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Earth-moving machinery and rough-terrain variable-reach trucks — Design requirements for machines intended to be driven on road

Engins de terrassement et chariots élévateurs tout terrain à portée variable — Exigences de conception pour engins prévus pour circuler sur route

Reference number
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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 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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 1, *Test methods relating to safety and machine performance*.

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Introduction

This International Standard is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations, or hazardous events are covered are indicated in the Scope of this International Standard.

When requirements of this type-C standard are different from those which that are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other International Standard standards for machines that have been designed and built according to the requirements of this type-C standard.

Earth-moving machinery and rough-terrain variable reach trucks are occasionally driven on the road to and from, and around the confines of marked jobsites and share the road with other road vehicle users. Design and verification for safety on the jobsite are subject to ISO 20474 and ISO 10896-1, but requirements for use on the road are undefined or covered in regional and local legislation, rules, or codes of practice. Such a situation presents lacking and differing requirements, despite a common objective: the safety of the machine when used on the road.

The purpose of this International Standard is to provide design and verification requirements to ensure a consistent level of safety when earth-moving machinery and rough-terrain variable-reach trucks are used on the road.

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Earth-moving machinery and rough-terrain variable-reach trucks — Design requirements for machines intended to be driven on road

1 Scope

This International Standard specifies the requirements for seated-operator, ride-on, earth-moving machinery, as defined in ISO 6165, and rough-terrain variable-reach trucks, as defined in ISO 10896-1, intended to be driven on public roads.

It specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards, hazardous situations, and hazardous events when these machines are driven on road.

It is not applicable to the following:

— machines on legs, e.g. walking excavators;

— hazards related to standing-operator (ride-on or non-riding) or remote-control earth-moving machines/rough-terrain variable-reach trucks;

— user requirements, including training, operator licensing, and machine taxation;

— local use restrictions, such as road/bridge capacities;

— environmental requirements, such as engine emissions, noise, refrigerants, or recyclability.

NOTE National or other regulations, which could be more stringent, can apply.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 3287, *Powered industrial trucks — Symbols for operator controls and other displays*

ISO 3457, *Earth-moving machinery — Guards — Definitions and requirements*

ISO 5006, *Earth-moving machinery — Operator's field of view — Test method and performance criteria*

ISO 5010, *Earth-moving machinery — Rubber-tyred machines — Steering requirements*

ISO 5676:1983, *Tractors and machinery for agriculture and forestry — Hydraulic coupling — Braking circuit*

ISO 6011, *Earth-moving machinery — Visual display of machine operation*

ISO 6014, *Earth-moving machinery — Determination of ground speed*

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

ISO 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

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ISO 6405-1, *Earth-moving machinery — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 6405-2, *Earth-moving machinery — Symbols for operator controls and other displays — Part 2: Specific symbols for machines, equipment and accessories*

ISO 6683, *Earth-moving machinery — Seat belts and seat belt anchorages — Performance requirements and tests*

ISO 6746-1, *Earth-moving machinery — Definitions of dimensions and codes — Part 1: Base machine*

ISO 6746-2, *Earth-moving machinery — Definitions of dimensions and codes — Part 2: Equipment and attachments*

ISO 6750, *Earth-moving machinery — Operator's manual — Content and format*

ISO 9533, *Earth-moving machinery — Machine-mounted audible travel alarms and forward horns — Test methods and performance criteria*

ISO 10261:2002, *Earth-moving machinery — Product identification numbering system*

ISO 10263-5, *Earth-moving machinery — Operator enclosure environment — Part 5: Windscreen defrosting system test method*

ISO 10265, *Earth-moving machinery — Crawler machines — Performance requirements and test procedures for braking systems*

ISO 10532, *Earth-moving machinery — Machine-mounted retrieval device — Performance requirements*

ISO 10896-1:2012, *Rough-terrain trucks — Safety requirements and verification — Part 1: Variable-reach trucks*

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

ISO 12509, *Earth-moving machinery — Lighting, signalling and marking lights, and reflex-reflector devices*

ISO 14401-1, *Earth-moving machinery — Field of vision of surveillance and rear-view mirrors — Part 1: Test methods*

ISO 14401-2, *Earth-moving machinery — Field of vision of surveillance and rear-view mirrors — Part 2: Performance criteria*

ISO 20474 (all parts), *Earth-moving machinery — Safety*

ISO 21507, *Earth-moving machinery — Performance requirements for non-metallic fuel tanks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6165, ISO 10896-1 and ISO 12100, and the following apply.

3.1
intended operation
operation intended by the manufacturer as described in the operating manual and with respect to any attachments on the machine (e.g. excavation, loading, materials handling, transportation, drilling, spreading, compacting or trenching of earth, rock, or other materials)

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