AS 5364:2021
ISO 5010:2019

Australian STANDARD®

STANDARDS Australia

Earth-moving machinery — Wheeled machines — Steering requirements

AS 5364:2021

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Australian Industry Group
Better Regulation Division — SafeWork NSW
Construction and Mining Equipment Industry Group
Department of Natural Resources, Mines and Energy, Qld
Department of Regional NSW
Engineers Australia
Institute of Instrumentation, Control & Automation Australia
Minerals Council of Australia
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Preface

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment.

The objective of this document is to specify steering system tests and performance criteria for evaluating the steering capability of wheeled, ride-on earth-moving machinery as defined in ISO 6165:2012.

This document deals with the following significant hazards, hazardous situations or hazardous events relevant to wheeled machines, when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer—

(a) mechanical hazards;

(b) ergonomic hazards;

(c) hazards due to maintenance;

(d) hazards due to the control system;

(e) hazards related to travelling function.

Functional safety of the steering system is not covered in this document.

This document is not applicable to wheeled machines manufactured before the date of its publication.

This document is identical with, and has been reproduced from, ISO 5010:2019, *Earth-moving machinery — Wheeled machines — Steering requirements*.

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

Contents

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This fourth edition cancels and replaces the third edition (ISO 5010:2007), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the title has been changed to “Wheeled machines” to include machines with drums and crawler wheel assemblies;

— requirements have been provided for earth-moving machinery (EMM) with a maximum machine speed <20 km/h.

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-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.

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.

As functional safety of steering system is not covered in this document, guidance for functional safety of steering systems can be found in the following standards: ISO 15998, ISO/TS 15998-2, ISO 13849-1, ISO 19014-1, ISO 19014-2[1)], ISO 19014-3, ISO 19014-4[2)] and ISO/TS 19014-5[3)].

1) Under preparation. Stage at the time of publication: ISO/DIS 19014-2:2019.

2) Under preparation. Stage at the time of publication: ISO/DIS 19014-4:2019.

3) Under preparation.

NOTES

Australian Standard®

Earth-moving machinery — Wheeled machines — Steering requirements

1 Scope

This document specifies steering system tests and performance criteria for evaluating the steering capability of wheeled, ride-on earth-moving machinery as defined in ISO 6165:2012. Wheeled machines include machines equipped with wheels, one or more drums or crawler wheel assemblies.

This document deals with the following significant hazards, hazardous situations or hazardous events relevant to wheeled machines, when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer:

— mechanical hazards;

— ergonomic hazards;

— hazards due to maintenance;

— hazards due to the control system;

— hazards related to travelling function.

Functional safety of the steering system is not covered in this document.

This document is not applicable to wheeled machines 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 3450:2011, *Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems*

ISO 6016:2008, *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components*

ISO 7457:1997, *Earth-moving machinery — Determination of turning dimensions of wheeled machines*

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

ISO 10968:—[4)], *Earth-moving machinery — Operator's controls*

ISO 18752:2014, *Rubber hoses and hose assemblies — Wire- or textile-reinforced single-pressure types for hydraulic applications — Specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4) Under preparation. Stage at the time of publication: ISO/DIS 10968:2019.