

MULLATÖÖMASINAD. OHUTUS. OSA 12:
TROSS-EKSKAVAATORITELE ESITATAVAD NÕUDED

Earth-moving machinery - Safety - Part 12:
Requirements for cable excavators



ESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 474-12:2022 sisaldab Euroopa standardi EN 474-12:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 474-12:2022 consists of the English text of the European standard EN 474-12:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.03.2022.	Date of Availability of the European standard is 30.03.2022.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 53.100

Standardite reproduutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele
Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation
No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation:
Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 474-12

March 2022

ICS 53.100

Supersedes EN 474-12:2006+A1:2008

English Version

Earth-moving machinery - Safety - Part 12: Requirements
for cable excavators

Engins de terrassement - Sécurité - Partie 12 :
Prescriptions applicables aux pelles à câbles

Erdbaumaschinen - Sicherheit - Teil 12: Anforderungen
für Seilbagger

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

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

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

Contents

	Page
European foreword.....	3
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	7
4 Safety requirements and/or protective/risk reduction measures.....	9
4.1 General.....	9
4.2 Access	9
4.3 Operator's station	9
4.4 Seat	9
4.5 Operator's controls and indicators.....	10
4.6 Steering system.....	10
4.7 Swing brakes.....	10
4.8 Stability.....	10
4.9 Excavator operation.....	13
4.10 Lifting operation.....	17
4.11 Cable excavator with electrical power source.....	17
4.12 Maintenance.....	17
5 Verification of the safety requirements and/or protective/risk reduction measures.....	18
6 Information for use	20
6.1 General.....	20
6.2 Operator's manual.....	20
Annex A (informative) List of significant hazards.....	22
Annex B (normative) Performance and test requirements for cable excavator swing brakes	27
B.1 General.....	27
B.2 Terms and definitions	27
B.3 Minimum performance	27
B.4 Conditions for testing the swing service brake.....	29
Annex C (informative) Illustrations.....	30
C.1 Standard applications.....	30
C.2 Special applications.....	33
C.3 Wheel type cable excavator in transport position for road travelling	35
Annex D (informative) Examples of free-fall operation and activation	36
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC machinery, and amending Directive 95/16/EC (recast) [2006 L157] aimed to be covered.....	40
Bibliography.....	45

European foreword

This document (EN 474-12:2022) 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 474-12:2006+A1:2008.

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 474-12:2006+A1:2008 are as follows:

- a) normative references (Clause 2) (revised and updated);
- b) definitions (Clause 3) (revised and updated);
- c) list of significant hazards (Annex A) (revised and updated);
- d) requirements for operative protective structures (revised);
- e) free-fall requirements (revised);
- f) verification methods table (Clause 5) (added);
- g) stability requirements (revised and updated);
- h) requirements for swing brake (revised);
- i) illustrations (updated);
- j) 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 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 together with EN 474-1:2022 deals with all significant hazards, hazardous situations and events relevant to cable 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 cable 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.

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

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

- Laser;
- Lightning.

Drilling and foundation equipment (covered by EN 16228-1:2014+A1:2021 to EN 16228-7:2014+A1:2021) are not dealt with in this document.

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.

This document does not deal with demolition machinery.

This document is not applicable to cable 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 16228-1:2014+A1:2021, *Drilling and foundation equipment — Safety — Part 1: Common requirements*

EN 13000:2010+A1:2014, *Cranes — Mobile cranes*

EN 14502-2:2005+A1:2008, *Cranes — Equipment for the lifting of persons — Part 2: Elevating control stations*

EN 60204-32:2008, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

EN ISO 2867:2011, *Earth-moving machinery — Access systems (ISO 2867:2011)*

EN ISO 6165:2012, *Earth-moving machinery — Basic types — Identification and terms and definitions (ISO 6165:2012)*

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)*

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

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*

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 1 Terminology for hydraulic excavators are specified in ISO 7135:2009.

NOTE 2 Terminology for cable excavators are specified in ISO 15219:2004 and illustrated in Annex C 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>

3.1

cable excavator

excavator (see 4.4 of EN ISO 6165:2012), having a wire rope-operated upper structure primarily designed for excavating (e.g. with a dragline bucket, a front shovel or grab, a chisel), for compacting material (e.g. with a compaction plate), for demolition work (e.g. by hook or ball) and for material handling with special equipment and attachment

[SOURCE: EN ISO 6165:2012, 4.4.3, modified]

3.2

boom hoist system

system which consists of the boom and its adjustment mechanism

Note 1 to entry: Boom hoist system can consist of e.g. lower-, intermediate- and head-section, the A-frame system and the boom hoist winch system, hydraulic-mechanical adjustment mechanism.

3.3

lift system

parts of the machine used for earth-moving-, demolition-, compaction- and lifting operation (e.g. with hook assembly) application which consists of the main winch system

3.4

lifting and lowering operation

lifting and lowering of a load without disengaging the lifting drum and the lift drive system