
**Rough-terrain trucks — Safety
requirements and verification —**

**Part 4:
Additional requirements for
variable-reach trucks handling freely
suspended loads**

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Chariots tout-terrain — Exigences de sécurité et vérification —

*Partie 4: Exigences additionnelles pour chariots à portée variable
manipulant des charges suspendues à oscillation libre*

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

ISO 10896 consists of the following parts, under the general title *Rough-terrain trucks — Safety requirements and verification*:

- *Part 1: Variable-reach trucks*
- *Part 2: Slewing trucks*
- *Part 4: Additional requirements for variable-reach trucks handling freely suspended loads*
- *Part 5: Interface between rough-terrain truck and integrated personnel work platform*
- *Part 6: Tilting operator's cabs*

The following part is under preparation:

- *Part 7: Longitudinal load moment systems*

Additional user requirements for variable-reach trucks handling freely suspended loads are given in ISO 11525-4.

Introduction

This International Standard is one of a set of 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.

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 the 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 and systems 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 4: Additional requirements for variable-reach trucks handling freely suspended loads

1 Scope

This part of ISO 10896 specifies the additional safety requirements and means of verification for rough-terrain variable-reach trucks (hereafter referred to as trucks) fitted with a lifting attachment for handling suspended loads which can swing freely in one or more directions. It is applicable to trucks covered by ISO 10896-1 and ISO 10896-2.

This part of ISO 10896 does not apply to:

- the lifting of suspended loads which by design of the load or the lifting attachments does not allow the load to swing freely in any direction;
- the handling of flexible intermediate bulk containers, as defined in ISO 21898, carried under the forks of the truck;
- any attachments/means used for lifting personnel;
- lifting accessories not included as part of the lifting attachment;
- freight container handling trucks.

This part of ISO 10896 deals with significant hazards, hazardous situations or hazardous events relevant to trucks handling a freely suspended load, when they are used as intended by the manufacturer.

This part of ISO 10896 is not applicable to rough-terrain variable-reach trucks fitted with a lifting attachment for handling suspended loads manufactured before the date of its publication.

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 7000:2014, *Graphical symbols for use on equipment — Registered symbols*

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

ISO 10896-2:—¹⁾, *Rough-terrain trucks — Safety requirements and verification — Part 2: Slewing variable-reach trucks*

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

ISO 22915-10, *Industrial trucks — Verification of stability — Part 10: Additional stability test for trucks operating in the special condition of stacking with load laterally displaced by powered devices*

1) To be published.

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

ISO 22915-20, *Industrial trucks — Verification of stability — Part 20: Additional stability test for trucks operating in the special condition of offset load, offset by utilization*

ISO 22915-24, *Industrial trucks — Verification of stability — Part 24: Slewing variable-reach rough-terrain trucks*

3 Terms and definitions

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

3.1 lifting attachment

device mounted to the truck from which a lifting accessory or a load can be suspended

EXAMPLE Jib, hoist.

3.2 lifting accessory

component or device fitted to the lifting attachment (e.g. sling), placed between the lifting attachment and the load

3.3 jib

device, telescopic or not, intended to extend forward the lifting point of the truck

Note 1 to entry: See Figure 1.

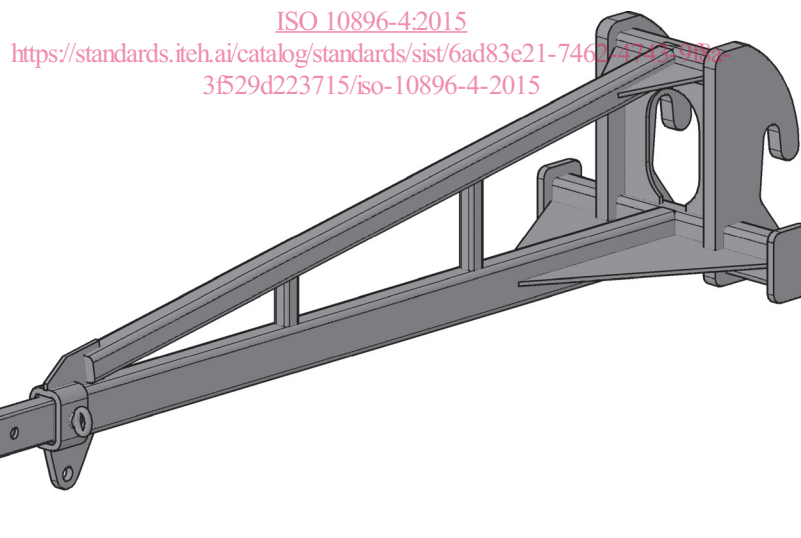


Figure 1 — Example of jib

3.4 hoist

device for lifting and lowering suspended loads over predetermined distances, using ropes or chains

3.5 suspended load

load that can swing freely when attached to a lifting attachment by means of a lifting accessory or a load handling mean (e.g. log clamp)

3.6**tether**

means used to restrain the dynamic effects of the load

3.7**tag line**

rope which can be fastened to a suspended load to restrain spinning or swinging of the load

3.9**level ground**

ground with a gradient of $0 \pm 2 \%$

3.10**pick and carry**

act of travelling with a suspended load

3.11**slinger/rigger**

personnel other than the operator driving the truck, who is in charge of attaching the load to the lifting accessory (slinging) and the lifting accessory to the lifting attachment

3.12**rotation-resistant rope**

stranded rope designed to generate reduced levels of torque and rotation when loaded

[SOURCE: ISO 17893:2004, 2.6.1.3]

3.13**load handling means**

part of the lifting attachment for holding the load or which the load/lifting accessory is attached to

EXAMPLE Hook, grab, clamp, etc.

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4 Safety requirements and/or protective measures

4.1 General requirements

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

In addition, the truck shall be designed according to the principles of ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.

Any lifting attachment mounted to the truck intended to handle a suspended load shall comply with ISO 10896-1:2012, Annex B or ISO 10896-2:—²⁾, Annex B, and the requirements of this part of ISO 10896.

4.2 Mounting and fixing

The lifting attachment shall be designed:

- to minimize hazards for the slinger/rigger and/or bystander (e.g. pipes and hoses containing fluid under pressure > 5 MPa (50 bar) and/or at temperature > 50°C);
- to facilitate attachment and intentional detachment;
- so that there is no restriction (e.g. snagging) during normal operation of the truck or when hoisting.

The fixing position of the lifting accessory(ies) on the lifting attachment shall be such that it is not deflected from its vertical path or damaged by other truck parts or part of the lifting attachment.

2) To be published.