
Vozila za talni transport - Varnostne zahteve in preverjanje - 3. del: Dodatne zahteve za tovornjake z dvignjenim položajem upravljavca in posebej zasnovane za vožnjo z dvignjenim bremenom (dodatne zahteve k EN 16307-1)

Industrial trucks - Safety requirements and verification - Part 3 Supplementary requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads (additional requirements to EN 16307-1)

iTeh STANDARD PREVIEW
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Sicherheit von Flurförderzeugen - Sicherheitsanforderungen und Verifizierung - Teil 1: Zusätzliche Anforderungen für Motorkraftbetriebene Flurförderzeuge mit Ausnahme von fahrerlosen Flurförderzeugen, Staplern mit veränderlicher Reichweite und Lasten- und Personentransportfahrzeugen [oSIST prEN 16307-3:2018](https://standards.it/standards/sist/69131830-321f-4b70-a59f-f571167a23a3/osist-pren-16307-3-2018)

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Chariots de manutention - Exigences de sécurité et vérification - Partie 3 : Exigences supplémentaires pour les chariots avec poste de conduite éleuable et pour chariots spécialement conçus pour une conduite avec des charges en élévation (prescriptions complémentaires à l'EN 16307-1)

Ta slovenski standard je istoveten z: prEN 16307-3

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53.060 Industrijski tovornjaki Industrial trucks

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**Industrial trucks - Safety requirements and verification -
Part 3 Supplementary requirements for trucks with
elevating operator position and trucks specifically
designed to travel with elevated loads (additional
requirements to EN 16307-1)**

Chariots de manutention - Exigence de sécurité et vérifications - Partie 1 : Exigences supplémentaires pour les chariots autres que les chariots sans conducteur, les chariots à portée variable et les chariots porteurs de charge

Sicherheit von Flurförderzeugen - Sicherheitsanforderungen und Verifizierung - Teil 1: Zusätzliche Anforderungen für Motorkraftbetriebene Flurförderzeuge mit Ausnahme von fahrerlosen Flurförderzeugen, Staplern mit veränderlicher Reichweite und Lasten- und Personentransportfahrzeugen

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 150.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 16307-3:2017) has been prepared by Technical Committee CEN/TC 150 “Industrial trucks - Safety”, the secretariat of which is held by BSI.

This document is currently submitted to the 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 Annex ZA, which is an integral part of this document.

This document is based on ISO/TS 3691-7 “Industrial trucks - Safety requirements and verification - Part 7: Regional additions for countries within the European Community” and is limited to self propelled industrial trucks.

EN 16307 consists of the following parts, under the general title ‘Industrial trucks — Safety requirements and verification’:

- Part 1: “Supplementary requirements for self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks”
- Part 2: “Supplementary requirements for self-propelled variable-reach trucks”
- Part 3: “Supplementary requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads (additional requirements to EN 16307-1)”
- Part 4: “Supplementary requirements for driverless industrial trucks and their systems”
- Part 5: “Supplementary requirements for pedestrian-propelled trucks”
- Part 6: “Supplementary requirements for burden and personnel carriers”

This document is intended to be used with EN ISO 3691-1 “Industrial trucks — Safety requirements and verification: Part: 1: Self-propelled industrial trucks, other than driverless, variable-reach and burden-carrier trucks”.

AND

EN ISO 3691-3 *Industrial trucks — Safety requirements and verification — Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads*

Introduction

General

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

The machines 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.

The EN 16307 series of standards covers safety requirements and their verification for industrial trucks as defined in ISO 5053-1 that are not covered exhaustively by EN ISO 3691 series.

Assessment of hazards

The product should be designed in such a way that it is fit for its purpose or function and can be adjusted and maintained without putting persons at risk when used under the conditions foreseen by the manufacturer.

In order to properly design a product and to cover all specific safety requirements, the manufacturer will identify the hazards that apply to his product and carry out a risk assessment. The manufacturer will then design and construct the product taking this assessment into account.

The aim of this procedure is to eliminate the risk of accidents throughout the foreseeable lifetime of the machinery, including the phases of assembling and dismantling where risks of accidents could also arise from foreseeable abnormal situations.

In selecting the most appropriate methods, the manufacturer will apply the following principles, in the order given here:

- a) eliminate or reduce risks as far as possible by design (inherently safe machinery design and construction);
- b) take the necessary protective measures in relation to risks that cannot be eliminated by design;
- c) inform users of any shortcoming of the protective measures adopted;
- d) indicate whether any particular training is required;
- e) specify any need to provide personal protection equipment;
- f) refer to the appropriate user's document for proper operating instructions.

Industrial trucks should be designed to prevent foreseeable misuse wherever possible, if such would engender risk. In other cases, the instructions should draw the user's attention to ways shown by experience in which the machinery ought not be used.

This part of EN 16307 does not repeat all the technical rules which are state-of-the art and which are applicable to the material used to construct the industrial truck. Reference should also be made to EN ISO 12100.

1 Scope

This European standard gives requirements for the types of industrial trucks specified in the scope of EN ISO 3691-3.

This standard is intended to be used in conjunction with EN ISO 3691-3. These requirements are supplementary to those stated in EN ISO 3691-3.

This European standard defines supplementary requirements to EN ISO 3691-3:

- Brakes
- Fall Protection Device
- Stability
- Information for use (instruction handbook and marking)

Annex A (informative) contains the list of significant hazards covered by this standard.

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.

EN 360, *Personal protective equipment against falls from a height - Retractable type fall arresters*

EN 361, *Personal protective equipment against falls from a height - Full body harnesses*

EN 363, *Personal fall protection equipment - Personal fall protection systems*

EN 795, *Personal fall protection equipment - Anchor devices*

EN ISO 3691-1:2015, *Industrial trucks - Safety requirements and verification - Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks (ISO 3691-1:2011, including Cor 1:2013)*

EN ISO 3691-3:2016, *Industrial trucks - Safety requirements and verification - Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads (ISO 3691-3:2016)*

ISO 5053-1:2015, *Industrial trucks — Terminology and classification — Part 1: Types of industrial trucks*

ISO 6292:2008, *Powered industrial trucks and tractors — Brake performance and component strength*

ISO 22915-21:2009, *Industrial trucks — Verification of stability — Part 21: Order-picking trucks with operator position elevating above 1 200 mm*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5053-1:2015, EN ISO 3691-1:2015 and EN ISO 3691-3:2016 apply.

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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>

4 Safety requirements and/or protective measures**4.1 General**

The following applies to the self-propelled industrial trucks with elevating operator position and trucks specifically designed to travel with elevated load, dealt with in EN ISO 3691-3. These are additional to the requirements of EN ISO 3691-3 and, in certain instances, replace them.

4.2 Brakes - Operation without guidance systems

For trucks travelling at more than 9 km/h, the braking capacity shall comply with ISO 6292:2008, Table 2,

Group A1 or, alternatively, the travel speed shall be automatically reduced to not more than 9 km/h and braking capacity shall comply with of ISO 6292:2008, Table 2, group C.

4.3 Operator fall protection

As an exception to the provisions of ISO 3691-1:2011, 4.7.3.1 and 4.7.3.2, normatively referenced in ISO 3691-3, the operator platforms may be equipped with a fall protection device in lieu of guarding all round, provided the truck is intended for use in particular circumstances (e.g. handling of bulky loads) where it is not suitable to use guard rails. [oSIST prEN 16307-3:2018](https://standards.iteh.ai/catalog/standards/sist/69131830-321f-4b70-a59f-197116/a29a5/osist-prEN-16307-3-2018)

The fall protection device shall consist of a body harness and retractable, automatically locking tether system in accordance with EN 363, a body harness in accordance with EN 361, a connecting device in accordance with EN 795, Class D, and an automatic locking tether in accordance with EN 360.

4.4 Stability of order-picking trucks with elevating operator position

If the travel speed is reduced to creep speed ($v \leq 2,5$ km/h) while travelling with load and in unrestricted steering mode (see ISO 22915-21:2009, Table 1, Test 3), the lateral stability is considered to have been verified if the truck reaches a minimum tilt table angle of 6 %.

If the travel speed is reduced to creep speed ($v \leq 2,5$ km/h) while travelling without load and in unrestricted steering mode (see ISO 22915-21:2009, Table 1, Test 4) the lateral stability is considered to have been verified if the truck reaches a minimum tilt table angle of 8 %. See EN ISO 3691-3:2016, 4.5.

5 Verification of safety requirements and/or protective measures

The requirements specified in Clause 4 shall be verified in accordance with the referenced standard and the principles defined in EN ISO 3691-3:2016, Clause 5.

Annex A (informative)

List of significant hazards

This annex contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this part of EN 16307, identified by risk assessment for industrial trucks and which require action to eliminate or reduce the risk. See Table A.1.

NOTE The structure of the table is based on that of EN ISO 12100:2010, Table B.1. The order of lines within a group corresponds to the truck functionalities.

Table A.1 — List of significant hazards

No.	Type or group/origin	Potential consequences	Corresponding requirement	
1	Mechanical hazards			
	<ul style="list-style-type: none"> — Acceleration, deceleration (kinetic energy) — Machinery mobility — Moving elements — Rotating elements 	<ul style="list-style-type: none"> — Being run over — Crushing — Drawing-in or trapping — Impact 	<ul style="list-style-type: none"> 4.3 4.4 4.5 4.6 4.7 4.12 6.1.1 6.1.2 6.1.3 	<ul style="list-style-type: none"> Travel speed Brakes Additional operation from alongside pedestrian-controlled and stand-on trucks Lift chains Mast tilt and carriage isolation Visibility Truck/attachments Operation of truck Transportation, commissioning and storage
	<ul style="list-style-type: none"> — Angular parts — Approach of a moving element to a fixed part — Cutting parts — Sharp edges 	<ul style="list-style-type: none"> — Crushing — Cutting or severing — Drawing-in or trapping — Entanglement — Shearing — Stabbing or puncture 	<ul style="list-style-type: none"> 4.9 	<ul style="list-style-type: none"> Protection against crushing, shearing and trapping
	<ul style="list-style-type: none"> — Falling objects 	<ul style="list-style-type: none"> — Crushing — Impact 	<ul style="list-style-type: none"> 6.1.1 	<ul style="list-style-type: none"> Truck/attachments
No.	Type or group/origin	Potential consequences	Corresponding requirement	
	<ul style="list-style-type: none"> — Stability 	<ul style="list-style-type: none"> — Being thrown — Crushing — Impact 	<ul style="list-style-type: none"> 6.1.1 	<ul style="list-style-type: none"> Truck/attachments

No.	Type or group/origin	Potential consequences	Corresponding requirement	
2	Electrical hazards			
	<ul style="list-style-type: none"> — Arc — Electromagnetic phenomena — Electrostatic phenomena — Live parts — Not enough distance to live parts under high voltage — Overload — Parts which have become live under fault conditions — Short-circuit — Thermal radiation 	<ul style="list-style-type: none"> — Burn — Chemical effects — Electrocutation — Falling, being thrown — Fire — Projection of molten particles — Shock 	4.2 4.15	Electrical requirements Electromagnetic compatibility
3	Thermal hazards			
	No origin of these kind of hazards in industrial trucks is covered.			
4	Noise hazards			
	<ul style="list-style-type: none"> — Exhausting system — Moving parts 	<ul style="list-style-type: none"> — Discomfort — Loss of awareness — Loss of balance — Permanent hearing loss — Stress — Tinnitus — Tiredness 	4.13 4.13.1 4.13.2 4.13.3 4.13.4 6.1.1	Reduction of noise by design General Main source of noise Measures to reduce noise at the operator's position Determination of noise emission values Truck/attachments
5	Vibration hazards			
	<ul style="list-style-type: none"> — Mobile equipment 	<ul style="list-style-type: none"> — Discomfort — Low-back morbidity — Neurological disorder — Osteo-articular disorder — Trauma of the spine — Vascular disorder 	4.14 6.1.1	Vibration Truck/attachments
6	Radiation hazards			
	No origin of these kind of hazards in industrial trucks is covered.			