
Gasilska in reševalna vozila - 3. del. Trajno vgrajena oprema - Varnost in zahteve za obnašanje v uporabi

Firefighting and rescue service vehicles - Part 3: Permanently installed equipment - Safety and performance

Feuerwehrfahrzeuge - Teil 3: Fest eingebaute Ausrüstung - Sicherheits- und Leistungsanforderungen

Véhicules des services de secours et de lutte contre l'incendie - Partie 3: Equipement installé a demeure - Sécurité et performance

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Firefighting and rescue service vehicles - Part 3: Permanently installed equipment - Safety and performance

Véhicules des services de secours et de lutte contre l'incendie - Partie 3: Equipement installé à demeure - Sécurité et performance

Feuerwehrfahrzeuge - Teil 3: Fest eingebaute Ausrüstung - Sicherheits- und Leistungsanforderungen

This European Standard was approved by CEN on 9 September 2002.

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Foreword

This document (EN 1846-3:2002) 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of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

The CEN/TC 192 entrusted the drafting of this standard to CEN/TC 192/WG3 "Firefighting and rescue service vehicles".

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 an EC Directive.

For the relationship with this EC Directive, see informative Annex ZA, which is an integral part of this document.

EN 1846 "Firefighting and rescue service vehicles" is composed of three parts:

- Part 1: *Nomenclature and designation*;
- Part 2: *Common requirements - Safety and performance*;
- Part 3: *Permanently installed equipment - Safety and performance*.

Annex A is for information only.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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EN 1846-3:2002 (E)**Introduction**

This document is a type C standard as stated in EN 1070:1998.

This document is a complement to EN 1846-2 and deals with some optional specific permanently installed equipment used by firefighters.

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

NOTE Other equipment not covered by this document can be dealt with later in another part, depending on the decision of CEN.

When 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 according to the provisions of this type C standard.

This document also deals with the performance requirements which apply to the equipment as defined in the scope.

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1 Scope

1.1 This Part of this European Standard specifies the minimum requirements for safety and performance of some optional specific permanently installed equipment on firefighting and rescue service vehicles, operated by trained persons, as designated in EN 1846-1 and specified in EN 1846-2.

NOTE 1 Categories and mass classes of the firefighting and rescue service vehicles are given in EN 1846-1.

The permanently installed equipment dealt with in this Part of this European Standard is given below:

- water installation;
- additive installation;
- monitor;
- equipment gantries.

NOTE 2 This Part of this European Standard should be read in conjunction with any national regulations in force for vehicles using the public roads and with any EU Directives and associated EFTA regulations in force relevant to vehicles and their equipment.

For the purposes of this European Standard, the normal ambient temperature range is - 15 °C to + 35 °C.

NOTE 3 In the case of utilization outside this temperature range, the particular temperature range should be specified by the user.

1.2 This Part of this European Standard is not applicable to:

- personnel carrying vehicles; [SIST EN 1846-3:2003](https://standards.iteh.ai/catalog/standards/sist/bd93098f-05a7-4818-a6c4-1e51364148ea/sist-en-1846-3-2003)
- vehicles with a gross laden mass not exceeding 2 t;
- boats;
- aircrafts;
- trains;
- ambulances;
- airport vehicles complying with International Civil Aviation Organisation (ICAO) recommendations.

1.3 This Part of this European Standard deals with the technical requirements to minimize the hazards listed in clause 4 which can arise during the commissioning, the operational use and the routine checking of firefighting and rescue service vehicles when carried out in accordance with the specifications given by the manufacturer or his authorized representative.

It deals also with performance requirements.

It does not cover the hazards generated by:

- noise (as permanently installed equipment cannot be operated separately from the vehicle, this hazard is covered in Part 2);
- radiation (low frequency, radio frequency, radiation, microwaves);
- errors in the software;

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- use in potentially explosive atmospheres;
- construction, transportation, maintenance and decommissioning;
- wind pressure in and out of use;
- static electricity problems;
- remote control;
- electromagnetic compatibility;
- oil hydraulic and pneumatic driving system.

1.4 This document is not applicable to the equipment which is manufactured before its date of publication by CEN.

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 of revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1:1991, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications.*

EN 292-2:1991/A1:1995, *Safety of machinery - Basic concepts, general principles for design – Part 2: Technical principles and specifications.*

EN 418, *Safety of machinery – Emergency stop equipment, functional aspects - Principles for design.*

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 1070:1998, *Safety of machinery – Terminology.*

EN 1028-1:2002, *Fire-fighting pumps – Fire-fighting centrifugal pumps with primer – Part 1: Classification, general and safety requirements.*

EN 1028-2, *Fire-fighting pumps – Fire-fighting centrifugal pumps with primer – Part 2: Verification of general and safety requirements.*

EN 1846-1:1998, *Firefighting and rescue service vehicles – Part 1: Nomenclature and designation.*

EN 1846-2:2001, *Firefighting and rescue service vehicles – Part 2: Common requirements - Safety and performance.*

EN 1846-2:2001/prA1, *Firefighting and rescue service vehicles – Part 2: Common requirements - Safety and performance.*

prEN 1947, *Fire-fighting hoses – Semi-rigid delivery hoses and hose assemblies for pumps and vehicles.*

3 Terms and definitions

For the purposes of this Part of this European Standard, the terms and definitions given in EN 1070:1998, EN 1846-1:1998, EN 1846-2:2001 together with the following apply.

3.1

water installation

combination of components for the collection, storage and delivery of water and/or water-additive mixture at varying pressures and delivery rates

3.1.1

specified rate(s) of the water installation, Q_1

specified rate(s) corresponding to the nearest lower value(s) in the following list : 250 l/min – 500 l/min – 750 l/min – 1 000 l/min – 1 500 l/min – 2 000 l/min – 3 000 l/min – 4 000 l/min – 6 000 l/min

3.1.2

specified outlet pressure(s) of the water installation, p_{a1}

specified outlet pressure(s) corresponding to the nearest lower value(s) in the following list : 6 bar – 10 bar – 15 bar – 40 bar

3.1.3

height

difference of level between the standing surface of the vehicle and the water surface at the time of a pumping appliance suction operation

3.1.4

specified height of the water installation, d

specified height where d equals 1,5 m or 3 m

3.1.5

standing surface of the vehicle

surface on which the vehicle wheels are resting when it is operating

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3.1.6

standing surface of the operator

surface on which the operator stands

3.1.7

installed water pump

pump permanently installed on a vehicle and driven by the motive power of the vehicle, or a pump complete with drive motor

3.1.8

installed water tank

container for storage of water for fire service purposes

3.1.9

supply and delivery connections for water

inlet and outlet devices for joining hoses to the pipework installation

3.1.10

pipework installation for water

any system linking the installed water pump(s), the installed water tank(s) and the supply and delivery connections

3.1.11

operating and control instruments for water

controls and gauges necessary to operate and monitor the water installation system

EN 1846-3:2002 (E)**3.1.12****hosereel system**

rotating hose storage system with semi-rigid hose(s) permanently connected to the pipework installation

3.1.13**wheeled hosereel**

hosereel designed for the storage, the transport and the deployment of layflat hose

3.2**liquid additive**

addition to water to enhance firefighting capabilities e.g. foam concentrate, fire retardant

NOTE In this document, the term "additive" means "liquid additive".

3.2.1**additive installation**

combination of components for the collection, storage and delivery of additive at varying pressures and delivery rates before mixing with water

3.2.2**installed additive pump**

pump permanently installed on a vehicle and driven by the motive power of the vehicle, or a pump complete with drive motor

3.2.3**installed additive tank**

container for storage of additive for fire service purposes

3.2.4**supply and delivery connections for additive**

inlet and outlet devices for joining hoses to the additive installation

3.2.5**pipework installation for additive**

any system linking the installed additive pump(s), the additive installed tank(s) and the supply and delivery connections

3.2.6**operating and control instruments for additive**

controls and gauges necessary to operate and monitor the additive installation system

3.3**rated capacity of a tank**

capacity of liquid contained in a tank that could be used by the corresponding pump(s)

3.4**mixing system**

system to mix the additive (including foam concentrate) with water (and sometimes air) to produce the required firefighting media

NOTE The mixing system is part of the water and/or additive installation.

3.5**monitor**

device permanently fixed on the vehicle for projection of extinguishing agents

3.6**equipment gantry**

mechanical system(s) to assist with the loading, unloading and storage of equipment

4 List of significant hazards

The significant hazards relevant to permanently installed equipment which are dealt with in this part of this European Standard are given in 4.1 to 4.4 (Tables 1 to 4).

4.1 Water installation

Table 1 — List of significant hazards for water installation

| Number of clause / sub-clause in EN 1050: 1996 | Corresponding hazard | Situation/area | References to Part 2 of this standard or other standards | Clause/sub-clause reference in this Part of this standard (in addition to Part 2 when dealt with in it) |
|--|---|---|---|---|
| 1 | Mechanical hazards | | | |
| 1 | Due to accumulation of energy inside the machinery caused, for example, by liquids and gases under pressure | Variation of pressure for firefighters at the end of the branch | / | 5.2.2 |
| 1.4 | Entanglement by a powered system | Exposed power take off (PTO) transmissions | <ul style="list-style-type: none"> 5.1.1.4 of EN 1846-2:2001 EN 953 | / |
| | | Powered rewind hosereel(s) | / | 5.2.2.7 |
| 1.9 | Rupture or piercing of the water installation | Exposed parts of the installation | / | 5.2.2 |
| 1.9 | Ejection of coupling | Supply and delivery location | / | 5.2.2.4 |
| 3 | Thermal hazards | | | |
| 3.1 | Resulting in burns by contact with the pump or by projection of hot water from the pump | Exposed parts of the pump, pipework and delivery connections | <ul style="list-style-type: none"> 5.2.3 of EN 1028-1:2002 | 5.2.2 |
| 7 | Hazards generated by materials and substances processed or used by the machine | | | |
| 7.1 | Inhalation of exhaust gases | Bad location of the exhaust | <ul style="list-style-type: none"> 5.1.1.3.2 of EN 1846-2:2001 | / |

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Table 1 — List of significant hazards for water installation (concluded)

| Number of clause / sub-clause in EN 1050: 1996 | Corresponding hazard | Situation/area | References to Part 2 of this standard or other standards | Clause/sub-clause reference in this Part of this standard (in addition to Part 2 when dealt with in it) |
|--|---|--|--|---|
| 8 | Hazards generated by neglecting ergonomic principles in machinery design (see EN 614-1 and prEN 13861) | | | |
| 8.4 | Inadequate local lighting | At the operating position | <ul style="list-style-type: none"> 5.1.3.3/5.1.4.2 of EN 1846-2:2001 | / |
| 8.5 | Mental overload and underload, stress | No logical relationship between the command and the expected operation at the operating position | <ul style="list-style-type: none"> 5.1.4.2 of EN 1846-2:2001 | 5.2.2.6 |
| 8.6 | Human error, human behaviour | | <ul style="list-style-type: none"> 3rd dash of 3.6.6 of EN 292-2:1991 | |
| 8.7 | Inadequate design, location or identification of manual controls | At the operating position | <ul style="list-style-type: none"> 5.1.4.2/7.3 of EN 1846-2:2001 3rd dash of 3.6.6 of EN 292-2:1991 | / |
| 11 | Impossibility of stopping the machine in the best possible conditions | At the operating position | / | 5.2.1 |
| 20 | Relating to the travelling function | | | |
| 20.5 | Excessive oscillations when moving | Overturning of vehicle. Loss of lateral stability during braking | <ul style="list-style-type: none"> 5.1.1.1/5.1.1.2 of EN 1846-2:2001 | 5.2.2.3 |

4.2 Additive installation

Table 2 — List of significant hazards for additive installation

| Number of clause / sub-clause in EN 1050: 1996 | Corresponding hazard | Situation/area | References to Part 2 of this standard or other standards | Clause/sub-clause reference in this Part of this standard (in addition to Part 2 when dealt with in it) |
|--|--|---------------------------|---|---|
| 1 | Mechanical hazards | | | |
| 1.4 | Entanglement by a powered system (if pump) | Exposed PTO/transmissions | <ul style="list-style-type: none"> 5.1.1.4 of EN 1846-2:2001 EN 953 | / |