ICS 65.060.01 SLOVENSKÁ TECHNICKÁ NORMA Jún 2019

STN	**Poľnohospodárske stroje a traktory Bezpečnosť vysokoautomatizovaných strojov Doplňujúci prvok (ISO 18497: 2018)**	**STN EN ISO 18497** 47 0007

Agricultural machinery and tractors - Safety of highly automated agricultural machines - Principles for design (ISO 18497:2018)

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. 05/19

Obsahuje: EN ISO 18497:2018, ISO 18497:2018

128767

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 18497

December 2018

ICS 65.060.01

English Version

Agricultural machinery and tractors - Safety of highly automated agricultural machines - Principles for design (ISO 18497:2018)

Tracteurs et matériels agricoles - Sécurité des machines hautement automatisées - Principes de conception (ISO 18497:2018)

Landwirtschaftliche Maschinen und Traktoren - Sicherheit hochautomatisierter Maschinen (ISO 18497:2018)

This European Standard was approved by CEN on 3 September 2018.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, 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

Ref. No. EN ISO 18497:2018 E

Contents

Page

European foreword

This document (EN ISO 18497:2018) 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 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(s).

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 18497:2018 has been approved by CEN as EN ISO 18497:2018 without any modification.

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of Directive 2006/42/EC Machinery aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/396 to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC on machinery.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC

Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
Within the limits of scope all relevant essential requirements are covered	All	Compliance with Essential Requirements is limited to establishing the principles for design and associated verification procedures relevant to highly automated and autonomous operation. In addition, compliance with the detailed requirements of a relevant machine specific type-C standard dealing with highly automated and/or autonomous operation based on these design principles and providing presumption of conformity with the relevant Essential Requirements of Directive 2006/42/EC is required to achieve presumption of conformity for the machine. For relation of normative clauses of this standard to significant hazards/relevant essential requirements of 2006/42/EC see informative Annex A, "List of significant hazards ", of this standard in combination with Annex D "Examples of significant hazards, hazardous situations,

		hazardous events and their relation to the Essential Requirements of the Machinery Directive 2006/42/EC" of CEN Guide 414 (https://boss.cen.eu/ref/CEN_414.pdf)

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

INTERNATIONAL STANDARD

ISO 18497

First edition
2018-11

Agricultural machinery and tractors — Safety of highly automated agricultural machines — Principles for design

Tracteurs et matériels agricoles — Sécurité des machines hautement automatisées — Principes de conception

Reference number
ISO 18497:2018(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 3, *Safety and comfort*.

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.

Introduction

This document is a type-B1 standard as stated in 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 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.

In addition, this document is intended for standardization bodies elaborating type-C standards.

The requirements of this document can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

The structure of safety standards in the field of machinery is as follows.

— Type-A standards (basis standards) give basic concepts, principles for design, and general aspects that can be applied to machinery.

— Type-B standards (generic safety standards) deal with one or more safety aspects or one or more types of safeguards that can be used across a wide range of machinery:

  — Type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);

  — Type-B2 standards on safeguards (e.g. two-hands controls, interlocking devices, pressure sensitive devices, guards).

— Type-C standards (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

Highly automated agricultural machine operations are an enabling technology. Customer benefits are increased; productivity and increased operator comfort.

Highly automated operation is a departure from traditional machine applications in the agricultural machinery and mobile equipment sectors that up to now required an on-board operator to perform work. Highly automated operations require unique safety considerations.

The objective of this document is to specify principles for the design of highly automated agricultural machine operations to achieve safe operation. Should requirements of this document for highly automated operation be different from those which are stated in a machine-specific standard dealing with highly automated operation, the requirements of the machine-specific standard take precedence over the requirements of this document.

INTERNATIONAL STANDARD **ISO 18497:2018(E)**

Agricultural machinery and tractors — Safety of highly automated agricultural machines — Principles for design

1 Scope

This document specifies principles for the design of highly automated aspects of highly automated machines and vehicles (e.g. agricultural tractors, tractor implement systems, implements and self-propelled machinery) during agricultural field operations. In addition, it provides guidance on the type of information on safe working practices (including information about residual risks) to be provided by the manufacturer.

The purpose of this document is to assist in the provision of safety requirements, means of verification and information for use to ensure an appropriate level of safety for agricultural and forestry tractors and self-propelled machines with functions allowing highly automated operations (see 3.7).

This document deals with all the significant hazards, hazardous situations and events (as listed in Annex A), relevant to agricultural and forestry tractors and self-propelled machines allowing highly automated field operations when used as intended and under the conditions of misuse foreseeable by the manufacturer during normal operation and service.

NOTE 1 While this document gives principles for the design, verification, validation and provision of information for use of a highly automated agricultural machine (HAAM), the detailed specification of requirements for a specific application will be dependent on the machine and its operating conditions. Therefore, the principles for design given in this document need to be extended for specific HAAM by the use of relevant specific (type-C) standards, when available, or by the manufacturer of the machine using risk assessment. Such additional specification of requirements, for design, verification, validation or information for use are outside the scope of this document.

NOTE 2 Safety requirements for specific machines not related to their highly automated operations can be available in machine-specific type-C standards.

This document is not applicable to:

— forestry applications;

— mobile, semi-mobile or stationary machinery used for farm yard or barn operations;

— operations on public roads including relevant requirements for braking and steering systems.

NOTE 3 With respect to implements (e.g. their specific design, functions) and the communication between tractors and implements, additional risks can be relevant and can require additional measures. Such additional measures are outside the scope of this document and are the responsibility of the manufacturer.

This document is not applicable to agricultural and forestry tractors, tractor implement systems, implements and self-propelled machines which are manufactured before the date of its publication.

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.

ISO 3767-1, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 3767-2, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 2: Symbols for agricultural tractors and machinery*

ISO 4254-1, *Agricultural machinery — Safety — Part 1: General requirements*

ISO 7731:2003, *Ergonomics — Danger signals for public and work areas — Auditory danger signals*

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

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

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

ISO 25119 (all parts), *Tractors and machinery for agriculture and forestry — Safety-related parts of control systems*

ISO 26322-1, *Tractors for agriculture and forestry — Safety — Part 1: Standard tractors*

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*