
**Tractors and machinery for agriculture —
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

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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.

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.

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Introduction

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 International Standard 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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Tractors and machinery for agriculture — Auto-guidance systems for operator-controlled tractors and self-propelled machines — Safety requirements

1 Scope

This International Standard 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 International Standard 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 vehicle control systems.

When requirements of this International Standard are different from those which are stated in a machine specific standard, the requirements of the machine specific standard take precedence over the requirements of this International Standard.

This International Standard is neither applicable to tractors and self-propelled machines which were manufactured with an auto-guidance system before the date of publication of this International Standard, nor to self-contained auto-guidance retrofit systems which were individually placed on the market before the date of publication of this International Standard.

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

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 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 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4254-1, ISO 10998, ISO 12100-1 and ISO 26322-1 and the following apply.

**3.1
activity monitor**
type of operator presence system whereby the auto-guidance system receives feedback from the operator's station indicating that an operator is present at the operator station

**3.2
auto-guidance system**
group of components used in conjunction with the main steering system which provides assistance to the operator in steering the tractor or self-propelled machine, but in which the operator remains at all times in primary control

**3.3
complex electronic control system**
electronic control systems subject to a hierarchy of control in which a controlled function may be over-ridden by a higher level electronic control system/function

3.4 States

**3.4.1
active state**
switched on and providing dynamic steering commands to the tractor or self-propelled machine

**3.4.2
enabled state**
switched on and prepared to carry out steering of the tractor or self-propelled machine upon receipt of a valid command or signal

**3.4.3
disabled state**
switched off or not prepared to carry out steering

**3.5
signal**
information or data in the form of either electrical voltages or currents, digital messages by a direct connection or by a communication data network which is provided to a control system

EXAMPLE Satellite signals provided by a receiver by a RS232 connection or a network in conformity with ISO 11783 (all parts).

**3.6
visual indicator**
signal that is intended to be detected by the sense of sight

EXAMPLE A lamp, LED, display message or display symbol.