



SLOVENSKI STANDARD

SIST EN 12094-6:2001

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Fixed firefighting systems - Components for gas extinguishing systems - Part 6:
Requirements and test methods for non-electrical disable devices for CO2 systems

Ortsfeste Brandbekämpfungsanlagen - Bauteile für Löschanlagen mit gasförmigen
Löschmitteln - Teil 6: Anforderungen und Prüfverfahren für nichtelektrische
Blockiereinrichtungen für CO2-Anlagen

Installations fixes de lutte contre l'incendie - Eléments constitutifs des installations
d'extinction a gaz - Partie 6: Exigences et méthodes d'essai pour dispositifs non
électriques de mise hors service pour systemes a CO2

Ta slovenski standard je istoveten z: EN 12094-6:2000

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13.220.10 Gašenje požara Fire-fighting

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Fixed firefighting systems - Components for gas extinguishing systems - Part 6: Requirements and test methods for non-electrical disable devices for CO₂ systems

Installations fixes de lutte contre l'incendie - Eléments constitutifs des installations d'extinction à gaz - Partie 6: Exigences et méthodes d'essai pour dispositifs non électriques de mise hors service pour systèmes à CO₂

Ortsfeste Brandbekämpfungsanlagen - Bauteile für Löschanlagen mit gasförmigen Löschmitteln - Teil 6: Anforderungen und Prüfverfahren für nichtelektrische Blockiereinrichtungen für CO₂-Anlagen

This European Standard was approved by CEN on 18 November 2000.

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 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 Management Centre 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.

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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 June 2001, and conflicting national standards shall be withdrawn at the latest by September 2002.

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 89/106/EEC.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

This part of EN 12094 is one of a number of European Standards prepared by CEN/TC 191 covering components for gas extinguishing systems.

They are included in a series of European Standards planned to cover:

- gas extinguishing systems (EN 12094)
- sprinkler systems (EN 12259 and EN 12845)
- powder systems (EN 12416)
- explosion protection systems (EN 26814)
- foam systems (EN 13565)
- hose systems (EN 671)
- smoke and heat control systems (EN 12101)
- water spray systems

The following parts of this European Standard are planned:

- Part 1: Requirements and test methods for electrical automatic control and delay devices
- Part 2: Requirements and test methods for non-electrical automatic control and delay devices
- Part 3: Requirements and test methods for manual triggering and stop devices
- Part 4: Requirements and test methods for high- pressure container valve assemblies and actuators
- Part 5: Requirements and test methods for selector valves and actuators for CO₂ systems
- Part 6: Requirements and test methods for non-electrical disable devices for CO₂ systems
- Part 7: Requirements and test methods for nozzles for CO₂ systems
- Part 8: Requirements and test methods for flexible connectors for CO₂ systems
- Part 9: Requirements and test methods for special fire detectors
- Part 10: Requirements and test methods for pressure gauges and pressure switches
- Part 11: Requirements and test methods for weighing devices
- Part 12: Requirements and test methods for alarm devices
- Part 13: Requirements and test methods for check valves and non-return valves
- Part 16: Requirements and test methods for odorizing devices for CO₂ low pressure systems
- Part 17: Requirements and test methods for pipe hangers
- Part 20: Requirements and test methods for compatibility of components

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.

Introduction

It has been assumed in the preparation of this Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

All pressure data in this European Standard are given as gauge pressures in bar, unless otherwise stated.

NOTE 1 bar = 10⁵ N m⁻² = 100 kPa.

1 Scope

This European Standard specifies requirements and test methods for non-electrical disable devices that prevent during maintenance work in the protected room or object any kind of unintentional release (automatic or manual) of CO₂ installations or in multiple-zone systems of each individual flooding zone without disabling the fire detection and alarm functions.

NOTE This standard can be used as guidance for testing electrical disable devices which work on different principles.

2 Normative references

This European Standard incorporates by dated or undated references, 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 (including amendments).

EN 12094-5:2000

Fixed fire fighting systems - Components for CO₂ systems - Part 5: Requirements and test methods for high and low pressure selector valves and their actuators

EN 12094-8

Fixed firefighting system - Components for gas extinguishing systems - Part 8: Requirements and test methods for flexible connectors for CO₂ systems

ISO 7-1

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

ISO 228-1

Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation

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3 Terms and definitions

For purposes of this European Standard, the terms and definitions of EN 12094-8 and the following terms and definitions apply.

3.1

actuator

a component which causes a valve to operate

3.2

container valve

a valve, which retains the extinguishing medium in a container, releasing it when actuated

3.3

working pressure

pressure at which the component is used in the system

4 Requirements

4.1 General design

4.1.1 Metal parts of the component shall be made of stainless steel, copper, copper alloy or corrosion-protected steel (e.g. galvanised steel, cadmium-plated steel etc.).

All materials shall be resistant to media with which they come into contact.

4.1.2 Non-electrical disable devices shall be designed so that the function cannot be adversely affected by ageing or environmental influences.

Non-metallic materials and elastomers shall be selected to be stable and not alter their performance over the working life recommended by the manufacturer.

4.1.3 The non-electric disable device shall be mechanical or pneumatic. In multiple-zone installations a non-electric disable device shall be provided for each individual flooding zone.

4.1.4 The disabled and the operational states shall be clearly indicated. This indication shall be given at the non-electrical disable device itself.

If an electrical control device is incorporated in the system the indication should be given at the electrical control device. Additionally indication may be given at a location which is permanently manned. The non-electrical disable device shall be lockable in the disabled and operational states.

4.1.5 The fire detection and pre-warning alarms shall not be affected by the non-electrical disable device.

4.1.6 Using an isolating valve in pilot lines the pilot line between the isolating valve and the actuator shall be vented to the atmosphere in the locked position in order to prevent pressure build-up due to any leakage in the valve. This may be done by using a 2-position, 3-port ball valve.

If the isolating valve is monitored at the control panel the correct open and closed position shall be indicated. This can be achieved by monitoring the completely open and closed position.

Valves in the pipework to the flooding zone and in pilot lines shall be in accordance with 4.8 and clause 6 and in accordance with EN 12094-5:2000.

For valves in pilot lines testing of flow characteristic is not necessary and requirements for opening and closing time are not relevant.

NOTE In the following non-electrical disable devices other than valves are described. The term "non-electrical disable device" is used in the following clauses for other non-electrical disable devices than valves.

4.1.7 The test sample shall comply to the technical description (drawings, parts list, description of functions, operating and installation instructions) when checked in accordance to 5.3.

4.2 Connection threads

Connection threads shall comply with ISO 7-1 and ISO 228-1 for threads.

4.3 Function

The non-electrical disable device shall function, when tested in accordance with 5.4.

4.4 Resistance to load

The non-electrical disable device shall withstand in disabled position at least two times the maximum load (force, pressure etc.) occurring in the system and shall show no signs of deterioration, when tested in accordance with 5.5.

4.5 Resistance to corrosion

The non-electrical disable device shall operate satisfactorily after being subjected to the corrosion test in accordance with 5.7.

4.6 Resistance to stress corrosion

Any copper alloy part used in the non-electrical disable device shall not crack, when tested in accordance with 5.8.

4.7 Resistance to vibration

The non-electrical disable device shall not change its state of operation or be damaged, when tested in accordance with 5.9.

4.8 Operating force

The force required to operate the non-electrical disable device shall not exceed:

- a) 150 N for hand operation; or
- b) 50 N for finger pull operation; or
- c) 10 N for finger push operation;

when tested in accordance with 5.6.

4.9 Operational reliability

There shall be no deterioration of performance, when a disable device is tested in accordance with 5.10.

5 Type test methods

5.1 Conditions

The components shall be tested assembled as recommended for installation by the manufacturer. The tests shall be carried at a temperature of (20 ± 5) °C, except when otherwise stated.

5.2 Samples

The manufacturer shall submit for tests three samples.

The sequence of tests is shown in Table 1 and is given by the numbers 1, 2, 3 etc. in the table. A, B etc. are the different samples.

Table 1 - Order of tests

Tests methods	Order of tests		
	Sample A	Sample B	Sample C
5.3 Compliance	1	1	1
5.4 Function	3	4	-
5.5 Test for resistance to strength	4	-	4
5.6 Determination of operating force	2/5	3	-
5.7 Test for resistance to corrosion	-	2	-
5.8 Test for resistance to stress corrosion	-	-	4
5.9 Vibration test	-	-	3
5.10 Operational reliability	-	-	2

5.3 Compliance

A visual and measurement check shall be made to determine whether the non-electrical disable device corresponds to the description in the technical literature (drawings, parts lists, description of functions, operating and installation instructions), and whether the device complies to this standard.

5.4 Function

This test relates to the requirements of 4.3.

The device shall be set in the disabled position and the actuator of the system triggered. It shall be ensured that the device has functioned correctly. The system and the non-electrical disable device shall be reset.

This test shall be repeated 10 times.

Following this test cycle a test of the correct function of the device in the non-disabled condition, permitting correct operation of the system, shall be made.

5.5 Test for resistance to load

This test relates to the requirements of 4.4.

Non-electrical disable devices shall be subjected to all relevant loads or forces. In each case the load or force shall be two times the maximum occurring in the system.

5.6 Determination of operational force

This test relates to the requirements of 4.8.

The force needed to set and reset the non-electrical disable device shall be measured when the system is in the operational condition.

5.7 Test for resistance to corrosion

This test relates to the requirements of 4.5.

The purpose of this test is to evaluate the ageing of components in automatic extinguishing systems where they are located in a corrosive environment. Ageing is accelerated to enable testing within an abbreviated period of time. The content of the corrosive agent in the atmosphere has consequently been intentionally elevated to a level higher than what would normally be expected in practice.

The essential components and properties of the reagents and the test specification are:-

- a) Solution of NaCl in distilled water
- b) pH value: 6,5 to 7,5
- c) Concentration of the solution: 5 % \pm 1 %
- d) Spray pressure: 0,6 bar to 1,5 bar
- e) Spray volume: 1 ml/h to 2 ml/h on an area of 80 cm²
- f) Temperature in the test cabinet: $(35 \begin{smallmatrix} +1,0 \\ -1,7 \end{smallmatrix})$ °C
- g) Position of the sample: 15 ° to the vertical axis
- h) Spray time: (240 \pm 2) h
- i) Drying time: 7 d at a maximum humidity of 70 %

5.8 Test for resistance to stress corrosion

This test relates to the requirements of 4.6.

Use a suitable container of known capacity in litres fitted with a capillary tube vent. The aqueous ammonia solution shall have a specific weight of (0,94 \pm 0,02) kg/l. The container is filled with (10 \pm 0,5) ml of the solution for each litre of container volume.

Degrease the sample for test and expose for 10 d to the moist atmosphere of ammonia and air, at a temperature of (34 \pm 2) °C. The samples are positioned (40 \pm 5) mm above the level of the liquid.

After testing, the samples are cleaned and dried and subjected to careful visual examination. Any cracking shall be clearly apparent. To make cracking clearly visible, the liquid penetration method shall be used.

5.9 Vibration test

This test relates to the requirements of 4.7.