SLOVENSKI STANDARD
oSIST prEN 14492-1:2026

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Dvigala (žerjavi) - Motorni vitli in dvižni mehanizmi - 1. del: Motorni vitli

Cranes - Power driven winches and hoists - Part 1: Power driven winches

Krane - Kraftgetriebene Winden und Hubwerke - Teil 1: Kraftgetriebene Winden

Appareils de levage à charge suspendue - Treuils et palans motorisés - Partie 1 : Treuils de traction motorisés

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Cranes - Power driven winches and hoists - Part 1: Power driven winches

Appareils de levage à charge suspendue - Treuils et palans motorisés - Partie 1 : Treuils de traction motorisés

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 147.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document has been prepared by Technical Committee CEN/TC 147 “Cranes – Safety”, the secretariat of which is held by SFS.

This document will supersede EN 14492-1:2006+A1:2009.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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

This is the first part of the standard “Cranes — Power driven winches and hoists”. The parts of the standard are:

— *Part 1: Power driven winches [the present document]*

— *Part 2: Power driven hoists*

For the relationship with other European Standards for cranes, see informative Annex G.

CEN/TC 147 WG17 has reviewed EN 14492-1:2006+A1:2009 to adapt the standard to the technical progress, new requirements and changes in standards referenced; the main topics are:

— winches are re-defined as: “machine designed for the movement or manipulation of a load supported on level or inclined planes using a pulling medium (e.g. rope or chain) and winding mechanism”;

— the scope will exclude forestry winches which are covered by EN ISO 19472-1;

— the scope will clarify that internal combustion motor as prime mover are not covered;

— the design and calculation reference to EN 13001-1, EN 13001−2 and EN 13001−3-1. The design according to the FEM-documents: FEM 1.001, FEM 9.901 does not apply any longer;

— the design and calculation to ISO 16625:2025 is incorporated. The standards ISO 4308-1:2003, 5.7 Rope drives does not apply any longer;

— the design and calculation to EN 13001-3-5:2025 “Hook” is in-cooperated;

— the EN 14492-1 references to FprEN 13135:2026[2];

— new requirements for the use of high-tensile synthetic ropes;

— new requirements for cyber-security;

— new requirements for cable-less controls;

— new requirements for electromagnetic compatibility (EMC);

— a guidance of relationships between the FEM and ISO-Classification (Winch Classification) and the new Classification in accordance with EN 13001 series is added; see Annex G.

Introduction

This document is a harmonized standard to provide one means for power driven winches to conform to the essential health and safety requirements of the EU Regulation 2023/1230 (Machinery). The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document. The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

1 Scope

This document is applicable to the design, information for use, maintenance and testing of power-driven winches for which the prime mover is an electric motor, hydraulic motor, or pneumatic motor. Winches are designed for the movement or manipulation of loads supported on level or inclined planes in situations where risks resulting from a failure of the winding mechanism or pulling medium are mitigated by external measures.

This document is not applicable to devices which handle suspended loads.

Generally, a winch is used without any additional transport movement, except in cases where a winch is used on a stranded vehicle for self-recovery of the vehicle.

Applications of winches covered are for example, but not limited to:

a) rope winches;

b) belt winches, except steel belts used as pulling media;

c) traction winches, including double capstan and traction sheave winches.

These types of winches a) to c) also include the following specific applications:

— vehicle recovery winches;

— winches for boat trailers;

— winches for stationary offshore applications.

NOTE Examples are shown in Annex H.

This document does not apply to:

— power-driven hoists in accordance with EN 14492-2;

— forestry winches in accordance with EN ISO 19472-1;

— winches for seagoing vessels and mobile offshore units;

— winches for the lifting of persons;

— NGL building hoists in accordance with EN 14492-2;

— winches for the handling of hot molten masses.

This document deals with the significant hazards, hazardous situations or hazardous events relevant to power driven winches when used as intended and under conditions of misuse which are reasonably foreseeable, identified in Annex A.

This document does not specify additional requirements for hazards related to the use of power driven winches in explosive atmospheres in underground mines.

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 12077-2:2024, *Cranes safety — Requirements for health and safety — Part 2: Limiting and indicating devices*

EN 13001-1:2015, *Cranes — General design — Part 1: General principles and requirements*

EN 13001-2:2021, *Crane safety — General design — Part 2: Load actions*

EN 13001-3-1:2025, *Cranes — General Design — Part 3-1: Limit States and proof competence of steel structure*

EN 13001-3-5:2025, *Cranes — General design — Part 3-5: Limit states and proof of competence of forged and cast hooks*

FprEN 13135:2026,[1] *Cranes — Safety — Requirements for equipment*

EN 13557:2024, *Cranes — Control devices and control stations*

EN 60529:1991,[2] *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 61000-6-7:2015, *Electromagnetic compatibility (EMC) — Part 6-7: Generic standards — Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations (IEC 61000-6-7:2014)*

EN 62745:2017,[3] *Safety of machinery — Requirements for cableless control systems of machinery (IEC 62745:2017)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 7010:2020,[4] *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2019)*

EN ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

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[1] Under preparation on CEN/TC 147/WG 3.

[2] As impacted by EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02, EN 60529:1991/AC:2016-12 and EN 60529:1991/corrigendum May 1993.

[3] As impacted by EN 62745:2017/A11:2020.

[4] As impacted by EN ISO 7010:2020/A1:2020; EN ISO 7010:2020/A2:2022; EN ISO 7010:2020/A3:2022; EN ISO 7010:2020/A4:2023; EN ISO 7010:2020/A5:2023; EN ISO 7010:2020/A6:2023; EN ISO 7010:2020/A7:2024; EN ISO 7010/A8:2024.

EN ISO 11688-1:2009, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2023, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2023)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 20607:2019, *Safety of machinery — Instruction handbook — General drafting principles (ISO 20607:2019)*

EN IEC 60034-5:2020,[5] *Rotating electrical machines — Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) Classification (IEC 60034-5:2020)*

EN IEC 60204-32:2025, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:2023)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (IEC 61000-6-2:2016)*

EN IEC 61000-6-4:2019, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments (IEC 61000-6-4:2018)*

EN IEC 61800-3:2023,[6] *Adjustable speed electrical power drive systems — Part 3: EMC requirements and specific test methods for PDS and machine tools (IEC 61800-3:2022)*

EN IEC 62443-3-3:2019,[7] *Industrial communication networks — Network and system security — Part 3-3: System security requirements and security levels (IEC 62443-3-3:2013)*

EN IEC 62443-4-2:2019,[8] *Security for industrial automation and control systems — Part 4-2: Technical security requirements for IACS components (IEC 62443-4-2:2019)*

ISO 3864-2:2016, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 12482:2014, *Cranes — Monitoring for crane design working period*

ISO 16625:2025, *Cranes and hoists — Selection of wire ropes, drums and sheaves*

[5] As impacted by EN IEC 60034-5:2020/AC:2024-01.

[6] As impacted by EN IEC 61800-3:2023/AC:2025-04.

[7] As impacted by EN IEC 62443-3-3:2019/AC:2019-10.

[8] As impacted by EN IEC 62443-4-2:2019/AC:2022-09.

3 Terms and definitions

For the purposes of this document, the following terms and definitions given in EN ISO 12100:2010 and the following apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
winch
machine which is designed for the movement or manipulation of loads supported on level or inclined planes in situations where risks resulting from a failure of the winding mechanism or pulling medium are mitigated by external measures

Note 1 to entry: Machines handling suspended loads are excluded.

Note 2 to entry: Examples are given in Annex H.

3.2
anchorage
complete device to anchor the pulling media to a fixed point

3.3
belt drive
system of belts, belt pulleys, belt drums and belt anchorages

3.4
direct control
main power supply to the winch is directly controlled by a hand-controlled actuator without additional means between the actuator and the main power circuit

3.5
hydraulic component
element (e.g. valve, filter) interconnected and forming an operational hydraulic system

3.6
hydraulic overpressure
pressure exceeding the rated pressure

3.7
hydraulic system
fluid power system, where power is transmitted and controlled through a fluid (relates only to hydraulic technology) under pressure within a circuit

3.8
indirect control
main power supply to the winch is not directly controlled by a hand-controlled actuator but uses additional means between the hand-controlled actuator and the main power circuit

3.9
raising
lowering
movement of the load supported on an inclined plane which results in a change to its horizontal and vertical position

3.10
maximum speed
maximum speed of the pulling medium which can be achieved by the winch

3.11
power source
provider of the energy to drive the prime mover of a winch is either electrical, hydraulic, pneumatic

3.12
pulling
moving of loads supported on level planes where the removal of the pulling force or a failure of the pulling mechanism or pulling medium results either in no movement of the load, or a movement that cannot result in a significant hazard

3.13
pulling medium
part of the winch by which the drive mechanism of the winch is connected to the load

3.14
pulling force limiter
device that automatically prevents the winch from pulling loads in excess of its maximum pulling force, considering the dynamic effects occurring during normal operational use

3.15
required maximum pressure
maximum required pressure in hydraulic or pneumatic systems at which the component is intended to operate for a number of repetitions to assure service life and achieving the specified maximum performance data

3.16
rated pulling force
F_{RP}
maximum force the winch is designed to operate at rated speed; in the case of winches with multi –layer winding, this is the value on the bottom layer of the drum

3.17
rated speed
linear speed of the pulling medium when pulling at rated pulling force - of the winch; in the case of winches with multi –layer winding, this is the value on the bottom layer of the drum:

— in case of electric motors, the rated voltage and rated frequency applies;

— in case of hydraulic motors, the rated flow applies;

— in case of pneumatic motors, the rated pressure applies

3.18
rope anchorage
arrangement comprising the parts which connect the rope termination to the major load bearing structure

EXAMPLE Pins, bolts, compensating levers, tension rods.

3.19
rope drive
system of ropes running on rope drums or traction sheaves and over rope sheaves, and rope attachment parts

3.20
rope end termination
arrangement that has direct contact with the rope in order to allow its connection to e.g. rope anchorage and hook

3.21
rope fastening onto the rope drum
all parts with which the rope is fastened onto the rope drum

3.22
traction winch
winch where a rope is not stored on a drum but passes through a rope drive in order to achieve the necessary traction required for rated pulling force

3.23
vehicle recovery winch
winch installed on a vehicle or a trailer for the purpose of self-recovery, recovery and loading and unloading of inoperative and operational vehicles, machinery, caravans and boats onto the carrying platform or other supporting structures

3.24
winch for a boat trailer
winch fitted to a boat trailer and used for lowering the boat from the trailer into the water, or pulling the boat out of the water onto the trailer

3.25
working coefficient
ratio of the minimum breaking force of the pulling medium divided by the rated pulling force

3.26
maximum pulling force
F_{max}
force which can be achieved by the winch when the pulling force limiter is triggered which, in the case of winches with multi –layer winding, is the value on the bottom layer of the drum

3.27
design factor
ratio between the minimum breaking force of the pulling medium divided by the maximum pulling force

3.28
working cycle
for the purpose of classification, a working cycle is a sequence of movements which commences when the winch is ready to pull the load and ends when the winch is ready to pull the next load