



SLOVENSKI STANDARD
SIST EN 14710-2:2005+A2:2009
01-maj-2009

; Ugl]g_Y` fdU_Y!'; Ugl]g_YWbLf]Z [UbY` fdU_YVfYn`gYgUbY'bUdfUj Y!'&"XY.
DfYj Yf'Ub'Y'gd`cýb]`]b`j Ufbcgfb]` nU hYj

Fire-fighting pumps - Fire-fighting centrifugal pumps without primer - Part 2: Verification of general and safety requirements

Feuerlöschpumpen - Feuerlöschkreiselpumpen ohne Entlüftungseinrichtung - Teil 2: Feststellung der Übereinstimmung mit den allgemeinen Anforderungen und den Sicherheitsanforderungen

Pompes à usage incendie - Pompes centrifuges à usage incendie sans dispositif d'amorçage - Partie 2: Vérification des prescriptions générales et de sécurité

Ta slovenski standard je istoveten z: EN 14710-2:2005+A2:2008

ICS:

13.220.10 Gašenje požara Fire-fighting

SIST EN 14710-2:2005+A2:2009 en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 14710-2:2005+A2:2009

<https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14710-2:2005+A2

December 2008

ICS 13.220.10; 23.080

Supersedes EN 14710-2:2005+A1:2008

English Version

Fire-fighting pumps - Fire-fighting centrifugal pumps without primer - Part 2: Verification of general and safety requirements

Pompes à usage incendie - Pompes centrifuges à usage incendie sans dispositif d'amorçage - Partie 2: Vérification des prescriptions générales et de sécurité

Feuerlöschpumpen - Feuerlöschkreiselpumpen ohne Entlüftungseinrichtung - Teil 2: Feststellung der Übereinstimmung mit den allgemeinen Anforderungen und den Sicherheitsanforderungen

This European Standard was approved by CEN on 17 December 2004 and includes Amendment 1 approved by CEN on 21 February 2008 and Amendment 2 approved by CEN on 16 November 2008.

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 CEN 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 CEN Management Centre has the same status as the official versions.





CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword	4
0 Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Verification, Principles	6
5 Verification of the safety requirements and/or protective measures	9
6 Verification of the general and performance requirements	12
7 Test report	15
Annex A (normative) Mounting positions for tests at inlet height	16
Annex B (normative) Pressure measurements	18
Annex C (normative) Measurements of delivery rates	19
Annex D (normative) Performance test	20
Annex E (normative) Endurance test	22
Annex F (normative) Pressure test	23
Annex G (normative) Efficiency test	25
Annex H (informative) Guidance for acceptance tests on delivery	27
Annex ZA (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC 	28
Annex ZB (informative)  Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 	29

Figures

Figure A.1 — Principle of testing arrangements for boosted pumps (FPN-B)	17
Figure A.2 — Principle of testing arrangements for floating pumps (FPN-F) with horizontal shaft	17
Figure A.3 — Principle of testing arrangements for floating pumps (FPN-F) with vertical shaft.....	17
Figure A.4 — Principle of testing arrangements for submersible pumps (FPN-S)	17
Figure B.1 — Principle of measuring instrument set-up	18
Figure D.1 — Pump characteristic curve at geodetic nominal inlet height $H_{Z_{geoN}}$	20
Figure F.1 — Measuring set-up for pressure test	23
Figure G.1 — Pump characteristic curves for efficiency tests	26

Tables

Table 1 — Limit of permissible error of measuring instruments	9
Table 2 — Appropriate method(s) of verification of the safety requirements and/or protective measures of EN 14710-1	10
Table 3 — Appropriate method(s) of verification of the general and performance requirements of EN 14710-1	13

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 14710-2:2005+A2:2009](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

<https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009>

EN 14710-2:2005+A2:2008 (E)**Foreword**

This document (EN 14710-2:2005+A2:2008) 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 June 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document supersedes $\boxed{A_2}$ EN 14710-2:2005+A1:2008 $\langle A_2 \rangle$.

This document includes Amendment 1, approved by CEN on 2008-02-21 and Amendment 2, approved by CEN on 2008-11-16.

The start and finish of text introduced or altered by amendment is indicated in the text by tags $\boxed{A_1}$ $\langle A_1 \rangle$ and $\boxed{A_2}$ $\langle A_2 \rangle$.

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).

$\boxed{A_1}$ For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document. $\langle A_1 \rangle$

This document is intended to be used in conjunction with part 1 of EN 14710 "*Classification, general and safety requirements*".

[SIST EN 14710-2:2005+A2:2009](https://standards.iteh.ai/SIST/EN/14710-2:2005+A2:2009)

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

<https://standards.iteh.ai/SIST/EN/14710-2:2005+A2:2009>
07154e955a3b/sist-en-14710-2-2005a2-2009

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

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

This document includes the verification of general and safety requirements of fire-fighting centrifugal pumps without primer.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 14710-2:2005+A2:2009](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

<https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009>

EN 14710-2:2005+A2:2008 (E)**1 Scope**

This document covers verification of the general and safety requirements of fire-fighting centrifugal pumps without primer as specified in ^{A2} EN 14710-1 ^{A2}.

^{A2} NOTE The tests can also be applied to pumps with nominal delivery rates greater than 10 000 l/min. ^{A2}

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.

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.

^{A2} EN 1028-1 ^{A2}, *Fire-fighting pumps — Fire-fighting centrifugal pumps with primer — Part 1: Classification — General and safety requirements*

^{A2} EN 1028-2 ^{A2}, *Fire-fighting pumps — Fire-fighting centrifugal pumps with primer — Part 2: Verification of general and safety requirements*

^{A2} EN 14710-1:2005 ^{A2}, *Fire-fighting pumps — Fire-fighting centrifugal pumps without primer — Part 1: Classification, general and safety requirements*

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

[SIST EN 14710-2:2005+A2:2009](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

[https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

[07154e955a3b/sist-en-14710-2-2005a2-2009](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and ^{A2} EN 14710-1:2005 ^{A2} apply.

4 Verification, Principles**4.1 General**

The verification in accordance with this part of this document is limited to the pump and not including installation.

Safety requirements of ^{A2} EN 14710-1:2005 ^{A2}, Clause 5 shall be verified according to Table 2.

Performance requirements of ^{A2} EN 14710-1:2005 ^{A2}, Clause 6 shall be verified according to Table 3.

All hydraulic tests shall be carried out using water having a temperature between 15 °C and 25 °C. The geodetic inlet height shall not deviate by more than ± 5 cm during one test cycle. In order to avoid air entrainment, the test configurations shall be as shown in Figure A.1 to Figure A.4.

If the safety equipment has to be disconnected to carry out any test, the manufacturer shall give information regarding the disconnected safety equipment (e.g. compensating or alternative safety measures to be used during the test and re-connection instructions after completing the test).

Verification shall be carried out with the pump equipment assembled for normal intended use.

Accessories and covers may be fitted or not, but the effect in either case shall not obscure the validity of the test.

Where the pump is assembled on site, the part of the verifications that cannot be made before dispatch shall be carried out at the place of use in accordance with the installation instructions of the pump manufacturer.

For testing purposes, the fire-fighting centrifugal pump shall be presented in its full operational configuration. The pump shall be equipped to undergo the full range of tests required.

NOTE 1 For pumps without a driving motor, a driving flange should be provided for testing. For pumps without a driving flange a driving system should be supplied.

NOTE 2 If dimensions, mass, or other factors make particular tests on complete equipment impractical, tests can be carried out on subassemblies or components provided that the results can be verified as representative of the fully assembled equipment.

NOTE 3 A guidance for acceptance tests on delivery is given in the informative Annex H.

The verification regime covers the following basic verifications which apply in Clauses 5 and 6.

For pumps according to A_2 EN 1028-1 and EN 1028-2 A_2 used as a pump without primer according to this document, e.g. as a "Boosted pump" by disusing the priming device, with the same classification (e.g., FPN 10-1000 used as FPN-B 10-1000), no tests according to this document are required.

For pumps according to the series of European Standards EN 1028 used as a pump without primer according to this document, e.g. as a "Boosted pump" by disusing the priming device, with a higher classification (e.g., FPN 10-1000 used as FPN-B 10-1500), the tests according to this document shall be carried out.

4.2 Type verification

Ensure that each type of the pump meets the requirements of this document.

NOTE This verification is indicated as "TYP" in Tables 2 and 3.

4.3 Individual verification

Ensure that each pump put on the market meets the requirements of this document before dispatch.

NOTE This verification is indicated as "IND" in Tables 2 and 3.

4.4 Methods of type and/or individual verification

4.4.1 Calculation check, stress measurement test

Determine that the calculations are correct according to the standard requirements. Calculations and stress measurement test results used to establish compliance with a requirement shall be recorded by the manufacturer and retained for future examination.

The calculation check can be replaced by a stress measurement test if the results are equivalent.

4.4.2 Design check

Determine that the design requirements of the standard have been achieved (design documentation).

EN 14710-2:2005+A2:2008 (E)**4.4.3 Compliance verification (manufacturing check)****4.4.3.1 General**

Determine that the pump is built according to the design and that the materials and their assemblies comply with the design documents and are sound, including the following.

4.4.3.2 Verification of documents

Determine that all necessary documents are present (e.g. attestations of conformity of supplied parts by the supplier).

4.4.3.3 Visual check

Determine by simple visual inspection that something is present (e.g. guard, marking, document), that the marking contains the required information/warnings, that there is no evident external leakage etc.

4.4.3.4 Verification by measurement (in accordance with Annexes C, D and G)

Determine by measurement, with suitable measuring instruments, that the requirements of the measurable parameters of the standard have been met (e.g. geometric dimensions, delivery rate, pressure, temperatures) (see also 4.5).

Methods of measurement should be selected to make use of existing or standardised methods.

4.4.3.5 Static test (in accordance with Annex F)

Test out of the range of functional tests.

Conduct the static pressure test and establish that the pump complies with the requirements of the standard.

4.4.3.6 Dynamic test (in accordance with Annex F)

Test out of the range of functional tests.

Conduct the dynamic test and establish that the pump complies with the requirements of the standard. Check that all safety devices are installed correctly and that their operation is as intended.

4.4.3.7 Functional tests (in accordance with Annexes D, E and F)

Determine by functional tests that the pump operates to the requirements of the standard including all safety devices, except those related to pressure overload protection.

4.4.3.8 Test of pressure overload protection devices (in accordance with Annexes D and F)

Determine that any pressure overload protection device operates to the requirements of the standard.

4.4.3.9 Verification of the information for the user

Verify that all necessary information for safe commissioning, use, maintenance/inspection, decommissioning etc. as stated in the standard is present and adequate.

4.4.3.10 Verification of the information for the installer

Verify that all necessary information on installation is present and adequate.

4.5 Measuring instruments

Measuring instruments for the measurements specified in Annexes B, C, D, E, F and G shall have a limit of permissible error conforming to Table 1.

Table 1 — Limit of permissible error of measuring instruments

Measuring instrument for	Limit of permissible error
Delivery rate	$\pm 1,5\%$ of Q_N
Speed	$\pm 0,5\%$ of n_N
Pressure	$\pm 1,0\%$ of p_N
Torque	$\pm 1,0\%$ at n_N
Temperature	$\pm 1,0\text{ }^\circ\text{C}$

5 Verification of the safety requirements and/or protective measures

Safety requirements and/or protective measures of $\overline{A_2}$ EN 14710-1 $\overline{A_2}$ shall be verified in accordance with the method(s) specified in Table 2. Every indicated verification method shall be carried out.

The test arrangements in Annexes A to G shall be applied.

iteh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 14710-2:2005+A2:2009](https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009)

<https://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-07154e955a3b/sist-en-14710-2-2005a2-2009>

Table 2 — Appropriate method(s) of verification of the safety requirements and/or protective measures of EN 14710-1

EN 14710-1 :2005, Reference to relevant safety requirement clause	Calculation check	Design check	Verification of documents	Visual check	Verification by measurement	Static test	Dynamic test	Functional tests	Test of pressure overloading protection devices	Verification of the information for the user	Verification of the information for the installer
5.1	-	TYP	TYP	-	-	-	-	-	-	TYP	TYP
5.2.1.1.1											
1st paragraph	-	TYP	-	TYP and IND	TYP	-	-	-	-	TYP	TYP
2nd paragraph	-	TYP	-	TYP and IND	-	-	-	-	-	-	TYP
3rd paragraph	-	TYP	-	TYP	-	-	-	-	-	TYP	TYP
4th paragraph	-	TYP	-	TYP and IND	-	-	-	-	-	TYP	TYP
5th paragraph	-	-	TYP	TYP	-	-	-	-	-	-	TYP
5.2.1.1.2											
1st paragraph	-	TYP	-	TYP and IND	TYP	-	-	-	-	TYP	TYP
2nd paragraph	-	TYP	-	TYP and IND	-	-	-	-	-	TYP	TYP
3rd paragraph	-	TYP	-	TYP and IND	TYP	-	-	-	-	-	TYP
5.2.1.1.3	-	TYP	-	TYP and IND	TYP	-	-	-	-	-	TYP
5.2.1.2.1											
1st paragraph	-	TYP	TYP	TYP and IND	-	-	-	TYP	-	-	-
2nd paragraph	-	-	TYP	TYP and IND	-	-	-	-	-	TYP	-
5.2.1.2.2											
1st paragraph	TYP	TYP	TYP	TYP and IND	-	TYP	TYP	TYP and IND	-	-	-
2nd paragraph	-	TYP	-	TYP and IND	-	-	-	-	-	-	-

IT-Item STANDARD PREVIEW
 (standards.iteh.ai)
<http://standards.iteh.ai/catalog/standards/sist/7347bb2e-2c7b-4aa0-b77f-10714e055a3b/sist-en-14710-2-2005a2-2009>
 SIST EN 14710-2:2005+A2:2009