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Agricultural machinery and tractors — Auto-guidance systems for operator-controlled tractors and self-propelled machines — Safety requirements

Tracteurs et matériels agricoles — Systèmes d'autoguidage pour tracteurs commandés par opérateur et pour machines automotrices — Exigences de sécurité

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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.

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 document 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 19, *Agricultural electronics.*

This second edition cancels and replaces the first edition (ISO 10975:2009), which has been technically revised.

The main changes are as follows:

— requirements have been added for limits of operation in 4.3;

— conditions have been added to 4.4.7;

— installation instructions for retrofitted systems have been added in 5.3.

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.

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Introduction

This document is a type-C 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.

Auto-guidance systems are used in tractors and self-propelled agricultural machines to reduce operator fatigue and to increase the accuracy and efficiency of field operations. To ensure the proper function and safety of such systems, this document specifies requirements for controls and displays, activation and deactivation of the system, audible and/or visual indicators to show the status of the system and the information to be provided to the operator. According to the current practice, these requirements are applicable to factory installed systems and systems intended to be retrofitted.

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Agricultural machinery and tractors — Auto-guidance systems for operator-controlled tractors and self-propelled machines — Safety requirements

1 Scope

This document specifies safety requirements for auto-guidance systems used in agricultural tractors and self-propelled agricultural machines.

It is applicable to auto-guidance systems which are factory installed as an integral part of the tractor or self-propelled machine, as well as systems designed to be retrofitted to equipment after such equipment has left the control of the manufacturer.

It is not applicable to guidance systems used in tractors or self-propelled machines that do not require an on-board operator for primary control of the tractor or self-propelled machine.

This document does not specify requirements necessary to ensure the integrity of the complex electronic control system which can be an integral part of the auto-guidance system. Such requirements are dealt with in other International Standards which address complex electrical/electronic machine control systems.

This document is not applicable to tractors and self-propelled machines which were manufactured with an auto-guidance system, and to self-contained auto-guidance retrofit systems, which were individually placed on the market before the date of publication of this document.

NOTE Specific road traffic regulations can impose additional requirements for auto-guidance systems.

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

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

ISO 10998, *Agricultural tractors — Requirements for steering*

ISO 11684, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

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

ISO 15077, *Tractors and self-propelled machinery for agriculture — Operator controls — Actuating forces, displacement, location and method of operation*

ISO/FDIS 18497-1:—[1)], *Agricultural machinery and tractors — Safety of partially automated, semi-autonomous and autonomous machinery — Part 1: Machine design principles and vocabulary*

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

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