DRAFT INTERNATIONAL STANDARD

ISO/DIS 10896-4

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Rough-terrain trucks — Safety requirements and verification —

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

Chariots tout-terrain — Exigences de sécurité et vérification —

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

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10896-4 was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 4, *Rough-*

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 variable-reach trucks*

— *Part 3: Lorry-mounted 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: *Elevating/tilting operator's station*

— Part 7*: Longitudinal load moment systems*

NOTE Users requirements for 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 -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.

Rough-terrain trucks — Safety requirements and verification — Part 4: Additional requirements for variable reach trucks handling freely suspended loads

1 Scope

This document 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 could swing freely in one or more directions. It is applicable to trucks covered by ISO 10896-1 and ISO 10896-2.

This standard does not apply to:

— the lifting of suspended loads which by design of the load or the load handling means does not allow the load to swing freely in any direction (e.g. flexible intermediate bulk containers as defined in ISO 21898 carried beneath the forks of the truck);

— any attachments/means used for lifting personnel;

— the lifting accessories not included as part of the lifting attachment;

— the freight container handling trucks.

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

This document 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 referenced documents are indispensable for the application 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/CD 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 22915-10:2008 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

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

ISO 22915-20:2008 Industrial trucks -- Verification of stability -- Part 20: Additional stability test for trucks operating in the special condition of offset load, offset by utilization

1) Under preparation

3 Terms and definitions

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

3.1
lifting attachment
device (e.g. jib, hoist) mounted directly to the truck from which a lifting accessory or a load can be suspended

3.2
lifting accessory
removable component or device (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

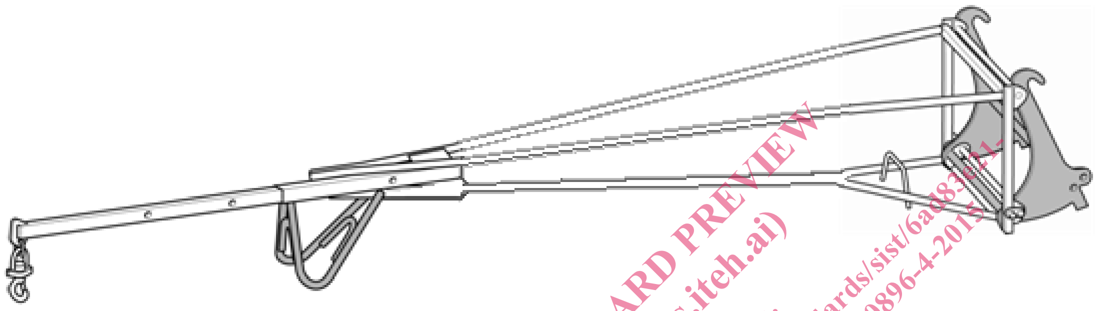

Figure 1 — Examples of jib

3.4
hoist
device designed for the lifting and lowering of loads by means of wire ropes or chains

3.5
suspended load
load attached to a lifting attachment by means of a lifting accessory, that could swing freely

3.6
tether
mean(s) used to restrain the dynamic effects of the load

3.7
tag line
rope which may be fastened to a suspended load to restrain spinning or swinging of the load

3.8
hoist limiter
device used to prevent the load-handling device (e.g. hook) from being raised such that it inadvertently strikes the lifting attachment structure

3.9
level ground
ground with a gradient of 0 ± 2 %

2) Under preparation

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 hooking the lifting accessory to the lifting attachment

4 Safety requirements and/or protective measures

4.1 General requirements

Machinery shall comply with the safety requirements and/or protective/risk reduction measures of this Clause. In addition, the machine 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 not adversely affect the truck (e.g. stability, functions, structural integrity) when operated in accordance with the manufacturer's instructions.

4.2 Mounting and fixing

The lifting attachment shall be designed:

- such that unintentional detachment is prevented;
- to minimise hazards for the slinger/rigger and/or bystander (e.g. pipes and hoses containing fluid under pressure [> 5 MPa (50bar) 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.

4.3 Design and strength

4.3.1 Lifting attachment

All load handling devices (e.g. hooks, magnets, grabs, etc.) fitted to a lifting attachment shall allow at least the same rated capacity of the lifting attachment itself.

The lifting attachment(s) shall be designed to withstand, as a minimum, a static load of 2,5 times the rated capacity of the attachment without permanent deformation or release of the load.

This shall be proven by calculation and/or by tests, with a test load of 2,5 times the rated capacity of the attachment.

4.3.2 Wire rope hoist attachments

4.3.2.1 General

Hooks fitted to a hoist shall be determined by the size and the type of rope to allow the same rated capacity as the hoist.