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Rough-terrain trucks — Safety requirements and verification —

Part 8: Requirements for trucks designed for towing

Chariots tout-terrain — Exigences de sécurité et vérification —

Partie 8: Exigences pour les chariots conçus pour tracter

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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 document 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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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 110, *Industrial trucks*, Subcommittee SC 4, *Rough-terrain trucks*.

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

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.

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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 organizations, 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 in 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.

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Rough-terrain trucks — Safety requirements and verification —

Part 8: Requirements for trucks designed for towing

1 Scope

This document specifies safety requirements and verification for rough-terrain variable-reach trucks and slewing rough-terrain variable-reach trucks as defined in ISO 10896-1 and ISO 10896-2 (hereafter referred to as "trucks") designed for towing trailers or towed equipment or both (hereafter referred to as "towed vehicles") with a maximum design speed less than or equal to 40 km/h, taking into account the intended use as well as the reasonably foreseeable misuse.

NOTE Local regulations can apply when trucks are used to tow towed vehicles on public roads.

The significant hazards dealt with in this document are mechanical hazards (see ISO 12100:2010, Table B.1) due to:

— acceleration, deceleration;

— instability;

— kinetic energy;

— machinery mobility;

— stored energy.

This document is not applicable to trucks intended to tow a towed vehicle equipped with a:

a) complex electronic control system for braking or electronically-controlled braking system (EBS);

b) braking system where the braking force applied to one wheel can be different from the braking force applied to the other wheel of the same axle (differential braking system);

c) braking system where the energy source that provides the energy required to actuate the brakes is a vacuum pump (vacuum braking system);

d) part of a service braking system which automatically controls the degree of slip, in the direction of rotation of the wheel, on one or more wheels of the towed vehicle or truck during braking (anti-lock braking system or ABS);

e) additional braking system having the capability to provide and to maintain a braking effect over a long period of time without a significant reduction in performance, including the control device which can comprise a single device or a combination of several devices each of which can have its own control (endurance braking system).

This document does not provide requirements for the towed vehicles themselves.

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

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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 5053-1, *Industrial trucks — Vocabulary — Part 1: Types of industrial trucks*

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

ISO 7638-1, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Part 1: Connectors for braking systems and running gear of vehicles with 24 V nominal supply voltage*

ISO 7638-2, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Part 2: Connectors for braking systems and running gear of vehicles with 12 V nominal supply voltage*

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

ISO 10896-2, *Rough-terrain trucks — Safety requirements and verification — Part 2: Slewing trucks*

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

ISO 16028, *Hydraulic fluid power — Dimensions and requirements of quick-attention couplings, flush-face type*

ISO 24347, *Agricultural vehicles — Mechanical connections between towed and towing vehicles — Dimensions of ball coupling device (80 mm)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100, ISO 10896-1, ISO 10896-2, ISO 5053-1 and the following apply.

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

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

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

3.1
towed vehicle
vehicle without powered traction that is towed by a truck

3.2
trailer
towed vehicle (3.1), intended mainly to carry loads or to process materials, where the ratio of the *technically permissible maximum laden mass* (3.11) to the unladen mass is equal to or greater than 3,0

3.3
towed equipment
towed vehicle (3.1) that permanently incorporates a piece of equipment or is designed to process materials, which can include a load platform to store temporarily any materials produced or needed during work, and where the ratio of the *technically permissible maximum laden mass* (3.11) to the unladen mass is less than 3,0

3.4
mechanical coupling
components of the truck intended to provide mechanical connection with a *towed vehicle* (3.1) for towing them on road or on unimproved terrain with the purpose of transport or work

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