



SLOVENSKI STANDARD

SIST EN 15000:2009

01-april-2009

**Varnost vozil za talni transport - Samognana vozila s spremenljivim dosegom -
Specifikacija, sposobnost in preskusne zahteve za zaznavala vzdolžnega
obremenitvenega momenta in za omejitnike vzdolžnega obremenitvenega
momenta**

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

iTeh STANDARD PREVIEW

Sicherheit von Flurförderzeugen (Kraftbetriebene Stapler) mit veränderlicher Reichweite -
Nachweis, Leistung und Prüfbedingungen für Lastmomentbegrenzer in Längsrichtung

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Sécurité des chariots de manutention - Chariots automoteurs a portée variable - La
spécification, l'exécution et essaie des conditions pour les indicateurs de moment de
chargement longitudinaux et limiters de moment de chargement longitudinal

Ta slovenski standard je istoveten z: EN 15000:2008

ICS:

53.060

Industrijski tovornjaki

Industrial trucks

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EUROPEAN STANDARD

EN 15000

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2008

ICS 53.060

English Version

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

Sécurité des chariots de manutention - Chariots
automoteurs à portée variable - Spécifications, exigences
de performance et d'essai pour les indicateurs de moment
de charge longitudinal et limiteurs de moment de charge
longitudinal

Sicherheit von Flurförderzeugen - Kraftbetriebene Stapler
mit veränderlicher Reichweite - Spezifikation, Leistung und
Prüfbedingungen für Lastmomentanzeiger in Längsrichtung
und Lastmomentbegrenzer in Längsrichtung

This European Standard was approved by CEN on 25 July 2008.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 15000:2008) 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 March 2009, and conflicting national standards shall be withdrawn at the latest by September 2010.

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 EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA and B which are integral parts of this document.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This European Standard is a "Type C" standard as defined in EN ISO 12100-1.

This European Standard has been prepared to be a harmonized standard to provide one means for longitudinal load moment indicators and longitudinal load moment control *systems* used on *self-propelled* variable reach trucks to conform to the essential health and safety requirements of the Machinery Directive, as amended.

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 other standards, for equipment that have been designed and built according to the provisions of this type C standard.

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1 Scope

This European Standard specifies the technical requirements, verification and test procedure for the longitudinal load moment indicators (LLMI) and longitudinal load moment control (LLMC) systems operating in the forward direction for self propelled variable reach trucks covered by EN 1459.

This European Standard completes the requirements of Clause 5.8.4 Longitudinal stability of EN 1459:1998.

The LLMI has been designated by the words longitudinal safety warning devices in EN 1459.

This European Standard covers LLMI and LLMC systems for stationary trucks performing loading or placing functions on consolidated, stable and level ground.

This European Standard does not cover the risk due to lateral instability, or instability due to the travelling of the truck. The LLMI and LLMC are not intended for warning of the overturning risk whilst the truck is travelling.

NOTE Acknowledging that, at the time of publication, the requirements included in this European Standard do not represent the state of the art, a transition period of 24 months is permitted after the date of publication, such that manufacturers can develop their products sufficiently to meet the requirements of this European Standard.

2 Normative references

The following referenced documents are indispensable for the application 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 1175-1:1998, *Safety of industrial trucks – Electrical requirements – Part 1: General requirements for battery powered trucks*

[SIST EN 15000:2009](https://standards.iteh.ai/catalog/standards/sist/b69e78e0-3db1-49b0-9dd7-9bb4c70c7c83/sist-en-15000-2009)

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

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

EN 1459:1998, *Safety of industrial trucks – Self propelled variable reach trucks*

EN 12895:2000, *Industrial trucks — Electromagnetic compatibility*

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

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 14121-1:2007, *Safety of machinery — Risk assessment — Part 1: Principles (ISO 14121-1:2007)*

ISO 3287:1999, *Powered industrial trucks – Symbols for operator controls and other displays*

EN 15000:2008 (E)**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003, EN 1459:1998 and the following apply.

3.1**longitudinal load moment**

moment produced by the load, the attachment and the lifting means of the truck which acts at the load centre of gravity from the tipping line in the forward direction

3.2**longitudinal load moment indicator****LLMI**

device that warns the operator of a change to the load handling geometry which would increase the longitudinal load moment, beyond pre-determined limit(s)

3.3**longitudinal load moment control****LLMC**

device that prevents the operator changing the load handling geometry in direction(s) which would increase the longitudinal load moment, beyond the allowable limit(s)

3.4**load handling geometry**

relationship of points, lines and angles, described by the position of the load centre of gravity (the position of the boom, carriage and attachment) and tipping line (front wheels or stabilisers – if equipped)

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4 List of significant hazards

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The following table shows a list of significant hazardous situations and hazardous events that could result in risks to persons during normal use and foreseeable misuse. It also contains the relevant clauses in this European Standard that are necessary to reduce or eliminate the risks associated with those hazards.

This list has been prepared in accordance with Annex A of EN ISO 14121-1.

Table 1 — List of significant hazards

Hazard (as listed in EN ISO 14121-1)	Relevant clause(s) in this standard
Electrical hazards - Contacts of persons with live parts (direct contact)	5.1, 5.1.8.1, 5.1.8.5.3, 5.1.8.5.5, 5.1.8.5.6
Electrical hazards - Contacts of persons with parts which have become live under faulty conditions (indirect contact)	5.1.8.1
Inadequate design or location of visual display units	5.1.6, 5.2.2, 5.2.3
Failure/disorder of the control system	5.1, 5.1.5, 5.1.6, 5.1.8.2, 5.1.8.3
External influences on electrical equipment	5.1, 5.1.2, 5.1.8.2, 5.1.8.3, 5.1.8.4, 5.1.8.5.6
Failure of the power supply	5.1.8.2
Errors of fitting	5.1.3, 5.1.4
Break up during operation	5.1.6, 5.1.8.5, 5.2.2, 5.3.2, 5.3.3

5 Requirements

5.1 General

5.1.1 General

Systems of LLMI and LLMC shall comply with the safety requirements and/or measures of this clause.

In addition, systems shall be designed according to the principles to EN ISO 12100-1 and -2 for hazards relevant but not significant which are not dealt with by this European Standard.

5.1.2 Environmental operating conditions

The degree of protection of components of the LLMI/LLMC shall be at least IP56 for exposed parts, and IP54 for enclosed parts, in accordance with EN 60529.

5.1.3 Protection against modification of the calibration setting

All adjustments affecting the calibration settings of the LLMI and LLMC shall be so designed that it can only be carried out by authorised persons (e.g. using a special tool, a dedicated key or sequence of operations).

5.1.4 Verification of the correct function

Verification of the correct function of the LLMI and LLMC shall be possible without any special tools. In case a special procedure is required, this procedure shall be described in the operator manual.

5.1.5 Warning and prevention

The LLMI and LLMC shall function in accordance with 5.2.2 and 5.3.3 for all combination of attachments and motions of the load handling means authorised by the manufacturer.

5.1.6 Malfunction of LLMI and/or LLMC

Any malfunction or functional damage of any part of the system shall be indicated to the operator until the fault is rectified (e.g. continuous illumination of warning lamps and/or buzzer until the fault is rectified). Such warnings shall not be confused with any other warnings and shall conform to performance level PLc of EN ISO 13849-1.

5.1.7 Guarding

Components of the LLMI and LLMC system which are vulnerable to damage shall be guarded.

5.1.8 Electrical

5.1.8.1 General

The installation shall be designed to protect persons against electrical shock from the power supply in accordance with the relevant part of EN 1175.

5.1.8.2 Power supply

The power supply shall be protected against voltage variations and surges, supply voltage reversal, overloading, short circuit and earth faults.