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Rough-terrain trucks - Safety requirements and
verification - Part 1: Variable-reach trucks

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1459-1:2017+A1:2020 sisaldab Euroopa standardi EN 1459-1:2017+A1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 1459-1:2017+A1:2020 consists of the English text of the European standard EN 1459-1:2017+A1:2020.
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English Version

Rough-terrain trucks - Safety requirements and verification - Part 1: Variable-reach trucks

Chariots tout-terrain - Prescriptions de sécurité et vérification - Partie 1 : Chariots à portée variable

Geländegängige Stapler - Sicherheitstechnische Anforderungen und Verifizierung - Teil 1: Stapler mit veränderlicher Reichweite

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

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Contents	Page
European foreword.....	4
Introduction	6
1 Scope.....	7
2 Normative references.....	8
3 Terms and definitions	11
4 Safety requirements and/or protective measures	15
4.1 General.....	15
4.2  Starting/stopping of engine and moving machine 	16
4.3 Brakes.....	17
4.4 Electrical and electronic systems.....	17
4.5 Controls.....	20
4.6 Power systems and accessories	24
4.7 Stabilizing devices	26
4.8 Design requirements for maintenance purposes.....	28
4.9 Systems for lifting, tilting and reaching.....	29
4.10 Operator's station	31
4.11 Operator access.....	36
4.12 Protective measures and devices	37
4.13 Stability requirements	38
4.14 Visibility.....	39
4.15 Lighting.....	39
4.16 Fire protection	39
4.17 Retrieval, transportation and lifting.....	39
4.18 Noise	40
4.19 Electromagnetic compatibility	40
5 Verification of requirements and safety measures	41
5.1 General.....	41
5.2 Functional verification.....	41
5.3 Structural verification	41
5.4 Load holding verification	42
6 Information for use	42
6.1 General.....	42
6.2 Graphical symbols and warning	43
6.3 Instruction handbook.....	48
6.4 Marking.....	52
6.5 Load chart	52
Annex A (informative) List of significant hazards	55
Annex B (informative) Consistency of motions	61
Annex C (normative) Rules for the construction and layout of pedals.....	62
C.1 Definitions	62
C.2 Requirements	62
C.3 Design and manufacture.....	63

Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....	65
Bibliography	69

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European foreword

This document (EN 1459-1:2017+A1:2020) 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 August 2020 and conflicting national standards shall be withdrawn at the latest by February 2021.

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.

This document supersedes A1 EN 1459-1:2017 A1.

This document includes Amendment 1, approved by CEN on 2019-11-25.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 Together with EN ISO 3691-2:2016 and prEN 16307-2:2017, EN 1459-1:2017 supersedes EN 1459:1998+A3:2012.

In comparison with the previous edition EN 1459:1998+A3:2012, the following significant changes have been made:

- industrial variable-reach trucks have been removed from the scope and are dealt with in EN ISO 3691-2 and EN 16307-2;
- annexes giving stability tests requirements have been removed; this standard refers to the ISO 22915 series for stability tests;
- LPG-engine powered trucks have been removed from the scope;
- performance level requirements for safety functions have been added in a table;
- ergonomic requirements have been added;
- format and requirements have been influenced by the equivalent ISO standard in order to prepare the global relevance.

The most significant changes introduced by Amendment 1 FprEN 1459-1:2019 leading to the new version EN 1459-1:2017+A1:2020 of edition EN 1459-1:2017 are:

- different conditions for the test to determine if the truck can still be controlled in case of failure of the hydraulic steering;
- incorporation in this standard of the relevant requirements applicable to electric circuits, instead of referencing to EN 1175-2:1998+A1:2010;
- exclusion of some requirements of EN ISO 4413:2010, which were not relevant or applicable to trucks;
- other minor changes, mainly editorial clarifications of existing requirements. A1

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 Directives, see informative Annex ZA, which is 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 suspended loads* (in preparation)
- *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* (Technical Report)
- *Part 7: Test method and determination of noise emission* (in preparation)
- *Part 8: Variable-reach tractors* (Technical Specification)

NOTE Part 7 will be developed in line with the development of the revision of the Outdoor noise directive.

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

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 12 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.

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 organizations, 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 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 concerned and the extent to which hazards, hazardous situations or 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.

1 Scope



This European Standard specifies the safety requirements of self-propelled variable-reach rough-terrain trucks (hereafter referred to as trucks), intended to handle loads, equipped with a telescopic lifting means (pivoted boom), on which a load handling device (e.g. carriage and fork arms) is fitted.

For the purpose of this standard, rough-terrain variable-reach trucks are designed to transport, lift and place loads and can be driven on unimproved terrain.

Fork arms are considered to be part of the truck. Trucks can also be equipped with a variety of attachments (e.g. bale spikes, mowers, sweepers).

This European Standard deals with all the significant hazards, hazardous situations and events relevant to the trucks when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A).

This European Standard does not apply to:

- slewing variable reach rough terrain trucks covered by EN 1459-2;
- industrial variable reach trucks covered by EN ISO 3691-2;
- lorry-mounted variable reach trucks;
- variable reach trucks fitted with tilting or elevating operator position;
- mobile cranes covered by EN 13000;
- machines designed primarily for earth moving, even if their buckets and blades are replaced with forks (see EN 474 series);
- trucks designed primarily with variable length load suspension elements (e.g. chain, ropes) from which the load may swing freely in all directions;
- trucks fitted with personnel work platforms, designed to move persons to elevated working positions;
- trucks designed primarily for container handling;
- trucks on tracks;
- trucks with articulated chassis;
-  attachments .

This European Standard does not address hazards linked to:

- hybrid power systems;
- gas power system;
- gasoline engine system;
- battery power system;
- tractor specific devices (e.g. PTO).

This European Standard does not address hazards which may occur:

- a) when handling suspended loads which may swing freely (additional requirements are given in prEN 1459-4 (in preparation));
- b) when using trucks on public roads;
- c) when operating in potentially explosive atmospheres;
- d) when operating underground;
- e) when towing trailers;
- f) when fitted with a personnel work platform (additional requirements are given in EN 1459-3);
- g) when using cruise-control.

This European Standard does not provide a method of calculation for fatigue and strength of material.

This document is not applicable to trucks manufactured before the date of its publication.

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.

A1 deleted text **A1**

prEN 1459-5:2017, *Rough-terrain trucks - Safety requirements and verification - Part 5: Attachments and attachment interface*

EN 12053:2001+A1:2008, *Safety of industrial trucks - Test methods for measuring noise emissions*

EN 12895:2015, *Industrial trucks - Electromagnetic compatibility*

EN 13059:2002+A1:2008, *Safety of industrial trucks - Test methods for measuring vibration*

EN 13309:2010, *Construction machinery - Electromagnetic compatibility of machines with internal power supply*

EN 15000:2008, *Safety of industrial trucks - Self propelled variable reach trucks - Specification, performance and test requirements for longitudinal load moment indicators and longitudinal load moment limiters*

EN 15830:2012, *Rough-terrain variable reach trucks - Visibility - Test methods and verification*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*¹⁾

EN 62061:2005, *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

1) This European Standard is impacted by the amendments EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

- EN ISO 2860:2008, *Earth-moving machinery - Minimum access dimensions (ISO 2860:1992)*
- EN ISO 2867:2011, *Earth-moving machinery - Access systems (ISO 2867:2011)*
- EN ISO 3449:2008, *Earth-moving machinery - Falling-object protective structures - Laboratory tests and performance requirements (ISO 3449:2005)*
- EN ISO 3457:2008, *Earth-moving machinery - Guards - Definitions and requirements (ISO 3457:2003)*
- EN ISO 3471:2008, *Earth-moving machinery - Roll-over protective structures - Laboratory tests and performance requirements (ISO 3471:2008)*
- EN ISO 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*
- EN ISO 5353:1998, *Earth-moving machinery, and tractors and machinery for agriculture and forestry - Seat index point (ISO 5353:1995)*
- EN ISO 6682:2008, *Earth-moving machinery - Zones of comfort and reach for controls (ISO 6682:1986, including Amd 1:1989)*
- EN ISO 6683:2008, *Earth-moving machinery - Seat belts and seat belt anchorages - Performance requirements and tests (ISO 6683:2005)*
- EN ISO 7096:2008, *Earth-moving machinery - Laboratory evaluation of operator seat vibration (ISO 7096:2000)*
- EN ISO 11688-1:2009, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)*
- EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*
- EN ISO 13849-1:2015, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)*
- EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*
- EN ISO 13857:2008, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*
- ▣^{A1} ISO 2328:2011, *Fork-lift trucks — Hook-on type fork arms and fork arm carriages — Mounting dimensions* 
- ISO 2330:2002, *Fork-lift trucks - Fork arms - Technical characteristics and testing*
- ISO 3795:1989, *Road vehicles, and tractors and machinery for agriculture and forestry - Determination of burning behaviour of interior materials*
- ISO 5053-1:2015, *Industrial trucks - Terminology and classification - Part 1: Types of industrial trucks*
- ISO 6011:2003, *Earth-moving machinery - Visual display of machine operation*

ISO 6016:2008, *Earth-moving machinery - Methods of measuring the masses of whole machines, their equipment and components*

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

ISO 7000:2014, *Graphical symbols for use on equipment - Registered symbols*

ISO 9533:2010, *Earth-moving machinery - Machine-mounted audible travel alarms and forward horns - Test methods and performance criteria*

ISO 10263-2:2009, *Earth-moving machinery - Operator enclosure environment - Part 2: Air filter element test method*

ISO 10263-3:2009, *Earth-moving machinery - Operator enclosure environment - Part 3: Pressurization test method*

ISO 10263-4:2009, *Earth-moving machinery - Operator enclosure environment - Part 4: Heating, ventilating and air conditioning (HVAC) test method and performance*

ISO 11112:1995+A1:2001, *Earth-moving machinery - Operator's seat - Dimensions and requirements*

ISO 12508:1994, *Earth-moving machinery - Operator station and maintenance areas - Bluntness of edges*

ISO 12509:2004, *Earth-moving machinery - Lighting, signalling and marking lights, and reflex-reflector devices*

ISO 13284:2003, *Fork-lift trucks — Fork-arm extensions and telescopic fork arms — Technical characteristics and strength requirements*

ISO 13333:1994, *Earth-moving machinery - Dumper body support and operator's cab tilt support devices*

ISO 15817:2012, *Earth-moving machinery - Safety requirements for remote operator control systems*

ISO 15818:2017, *Earth-moving machinery - Lifting and tying-down attachment points - Performance requirements*

ISO 15870:2000, *Powered industrial trucks - Safety signs and hazard pictorials - General principles*

ISO 16528-1:2007, *Boilers and pressure vessels - Part 1: Performance requirements*

ISO 16528-2:2007, *Boilers and pressure vessels - Part 2: Procedures for fulfilling the requirements of ISO 16528-1*

ISO 21507:2010, *Earth-moving machinery - Performance requirements for non-metallic fuel tanks*

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*