

Agricultural tractors — Requirements for steering

ICS 65.060.10

National foreword

This British Standard is the UK implementation of ISO 10998:2008+A1:2014. It supersedes BS ISO 10998:2008 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee AGE/6, Agricultural tractors and forestry machinery.

A list of organizations represented on this committee can be obtained on request to its secretary.

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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.

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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.

ISO 10998 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 4, *Tractors*.

This second edition cancels and replaces the first edition (ISO 10998:1995), which has been technically revised.

Agricultural tractors — Requirements for steering

1 Scope

This International Standard specifies performance and safety requirements for both normal and emergency steering modes of agricultural tractors. It is applicable to those tractors having a maximum design speed, measured in accordance with ISO 3965, not exceeding (60 ± 3) km/h.

It is not applicable to track-laying tractors equipped with steel tracks having a maximum design speed, measured in accordance with ISO 3965, not exceeding (15 ± 3) km/h.

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 789-11:1996, *Agricultural tractors — Test procedures — Part 11: Steering capability of wheeled tractors*

ISO 3965:1990, *Agricultural wheeled tractors — Maximum speeds — Method of determination*

ISO 7000:2004, *Graphical symbols for use on equipment — Index and synopsis*

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

ISO 19879:2005, *Metallic tube connections for fluid power and general use — Test methods for hydraulic fluid power connections*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General terms

3.1.1

agricultural tractor

power-driven vehicle, either wheeled and having at least two-axes or tracklaying, whose function depends essentially on its tractive power, and which is specially designed to pull, push, carry or actuate certain implements, machines or trailers intended for use in agriculture or forestry

NOTE Such a tractor can be arranged to carry a load and/or attendants as specified in ISO 23205.

3.1.2

steering equipment

all components whose purpose is to determine the direction of movement of the tractor, comprising **steering control** (3.1.3), **steering transmission** (3.1.4), **steered wheels** (3.1.7) or tracks, and **energy supply** (3.1.8) if any

3.1.3

steering control

part of the steering equipment which controls steering operation

NOTE It may be operated with or without the direct intervention of the driver. For steering equipment in which the steering forces are provided solely or partly by the muscular effort of the driver, the steering control includes all parts from the driver interface up to the point where the steering effort is transformed by mechanical, hydraulic or electrical means.

3.1.4

steering transmission transmission

all parts of the steering equipment providing the means of transmitting the steering forces between the steering control and the steered wheels or tracks

NOTE 1 It includes all parts from the point where the steering control effort is transformed by mechanical, hydraulic or electrical means.

NOTE 2 The steering transmission is divided into two independent functions: The **control transmission** (3.1.4.1) and the **energy transmission** (3.1.4.2). Where the term “steering transmission” or “transmission” is used alone in this International Standard, it encompasses both control transmission and energy transmission. A distinction is drawn between mechanical, electrical and hydraulic transmission systems or combinations thereof, according to the means by which the signals and/or energy is transmitted.

3.1.4.1

control transmission

all components by means of which signals are transmitted for control of the steering equipment

3.1.4.2

energy transmission

all components by means of which the energy required for control/regulation of the steering function of the wheels is transmitted

 *Text deleted* 

3.1.6

advanced driver assistance steering system

system, additional to the main steering system, that provides assistance to the driver in steering the tractor, but where the driver remains at all times in primary control of the tractor

NOTE The advanced driver assistance steering system comprises the **automatically commanded steering function** (3.1.6.1) and/or **corrective steering function** (3.1.6.2).

3.1.6.1

automatically commanded steering function

function within a complex electronic control system where actuation of the steering system can result from automatic evaluation of signals initiated on-board the tractor, possibly in conjunction with passive infrastructure features, to generate continuous control action in order to assist the driver in following a particular path, in low speed manoeuvring or parking operations

3.1.6.2

corrective steering function

discontinuous control function within a complex electronic control system whereby, for a limited duration, changes to the steering angle of one or more wheels or tracks can result from the automatic evaluation of signals initiated on-board the tractor, in order to maintain the basic desired path of the tractor or to influence the tractor's dynamic behaviour