



# SLOVENSKI STANDARD

## SIST EN 13077:2018

01-maj-2018

Nadomešča:  
SIST EN 13077:2009

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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 13077:2018**

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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 13077:2018** en,fr,de

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EUROPEAN STANDARD

**EN 13077**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2018

ICS 13.060.20

Supersedes EN 13077:2008

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 26 February 2018.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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 13077:2018) 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 2018, and conflicting national standards shall be withdrawn at the latest by September 2018.

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

This document supersedes EN 13077:2008.

Compared to the previous edition of the document the following changes have been made:

- a) the scope has been adjusted;
- b) Figure 3 was updated and redrawn;
- c) terms and definitions were updated;
- d) mainly Clause 7 was revised and improved,
- e) the entire standard was revised editorially.

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

**EN 13077:2018 (E)****Introduction**

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

- a) this European Standard provides no information as to whether the product may be used without restriction in any of the Member State 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 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 European Standard applies to air gaps in factory-assembled products and to constructed air gaps *in situ*, and defines requirements and methods to verify and ensure compliance with this European Standard during normal working use.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 1717:2000, *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 1717:2000 and the following apply.

### 3.1

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

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.

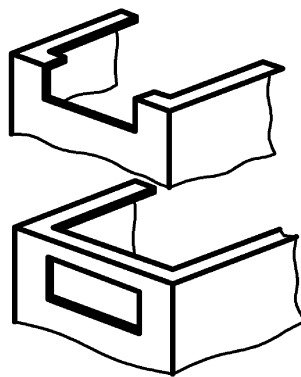


Figure 1 — Design principle

### 3.2

#### **spillover level**

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

**EN 13077:2018 (E)****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 level

Note 1 to entry: See 7.4 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 (bore  $D$ )**

maximum internal diameter (or calculated from the equivalent cross sectional area) found within the last metre of the supply pipe or DN of the inlet connection

**4 Designation**

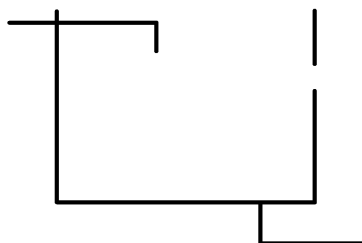
An air gap with non-circular overflow (unrestricted) Family A, Type B is designated by:

- name;
- reference to this European Standard, i.e. EN 13077;
- family and type;
- denomination shall correspond to the type of connection of the inlet;
- maximum permitted flow rate.

EXAMPLE Air gap, EN 13077, Family A, Type B, G 1/2, 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**



## 6 Materials

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.

### 7.2 Water inlet device

Every float-operated valve or other device, which controls the inflow of water to a receiving vessel, shall be securely and rigidly fixed 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 clearance is not present in addition to the air gap validation a vacuum test in accordance with Annex C shall be undertaken.

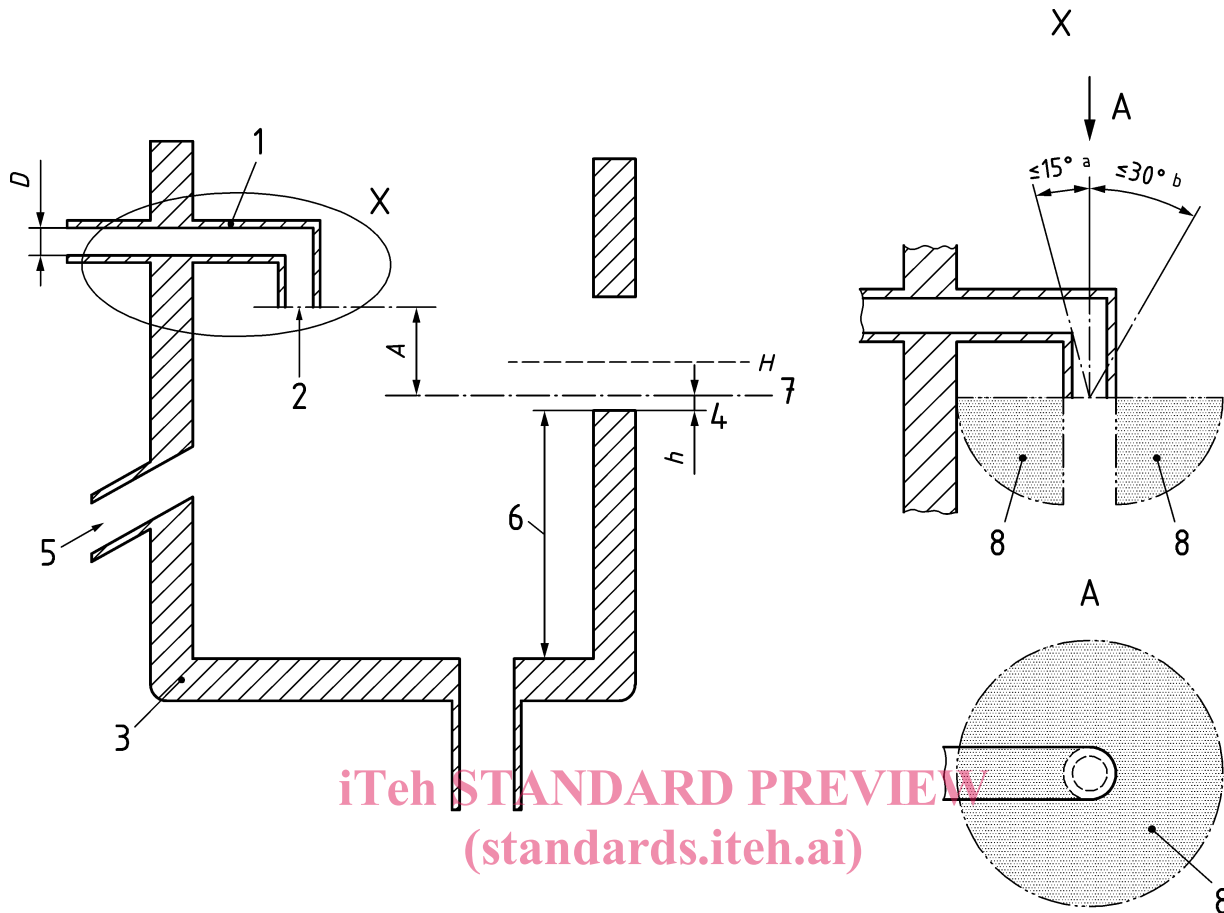
The direction of flow from a feed pipe into the receiving vessel shall be into air at atmospheric pressure, downwards and not more than 30° from the vertical. If the direction of flow is not more than 15°, the air gap shall be validated by calculation or by test, if it is more than 15° it shall be verified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

The feed orifice shall not be in contact with the receiving vessel.

No contact shall be observed between the upstream 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/unobstructed.



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**Key**

- |   |                                       |   |  |
|---|---------------------------------------|---|--|
| A | air gap (distance)                    | 4 | spillover level  |
| D | internal diameter of feed pipe (bore) | 5 | optional warning pipe  |
| H | maximum level                         | 6 | $Uw \geq 5h$ (internal vertical surface)                             |
| 1 | feed pipe                             | 7 | critical water level (distance $h$ )                                 |
| 2 | feed orifice                          | 8 | 2D Minimum radial clearance  |
| 3 | receiving vessel                      | a | 15° maximum from the vertical<br>(validation by test or calculation) |
|   |                                       | b | 30° maximum from the vertical<br>(validation by test only)           |

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

### 7.3 Overflow arrangements

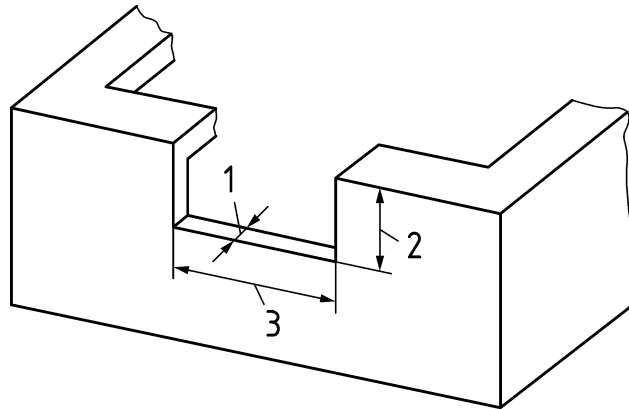
The overflow arrangements shall be of non-circular design, shall discharge immediately into free air and shall be totally unobstructed.

Verification of the dimensions of the overflow arrangement shall be based upon the largest possible single rectangular that can be accommodated within the non-circular overflow.

If the receiving vessel has more than one overflow arrangement, each one shall fulfil the given requirements. If the overflow has an extension (see Annex B) the air gap shall be verified by test as defined in 7.4.1 a).

If the overflow is the only air inlet then a vacuum test shall be undertaken as defined in Annex C.

The height of the overflow arrangement  $Ow$  is  $\geq 2D + h$  and never less than 20 mm (see Figures 4 and 5).

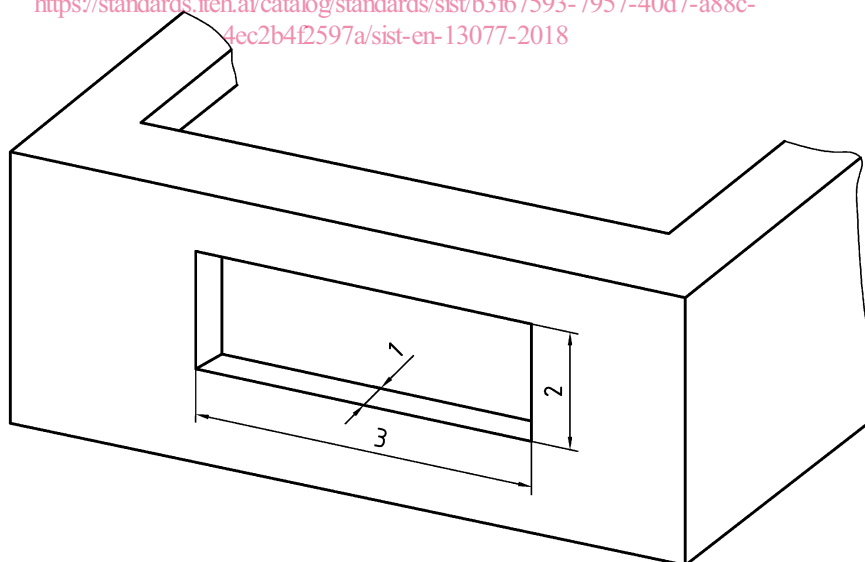


**Key**

- 1  $Cw \leq 5 h$
- 2  $Ow \geq 2D + h$  and never less than 20 mm (single inlet)  
 $Ow \geq A + h$  and never less than 20 mm (multiple inlets)
- 3  $l \geq 10 h$

**Figure 4 — Rectangular overflow arrangement**

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**Key**

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 $Ow \geq A + h$  and never less than 20 mm (multiple inlets)
- 3  $l \geq 10 h$

**Figure 5 — Letterbox overflow arrangement**