

Fasta släcksystem – Komponenter till gasläcksystem –

Del 2: Krav och provningsmetoder för icke elektriska kontrollenheter och fördröjningsanordningar

Fixed firefighting systems – Components for gas extinguishing systems –

Part 2: Requirements and test methods for non-electrical automatic control and delay devices

Europastandarden EN 12094-2:2003 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 12094-2:2003.

The European Standard EN 12094-2:2003 has the status of a Swedish Standard. This document contains the official English version of EN 12094-2:2003.

Dokumentet består av 28 sidor.

Upplysningar om **sakinnehållet** i standarden lämnas av SIS, Swedish Standards Institute, tel 08 - 555 520 00.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12094-2

April 2003

ICS 13.220.20

English version

Fixed firefighting systems - Components for gas extinguishing systems - Part 2: Requirements and test methods for non-electrical automatic control and delay devices

Installations fixes de lutte contre l'incendie - Eléments constitutifs pour installations d'extinction à gaz - Partie 2: Exigences et méthodes d'essai pour les dispositifs non électriques de commande et de temporisation

Ortsfeste Brandbekämpfungsanlagen - Bauteile für Löschanlagen mit gasförmigen Löschmitteln - Teil 2: Anforderungen und Prüfverfahren für automatische nicht-elektrische Steuer- und Verzögerungseinrichtungen

This European Standard was approved by CEN on 13 February 2003.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Contents

	page
Foreword	3
Introduction	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	7
4 Requirements	9
4.1 General design	9
4.2 Connection threads	11
4.3 Signal processing and indication.....	11
4.4 System delay	11
4.5 Function at ambient temperatures	11
4.6 Internal pressure	12
4.7 Strength.....	12
4.8 Operational reliability	12
4.9 Corrosion	12
4.10 Stress corrosion.....	12
4.11 Vibration.....	12
4.12 Pneumatic energy supply using pilot containers	12
4.13 Operating force.....	12
4.14 Functional reliability	12
4.15 Safety classification.....	13
4.16 Test facility.....	13
4.17 Documentation	13
5 Tests	14
5.1 Test conditions.....	14
5.2 Test samples and order of tests	14
5.3 Compliance	15
5.4 Function	15
5.5 System delay	16
5.6 Temperature.....	16
5.7 Internal pressure	16
5.8 Strength.....	16
5.9 Operational reliability	16
5.10 Corrosion	17
5.11 Stress corrosion.....	17
5.12 Vibration.....	17
5.13 Energy supply.....	18
5.14 Operating force.....	18
5.15 Functional reliability	18
6 Marking and data.....	18
7 Evaluation of conformity	19
7.1 General	19
7.2 Initial type testing.....	19
7.3 Factory production control (FPC).....	20
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive	23
Bibliography	26

Foreword

This document (EN 12094-2:2003) 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 October 2003, and conflicting national standards shall be withdrawn at the latest by April 2006.

This document 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).

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

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 26184)
- foam systems (EN 13565)
- hose systems (EN 671)
- smoke and heat control systems (EN 12101)
- water spray systems¹

This European Standard has the general title "Fixed firefighting systems – Components for gas extinguishing systems" and will consist of the following parts:

- 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 container valve assemblies and their actuators
- Part 5: Requirements and test methods for high and low pressure selector valves and their actuators for CO₂ systems
- Part 6: Requirements and test methods for non-electrical disable devices for CO₂ systems

¹ under preparation

EN 12094-2:2003 (E)

- 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 mechanical weighing devices
- Part 12: Requirements and test methods for pneumatic alarm devices
- Part 13: Requirements and test methods for check valves and non-return valves
- Part 16: Requirements and test methods for odourising 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

This document includes a Bibliography.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

It has been assumed in the preparation of this European 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 = 10^5 N m^{-2} = 100 kPa.

EN 12094-2:2003 (E)

1 Scope

This European Standard specifies requirements and test methods for non-electrical automatic control devices incorporating non-electrical delay devices for CO₂, inert gas- or halo-carbon-gas fire extinguishing systems.

This European Standard applies to devices which may be triggered by:

- automatic fire detection installation
- electrical control device
- non-electrical special fire detector
- manual triggering device or
- combination of the above.

Where applicable the requirements and test methods also apply to separate non-electrical delay devices.

This European Standard covers devices which are powered pneumatically, mechanically or by a combination of both.

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 (including amendments).

EN 54-1, *Fire detection and fire alarm systems - Part 1: Introduction.*

prEN 12094-4, *Fixed firefighting systems – Components for gas extinguishing systems – Part 4: Requirements and test methods for high-pressure container valve assemblies and their actuators.*

EN 12094-9, *Fixed firefighting systems – Components for gas extinguishing systems – Part 9: Requirements and test methods for special fire detectors.*

EN 12094-10, *Fixed firefighting systems – Components for gas extinguishing systems – Part 10: Requirements and test methods for pressure gauges and pressure switches.*

EN 12094-11, *Fixed firefighting systems – Components for gas extinguishing systems – Part 11: Requirements and test methods for mechanical weighing devices.*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529 : 1989).*

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).*

IEC 60068-2-42, *Basic environmental testing procedures - Part 2 : Tests. Test Kc: Sulphur dioxide test for contacts and connections.*

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

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

activated condition

condition of a non-electrical automatic control device, when a fire alarm signal is received and indicated

3.2

actuator

component which causes a valve to operate

3.3

condition

defined status of the non-electrical automatic control device and non-electrical delay device which is indicated at the device

NOTE The conditions recognised in this European Standard are the following:

- Activated Condition;
- Stand-by Condition;
- Operating Condition;
- Disabled Condition;
- Released Condition;
- Quiescent Condition.

3.4

control device

device which receives a signal from a special fire detector, a fire detection installation or a manual triggering device and processes and transmits signals for actuation and auxiliary functions

NOTE 1 Parts of the control devices can be: cable, rolls, weights, pilot container, pneumatic triggering pipework, pilot valves, solenoids, springs, etc. In general all parts are needed between detection or triggering and actuating of container and selector valves.

NOTE 2 The monitoring of the installation can be a function of a control device.

3.5

CO₂-high-pressure installation

fire extinguishing installation in which the CO₂ is stored at ambient temperature, e.g. the pressure of the CO₂ in storage is $p_{abs} = 58,6$ bar at 21 °C

3.6

CO₂-low-pressure installation

fire extinguishing installation in which the CO₂ is stored at low temperature, normally at a temperature of – 19 °C to – 21 °C

3.7

delay device

component of the control device to delay the signal for actuation for a given period of time

3.8

electrical control device

control device using electrical means

EN 12094-2:2003 (E)

- 3.9**
electrical delay device
delay device using electrical means
- 3.10**
fire detector
component as defined in EN 54-1
- 3.11**
functional reliability
ability to function under different working conditions
- 3.12**
gas extinguishing installation
system installed to provide fire protection
- 3.13**
halocarbon gas
extinguishing agent that contains as primary components one or more organic compounds containing one or more of the elements fluorine, chlorine, bromine or iodine
- 3.14**
halocarbon gas installation
fire extinguishing installation in which the halocarbon gas is stored at ambient temperature
- 3.15**
indication
information given by an indicator
- 3.16**
indicator
device capable of changing state to give information
- 3.17**
inert gas
non-liquefied gas or mixture of gases which extinguish the fire mainly by reducing the oxygen concentration in the protected zone, e.g. argon, nitrogen or CO₂ or mixtures of these gases
- 3.18**
inert gas installation
fire extinguishing installation in which the inert gas is stored at ambient temperature
- 3.19**
manual triggering device
manually operated device to trigger the control device
- 3.20**
non-return valve
component permitting flow only in one direction
- 3.21**
non-electrical control device
control device using mechanical or pneumatic means
- 3.22**
non-electrical delay device
delay device using mechanical or pneumatic means
- 3.23**
pre-warning time
period of time between activation of the evacuation alarm devices and the discharge of the extinguishant

3.24

special fire detector

electrical, pneumatic and mechanical component as defined in EN 12094-9

3.25

system

selection of approved components tested for correct interaction and compatibility

3.26

system delay for discharge

time between the response of a fire detection installation, a special fire detector or a manual triggering device and the triggering of the actuator of the valve which causes the gas discharge, without taking into account the prewarning time

3.27

system delay for alarm

time between the triggering of the non-electrical automatic control devices and the operation of the sounders

3.28

transmission path

electrical connection necessary for the transmission and reception of data and signals from or to control and indicating equipment and between devices connected within the extinguishing system

3.29

working pressure

pressure at which the component is used in the system

4 Requirements

4.1 General design

4.1.1 Pilot container valves and their actuators, which are only used in the non-electrical automatic control devices, and non-electrical delay devices shall be tested in accordance with prEN 12094-4, except for the vibration test, the temperature test, the corrosion test, the stress corrosion and the operational reliability test, which shall be tested according to this European Standard.

Components which are powered by pneumatic energy shall be designed to ensure that leakage from pilot lines does not affect the function of the components downstream of the pilot line.

NOTE See prEN 12094-20.

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

4.1.3 The component shall be designed so that the function cannot be adversely affected by ageing or environmental influences.

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

4.1.5 The delay time of the component shall be adjustable up to 60 s either by infinitely variable adjustment or by step function. The maximum increments for the step function shall be 5 s. There shall be physical protection of the component to prevent tampering (e.g. locked door or protective cover) and clear indication in the event of any unauthorised adjustment to the setting mechanism.

The setting and the operation of the non-electrical delay devices shall not be affected by other components like fire detection and alarm devices.

4.1.6 The component shall be powered using any of the following sources of energy

a) pneumatic (CO₂, air, or inert gases) or