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Brand och räddning – Portabel utrustning för släckmedel i brandpumpar – Skumutrustning – Del 1: Induktörer PN 16

**Portable equipment for projecting extinguishing agents supplied
by fire fighting pumps – Portable foam equipment –
Part 1: Inductors PN 16**



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EUROPEAN STANDARD

EN 16712-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2015

ICS 13.220.10

English Version

Portable equipment for projecting extinguishing agents
supplied by fire fighting pumps - Portable foam equipment
- Part 1: Inductors PN 16

Équipement portable de projection d'agents
d'extinction alimenté par des pompes à usage incendie
- Equipements mousse portables - Partie 1 :
Proportionneurs PN 16

Tragbare Geräte zum Ausbringen von Löschmitteln, die
mit Feuerlöschpumpen gefördert werden - Tragbare
Schaumgeräte - Teil 1: Zumischer PN 16

This European Standard was approved by CEN on 1 August 2015.

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-CENELEC 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-CENELEC Management Centre 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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European foreword

This document (EN 16712-1:2015) has been prepared by Technical Committee CEN/TC 192 “Fire and Rescue 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of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

EN 16712 consists of the following parts, under the general title “*Portable equipment for projecting extinguishing agents supplied by fire fighting pumps – Portable foam equipment*”:

- Part 1: Inductors PN 16;
- Part 2: Pick-up tubes;
- Part 3: Low and medium expansion hand-held foam branchpipes PN 16;
- Part 4: High expansion foam generators PN 16.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The inductor is only one piece in the foam system. Other components such as branchpipes, pick-up tubes and delivery hoses should be taken into account (see Figure 2 as example of installation).

1 Scope

1.1 This European Standard defines requirements and tests which apply to inductors PN 16 which are used to proportion foam concentrate or other additives to the water stream and work using the Venturi principle.

1.2 This European Standard is not applicable to inductors which are integrated in self-inducting foam branchpipe.

1.3 This European Standard is not applicable to inductors which have been manufactured before its date of publication as European Standard.

2 Normative references

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

EN 837-1, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 837-3, *Pressure gauges — Part 3: Diaphragm and capsule pressure gauges — Dimensions, metrology, requirements and testing*

EN 16712-2, *Portable equipment for projecting extinguishing agents supplied by fire fighting pumps — Portable foam equipment — Part 2: Pick-up tubes*

3 Terms and definitions

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

3.1

inductor

equipment which, using the Venturi principle, induces foam concentrates or other additives into a water flow to produce a solution at a predetermined ratio

Note 1 to entry: Venturi principle: a negative pressure is created in a suction chamber by means of the injector effect.

3.2

regulating device

automatic device that regulates Δp_2

3.3

setting device

device to select the proportion ratio

3.4

proportion ratio

percentage of foam concentrates or additives in the foam water solution

EXAMPLE If a hand-held foam branchpipe is used to flow 400 l/min of foam water solution at a proportion ratio of 3 %, the foam concentrate flow will be 12 l/min.

3.5

foam water solution

homogeneous mixture of water and foam concentrate

Note 1 to entry: Foam concentrates are defined in EN 1568 series.

3.6

pressures

Note 1 to entry: Pressures are expressed in bar, measured with respect to atmospheric pressure.

Note 2 to entry: 1 bar = 0,1 MPa (10^5 Pa).

3.6.1

foam branchpipe working pressure

p_1

pressure measured at the inlet of the foam branchpipe

3.6.2

outlet working pressure

p_2

pressure measured at the outlet of the inductor

3.6.3

inlet working pressure

p_3

pressure measured at the inlet of the inductor

3.6.4

nominal pressure

p_N

maximum working pressure measured at the inlet of the inductor

3.6.5

test pressure

p_t

static pressure used for leakage tests

3.6.6

burst pressure

p_B

static pressure used for burst test

3.6.7

inductor pressure loss

Δp_2

pressure difference between the inlet of the inductor and the outlet of the inductor ($p_3 - p_2$) expressed in percentage of p_3

Note 1 to entry: The pressure loss of the inductor can be calculated with the following formula:

$$\Delta p_2 = \frac{p_3 - p_2}{p_3} \cdot 100.$$

3.7

geodetic suction height

$H_{S\text{geo}}$

distance measured from the central axis of the inductor to the lowest point at which foam concentrate or additive is supplied

4 Inductor types

The inductors are categorized by the foam water solution flow rate of the inductor in types according to Table 1.

Table 1 — Inductor types

Type	Nominal flow rate of inductor ^a l/min	Regulating device	Minimum inside diameter of the connection	
			Water inlet/Foam water solution outlet	Foam concentrate inlet
Z 0,5	50	without	25,4 mm (1")	25,4 mm (1")
Z 0,5R		with		
Z 1	100	without	25,4 mm (1") or 38 mm (1,5") or 51 mm (2")	
Z 1R		with		
Z 2	200	without	38 mm (1,5") or 51 mm (2")	
Z 2R		with		
Z 4	400	without	51 mm (2") or 63,5 mm (2,5")	
Z 4R		with		
Z 8	800	without	51 mm (2") or 63,5 mm (2,5")	
Z 8R		with		

^a Measured at $p_1 = 5$ bar, $p_2 = 6,5$ bar and $\Delta p_2 \leq 35$ %