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NÕUDED

Earth-moving machinery - Safety - Part 5:
Requirements for hydraulic excavators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Earth-moving machinery - Safety - Part 5: Requirements for hydraulic excavators

Engins de terrassement - Sécurité - Partie 5 :
Prescriptions applicables aux pelles hydrauliques

Erdbaumaschinen - Sicherheit - Teil 5: Anforderungen
für Hydraulikbagger

This European Standard was approved by CEN on 14 February 2022.

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

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European foreword

This document (EN 474-5:2022) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines - Safety”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by March 2024.

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 474-5:2006+A3:2013.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

For bibliographic references, see EN 474-1:2022.

EN 474 “Earth-moving machinery — Safety” comprises the following parts:

- Part 1: General requirements
- Part 2: Requirements for tractor-dozers
- Part 3: Requirements for loaders
- Part 4: Requirements for backhoe-loaders
- Part 5: Requirements for hydraulic excavators
- Part 6: Requirements for dumpers
- Part 7: Requirements for scrapers
- Part 8: Requirements for graders
- Part 9: Requirements for pipelayers
- Part 10: Requirements for trenchers
- Part 11: Requirements for earth and landfill compactors
- Part 12: Requirements for cable excavators
- Part 13: Requirements for rollers

This document is intended for use in combination with part 1 of the series.

The main differences between this document and EN 474-5:2006+A3:2013 are as follows:

- a) normative references (Clause 2) (revised and updated);
- b) safety related functions of control systems (excluded);
- c) definitions (Clause 3) (revised and updated);
- d) list of significant hazards (revised and updated);
- e) requirements for operative protective structures (revised);
- f) ROPS requirements for hydraulic excavators (revised);
- g) visibility requirements (added);
- h) lifting operation requirements (revised);
- i) verification methods table (added) (Clause 5);
- j) rated lift capacity charts for lifting operation (updated);
- k) requirements for excavator swing brake (revised);
- l) illustrations (updated);
- m) requirements for quick couplers (added);
- n) list of significant hazards (Annex A) (updated);
- o) Annex ZA (updated).

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, Turkey and the United Kingdom.

Introduction

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

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 in 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 together with EN 474-1:2022 deals with all significant hazards, hazardous situations and events relevant to hydraulic excavators when used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A) associated with the whole lifetime of the machine as described in EN ISO 12100:2010, 5.4.

The requirements of this document are complementary to the common requirements formulated in EN 474-1:2022. This document does not repeat the requirements of EN 474-1:2022 but supplements or modifies the requirements for hydraulic excavators.

This document does not provide requirements for main electrical circuits and drives of machinery when the primary source of energy is an external electrical supply.

The following significant and relevant hazards are not covered in this document:

- Laser;
- Lightning.

This document does not provide performance requirements for safety related functions of control system(s).

This document does not deal with towing of trailers.

This document does not deal with demolition machinery.

This document also deals with lifting operation application, shovel application, log application, grapple application, and magnetic plate application.

This document is not applicable to hydraulic excavators 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 474-1:2022, *Earth-moving machinery — Safety — Part 1: General requirements*

EN 13531:2001+A1:2008, *Earth-moving machinery — Tip-over protection structure (TOPS) for compact excavators — Laboratory tests and performance requirements (ISO 12117:1997 modified)*

EN ISO 3471:2008, *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements (ISO 3471:2008)*

EN ISO 5353:1998, *Earth-moving machinery and tractors and machinery for agriculture and forestry — Seat index point (ISO 5353:1995)*

EN ISO 6683:2008, *Earth-moving machinery — Seat belts and seat belt anchorages — Performance requirements and tests (ISO 6683:2005)*

EN ISO 7096:2020, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2020)*

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

EN ISO 16001:2017, *Earth-moving machinery — Object detection systems and visibility aids — Performance requirements and tests (ISO 16001:2017)*

ISO 5006:2017, *Earth-moving machinery — Operator's field of view — Test method and performance criteria*

ISO 6016:2008, *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components*

ISO 7451:2007, *Earth-moving machinery — Volumetric ratings for hoe-type and grab-type buckets of hydraulic excavators and backhoe loaders*

ISO 7546:1983, *Earth-moving machinery — Loader and front loading excavator buckets — Volumetric ratings*

ISO 10262:1998, *Earth-moving machinery — Hydraulic excavators — Laboratory tests and performance requirements for operator protective guards*

ISO 10262:1998/Cor 1:2009, *Earth-moving machinery — Hydraulic excavators — Laboratory tests and performance requirements for operator protective guards — Technical Corrigendum 1*

ISO 10567:2007, *Earth-moving machinery — Hydraulic excavators — Lift capacity*

ISO 12117-2:2008, *Earth-moving machinery — Laboratory tests and performance requirements for protective structures of excavators — Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t*

ISO 12117-2:2008/Cor 1:2010, *Earth-moving machinery — Laboratory tests and performance requirements for protective structures of excavators — Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t — Technical Corrigendum 1*

ISO 12117-2:2008/AMD 1:2016, *Earth-moving machinery — Laboratory tests and performance requirements for protective structures of excavators — Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t – Amendment 1*

ISO 13031:2016, *Earth-moving machinery — Quick couplers — Safety*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 474-1:2022, EN ISO 12100:2010 and the following apply.

NOTE Terminology for hydraulic excavators are specified in ISO 7135:2009 and illustrated in Annex D of this document.

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

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