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Builders hoists for persons and materials with vertically guided cages

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/24

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12159

July 2024

ICS 91.140.90 Supersedes EN 12159:2012

English Version

Builders hoists for persons and materials with vertically guided cages

Ascenseurs de chantier pour personnes et matériaux avec cages guidées verticalement

Bauaufzüge zur Personen- und Materialbeförderung mit senkrecht geführten Fahrkörben

This European Standard was approved by CEN on 3 June 2024.

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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Ref. No. EN 12159:2024 E

Contents

Page

European foreword

This document (EN 12159:2024) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.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 supersedes EN 12159:2012.

EN 12159:2024 includes the following significant technical changes with respect to EN 12159:2012:

— hydraulic driven hoists, drum driven hoists, counterweighted hoists and expanding linkage mechanism are removed from the scope of the standard;

— noise has been removed from the scope of the standard;

— additional clarifications of the scope concerning multiple hoists;

— limit state method added;

— out of service wind calculation updated;

— introducing performance levels for safety functions according to EN ISO 13849-1:2023;

— modified the definition of overload;

— normative references are updated.

This document has been prepared under a standardisation 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.

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.

Introduction

This document is one of a series of standards produced by CEN/TC 10/SC 1 Building hoists as part of the CEN programme of work to produce machinery safety standards.

The document is a C-standard relating to safety for builders' hoist for persons and materials

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.

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.

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

1 Scope

1.1 This document specifies power operated temporarily installed builders' hoists (referred to as "hoists" in this document) intended for use by persons who are permitted to enter sites of engineering and construction, serving landing levels, having a cage:

— designed for the transportation of persons or of persons and materials;

— guided;

— travelling vertically or along a path within 15° max. of the vertical;

— supported or sustained by rack and pinion;

— designed with and / or without support from separate structure.

1.2 This document specifies the significant hazards, hazardous situations or hazardous events relevant to the machine as listed in Annex C which arise during the various phases in the life of the machine and describes methods for the elimination or reduction of these hazards when it is used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

1.3 This document does not specify the additional requirements for:

— operation in severe conditions (e.g. extreme climates, strong magnetic fields);

— lightning protection;

— operation subject to special rules (e.g. potentially explosive atmospheres);

— electromagnetic compatibility (emission, immunity);

— handling of loads the nature of which could lead to dangerous situations (e.g. molten metal, acids/bases, radiating materials, fragile loads);

— the use of combustion engines;

— the use of remote controls;

— hazards occurring during manufacture;

— hazards occurring as a result of mobility;

— hazards occurring as a result of being erected over a public road;

— earthquakes;

— emission of airborne noise;

— dual (twin) cage hoists;

— twin masts hoists;

— combination hoists, e.g. an EN 12159 hoist with an EN 12158-1 hoist;

— counterweighted hoists, neither by separate counterweight nor counterweighted by another cage.

1.4 This document does not apply to:

— builders' hoists for the transport of goods only EN 12158-1:2021 and EN 12158-2:2000+A1:2010;

— lifts according to EN 81-20:2020, EN 81-3:2000+A1:2008 and EN 81-43:2009;

— work cages suspended from lifting appliances;

— work platforms carried on the forks of fork trucks;

— work platforms according to EN 1495:1997+A2:2009 [1];

— transport platforms according to EN 16719:2018;

— funiculars;

— lifts specially designed for military purposes;

— mine lifts;

— theatre elevators;

— hoists with hydraulic drive/braking systems and hydraulic safety devices.

1.5 This document specifies the hoist installation. It includes the base frame and base enclosure but excludes the design of any concrete, hard core, timber or other foundation arrangement. It includes the design of mast ties but excludes the design of anchor bolts to the supporting structure. It includes the landing gates and their frames but excludes the design of any anchorage fixing bolts to the supporting structure.

1.6 This document does not apply to builders' hoists for persons and material with vertically guided cages which are manufactured before the date of publication of this document by CEN.

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 81-20:2020, *Safety rules for the construction and installation of lifts — Lifts for the transport of persons and goods — Part 20: Passenger and goods passenger lifts*

EN 81-50:2020, *Safety rules for the construction and installation of lifts — Examinations and tests — Part 50: Design rules, calculations, examinations and tests of lift components*

EN 894-1:1997+A1:2008, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

[1] As impacted by EN 1495:1997+A2:2009/AC:2010.

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

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2016)*

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

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 13849-2:2012, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation (ISO 13849-2:2012)*

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

EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 14118:2018, *Safety of machinery — Prevention of unexpected start-up (ISO 14118:2017)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

ISO 2394:2015, *General principles on reliability for structures*

ISO 4302:2016, *Cranes — Wind load assessment*

ISO 6336-1:2019, *Calculation of load capacity of spur and helical gears — Part 1: Basic principles, introduction and general influence factors*

ISO 6336-2:2019, *Calculation of load capacity of spur and helical gears — Part 2: Calculation of surface durability (pitting)*

ISO 6336-3:2019, *Calculation of load capacity of spur and helical gears — Part 3: Calculation of tooth bending strength*

ISO 6336-5:2016, *Calculation of load capacity of spur and helical gears — Part 5: Strength and quality of materials*

[2] As impacted by EN 60529:1991/AC:2006-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.