



SLOVENSKI STANDARD

SIST EN 17451:2025

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Vgrajene naprave za gašenje - Avtomatski sprinklerski sistemi - Projektiranje, montaža, vgradnja in preverjanje črpalk

Fixed firefighting systems - Automatic sprinkler systems - Design, assembly, installation and commissioning of pump sets

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen - Projektierung, Zusammenstellung, Montage und Inbetriebnahme von Pumpenaggregaten

Installations fixes de lutte contre l'incendie - Systèmes d'extinction automatique de type sprinkleur - Conception, assemblage, installation et mise en service des groupes motopompes

Ta slovenski standard je istoveten z: EN 17451:2024

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Fixed firefighting systems - Automatic sprinkler systems - Design, assembly, installation and commissioning of pump sets

Installations fixes de lutte contre l'incendie - Systèmes
d'extinction automatique de type sprinkleur -
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Sprinkleranlagen - Projektierung, Zusammenbau,
Montage und Inbetriebnahme von Pumpenaggregaten

This European Standard was approved by CEN on 4 November 2024.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17451:2024) 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of an identical text or by endorsement, at the latest by June 2025, and conflicting national standards shall be withdrawn at the latest by June 2025.

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

This document is related to the following European standards:

CEN/TS 14816, *Fixed firefighting systems — Water spray systems — Design, installation and maintenance*;

EN 671 (all parts), *Fixed firefighting systems — Hose systems*;

EN 12094 (all parts), *Fixed firefighting systems — Components for gas extinguishing systems*;

EN 12101 (all parts), *Smoke and heat control systems*;

EN 12259 (all parts), *Fixed firefighting systems — Components for sprinkler and water spray systems*;

EN 12416 (all parts), *Fixed firefighting systems — Powder systems*;

EN 12845 (all parts), *Fixed firefighting systems — Automatic sprinkler systems*;

EN 13565 (all parts), *Fixed firefighting systems — Foam systems*;

EN 14972 (all parts), *Fixed firefighting systems — Water mist systems*.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

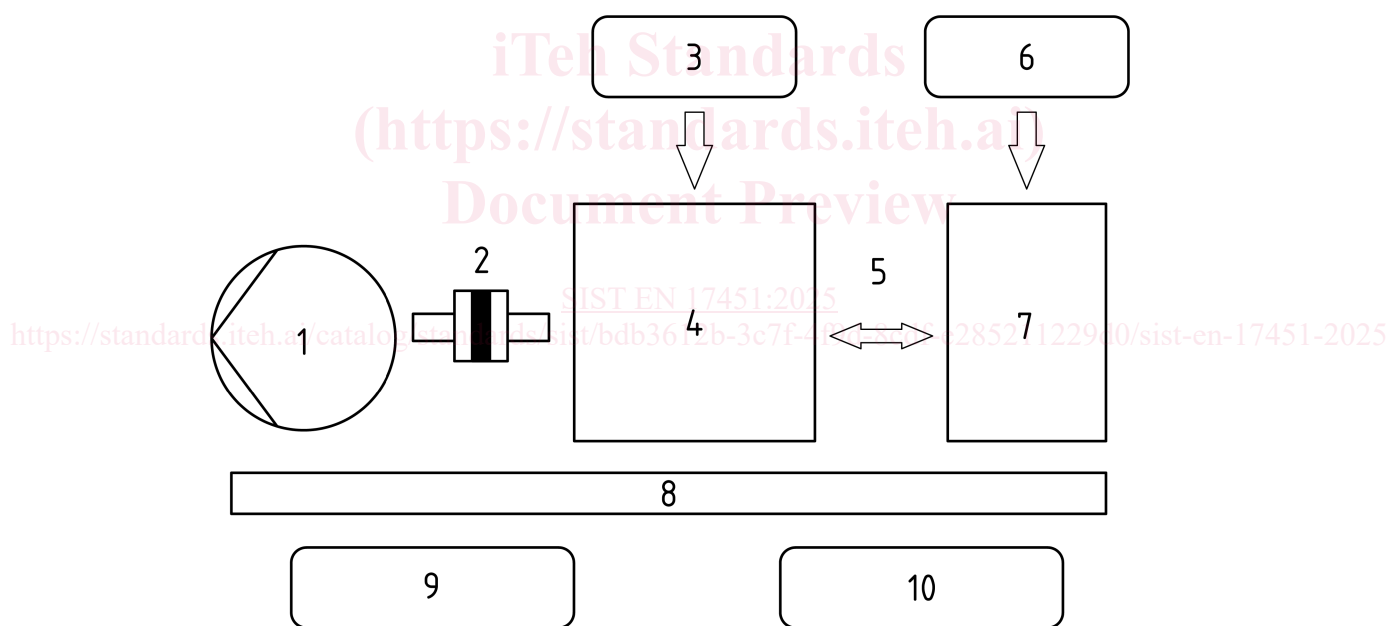
EN 17451:2024 (E)**Introduction**

This document covers:

- the design and assembly of the pump set in accordance with the requirements of EN 12845:2015+A1:2019;
- identification of essential pump set components;
- the performance characteristics for components used within a pump set;
- performance testing requirements for diesel and electric driven pump sets;
- testing, commissioning and handover;
- documentation.

This document can be applied with the current edition of EN 12845:2015+A1:2019. Any conflicting requirements that arise by application to other standards would need to be resolved through the contracts and specifications in each case.

Figure 1 identifies the typical pump set components covered by this document.

**Key**

- | | |
|--|---|
| 1 pump | 6 pressure loss detection |
| 2 coupling | 7 pump set control panel |
| 3 fuel and fuel tank for diesel driver | 8 frame |
| 4 driver | 9 test system |
| 5 wiring | 10 auxiliary items, e.g. exhaust and cooling pipe |

Figure 1 — Example of a typical pump set assembly for a diesel driven unit

1 Scope

This document specifies design, assembly, installation and commissioning requirements for pump sets for use in sprinkler systems conforming to EN 12845:2015+A1:2019.

Where applicable, this document can also be used for pump sets for other water based fixed firefighting systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12259-5:2002, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 5: Water flow detectors*

EN 12259-12:2023, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 12: Pumps*

EN 12845:2015+A1:2019, *Fixed firefighting systems — Automatic sprinkler systems — Design, installation and maintenance*

EN 12845-2:2024, *Fixed firefighting systems — Automatic sprinkler systems — Part 2: Design and installation of ESFR and CMSA sprinkler systems*

EN 12845-3, *Fixed firefighting systems — Automatic sprinkler systems — Part 3: Guidance for earthquake bracing*

EN 50342-1, *Lead-acid starter batteries — Part 1: General requirements and methods of test*

EN 50342-2, *Lead-acid starter batteries — Part 2: Dimensions of batteries and marking of terminals*

EN 60529:1991,¹ *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60623, *Secondary cells and batteries containing alkaline or other non-acid electrolytes — Vented nickel-cadmium prismatic rechargeable single cells (IEC 60623)*

EN 60034-1, *Rotating electrical machines — Part 1: Rating and performance (IEC 60034-1)*

EN IEC 60947-1:2021,² *Low-voltage switchgear and controlgear — Part 1: General rules (IEC 60947-1:2020)*

EN IEC 60947-3:2021,³ *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3:2020)*

EN IEC 60947-4-1:2019,⁴ *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters — Electromechanical contactors and motor-starters (IEC 60947-4-1:2018)*

ISO 281, *Rolling bearings — Dynamic load ratings and rating life*

¹ As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

² As impacted by EN IEC 60947-1:2021/AC:2023-01 and EN IEC 60947-1:2021/AC:2024-05.

³ As impacted by EN IEC 60947-3:2021/AC:2023-01 and EN IEC 60947-1:2021/AC:2024-05.

⁴ As impacted by EN IEC 60947-4-1:2019/AC:2020-05 and EN IEC 60947-4-1:2019/AC:2021-04.

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ISO 3046-1, *Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use*

NEMA MG1-2016, *Motors and Generators*

3 Terms, definitions, symbols and abbreviated terms**3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 12845 (all parts) and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1.1**assembly**

design, production and testing of the pump set

3.1.2**coupling**

device to transmit torque and power from the driver to the pump

3.1.3**coupling safety factor**

safety margin specified by coupling manufacturers to address uncertainties in design

Note 1 to entry: See 5.2.

Note 2 to entry: The abbreviation for coupling safety factor is *SF_k*.

3.1.4**all-elastomeric coupling**

linkage that relies solely on an elastomeric material for power transmission

3.1.5**electric motor service factor**

design margin to account for higher torque loadings which can be encountered under certain operating conditions

3.1.6**fail-safe coupling**

integrated unit which provides power transmission, damping and flexibility from the driver to the pump, designed so that the wear or failure of the elastomeric components (if present) of the coupling does not interrupt the transmission of full torque from the driver to the pump

Note 1 to entry: Examples of fail-safe elastomeric couplings include: gimbal, universal drive shaft, spacer coupling, claw couplings and flexible couplings.

3.1.7**installation**

mounting and commissioning of the pump set in its final location of use in accordance with the pump set manufacturer's installation manual and procedures

3.1.8**maintenance**

work performed to keep pump sets operable including repairs where required

3.1.9**pressure sensor**

element which generates an electrical signal that is transmitted to the pump set control panel according to the pressure at the point where it is hydraulically connected

3.1.10**pump set**

assembled machine which is intended to supply water to automatic sprinkler, water spray and wet riser systems, typically comprising of pump, electric motor or diesel engine, control panel, partial wiring loom, drive coupling, mounting frame, baseplate and where required batteries and a fuel tank

3.1.11**pump set installer**

entity who is responsible for integrating the fire pump set into the automatic sprinkler, water spray or wet riser system in accordance with the pump set manufacturer installation manual and procedures

3.1.12**pump set manufacturer**

entity responsible for the design, assembly and build of the pump set

Note 1 to entry: It can be necessary for the pump set manufacturer to establish and manage technical and commercial relationships with key sub-component or sub-system suppliers.

3.1.13**rigid coupling**

component without flexibility which provides power transmission from diesel engines or electric motors to fire pumps that supply water to fire protection systems

3.1.14**spacer coupling**

cylindrical shaped piece introduced between the pump shaft coupling hub and motor shaft coupling hub to facilitate maintenance

EN 17451:2024 (E)**3.2 Symbols and abbreviated terms**

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

AC	alternating current
ECM	engine control module
EMC	electromagnetic compatibility
EMF	electromagnetic fields
FLC	full load current
FLT	full load torque
IFN	numerical value of the fuel stop power taken as the maximum IFN value in accordance to ISO 3046-1 for the driver, expressed in kilowatt
IP	ingress protection, degree of protection rating as per EN 60529 classifications
L_{10} basic rating life	time by which ten percent of a population of a product will have failed (see ISO 281 rolling bearings)
LRC	locked rotor current
NPSHr	net positive suction head required
NPSHa	net positive suction head available
SF_k	coupling safety factor
VFD	variable frequency drive

4 Performance of pump set**4.1 General design principles**

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The design details covered in this clause address the general principles which shall be considered for all pump set designs covered by this document. The design of pump set shall be based on the following information provided to the pump set manufacturer:

- pressure-flow demand characteristics (including any required design margins) [see 4.2.2 and 10.2.2];
- maximum possible suction pressure at pump suction flange;
- NPSHa at low water level in the water storage tank measured at the pump suction flange at the maximum possible demand flow including 1 m safety margin;
- duration of operation (e.g. for fuel tank sizing; see 4.4);
- driver type (electric or diesel);
- applicable fixed firefighting system design specification according to EN 12845:2015+A1:2019;
- hazard classification according to EN 12845:2015+A1:2019;
- water quality (potable, brackish, sea or filtered) description;