



**SLOVENSKI STANDARD**  
**oSIST prEN 1459-4:2018**  
**01-julij-2018**

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**Vozila za talni transport - Terenska vozila - Varnostne zahteve in preverjanje - 4. del: Dodatne zahteve za tovornjake z mehanizmom s spremenljivim dosegom za dvigovanje prosto visečih bremen**

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

Geländegängige Stapler - Sicherheitstechnische Anforderungen und Verifizierung - Teil 4: Zusätzliche Anforderungen für Stapler mit veränderlicher Reichweite zum Befördern angehängter Lasten

Chariots tout-terrain - Prescriptions de sécurité et vérification - Partie 4 : Prescriptions supplémentaires pour les chariots à portée-variable manutentionnant des charges suspendues à oscillation libre

**Ta slovenski standard je istoveten z: prEN 1459-4**

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**ICS:**

53.060      Industrijski tovornjaki      Industrial trucks

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EUROPEAN STANDARD  
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**DRAFT**  
**prEN 1459-4**

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English Version

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

Chariots tout-terrain - Prescriptions de sécurité et vérification - Partie 4 : Prescriptions supplémentaires pour les chariots à portée-variable manutentionnant des charges suspendues à oscillation libre

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 1459-4:2018) has been prepared by Technical Committee CEN/TC 150 "Industrial Trucks - Safety", the secretariat of which is held by BSI.

This document is submitted to CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annexes ZA, which are an integral part of this document.

EN 1459 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: Interface between the variable-reach truck and the work platform

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

Part 5: Additional requirements for attachments and attachment interface

Part 6: Application of EN ISO 13849-1 to slewing and non-slewing variable-reach rough-terrain trucks

Part 7: Test method and determination of noise emission

**prEN 1459-4:2018 (E)****Introduction**

This European Standard covers general safety requirements and the means for verification of these requirements for rough-terrain variable-reach trucks.

All quantities are in SI units, and this includes metric units.

Considering the technical improvements to the previous version of EN 1459, a transition period of 6 months is permitted after the date of publication, such that manufacturers can develop their products sufficiently to meet the requirements of this European Standard.

This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document.

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

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 1459-4:2021

<https://standards.iteh.ai/catalog/standards/sist/48fa459d-32ac-4edb-ac95-cfa4c1e152fe/sist-en-1459-4-2021>

## 1 Scope

This document specifies the additional safety requirements and means of verification for rough-terrain variable-reach trucks (hereafter referred to as trucks) designed and intended for handling suspended loads which can swing freely in one or more directions. It is applicable to trucks covered by EN 1459-1 and EN 1459-2.

This document 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 document 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 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 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.

prEN 1459-5, *Rough-terrain trucks — Safety requirements and verification — Part 5: Attachments and attachment interface*

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

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100, EN 1459-1 and EN 1459-2 with 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

#### **lifting attachment**

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

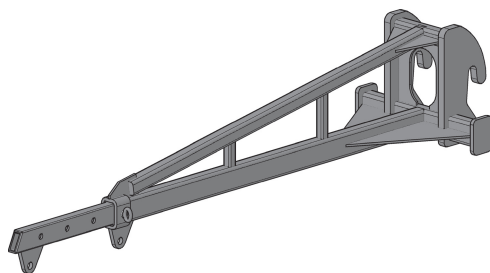
**prEN 1459-4:2018 (E)****3.2****lifting accessory**

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 a 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 means (e.g. log clamp)

**3.6****tether**

simple means used to restrain the dynamic effects of the load

**3.7****level ground**

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

**3.8****pick and carry**

act of travelling with a suspended load

**3.9****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

**3.10****rotation resistant rope**

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

[SOURCE: ISO 17893:2004, 2.6.1.3]



### 3.11

#### **load handling means**

part of the lifting attachment for holding the load or which the load/lifting accessory is attached to (e.g. hook, grab, clamp)

## **4 Safety requirements and/or protective measures**

### **4.1 General**

Trucks shall comply with the safety requirements and/or protective measures of this clause. In addition, the truck shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this standard.

Any lifting attachment mounted to the truck intended to handle a suspended load shall comply with the requirements of this standard.

### **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 and/or at high temperature);
- 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 means (e.g. hooks, magnets, grabs) specified by the truck manufacturer for a specific truck model and fitted to a lifting attachment shall have 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.

The wire rope shall remain taut on the drum even when the boom of the truck is lowered and the load is on the ground such that the rope becomes slack.

Means shall be provided to prevent the wire rope jumping off the sheaves even when the rope becomes slack.

**prEN 1459-4:2018 (E)****4.3.2.2 Wire ropes**

When a hoist is selected, wire ropes shall have a factor  $K_2 \geq 3,55$ , except rotation-resistant ropes that shall have a factor  $K_2 \geq 4,5$ .

NOTE 1 ISO 16625 can be used as guidance.

$$K_2 = \frac{L_{wr} \times n}{RCA + D_w}$$

where

$L_{wr}$  is the minimum breaking strength for new wire rope;

$n$  is the number of wire ropes;

RCA is the rated capacity of the attachment;

$D_w$  is the dead weight of the lifting accessory carried by the wire rope(s).

NOTE 2 The minimum breaking strength for a new wire rope is a certified value given by its manufacturer.

Pulley diameters shall follow the wire rope manufacturer's recommendations.

**4.3.2.3 Wire rope terminations**

The ratio between the maximum strength of wire rope/rope end combination and the rated capacity of the lifting attachment (RCA) shall be at least 5.

**4.4 Stability****4.4.1 Load chart for suspended load lifting attachment(s)**

For each combination truck and lifting attachment, the load chart for suspended loads shall be provided according to the truck manufacturer's instructions for use and determined according to prEN 1459-5.

**5 Verification of the safety requirements and/or protective measures****5.1 General**

A representative of each model of serial production truck, fitted with a representative of each lifting attachment model, shall be verified by testing or by calculation. The test results shall be used to validate the load chart(s).

**5.2 Tests for trucks fitted with lifting attachments**

- a) dynamic structural test according to 5.3 and
- b) travelling / pick and carry test according to 5.4.

**5.3 Dynamic structural tests****5.3.1 General**

The purpose of this test is to demonstrate the overall structural integrity of the truck fitted with a specified lifting attachment in dynamic conditions.