INTERNATIONAL STANDARD

ISO 10896-7

First edition
2016-10-01

Rough-terrain trucks — Safety requirements and verification —

Part 7: Longitudinal load moment systems

Chariots tout-terrain — Exigences de sécurité et vérification —

Partie 7: Systèmes longitudinaux de moment de charge

Reference number
ISO 10896-7:2016(E)

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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).

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 110, *Industrial trucks*, Subcommittee SC 4, *Rough-terrain trucks*.

A list of all parts in ISO 10896 series can be found on the ISO website.

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Introduction

This document is one of a set of International Standards produced by ISO/TC 110/SC 4 as part of its program of work regarding standardization of terminology, general safety, performance and user requirements for rough-terrain trucks (hereafter also referred to as trucks).

This document 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 document.

When requirements of this type-C standard are different from those which are stated in type-A or -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.

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Rough-terrain trucks — Safety requirements and verification —

Part 7: Longitudinal load moment systems

1 Scope

This document specifies design, safety and verification requirements for longitudinal load moment systems which can be used on rough-terrain trucks (hereafter referred to as trucks). This document provides requirements for both the longitudinal load moment indicator (hereafter referred to as LLMI) and the longitudinal load moment control (hereafter referred to as LLMC) used on rough-terrain trucks, defined in ISO 10896-1, in a stationary position performing loading or placing functions on consolidated, stable and level ground.

It is not applicable to the following:

— lorry-mounted trucks as defined in ISO 20297-1;

— slewing variable-reach trucks as defined in ISO 10896-2.

This document deals with significant hazards, hazardous situations or hazardous events relevant to longitudinal load moment systems when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

This document does not cover the risk due to lateral instability or instability due to the travelling of the truck. The longitudinal load moment system is not intended for warning of the overturning risk while the truck is travelling.

This document is not applicable to longitudinal load moment systems 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 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 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 22915-14:2010, *Industrial trucks — Verification of stability — Part 14: Rough-terrain variable-reach trucks*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

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3 Terms and definitions

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

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

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

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

3.1
longitudinal load moment
sum of the moments in the longitudinal plane forward of the tipping line (for example, wheels, stabilizing devices) produced by the load, the attachment and the lifting means of the truck

3.2
longitudinal load moment indicator
LLMI
device that warns the operator of a change to the *load-handling geometry* (3.4) which would increase the *longitudinal load moment* (3.1) beyond pre-determined limit(s)

3.3
longitudinal load moment control
LLMC
device that prevents the operator changing the *load-handling geometry* (3.4) in direction(s) which would increase the *longitudinal load moment* (3.1) beyond the allowable limit(s)

3.4
load-handling geometry
relationship of points, lines and angles, described by the position of the load centre of gravity (the position of the boom, carriage and attachment) and tipping line (front wheels or stabilizing devices, if equipped)

4 Safety requirements and/or protective/risk reduction measures

4.1 General

4.1.1 Trucks shall comply with the safety requirements and/or protective/risk reduction measures of this clause.

4.1.2 In addition, the truck shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this document.

4.2 Longitudinal load moment systems

4.2.1 General

4.2.1.1 Longitudinal load moment systems shall comply with the safety requirements and/or measures of this clause for all actual capacities and all configurations described in the operating manual supplied by the truck manufacturer.

4.2.1.2 Longitudinal load moment systems shall be designed taking the following into account:

— the operating environment, for example, relative humidity, temperature, condensation, dust;

— the truck rated capacity;

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