
**Naprave za varovanje pitne vode pred onesnaženjem zaradi povratnega toka –
Mehanski ločilniki z neposrednim aktiviranjem – Družina G, tip A**

Devices to prevent pollution by backflow of potable water - Mechanical disconnecter,
direct actuated - Family G, type A

Sicherungseinrichtungen zum Schutz des Trinkwassers gegen Verschmutzung durch
Rückfließen - Rohrtrenner, nicht durchflussgesteuert - Familie G, Typ A

Dispositifs de protection contre la pollution par retour de l'eau potable - Disconnecteur
mécanique a action directe - Famille G, type A

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Ta slovenski standard je istoveten z: EN 13433:2006

ICS:

13.060.20	Pitna voda	Drinking water
23.060.50	Blokirni ventili	Check valves
91.140.60	Sistemi za oskrbo z vodo	Water supply systems

SIST EN 13433:2006**en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13433

March 2006

ICS 13.060.20; 23.060.50

English Version

**Devices to prevent pollution by backflow of potable water -
Mechanical disconnecter, direct actuated - Family G, type A**

Dispositifs de protection contre la pollution par retour de
l'eau potable - Disconnecteur mécanique à action directe -
Famille G, type A

Sicherungseinrichtungen zum Schutz des Trinkwassers
gegen Verschmutzung durch Rückfließen - Rohrtrenner,
nicht durchflussgesteuert - Familie G, Typ A

This European Standard was approved by CEN on 16 December 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This European Standard (EN 13433:2006) 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 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

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

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EN 13433:2006 (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:

- 1) 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;
- 2) 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 dimensional, the physico-chemical, the design, the hydraulic, the mechanical and the acoustic characteristics of mechanical disconnector, direct actuated Family G, type A.

This European Standard is applicable to mechanical disconnector direct actuated in nominal sizes DN 8 up to DN 250, intended to prevent the return of water having lost its original sanitary and drinking qualities (called "polluted water" in this European Standard), into the potable water distribution system whenever the pressure of the latter is temporarily lower than in the polluted circuit.

This European Standard covers the mechanical disconnector direct actuated 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 limit temperature of 65 °C and 90 °C for 1 h maximum.

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

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 806-1:2000, *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 13959, *Anti-pollution check valves DN 6 to DN 250 inclusive family E, type A, B, C and D*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

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 3822-3:1984)*

EN ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements (ISO 5167-1:2003)*

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

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

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1717:2000, EN 806-1:2000 and the following apply.

3.1**mechanical disconnecter, hydraulic actuated — Family G, type A**

specific characteristics of this device called “GA”, (see Figure 1) are as follows:

- two pressure zones in flow position: upstream and downstream;
- three zones in drain position (zero-flow): upstream, intermediate and downstream. The upstream spring loaded obturator with discharge system and the downstream check valve separate the intermediate zone from the upstream and downstream zone;
- flow position is achieved at a pressure $p_r \leq p_s + 50 \text{ kPa}$ (0,5 bar);
- the relief valve starts opening at the set pressure $p_s \geq p_{\text{stat}} + 50 \text{ kPa}$ (0,5 bar);
- drain position is achieved at a pressure $p_0 \geq p_s - 36 \text{ kPa}$ (0,36 bar);
- a determined relief flow rate;
- a drain position visible directly or by a position indicator

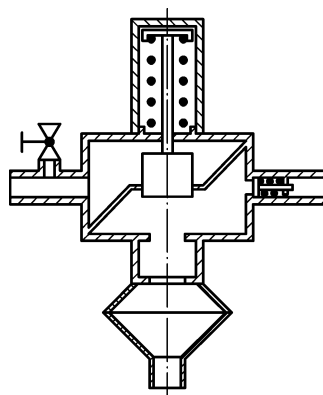


Figure 1 — Design principle

3.2**inlet pressure, p_1**

pressure on the inlet side of the device

3.3**intermediate pressure, p_i**

pressure in the intermediate chamber of the device (in drain position $p_i = p_{\text{atmosph.}}$ and under flow condition $p_i = p_1$)

3.4**outlet pressure, p_2**

pressure on the outlet side of the device

3.5**differential pressure Δp**

differential pressure between the inlet pressure p_1 and the outlet pressure p_2

3.6**static pressure p_{stat}**

pressure equivalent to the height of the water column between the highest draw-off point and the horizontal axis of the installed disconnector

3.7**set pressure p_s**

pressure at which the relief valve starts to open

3.8**opening pressure p_o**

pressure at which the disconnection distance of 20 mm is reached

3.9**closing pressure p_f**

pressure at which the relief valve is fully closed

3.10**disconnection distance**

minimal distance between the seat of the relief valve and the seat of the upstream obturator where the disconnection is operated

NOTE For the purposes of this standard «Mechanical disconnector, direct actuated — Family G, type A» is hereafter referred to as «device».

4 Nominal size

The nominal size of the device is given in Table 1:

Table 1 — DN versus threads and flanges

Nominal size DN	8	10	15	20	25	32	40	50	65	80	100	125	150	200	250
Threads (designation in accordance with ISO 7-1)	G ¼	G ⅜	G ½	G ¾	G 1	G 1 ¼	G 1 ½	G 2							
Flanges (DN)							40	50	65	80	100	125	150	200	250

EN 13433:2006 (E)**5 Designation**

A mechanical disconnecter direct actuated Family G, Type A is designated by:

- name;
- reference to this European Standard, i.e. EN 13433;
- family and type
- nominal size (see Table 1);
- connection type;
- material of its body;
- surface finish (possible coatings);
- acoustic group (if applicable).

EXAMPLE of designation Mechanical disconnecter EN 13433, direct actuated Family G, Type A, DN 32, G 1¼ × G 1¼, cast iron, epoxy coated.

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6 Symbolization

The graphic representation of the mechanical disconnecter direct actuated Family G, Type A is as follows (see Figure 2):

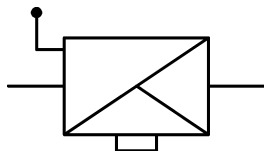


Figure 2 — Graphic symbol

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.

The materials and the coatings shall be:

- a) corrosion resistant;
- b) prone to the least scaling possible;
- c) in conformity with the European Standards and regulations;

- d) compatible among themselves and:
- 1) with the water supply;
 - 2) with the fluids or matter liable to come into contact with them;
 - 3) with the products normally used for disinfection of the water distribution system: 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 European Standard does not cover non-metallic materials for 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.

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8 Design

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8.1 General

- a) The internal components of the device shall be accessible for inspection, repair or replacement. 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) Additional control devices (electrical, pneumatic etc.) shall not influence the safety function.
- c) The settings of the springs shall be fixed and not adjustable.
- d) The device shall comprise one pressure tapping and a visible indication on the device when the obturator is in the drain position. The pressure tapping is located on the inlet of the device.
- e) Only the pressure of the water of the supply system at the inlet can operate the control of the internal components of the device.

8.2 Relief valve

Under normal service conditions $p_1 > p_s$ the relief valve is closed. At an inlet pressure $p_1 \leq p_s$ the relief valve starts opening and at a pressure $p_1 \leq p_o$ the relief valve is in drain position. There shall be a visible indication on the device, when the obturator is in the drain position.

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

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The cross-section of the passage orifices and of the pilot tube for operation of the relief device shall be equal to or greater than an area of 12,5 mm², except with DN < 15 for control drillings with a length of less than 20 mm which shall have a minimum internal diameter of 2 mm. In case of un-machined cross — sections the smallest dimension should be ≥ 4 mm. The outside pilot tube shall be made so as not to be vulnerable to any permanent deformation or rupture caused by external loading.

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 9.7.4 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 adhesive, welding or interlocking.

8.3 Disconnection distance

In drain position the obturator shall close the opening from upstream zone to the intermediate zone. The disconnection distance shall be at least 20 mm.

The drain port shall be closed, before flow condition is achieved. The passage orifice of the drain port shall be at least equal to the minimum cross-section of the outlet water way (downstream).

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.

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

9.2 General tolerances**9.2.1 Tolerance on set values**

In the absence of any particular specifications given in this European Standard:

- 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;
- time: $+ \frac{10}{0}$ % of the value specified.