SLOVENSKI STANDARD
SIST EN 12259-2:2000

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Vgrajene naprave za gaġenje ï Sestavni deli sprinklerjev in sistemov s prġeļ o vodo - 2. del: Mokri alarmni ventili

Fixed firefighting systems - Components for sprinkler and water spray systems - Part 2: Wet alarm valve assemblies

Ortsfeste Löschanlagen - Bauteil für Sprinkler- und Sprühwasseranlagen - Teil 2: Naßalarmventil mit Zubehör

Installations fixes de lutte contre l'incendie - Composants des systemes d'extinction du type sprinkler et a pulvérisation d'eau - Partie 2: Systemes de soupape d'alarme hydraulique

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This European Standard was approved by CEN on 2 October 1997.

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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.

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

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 191 "Fixed firefighting 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of an identical text or by endorsement, at the latest by December 1999, and conflicting national standards shall be withdrawn at the latest by December 1999.

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).

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.

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

a) automatic sprinkler systems (prEN 12259);

b) gas extinguishing systems (EN 12094 and EN ISO 14520);

c) powder systems (prEN 12416);

d) explosion protection systems (EN 26 184);

e) foam systems [1];

f) halon systems [1];

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

h) smoke and heat control systems (EN 12101);

i) water spray systems [1]

prEN 12259 has the general title “Fixed firefighting systems - Components for sprinkler and water spray systems” and will be subdivided as follows :

Part 1 : Sprinklers;

Part 2 : Wet alarm valve assemblies;

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[1] in preparation

Part 3 : Dry alarm valve assemblies;

Part 4 : Water motor alarms;

Part 5 : Water flow detectors;

Part 6 : Pipe couplings;

Part 7 : Pipe hangers;

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.

Users should note that standards undergo revision from time to time and that any reference made herein to any other European or International Standard implies its latest edition, unless otherwise stated.

This standard is to be entrusted for use to qualified and experienced organisations.

1 Scope

This standard specifies requirements for constructions and performance of wet alarm valve assemblies and retard chambers used in automatic sprinkler systems. Auxiliary components and attachments to wet alarm valve assemblies and retard chambers are not covered by this standard.

Note: All pressure data in this European standard are given as gauge pressure in bar [2)]

2) bar = 10^5 Pa

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 incorporate in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 7-1:1994	Pipe threads where pressure-tight joints are made on the threads Part 1 : Dimensions, tolerances and designation
ISO 898-1:1988	Mechanical properties of fasteners Part 1 : Bolts, screws and studs
ISO 898-2:1992	Mechanical properties of fasteners Part 2 : Nuts with specified proof load values

3 Definitions

For the purposes of this standard, the following definitions apply :

3.1 alarm device : Mechanical or electrical device to sound an alarm on operation of the wet alarm valve.

3.2 clapper : Type of sealing assembly (see 3.12).

3.3 compensator : External or internal device to minimize false alarms caused by small increase of service pressure.

3.4 differential pressure ratio : Ratio of service pressure to installation pressure at the trip point (see 3.18).

3.5 flow velocity : Water velocity through a pipe of the same nominal size as the wet alarm valve at the same flow rate.

3.6 installation pressure : Static water pressure at the main outlet of the wet alarm valve when the valve is in the ready condition.

3.7 rated working pressure : Maximum service pressure (see 3.15) at which the wet alarm valve or retard chamber is intended to operate.

3.8 ready condition : State of the wet alarm valve in a sprinkler installation filled with water from a water supply of stable pressure, when there is no water flow from any outlet downstream from the sealing assembly.

3.9 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.

3.10 retard chamber : Volumetric device to minimize false alarms caused by surges and fluctuations in water supplies.

3.11 retard time : Difference in times between the passage of water through the wet alarm valve port and the actuation of the alarm device, measured with and without the retard chamber.

3.12 sealing assembly : Main movable sealing element of the wet alarm valve (such as a clapper).

3.13 sealing assembly seat ring : Main fixed sealing element of the wet alarm valve.

3.14 sensitivity : Minimum rate of flow to open the wet alarm valve, and operate the alarm (see 4.11.2).

3.15 service pressure : Static water pressure at the inlet to the wet alarm valve when the valve is in the ready condition.

3.16 supplier: Company responsible for design, manufacturing and quality assurance.

3.17 trim : External equipment and pipework, excluding the main installation pipework, fitted to the wet alarm valve assembly.

3.18 trip point : Point at which the wet alarm valve operates admitting water into the sprinkler installation measured in terms of the installation and service pressures.

3.19 waste of water : Discharge of any water from the alarm port of the wet alarm valve which is in the ready condition.

3.20 water motor alarm : Hydraulically actuated alarm device (see 3.1) fitted to the wet alarm valve to provide a local audible alarm when the sprinkler installation operates.

3.21 wet alarm valve : Valve to permit flow of water into a wet sprinkler installation but prevent reverse flow of water.

4 Wet 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 DN50 , DN65, DN80, DN100, DN125, DN150, DN200 or DN250.

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

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

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 or stainless steel.

4.4.1.2 If non-metallic materials (other than for gaskets and pipe seals), or metals with a melting point of less than 800 °C (other than for gaskets and pipe seals) form part of the wet alarm valve body or cover, the sealing assembly shall open freely and fully when tested in accordance with annex A and the assembled wet alarm valve shall conform to the requirements of 4.12.

4.4.2 *Configuration*

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

4.4.3 ***Strength***

4.4.3.1 The assembled wet 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 898-1 : 1988 and ISO 898-2 : 1992, when the wet alarm valve is pressurised 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 a 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 Drain

The wet alarm valve shall be provided with a threaded connection in accordance with

ISO 7-1 : 1994 to drain water from the valve body downstream of the sealing assembly when the valve is installed in any position specified or recommended by the supplier. The minimum nominal size shall be 20 mm.

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 a 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 wet 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.

4.6.2 ***Closing***

The closing action of the wet alarm valve shall be assisted by gravity in all intended mounting positions, that is the sealing assembly shall fall towards the seat when water flow ceases when tested in accordance with C.1.

NOTE : Springs may be used to ensure full and proper seating.

4.6.3 ***Fatigue resistance of springs and diaphragms***

Springs and diaphragms shall not fracture or rupture during 50 000 cycles of normal operation when tested in accordance with annex D.

4.6.4 ***Resistance to damage of sealing assembly***

The sealing assembly shall bear against a definite stop in the open position. There shall be no sign of damage to the sealing elements of the wet alarm valve or any permanent twist, bend or fracture of any parts after testing in accordance with E.1 and E.2.

4.6.5 ***Materials for seat rings and bearing surfaces***

4.6.5.1 Seat rings shall be made of bronze, brass, monel metal or stainless steel.

4.6.5.2 The bearing surfaces of any contacting parts which rotate or slide relative to each other shall be made of bronze, brass, monel metal or stainless steel and this may be achieved by bushings or inserts.

4.7 Non-metallic elements (excluding gaskets and seals)

After ageing in accordance with annex F, there shall be no cracking of any non-metallic elements and a wet alarm valve shall meet the performance and leak resistance requirements of 4.10.1 and 4.12 when tested in accordance with C.1 and annex J.

4.8 Sealing assembly elements

4.8.1 In the ready condition there shall be no waste of water when the wet alarm valve assembly is tested in accordance with C.1.

NOTE : Valve sealing surfaces should withstand ordinary wear and tear, rough usage, compression stresses, and damage due to pipe scale or foreign matter carried by the water.

4.8.2 A seal made of elastomer or other resilient materials shall not adhere to the mating surface when tested in accordance with annex G.

4.9 Clearances

NOTE 1 : Clearances are necessary between moving parts and between moving and stationary parts so that corrosion or deposits of foreign matter within an assembly will not render the wet alarm valve sluggish in action or inoperative.

NOTE 2 : If an internal or external compensator is provided it should be such that deposits or sediment will not readily accumulate to an extent sufficient to interfere with its proper operation, and there should be sufficient play between the working parts to allow proper seating of the main and any auxiliary valves.

4.9.1 The radial clearance (see figure 1a)) between the sealing assembly and the inside walls of the body, in every position except the wide open position, shall not be less than 12 mm if the body is cast iron, or 6 mm if body and sealing assembly are of non-ferrous metal, stainless steel, or a combination of those.

4.9.2 The diametrical clearance (see figure 1b)), shall be not less than3 mm between the inner edges of the seat ring and the metal parts of a sealing assembly when in the closed position.

4.9.3 Any space in which the sealing assembly may trap debris below the valve seat shall not be less than 3 mm deep.

4.9.4 The diametrical clearance (see figure 1b)) between any pins and their bearings shall be not less than 0,125 mm.

4.9.5 The axial clearance (L_2 - L_1) (see figure 1c)) between any clapper hinge and the adjacent wet alarm valve body bearing surfaces shall not be less than 0,25 mm.

4.9.6 Any reciprocating guide components in the main valve body, operation of which is essential to allow a wet alarm valve to open, shall have a minimum diametrical clearance of not less than 0,7 mm in that portion over which the moving component enters the fixed component and of not less than 0,05 mm in that portion of the moving component continuously in contact with the fixed component in the ready condition.

4.9.7 Any sealing assembly bushings or hinge pin bearings shall project a sufficient axial distance to maintain dimension A (see figure 1c)) at not less than 3 mm if the adjacent parts are not of bronze, brass, monel metal or stainless steel.