



SLOVENSKI STANDARD

SIST EN 14710-1:2005

01-april-2005

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Fire-fighting pumps - Fire-fighting centrifugal pumps without primer - Part 1:
Classification, general and safety requirements

Feuerlöschpumpen - Feuerlöschkreiselpumpen ohne Entlüftungseinrichtung - Teil 1:
Klassifizierung, allgemeine Anforderungen und Sicherheitsanforderungen

Pompes a usage incendie - Pompes centrifuges a usage incendie sans dispositif
d'amorçage - Partie 1: Classification, prescriptions générales et de sécurité

Ta slovenski standard je istoveten z: EN 14710-1:2005

ICS:

13.220.10 Gašenje požara Fire-fighting

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EUROPEAN STANDARD
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Fire-fighting pumps - Fire-fighting centrifugal pumps without primer - Part 1: Classification, general and safety requirements

Pompes à usage incendie - Pompes centrifuges à usage incendie sans dispositif d'amorçage - Partie 1: Classification, prescriptions générales et de sécurité

Feuerlöschpumpen - Feuerlöschkreiselpumpen ohne Entlüftungseinrichtung - Teil 1: Klassifizierung, allgemeine Anforderungen und Sicherheitsanforderungen

This European Standard was approved by CEN on 17 December 2004.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 14710-1:2005) has been prepared by Technical Committee CEN/TC 192 "Fire service equipment", 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 August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

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 document is intended to be used in conjunction with part 2 of EN 14710 "*Verification of general and safety requirements*".

EN 14710 "*Fire-fighting pumps – Fire-fighting centrifugal pumps without primer*" comprises two parts:

— *Part 1: Classification, general and safety requirements;*

— *Part 2: Verification of general and safety requirements.*

For relationship with EN 1028 see EN 14710-2:2005, 4.1.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EN 14710-1:2005 (E)**0 Introduction**

This document is a type C standard as stated in EN ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

Where provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built in accordance with the provisions of this type C standard.

While producing this document it was assumed that:

- a) only trained persons operate the machine;
- b) the original characteristics are maintained provided components are kept in good repair and working order.

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1 Scope

This document applies to centrifugal pumps without priming devices for fire-fighting use designed as

- floating pumps (FPN-F),
- submersible pumps (FPN-S) or
- boosted pumps (FPN-B).

Fire-fighting centrifugal pumps without primer are defined as terminated by their inlet and outlet connections as well as by their shaft ends.

This document applies for fire-fighting centrifugal pumps without priming devices for use under ambient temperatures between -15 °C and 40 °C.

NOTE 1 For special conditions, -30 °C; see 6.11.

This document does not apply to fire-fighting centrifugal pumps without primer of which the only power source is directly applied manual effort.

This document does not apply to fire-fighting centrifugal pumps without primer, intended to be used as interchangeable equipment (i.e. combined by the user with another machine or vehicle acting as a driver).

This document does not apply to fire-fighting centrifugal pumps without primer with a nominal delivery pressure p_N above 15 bar.

NOTE 2 High pressure pumps with primer are dealt with in EN 1028-1 and EN 1028-2.

This document specifies the classification and general requirements for fire-fighting centrifugal pumps without priming devices with a nominal delivery rate of up to 6 000 l/min.

This document deals with significant hazards listed in Clause 4, hazardous situations and events during the commissioning, operation and maintenance of fire-fighting centrifugal pumps without priming devices, used as intended and under the conditions foreseen by the manufacturer.

This document does not deal with the detailed verification of general and safety requirements and/or protective measures. These are covered in EN 14710-2 "*Verification of general and safety requirements*".

This document does not deal with noise.

This document does not deal with the technical safety requirements for the design or manufacture of drivers or of additional equipment intended to be fitted to inlet and outlet connections. It does not cover risks directly arising from means provided for the portability, transportability, and mobility of pump units during or between periods of operation, or requirements for power transmission devices. In addition, this document does not cover:

- hazards occurring due to decommissioning;
- hazards during use due to a specific environment (e.g. traffic during use on public roads, potentially explosive atmospheres).

This document does not apply to fire-fighting centrifugal pumps without primer that are manufactured before the date of publication by CEN of this document.

EN 14710-1:2005 (E)**2 Normative references**

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

EN 294, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs.*

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body.*

EN 547-2, *Safety of machinery — Human body measurements — Part 2: Principles for determining the dimensions required for access openings.*

EN 547-3, *Safety of machinery — Human body measurements — Part 3: Anthropometric data.*

EN 563, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces.*

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing.*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators.*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays.*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators.*

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards.*

EN 1050:1996, *Safety of machinery — Principles for risk assessment.*

EN 13202, *Ergonomics of the thermal environment — Temperatures of touchable hot surfaces — Guidance for establishing surface temperature limit values in production standards with the aid of EN 563.*

EN 14710-2:2005, *Fire-fighting pumps — Fire-fighting centrifugal pumps without primer — Part 2: Verification of general and safety requirements.*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997).*

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

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995).*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:1995).*

EN 62079, *Preparation of instructions — Structuring, content and presentation (IEC 62079:2001).*

EN ISO 5199, *Technical specifications for centrifugal pumps — Class II (ISO 5199:2002).*

EN ISO 9905, *Technical specifications for centrifugal pumps — Class I (ISO 9905:1994).*

EN ISO 9908, *Technical specifications for centrifugal pumps — Class III (ISO 9908:1993).*

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EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*.

EN ISO 12100-2, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*.

ISO 7010, *Graphical symbols — Safety colours and safety signs — Safety signs used in workplaces and public areas*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

3.1 Pumps and their applications

3.1.1

fire-fighting centrifugal pump

FP

mechanically or hydraulically driven fluid flow machine intended for delivery of fluids for fire-fighting purposes

NOTE 1 Adapted from EN 1028-1.

NOTE 2 Fire-fighting centrifugal pumps without primer are specially designed for use by fire brigades and can be suitable for installation in fire-fighting vehicles as specified in EN 1846-1 and motor pumps.

NOTE 3 Fire-fighting centrifugal pumps without primer generally consist of:

- pump unit; [SIST EN 14710-1:2005](https://standards.iteh.ai/catalog/standards/sist/018ea541-e68f-4837-ac90-240f76664048/sist-en-14710-1-2005)
- connections for inlet ports; <https://standards.iteh.ai/catalog/standards/sist/018ea541-e68f-4837-ac90-240f76664048/sist-en-14710-1-2005>
- shut off devices and connections for outlet ports;
- connections between pump, shut off devices and connection couplings;
- sieves and dirt traps;
- measuring instruments;
- safety devices (if provided);
- additional equipment.

3.1.2

vehicle mounted pump

pump permanently installed on a vehicle and driven by the motive power of the vehicle

[EN 1028-1:2002]

3.1.3

motor pump

pump complete with a drive motor

[EN 1028-1:2002]

EN 14710-1:2005 (E)**3.1.3.1****portable pump**

hand transportable motor pump not permanently mounted on a fire-fighting vehicle

[EN 1028-1:2002]

3.1.3.2**trailer pump**

motor pump mounted on a wheeled chassis that can be towed by a vehicle

[EN 1028-1:2002]

3.1.3.3**skid-mounted pump**

motor pump mounted on a fixed or transportable frame

[EN 1028-1:2002]

3.1.4**normal-pressure pump****FPN**

single or multiple stage fire-fighting centrifugal pump for nominal delivery pressures p_N up to 15 bar

NOTE Adapted from EN 1028-1.

3.1.4.1**floating pump****FPN-F**

pump floating on the surface of the water with the inlet section and the first impeller fully submerged under water

3.1.4.2**submersible pump****FPN-S**

pump with the inlet section and the first impeller totally submerged under water, and which shall also be operational when fully submerged beneath the water

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3.1.4.3**boosted pump****FPN-B**

pump to which water is fed under pressure (e.g. from another pump or from an elevated tank)

3.1.5**direction of rotation**

direction of rotation of the impeller viewed from the driving site

NOTE 1 Adapted from EN 1028-1.

NOTE 2 The direction of rotation is given by the following convention:

- to the right: clockwise;
- to the left: anticlockwise.

3.2 Inlet heights

NOTE 1 For fire fighting centrifugal pumps without primer the suction height is called the inlet height.

NOTE 2 All inlet heights are given in metres.

3.2.1 geodetic inlet height

$H_{Z,geo}$

height difference between the centre of the first impeller inlet and the water level on the inlet side at 1013 mbar and 4 °C water temperature

NOTE In case of deviating local air pressure (p_b) and deviating water temperatures a correction of the geodetic inlet height is not necessary, due to the constructive characteristics of the pump. Under conditions deviating from 1013 mbar and 4 °C, this may lead to different performance results.

3.2.2 geodetic nominal inlet height

$H_{Z,geoN}$

height difference between the centre of the first impeller inlet (in the direction of flow) and the water level on the inlet side of the pump, at 1013 mbar and 4 °C water temperature, as specified for the nominal delivery rate

NOTE In case of deviating local air pressure (p_b) and deviating water temperatures a correction of the geodetic nominal inlet height is not necessary, due to the constructive characteristics of the pump. Under conditions deviating from 1013 mbar and 4 °C, this may lead to different performance results.

3.3 Pressures

NOTE Pressures are manometric pressures given in bar.

3.3.1 inlet section pressure

p_e

inlet pressure, measured at the measurement point specified in Annex B of EN 14710-2:2005

NOTE 1 Adapted from EN 1028-1.

NOTE 2 The pressure can be positive or negative.

3.3.2 outlet section pressure

p_a

outlet pressure, measured at the measurement point specified in Annex B of EN 14710-2:2005

NOTE Adapted from EN 1028-1.

3.3.3 maximum pressure

$p_{a,max}$

maximum pressure that can be attained in the outlet section at geodetic nominal inlet height $H_{Z,geoN}$ and maximum speed n_0 (see Figure 1)

NOTE Adapted from EN 1028-1.

3.3.4 limit pressure

$p_{a,lim}$

maximum permissible outlet section pressure p_a during operation (see Figure 1)

[EN 1028-1:2002]

3.3.5 closing pressure

p_{a0}

steady state pressure in the outlet section with a delivery flow rate $Q = 0$, at geodetic nominal inlet height $H_{Z,geoN}$ and maximum speed n_0 (see Figure 1)

EN 14710-1:2005 (E)

NOTE Adapted from EN 1028-1.

3.3.6
delivery pressure

p
difference between the outlet section pressure p_a and the inlet section pressure p_e :

$$p = p_a - p_e$$

[EN 1028-1:2002]

3.3.7
nominal delivery pressure

p_N
delivery pressure specified for the nominal delivery rate

[EN 1028-1:2002]

3.3.8
static test pressure

p_{ps}
pressure used for testing the integrity of the inlet side of the pump when stationary

[EN 1028-1:2002]

3.3.9
dynamic test pressure

p_{pd}
pressure used for testing the integrity of the pressure parts of the pump with the pump running, given by $p_{a \text{ lim}} + 5,5 \text{ bar}$ (see Figure 1)

[EN 1028-1:2002]

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