

METSATÖÖMASINAD. ÜLDISED OHUTUSNÕUDED

**Machinery for forestry - General safety requirements -
Access to operator's station and maintenance locations
(ISO 11850:2011 + ISO 11850:2011/Amd 1:2016 +
ISO 11850:2011/Amd 2:2022)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN ISO 11850:2011+A1+A2:2022 sisaldab Euroopa standardi EN ISO 11850:2011 ja selle muudatuste A1:2016 ja A2:2022 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11850:2011+A1+A2:2022 consists of the English text of the European standard EN ISO 11850:2011 and its amendments A1:2016 and A2:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 15.11.2011, muudatused A1 10.02.2016 ja A2 25.05.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 15.11.2011, for A1 10.02.2016 and A2 25.05.2022.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega A1 A1 . Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega A2 A2 . Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags A1 A1 . The start and finish of text introduced or altered by amendment A2 is indicated in the text by tags A2 A2 . The standard is available from the Estonian Centre for Standardisation and Accreditation.

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English Version

**Machinery for forestry - General safety requirements -
Access to operator's station and maintenance locations
(ISO 11850:2011 + ISO 11850:2011/Amd 1:2016 + ISO
11850:2011/Amd 2:2022)**

Matériel forestier - Exigences de sécurité générales -
Accès au poste d'opérateur et emplacements de
maintenance (ISO 11850:2011 + ISO 11850:2011/Amd
1:2016 + ISO 11850:2011/Amd 2:2022)

Forstmaschinen - Generelle Sicherheitsanforderungen
- Zugang zur Bedienerkabine und zu
Wartungsbereichen (ISO 11850:2011 + ISO
11850:2011/Amd 1:2016 + ISO 11850:2011/Amd
2:2022)

This European Standard was approved by CEN on 29 October 2011. Amendment A1 was approved by CEN on 19 December 2015. Amendment A2 was approved by CEN on 11 February 2022.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Foreword

This document (EN ISO 11850:2011) has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" in collaboration with Technical Committee CEN/TC 144 "Tractors and machinery for agriculture and forestry" 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 May 2012, and conflicting national standards shall be withdrawn at the latest by May 2012.

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

This document supersedes EN 14861:2004+A1:2009.

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

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

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Endorsement notice

The text of ISO 11850:2011 has been approved by CEN as a EN ISO 11850:2011 without any modification.

A1 Amendment A1 European foreword

This document (EN ISO 11850:2011/A1:2016) has been prepared by Technical Committee ISO/TC 23 "Tractors and machinery for agriculture and forestry" in collaboration with Technical Committee CEN/TC 144 "Tractors and machinery for agriculture and forestry" the secretariat of which is held by AFNOR.

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A₂ Amendment A2 European foreword

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Endorsement notice

The text of ISO 11850:2011/Amd 2:2022 has been approved by CEN as EN ISO 11850:2011/A2:2022 without any modification. **A₂**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 11850 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 15, *Machinery for forestry*.

This third edition cancels and replaces the second edition (ISO 11850:2003), which has been technically revised.

A1 Amendment A1 foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 15, *Machinery for forestry*. **A1**

A₂ Amendment A2 foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 15, *Machinery for forestry*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. **A₂**

Introduction

A2 This document is a type-C standard as stated in 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 organisations, 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. **A2**

Machinery for forestry — General safety requirements

1 Scope

Ⓐ This document specifies general safety requirements for self-propelled forestry machines and machines configured as forestry machines. It deals with all significant hazards, hazardous situations and events common to fellers, bunchers, delimiters, forwarders, log loaders, skidders, processors, harvesters, mulchers and multi-function versions of these machine types, as defined in ISO 6814:2009, when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer. Ⓐ

It does not deal with hazards specific to individual machines, such as those related to specific attachments, and therefore its use will not alone be sufficient to address all significant hazards for a majority of the machines it covers.

It does not deal with hazards related to chain shot, chain breakage on the upper side of the bar, lifting operation, remote control operation, the need for work lights or road safety. For vibration measurement, the test setup and work cycles are not dealt with; nor is the verification method for noise measurement addressed. It is not applicable to hazards related to maintenance or repairs carried out by professional service personnel.

The list of significant hazards dealt with is given in Annex A.

This International Standard is not applicable to machines manufactured before its date of publication.

2 Normative references

The following referenced documents are indispensable for the application 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.

Ⓐ ISO 2631-1:1997, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*. Amended by ISO 2631-1:1997/Amd 1:2010

ISO 2860:1992, *Earth-moving machinery — Minimum access dimensions* Ⓐ

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

ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

Ⓐ ISO 3450:2011, *Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems*

ISO 3457:2003, *Earth-moving machinery — Guards — Definitions and requirements*

ISO 3600:2015, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and presentation*

ISO 3767-1:2016, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1: Common symbols*. Amended by ISO 3671-1:2016/Amd 1:2020

ISO 3767-4:2016, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 4: Symbols for forestry machinery*

ISO 3795:1989, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

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

ISO 5010:2019, *Earth-moving machinery — Rubber-tyred machines — Steering requirements*

ISO 5349-2:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 2: Practical guidance for measurement at the workplace*. Amended by ISO 5349-2:2001/Amd 1:2015

ISO 6682:1986, *Earth-moving machinery — Zones of comfort and reach for controls*. Amended by ISO 6682:1986/Amd 1:1989

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

ISO 6405-1:2017, *Earth-moving machinery — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 6750-1:2019, *Earth-moving machinery — Operator's manual — Content and format*

ISO 6814:2009, *Machinery for forestry — Mobile and self-propelled machinery — Terms, definitions and classification*

ISO 8082-1:2009, *Self-propelled machinery for forestry — Laboratory tests and performance requirements for roll-over protective structures — Part 1: General machines*. Amended by ISO 8082-1:2009/Amd 1:2021

ISO 8082-2:2011, *Self-propelled machinery for forestry — Laboratory tests and performance requirements for roll-over protective structures — Part 2: Machines having a rotating platform with cab and boom on the platform* ^{A2}

ISO 8083:2006, *Machinery for forestry — Falling-object protective structures (FOPS) — Laboratory tests and performance requirements*

^{A2} ISO 8084:2003, *Machinery for forestry — Operator protective structures — Laboratory tests and performance requirements*. Amended by ISO 8084:2003/Amd 1:2015

ISO 9533:2010, *Earth-moving machinery — Machine-mounted audible travel alarms and forward horns — Test methods and performance criteria*

ISO 10263-4:2009, *Earth-moving machinery — Operator enclosure environment — Part 4: Heating, ventilating and air conditioning (HVAC) test method and performance* ^{A2}

ISO 10263-5:2009, *Earth-moving machinery — Operator enclosure environment — Part 5: Windscreen defrosting system test method*

ISO 10265:2008, *Earth-moving machinery — Crawler machines — Performance requirements and test procedures for braking systems*

ISO 10532:1995, *Earth-moving machinery — Machine-mounted retrieval device Performance requirements*. Amended by ISO 10532:1995/Amd 1:2004

ISO 10533:1993, *Earth-moving machinery — Lift-arm support devices*. Amended by ISO 10533:1993/Amd 1:2005

ISO 10570:2004, *Earth-moving machinery — Articulated frame lock — Performance requirements*

ISO 11112:1995, *Earth-moving machinery — Operator's seat — Dimensions and requirements*. Amended by ISO 11112:1995/Amd 1:2001

ISO 11169:1993, *Machinery for forestry — Wheeled special machines — Vocabulary, performance test methods and criteria for brake systems*

ISO 11512:1995, *Machinery for forestry — Tracked special machines — Performance criteria for brake systems*

ISO 11837:2011, *Machinery for forestry — Saw chain shot guarding systems — Test method and performance criteria* ^{A2}

ISO 11839:2021, *Machinery for forestry — Thrown object guard — Test method and performance criteria* ^{A2}

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

ISO 13766-1:2018, *Earth-moving and building construction machinery — Electromagnetic compatibility (EMC) of machines with internal electrical power supply — Part 1: General EMC requirements under typical electromagnetic environmental conditions*

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

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

ISO 14269-2:1997, *Tractors and self-propelled machines for agriculture and forestry — Operator enclosure environment — Part 2: Heating, ventilation and air-conditioning test method and performance*

ISO 14982:1998, *Agricultural and forestry machinery — Electromagnetic compatibility — Test methods and acceptance criteria*

ISO 15818:2017, *Earth-moving machinery — Lifting and tying-down attachment points — Performance requirements* ^{A2}

ISO 15998:2008, *Earth-moving machinery — Machine-control systems (MCS) using electronic components — Performance criteria and tests for functional safety*

ISO 18564:2016, *Machinery for forestry — Noise test code* ^{A2}

ISO 19472:2006, *Machinery for forestry — Winches — Dimensions, performance and safety*

ISO 16890-1:2016, *Air filters for general ventilation — Part 1: Technical specifications, requirements and classification system based upon particulate matter efficiency*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010 and ISO 6814:2009 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/>

4 Safety requirements and/or protective measures

4.1 General

Machinery shall comply with the safety requirements and/or protective measures of this clause. The machine shall also be marked in accordance with 5.2 and carry safety signs in accordance with 5.3.

In addition, the machine shall be designed in accordance with the principles of ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

The operator's manual to be provided with the machine shall comply with 5.1.

Verification of conformity shall be by inspection.

4.2 Safety distances, guards, shields

Unless otherwise specified in this document, safety distances shall be in accordance with the requirements of ISO 13857:2019, with the exception of ISO 13857:2019, 4.2.4.2. Guards and shields, including thermal guards, shall be in accordance with ISO 3457:2003, except that fasteners which retain fixed guards and shields in position shall be attached either to the guard or the machine.

Verification of conformity shall be by measurement.

4.3 Operator station

4.3.1 Operator space envelope

The design and arrangement of the operator station shall be such as to allow the operator to perform all normal operations at each operating position without equipment or working attachments infringing on the operator space envelope, as defined in ISO 3411:2007, Clause 5, or on the space required for the operation of controls, see 4.5.

Verification of conformity shall be by inspection and measurement.