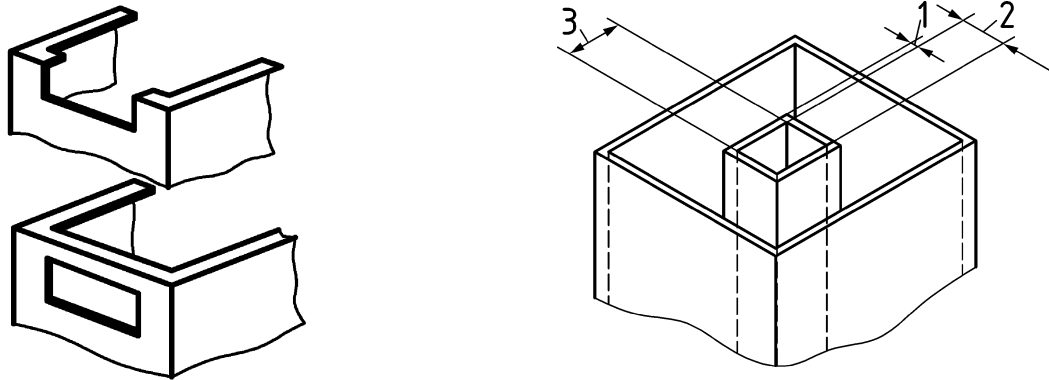
For the purposes of this document, the terms and definitions given in EN 806-1 and EN 1717 and the following apply.

### 3.1

#### **air gap with non-circular overflow (unrestricted) Family A, Type B**

permanent and vertical distance between the lowest point of the inlet orifice and the critical water level of the receiving vessel having an overflow which is non-circular in design

Note 1 to entry: See Figure 1 for the design principle.



a) Air gap with non-circular overflow

b) Internal non-circular overflow arrangement

**Key**

- 1  $C_w \leq 20 \text{ mm}$
- 2  $O_w \geq 2D + h$  and never  $< 20 \text{ mm}$  (single inlet)  
 $O_w \geq A + h$  and never  $< 20 \text{ mm}$  (multiple inlets)
- 3  $l \geq 10 h$

**Figure 1 — Design principle**

### 3.2 spillover level

level at which water will start to overflow the receiving vessel with all outlets closed

### 3.3 critical water level

physical or piezometric level of the liquid reached in any part of the appliance 2 s after closing the water inlet starting from maximum level

### 3.4 dimension $h$

height between the spillover level and the critical water level

Note 1 to entry: See 7.6 for measurement and calculation. For example, see Annex A.

### 3.5 maximum level

highest water level  $H$  reached above the spillover level with flow rate  $Q$  applied and all outlets closed

### 3.6 diameter of feed pipe outlet orifice (bore $D$ )

internal diameter size of the outlet feed orifice (or calculated from the equivalent cross sectional area)

### 3.7 unrestricted

during fault condition, the water pathway to the overflow (of the receiving vessel) is not compromised including through the overflow itself



## 4 Designation

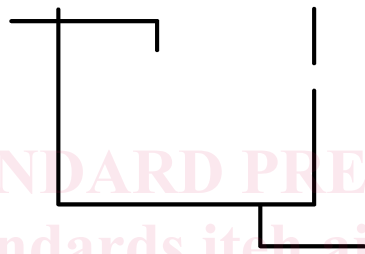
An air gap with non-circular overflow (unrestricted) Family A, Type B is designated by:

- name;
- reference to this document, EN 13077;
- family and type;
- maximum permitted flow rate (Q).

EXAMPLE Air gap, EN 13077, Family A, Type B, 14 l/min.

## 5 Symbolization

The graphic representation of the air gap with non-circular overflow (unrestricted) Family A, Type B is as follows (see Figure 2).



**Figure 2 — Graphic symbol**

[SIST EN 13077:2023](#)

## 6 Materials [/standards.iteh.ai/catalog/standards/sist/87bcf22b-5ac5-47a8-aa36-f3614c840c59/sist-en-13077-2023](https://standards.iteh.ai/catalog/standards/sist/87bcf22b-5ac5-47a8-aa36-f3614c840c59/sist-en-13077-2023)

All materials coming into contact with water intended for human consumption shall present no health risk nor cause any change of the drinking water in terms of quality, appearances, smell or taste. All materials shall be compatible among themselves and with the water supplied and with the fluids or substances that can come into contact with them.

There are no special requirements concerning the materials downstream of the feed orifice provided they do not have any harmful effect on the upstream part or the overflow arrangement.

## 7 Requirements

### 7.1 General

The protection assembly comprises three parts:

- water inlet device;
- receiving vessel (container);
- non-circular overflow.

**EN 13077:2023 (E)****7.2 Characteristics and tests****7.2.1 General**

Performance tests shall be carried out on the device as installed in accordance with the manufacturer's technical documents. If not specified, all tests shall be performed with water at an ambient temperature.

**7.2.2 General tolerances and measurements**

- flow rate and pressure:  $\pm 2$  % of the value specified;
- temperature:  $\pm 5$  °C of the value specified;
- time:  $\frac{+10}{-0}$  % of the value specified.

**7.2.3 Accuracy of measuring instruments**

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

**7.2.4 Measurements**

All measurements shall be in mm or l/min unless otherwise specified.

**7.3 Water inlet device**

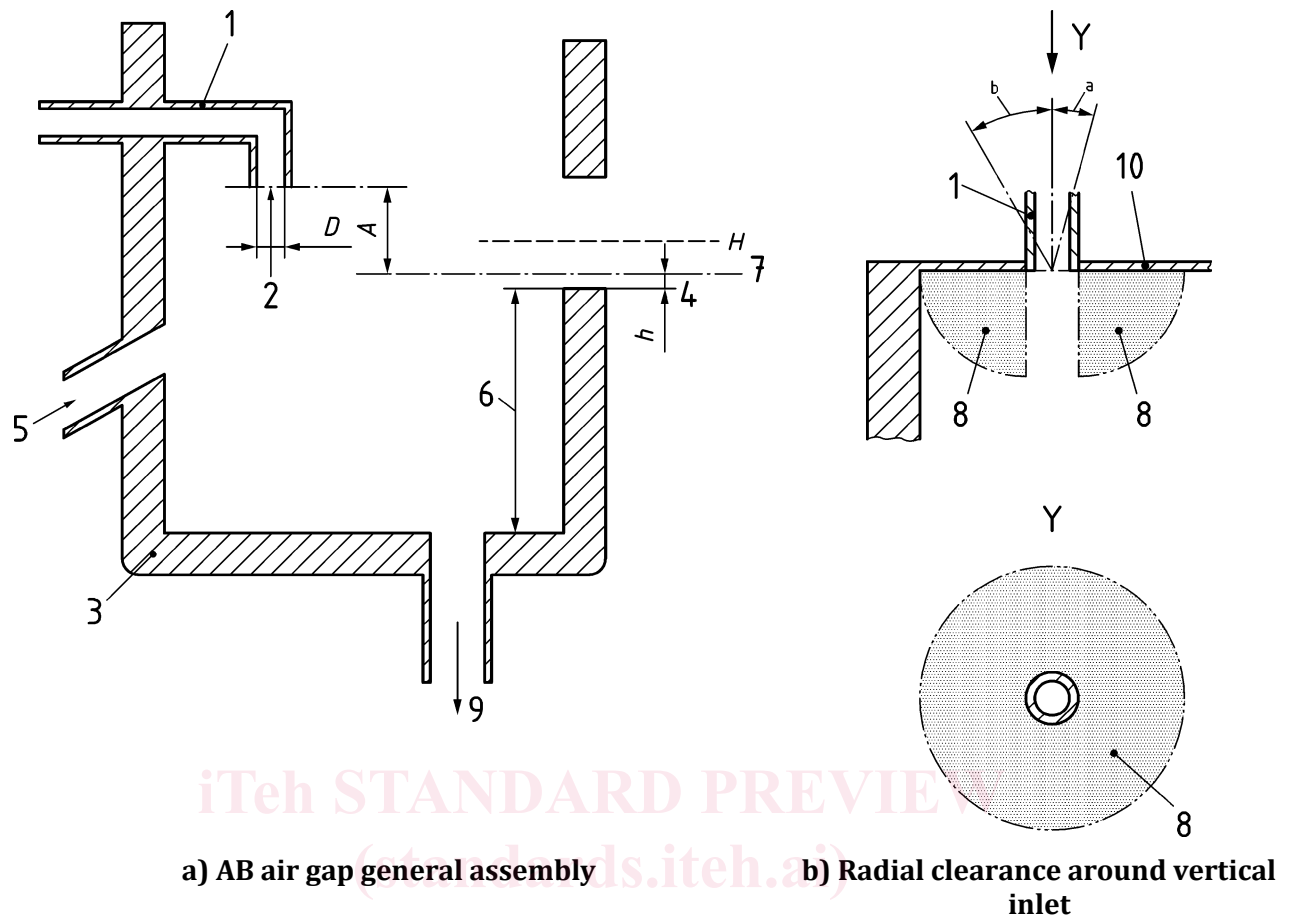
Any device controlling the supply of water into a receiving vessel shall be securely attached to the vessel. Every feed pipe supplying water to such a valve assembly or other device shall be fixed in its position to prevent it from moving or buckling and to maintain a 2D radial clearance around the outlet. If a 2D with a minimum of 20 mm clearance is not present, in addition to the air gap validation a vacuum test in accordance with Annex B shall be undertaken and the radial clearance shall be  $> D$ .

The direction of flow from a feed pipe into the receiving vessel shall be into air at atmospheric pressure, downwards and not more than  $30^\circ$  from the vertical. If the direction of flow is  $< 15^\circ$ , the air gap shall be validated by calculation or by test, if it is  $\geq$  than  $15^\circ$  it shall be verified by test.

There shall be no contact between the upstream potable water carrying components and the liquid in the receiving vessel.

When maintaining the maximum flow rate at normal operating conditions, the feed pipe, inlet device and its outlet shall not come into contact in any way with a product from downstream; it shall always be above level  $H$  (see Figure 3).

The water pathway to the overflow shall be unrestricted.

**Key**

- A* air gap (distance)  
*D* bore or equivalent cross section  
*H* maximum level  
*h* height between spill over and critical water level  
*a* 15° maximum from the vertical flow (validation by test or calculation)  
*b* 30° maximum from the vertical flow (validation by test only)  
 1 feed pipe  
 2 feed orifice with a minimum diameter *D*  
 3 receiving vessel  
 4 spillover level  
 5 optional warning pipe  
 6  $Uw \geq 5h$  (internal vertical surface)  
 7 critical water level  
 8 minimum radial clearance around the feed orifice  
 9 outlet from the receiving vessel  
 10 fixing plate, lid or roof

**Figure 3 — Air gap with non-circular overflow (unrestricted) Family A, Type B**