# SLOVENSKI STANDARD
# SIST EN 12259-3:2001

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**Vgrajene naprave za gašenje - Sestavni deli sprinklerjev in sistemov s pršečo vodo - 3. del: Suhi alarmni ventili**

Fixed firefighting systems - Components for automatic sprinkler and water spray systems - Part 3: Dry alarm valve assemblies

Ortsfeste Löschanlagen - Bauteile für Sprinkler- und Sprühwasseranlagen - Teil 3: Trockenalarmventile und Zubehör



Systemes fixes de lutte contre l'incendie - Composants des systemes sprinkleurs et a pulvérisation d'eau - Partie 3: Postes d'alarme sous air



**Ta slovenski standard je istoveten z:** **EN 12259-3:2000**

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**ICS:**

| | | |
|---|---|---|
| 13.220.10 | Gašenje požara | Fire-fighting |
| 13.320 | Alarmni in opozorilni sistemi | Alarm and warning systems |

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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

**EN 12259-3**

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ICS 13.220.20; 13.320

English version

# Fixed firefighting systems - Components for sprinkler and water spray systems - Part 3: Dry alarm valve assemblies

Systèmes fixes de lutte contre l'incendie - Composants des systèmes sprinkleurs et à pulvérisation d'eau - Partie 3: Postes d'alarme sous air

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This European Standard was approved by CEN on 17 December 1999.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Central Secretariat: rue de Stassart, 36 B-1050 Brussels**



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# Contents

## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 191, "Fixed fire fighting systems" the secretariat of which is held by BSI

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 November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

It forms one Part of EN 12259, covering components for automatic sprinkler systems, and is included in a series of European Standards planned to cover:

a) automatic sprinkler systems (EN 12845 & 12259[1)]);

b) gas systems (EN 12094 & EN ISO 14520.);

c) powder systems (EN 12416[1)]);

d) explosion protection systems (EN 26 184);

e) foam systems (EN 13565[1)]);

f) hydrant and hose reel systems (EN 671);

g) smoke and heat control systems (EN 12101[1)]);

h) water spray systems (EN .....[1)]).

EN 12259 has the general title Fixed fire fighting systems - Components for sprinkler and water spray systems and will consist of the following Parts:



Part 1 : Sprinklers

Part 2 : Wet alarm valve assemblies



Part 3 : Dry alarm valve assemblies

Part 4 : Water motor alarms

Part 5 : Water flow detectors

Part 6 : Pipe couplings

Part 7 : Pipe hangers

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[1)] In preparation.

Part 8 : Pressure switches

Part 9 : Deluge alarm valve assemblies

Part 10 : Multiple controls

Part 11 : Medium and high velocity water sprayers

Part 12 : Pump sets

Annexes A, B, C, D, E, F, G, H, I, J and K give test methods and are normative.

Annex L gives an example of a test schedule suitable for type approval of conventional designs, and is informative.

This standard is to be entrusted for use to qualified and experienced organisations which have a capability to design and manufacture to recognised international standards.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This Part of EN 12259 specifies requirements for construction and performance of dry alarm valve assemblies, accelerators and exhausters used in automatic sprinkler systems conforming to annexes A and B of prEN 12845 Automatic sprinkler systems: Design and Installation.

Auxiliary components and attachments to dry alarm valve assemblies, accelerators and exhausters are not covered by this standard.

## 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.

| | |
|---|---|
| ISO 7-1 | Pipe threads where pressure-tight joints are made on the threads Part 1 : Dimensions, tolerances and designation |
| ISO 65 | Carbon steel tubes suitable for screwing in accordance with ISO 7-1. |
| ISO 228-1 | Pipe threads where pressure-tight joints are not made on the threads Part 1 : Designation, dimensions and tolerances. |
| ISO 868 | Plastics and ebonite - Determination of indentation hardness by means of a dorometer (shore hardness). |
| ISO 898-1 | Mechanical properties of fasteners Part 1 : Bolts, screws and studs. |
| ISO 898-2 | Mechanical properties of fasteners Part 2 : Nuts with specified proof load values. |
| prEN 12845 | Automatic sprinkler systems: Design and Installation. |

## 3 Definitions

For the purposes of this standard the following definitions apply:

**3.1**
**accelerator**
Quick opening device (see 3.18) to hasten the operation of a dry alarm valve using mechanical means other than by reducing the installation air/inert gas pressure, to the valve trip point.

**3.2**
**alarm device**
Mechanical or electrical device to sound an alarm on operation of the dry alarm valve.
[EN 12259-2: 1999]

**3.3**
**anti-flooding device**
Device to prevent excessive water from entering any relevant part or parts of the quick opening device (see 3.18) where this might prevent subsequent operation.

**3.4**
**anti-reset latch**
Mechanism to prevent the sealing assembly from returning to its closed position after operation.

**3.5**
**automatic drain (valve)**
Normally open valve to drain water automatically from and vents the intermediate chamber (see 3.14) of dry alarm valve to atmosphere, when the dry alarm valve is in the ready condition (see 3.20) and limits water flow from the alarm line after the dry alarm valve operates.

**3.6**
**clapper**
Type of sealing assembly (see 3.22).
[EN 12259-2: 1999]



**3.7**
**differential pressure ratio**



Ratio of service pressure to installation air/inert gas pressure at the trip point (see 3.27).
[EN 12259-2: 1999]



**3.8**
**differential type dry alarm valve**
Type of dry alarm valve in which downstream air/inert gas pressure acts directly on the sealing assembly to maintain it in the closed position.

The air/inert gas sealing assembly seat ring is of larger diameter relative to the water sealing assembly seat ring, with the two separated by an intermediate chamber maintained at atmospheric pressure in the ready condition.

**3.9**
**dry alarm valve**
Valve to prevent water flow into a dry installation in the ready condition but to permit flow of water into the installation at air or inert gas pressures below the trip point.

**3.10**
**exhauster**
Quick opening device (see 3.18) to discharge installation air/inert gas directly to atmosphere.

**3.11**
**flow velocity**
Water velocity through pipe of the same nominal size as the dry alarm valve at the same flow rate.

**3.12**
**holding chamber**
Chamber pressurized with installation air/inert gas to actuate a quick opening device (see 3.18) at above a specified rate of loss of installation air/inert gas pressure.

**3.13**
**installation (air/inert gas) pressure**
Air/inert gas pressure in a dry installation at the main outlet of the dry alarm valve.

**3.14**
**intermediate chamber**
Part of a dry alarm valve which separates the air/inert gas and water sealing assembly seat rings and is at atmospheric pressure when the dry alarm valve is in the ready condition.

**3.15 leak point**
Installation air/inert gas pressure at a specified service pressure at which water begins to flow from the dry alarm valve, intermediate chamber, vent or alarm connection.

**3.16**
**mechanical type dry alarm valve**
Type of dry alarm valve where downstream air/inert gas pressure acts both on the sealing assembly and linking mechanism to maintain it in the closed position.



**3.17**
**priming water**
Water used to seal the sealing assembly and to prevent cementation of the working parts.



**3.18**
**quick-opening device**
Device to reduce the time to reach the trip point.

**3.19**
**rated working pressure**
Maximum service pressure (see 3.24) at which the dry alarm valve or quick opening device is intended to operate.

**3.20**
**ready condition**
State of the dry alarm valve assembly in a sprinkler installation filled downstream with air/inert gas and upstream with water at predetermined pressures, when there is no flow from any outlet downstream from the sealing assembly, preventing the downstream pipework filling with water.
[EN 12259-2: 1999]

**3.21**
**reinforced elastomeric element**
Element of a clapper, clapper assembly or seat seals made of an elastomeric compound with one or more other components that increase the tensile strength of the combination to at least twice that of the elastomeric material alone.
[EN 12259-2: 1999]

**3.22**
**sealing assembly**
Main movable sealing element of the dry alarm valve (such as clapper).
[EN 12259-2: 1999]

**3.23**
**sealing assembly seat ring**
Main fixed sealing element of the dry alarm valve.
[EN 12259-2: 1999]

**3.24**
**service pressure**
Static water pressure at the inlet to the dry alarm valve in the ready condition.
[EN 12259-2: 1999]

**3.25**
**supplier**
Company responsible for design manufacturing and quality assurance.
[EN 12259-2: 1999]

**3.26**
**trim**

External equipment and pipework, excluding the main installation pipework, fitted to the dry alarm valve assembly.
[EN 12259-2: 1999]


**3.27**
**trip point**
Point at which the dry alarm valve operates admitting water into the sprinkler installation measured in terms of the installation air/inert gas pressure and service pressure.
[EN 12259-2: 1999]

**3.28**
**water motor alarm**
Hydraulically actuated alarm device (see 3.2) fitted to the dry alarm valve to provide a local audible alarm when the sprinkler installation operates.
[EN 12259-2: 1999]

**3.29**
**water motor transmitter:**
Hydraulically actuated device to generate an electrical current to operate an electrical alarm device.

## 4 Dry alarm valve assembly construction and performance

### 4.1 Nominal size

The nominal size shall be expressed as the nominal diameter of the inlet and outlet connections, i.e. the pipe size for which the connections are intended. The nominal size shall be 50 mm, 65 mm, 80 mm, 100 mm, 125 mm, 150 mm, 200 mm or 250 mm.

NOTE The diameter of the waterway through the sealing assembly seat ring may be less than the nominal size.

### 4.2 Connections to the assembly

#### 4.2.1 *General*

The dimensions of all connections shall be specified by the dry alarm valve assembly supplier.

#### 4.2.2 *Differential type dry alarm valves*

If the valve is of the differential type it shall be provided with means of venting water from the intermediate chamber and preventing the build-up of partial vacuum between the upstream and downstream sealing elements of the sealing assembly.

### 4.3 Rated working pressure



The rated working pressure shall not be less than 12 bar.



NOTE: Inlet and outlet connections may be machined for lower working pressure, to match installation equipment of a lower working pressure.



### 4.4 Body and cover

#### 4.4.1 *Materials*

**4.4.1.1** The body and any cover shall be made of cast iron, bronze, brass, monel metal, titanium or stainless steel or materials having equivalent physical and mechanical properties.

**4.4.1.2** If non-metallic materials (other than for gaskets and pipe seals) or metals with melting point of less than 800 °C (other than for gaskets and pipe seals) form part of the dry alarm valve body and any

cover, the assembled dry alarm valve shall conform to the leakage requirements of 4.10.1 and the sealing assembly shall open freely and fully when tested in accordance with A.1.

### 4.4.2 *Configuration*

It shall not be possible to assemble the dry alarm valve cover plate (if fitted) in position which so affects the operation of the valve that it does not conform to this standard, in particular indication of flow direction, see 6.2 d).

### 4.4.3 *Strength*

**4.4.3.1** The assembled dry alarm valve with the sealing assembly open shall withstand, without rupture, an internal hydrostatic pressure of four times the rated working pressure, when tested in accordance with annex B.

**4.4.3.2** The normal design load of any fastener, excluding the force required to compress the gasket, shall not exceed the minimum tensile strength specified in ISO 898-1and ISO 898-2, when the dry alarm valve is pressurized to four times the rated working pressure. The area of the application of pressure shall be calculated as follows:

a) if a full-face gasket is used, the area of force application is that extending out to line defined by the inner edge of the bolts;

b) if a toroidal sealing ring or ring gasket is used, the area of force application is that extending out to the centre line of the toroidal sealing ring or ring gasket.

## 4.5 Drains

### 4.5.1 *Body*

**4.5.1.1** The dry alarm valve body shall be provided with threaded connection to ISO 7-1to drain water from the valve body downstream of the sealing assembly when the valve is installed in any position specified or recommended by the manufacturer.

**4.5.1.2** Where the drain opening is also to be used for the draining of the installation pipework then the size of the threaded connection shall conform to the appropriate value given in table 1.

**Table 1 — Minimum size of valve body drain for draining installation pipework**

Dimensions in mm

| Nominal valve size | Minimum drain connection |
|---|---|
| 50 | 20 |
| 65<br>80<br>100 | 32 |
| 125<br>150 | 50 |
| 200<br>250 | 50 |

**4.5.2** ***Intermediate chamber***

**4.5.2.1** The intermediate chamber of the dry alarm valve shall be provided with an automatic drain.

**4.5.2.2** Automatic flow or velocity type drain valves used for normally venting intermediate chambers shall close at pressure of not more than, 1,4 bar with flow rate through the drain valve just prior to closure of not less than 0,13 l/s and not more than 0,63 l/s when in accordance with C.1.

**4.5.2.3** Automatic drain valves shall remain closed during drainage of the installation, until the pressure effective at the sealing mechanism drops to less than 1,4 bar and shall open at pressure between 0,035 bar and 1,4 bar when tested in accordance with C.1.

**4.5.2.4** The flow through an open ended drain shall not exceed 0,63 l/s at any service pressure up to the rated working pressure when tested in accordance with annex C.2.

**4.6 Sealing assembly**

**4.6.1** ***Access for maintenance***



Means shall be provided for access to working parts and allow removal of the sealing assembly.



NOTE 1: Whatever method is adopted it should permit ready maintenance by one person with minimum of down-time.

NOTE 2: The design of any element which may normally be disassembled during servicing should be such that it cannot be reassembled wrongly without an external visual indication when the dry alarm valve is returned to service.

NOTE 3: With the exception of the valve seat, all parts intended for field replacement should be capable of being disassembled and reassembled with tools normally employed by the trade.

NOTE 4: While the dry alarm valve is in the ready condition, it should not be possible to tamper with the valve operating mechanism preventing the sealing assembly opening.