SLOVENSKI STANDARD
SIST EN 16307-6:2014

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Vozila za talni transport - Varnostne zahteve in preverjanje - 6. del: Dodatne zahteve za tovorne in osebne vozičke

Industrial trucks - Safety requirements and verification - Part 6: Supplementary requirements for burden and personnel carriers

Flurförderzeuge - Sicherheitstechnische Anforderungen und Verifizierung - Teil 6: Zusätzliche Anforderungen für Lasten- und Personentransportfahrzeuge

Chariots de manutention - Exigences de sécurité et vérification - Partie 6: Exigences supplémentaires pour les chariots porte-charge et chariots porte-personne

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Industrial trucks - Safety requirements and verification - Part 6: Supplementary requirements for burden and personnel carriers

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Foreword

This document (EN 16307-6:2014) has been prepared by Technical Committee CEN/TC 150 “Industrial Trucks - Safety”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2014, and conflicting national standards shall be withdrawn at the latest by October 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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 2006/42/EC, 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 requirements 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 to be used with EN ISO 3691-6:2013, *Industrial trucks — Safety requirements and verification – Part 6: Burden and personnel carriers (*ISO 3691-6:2013*)*.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

0 Introduction

0.1 General

This document is a type-C standard as stated in EN ISO 12100:2010.

The machines concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document (Clause 1).

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 that are not covered exhaustively by EN ISO 3691 series.

0.2 Assessment of hazards

The product needs to 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 have to identify the hazards that apply to his product and carry out a risk assessment. The manufacturer will then need to 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 need to 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 need to be designed to prevent foreseeable misuse wherever possible, if such would engender risk. In other cases, the instructions will need to 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 will also need to be made to EN ISO 12100:2010.

1 Scope

This European Standard gives requirements for the types of industrial trucks specified in the scope of EN ISO 3691-6:2013.

This European Standard is intended to be used in conjunction with EN ISO 3691-6:2013. These requirements are supplementary to those stated in EN ISO 3691-6:2013 with the addition of following hazards:

- Noise emissions
- Vibration
- Electromagnetic compatibility (EMC)
- When operating in potentially explosive atmospheres

This European Standard replaces the following requirements of EN ISO 3691-6:2013:

- Electrical requirements

This European Standard defines supplementary requirements to EN ISO 3691-6:2013:

- Brakes
- Operator's seat
- Protection from burning
- Protection against crushing, shearing and trapping
- Visibility
- Information for use (instruction handbook and marking)

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

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.

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 1175-1:1998+A1:2010, *Safety of industrial trucks — Electrical requirements — Part 1: General requirements for battery powered trucks*

EN 1175-2:1998+A1:2010, *Safety of industrial trucks — Electrical requirements — Part 2: General requirements of internal combustion engine powered trucks*

EN 1175-3:1998+A1:2010, *Safety of industrial trucks — Electrical requirements — Part 3: Specific requirements for the electric power transmission systems of internal combustion engine powered trucks*

EN 1755, *Safety of industrial trucks — Operation in potentially explosive atmospheres — Use in flammable gas, vapour, mist and dust*

EN 12053, *Safety of industrial trucks — Test methods for measuring noise emissions*

EN 12895, *Industrial trucks — Electromagnetic compatibility*

EN 13059, *Safety of industrial trucks — Test methods for measuring vibration*

EN 13490, *Mechanical vibration — Industrial trucks — Laboratory evaluation and specification of operator seat vibration*

EN ISO 3691-6:2013, *Industrial trucks — Safety requirements and verification — Part 6: Burden and personnel carriers (ISO 3691-6:2013)*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1)*

ISO 5053:1987, *Powered industrial trucks — Terminology*

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

ISO 13564-1:2012, *Powered industrial trucks — Test methods for verification of visibility — Part 1: Sit-on and stand-on operator trucks and variable-reach trucks up to and including 10 t capacity*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5053:1987 and EN ISO 3691-6:2013 apply.

4 Safety requirements and/or protective measures

4.1 General

The following applies to the burden and personnel carriers dealt with in EN ISO 3691-6:2013. These are additional to the requirements of EN ISO 3691-6:2013 and, in certain instances, replace them.

4.2 Electrical requirements

Subclause 4.1.3 of EN ISO 3691-6:2013 is replaced with the following:

Electrical systems and equipment shall be in accordance with the relevant part(s) of EN 1175.

4.3 Brakes

The requirements of EN ISO 3691-6:2013, 4.3.1 shall apply with the following addition:

The truck shall be provided with an emergency brake in accordance with ISO 6292:2008, 4.3.

4.4 Operator's seat

The requirements of EN ISO 3691-6:2013, 4.6.3.1 shall apply with the following addition:

The operator's seat shall be specified and marked in accordance with EN 13490.

4.5 Protection from burning

The requirements of EN ISO 3691-6:2013, 4.6.4 shall apply with the following addition:

The carrier shall provide a space for the location of a fire extinguisher.

4.6 Protection against crushing, shearing and trapping

The requirements of EN ISO 3691-6:2013, 4.6.5 shall apply with the following addition:

Where fixed and/or removable guard systems are needed, the requirements of EN 953 shall be met.

When a fixed guard is removed, its fixing system shall remain on the guard or truck. This requirement applies to any fixed guards that are liable to be removed by the user with a risk of loss of the fixings, e.g. fixed guards that are liable to be removed during routine maintenance or setting operations carried out at the place of use.

4.7 Visibility

The requirements of EN ISO 3691-6:2013, 4.9.1 shall apply with the following modifications:

Replace the requirement given in ISO 13564-1:2012, 9.2.2 a) with the following:

a) forward direction:

   25 % of the vertical surface of the test body;

b) rearward direction:

   20 % of the vertical surface of the test body.

Replace the required minimum illuminated area of test surface as required by ISO 13564-1:2012, Table 3, Test No.1, with the following:

25 % of the vertical surface of the test body.

4.8 Reduction of noise by design

4.8.1 General

Burden and personal carriers shall be designed and constructed such that risks resulting from the emission of airborne noise are reduced according the state of the art.

When noise is a significant hazard, there is need for a low-noise design. In this case, the methodology for low-noise design given in EN ISO 11688-1 shall be considered.

NOTE EN ISO 11688-2 gives useful information on noise generation mechanisms in machinery.

Normally, noise is not a significant hazard for battery-powered trucks.

4.8.2 Main source of noise

On burden and personal carriers, the main sources of noise are components, such as the following, in a high-speed operation mode:

— combustion engines, including air intake, cooling fan and exhaust system;

— hydraulic pumps/motors.