SLOVENSKI STANDARD
SIST EN 17314:2020

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Vozila za talni transport - Specifikacije in preskusne metode - Sistemi za zadrževanje voznikov, razen varnostnih pasov okoli pasu

Industrial trucks - Specifications and test methods - Operator restraint systems other than lap-type seat belts

Flurförderzeuge - Spezifikationen und Prüfverfahren - Andere Rückhaltesysteme für den Bediener als Beckengurte

Chariots de manutention - Spécifications et méthodes d'essai - Systèmes de retenue de l'opérateur autres que le type ceintures de sécurité ventrales

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53.060	Industrijski tovornjaki	Industrial trucks

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Industrial trucks - Specifications and test methods - Operator restraint systems other than lap-type seat belts

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European foreword

This document (EN 17314:2020) 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of an identical text or by endorsement, at the latest by July 2020, and conflicting national standards shall be withdrawn at the latest by July 2020.

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

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Introduction

This European Standard is a type C standard as stated in EN ISO 12100:2010. This standard has been prepared to provide one means of conforming to the essential safety requirements of the Machinery Directive and associated EFTA regulations.

The extent to which hazards are covered is indicated in the scope of this standard.

Current progress in the technical state of the art is leading to improvements in the safety of restraint systems for industrial truck operators. This standard provides a procedure for verifying the effectiveness and the robustness of restraint systems, other than lap-type seat belts, to protect truck operator(s) against the risk of lateral ejection from the protective structure during a lateral tip-over. The procedure can be used as a type test as well as an individual test.

1 Scope

This document specifies the tests for the verification of restraint systems against the risk of lateral ejection of the operator for:

— counterbalanced lift trucks with centre control, sit down and non-elevating operator position (see EN ISO 3691-1:2015, 4.7.8), with a rated capacity up to and including 10 000 kg;

— tractors as defined in EN 12312-15 (airport ground equipment);

— burden carriers (as defined in ISO 5053-1:2015, 3.25) with a maximum speed of more than 25 km/h with seated operator;

— other types of industrial trucks equipped with such a restraint system.

Counterblanced lift trucks, tractors and burden carriers are named hereafter as trucks.

NOTE 1 Industrial tractors as defined in ISO 5053-1[1] do not need a restraint system in general.

This document describes type tests for a specific combination of truck and restraint system.

This standard does not cover:

— the risk due to frontal ejection;

— the monitoring of the protective position of the operator restraint system as defined in EN 16307-1:—[2], 4.16;

— the testing of seat belts.

NOTE 2 The testing of sealt belts is covered by ISO 24135-1.

The document is not applicable for the retrofit of trucks with restraint systems.

This document does not give any requirements on the need for a restraint system.

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 12312-15, *Aircraft ground support equipment — Specific requirements — Part 15: Baggage and equipment tractors*

EN 16307-1:—[2], *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*

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)*

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[1] Under preparation. Stage at the time of publication: ISO/DIS 5053-1.

[2] Under preparation. Stage at the time of publication: prEN 16307-1.

EN ISO 5353, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point (ISO 5353)*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
operator restraint system
device or system that is permanently installed to keep the operator within the protective structure of the truck

Note 1 to entry: The restraint system can be composed of several parts.

Note 2 to entry: A cabin can be designed to act as a restraint system.

3.2
protective structure
framework, cabin or overhead guard protecting the operator of the truck

3.3
bed-plate
chassis or platform on which the assembly composed of protective structure and restraint system is fixed

3.4
test shape
part of the lateral view of the human shape

Note 1 to entry: Simulates the main body parts involved in the case a lateral tip-over occurs. The dimensions and geometry of the test shape are a simplification of the Hybrid III dummy.

3.5
test zone
zone through which the operator might be ejected laterally from the protective structure

3.6
protective position
position of the restraint system in which the operator is safeguarded against lateral ejection from the truck

Note 1 to entry: For restraint systems equipped with a bolt or lock system (door-bar system, door, etc.), the protective position is when the moving part of the restraint is engaged in the interlocking system mounted on a fixed part of the truck.

Note 2 to entry: For restraint systems without such a bolt or lock system, the protective position is as defined by the manufacturer.

4 Test set-up

4.1 General

The following preconditions are defined to achieve repeatability and comparability for the verification of the capability of restraint systems avoiding the risk of lateral ejection of the operator.

The restraint system design shall be verified by:

a) testing as described in this standard; or

b) calculations, computer modelling or other equivalent simulation methods.

Where a cabin is designed to act as a restraint system, the protective position of the access door(s) shall be monitored in accordance with EN 16307-1:—, 4.16 or:

— the access door(s) shall be self closing and latching;

— the access door(s) shall not be latched or held back in the open position;

— the truck shall not be operated with the access doors temporarily removed.

4.2 Assembly of the restraint system

The restraint system shall be mounted according to the specifications of the truck manufacturer and the restraint system manufacturer.

The restraint system shall be a new and unused sample. It shall be mounted on the truck (e.g. overhead guard or seat, see Tables 1 and 2) or on an equivalent structure in terms of geometry, dimensions and materials.

Additional fittings shall not be used to contribute to the strength of the structure.

The assembly shall be secured to the bed-plate so that the members connecting the assembly and the bed-plate do not deflect significantly in relation to the restraint system during the test.

If the restraint system is a system that can be deployed during a tip-over situation (e.g. a flexible structure or net) and is not deployed permanently on the protective structure, the deployed version shall be mounted and tested.