



BSI Standards Publication

Industrial trucks — Safety requirements and verification

Part 5: Pedestrian-propelled trucks

National foreword

This British Standard is the UK implementation of EN ISO 3691-5:2015+A1:2020, incorporating corrigenda August 2014, October 2015 and June 2016. It is identical to ISO 3691-5:2014, incorporating amendment 1:2020. It supersedes BS EN ISO 3691-5:2015, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted to Technical Committee MHE/7, Industrial trucks.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2020
Published by BSI Standards Limited 2020

ISBN 978 0 580 93639 5

ICS 53.060

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2014.

Amendments/corrigenda issued since publication

Date	Text affected
30 September 2014	Implementation of CEN corrigendum August 2014: CEN foreword and Annex ZA updated
30 November 2015	Implementation of CEN corrigendum October 2015: CEN foreword and Annex ZA updated. This corrigendum also renumbers BS EN ISO 3691-5:2014 as BS EN ISO 3691-5:2015.
31 October 2016	Implementation of CEN corrigendum June 2016: Foreword and Annex ZA modified
30 June 2020	Implementation of ISO amendment 1:2020 with CEN endorsement A1:2020

English Version

Industrial trucks - Safety requirements and verification - Part 5: Pedestrian-propelled trucks (ISO 3691-5:2014)

Chariots de manutention - Exigences de sécurité et
vérification - Partie 5: Chariots à conducteur à
propulsion manuelle (ISO 3691-5:2014)

Flurförderzeuge - Sicherheitstechnische
Anforderungen und Verifizierung - Teil 5:
Mitgängerbetriebene Flurförderzeuge (ISO 3691-
5:2014)

This European Standard was approved by CEN on 7 October 2015.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of ISO 3691-5:2014 has been prepared by Technical Committee ISO/TC 110 “Industrial trucks” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 3691-5:2015 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 April 2016, and conflicting national standards shall be withdrawn at the latest by April 2016.

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 supersedes EN ISO 3691-5:2014.

For the purposes of global relevance, the requirements of all clauses referring to ISO/TS 3691-7 have been transferred and published as European Standard EN 16307-5, *Industrial trucks — Safety requirements and verification — Part 5: Supplementary requirements for pedestrian-propelled trucks*.

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.

For relationship with EU Directive, see informative Annex ZA, which is an integral part 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, 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.

Endorsement notice

The text of ISO 3691-5:2014 has been approved by CEN as EN ISO 3691-5:2015 without any modification.

European foreword to amendment A1

This document (EN ISO 3691-5:2015/A1:2020) has been prepared by Technical Committee ISO/TC 110 "Industrial trucks" in collaboration with Technical Committee CEN/TC 150 "Industrial Trucks - Safety" the secretariat of which is held by BSI.

This Amendment to the European Standard EN ISO 3691-5:2015 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 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.

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 the relationship with EU Directive(s) see informative Annex ZA, which is an integral part 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, 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.

Endorsement notice

The text of ISO 3691-5:2014/Amd 1:2020 has been approved by CEN as EN ISO 3691-5:2015/A1:2020 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered

This European Standard has been prepared under a Commission's standardization request "M/396 Mandate to CEN and CENELEC for Standardisation in the field of machinery" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
		<i>To cover all the relevant safety requirements for the products(s) in its scope, this standard (providing global requirements and references to regional requirements for a machine) has to be applied together with one of those standards as specified in the scope (providing European regional requirements for a machine).</i>
1.1.2. Principles of safety integration	4.1	
1.1.3. Materials and products	4.4.3.4, 4.4.6.4, 4.10.2	
1.1.5. Design of machinery to facilitate its handling	4.10.4, 4.12, 6.3.3	
1.1.6. Ergonomics	4.2, 4.3.2	
1.1.7. Operating positions	4.10	
1.2.1. Safety and reliability of control systems	4.3, 4.4.3.5, 4.4.3.6	

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.2.2. Control devices	4.3	
1.2.3. Starting	4.3	
1.2.4.1. Normal stop	4.3	
1.2.5. Selection of control or operating modes	4.3	
1.2.6. Failure of the power supply	4.4.3.6	
1.3.1. Risk of loss of stability	4.6	
1.3.2. Risk of break-up during operation	4.4, 6.2.5	
1.3.3. Risks due to falling or ejected objects	4.4.4, 4.4.5, 4.4.6.1, 4.4.6.2, 4.10.2, 4.10.3	
1.3.4. Risks due to surfaces, edges or angles	4.9	
1.3.6. Risks related to variations in operating conditions	6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2, 6.3.3, 6.3.4	
1.3.7. Risks related to moving parts	6.1, 6.2.2	
1.3.8. Choice of protection against risks arising from moving parts	4.1	
1.3.8.1. Moving transmission parts		not covered
1.3.8.2. Moving parts involved in the process	4.10.1	
1.3.9. Risks of uncontrolled movements	4.4.3.2, 4.4.3.6	
1.4.1. General requirements		not covered
1.4.2. Special requirements for guards		not covered
1.4.3. Special requirements for protective devices	4.4.3.3	
1.5.1. Electricity supply		not covered

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.5.2. Static electricity		not covered
1.5.3. Energy supply other than electricity	4.4.3.3	
1.5.4. Errors of fitting	6.2.6	
1.5.6. Fire		not covered
1.5.7. Explosion	6.2.4	
1.5.10. Radiation		not covered
1.5.11. External radiation		not covered
1.5.13. Emissions of hazardous materials and substances	4.4.3.4, 4.4.6.3	
1.5.16. Lightning	6.2.3	
1.6.1. Machinery maintenance	6.2.5	
1.6.2. Access to operating positions and servicing points	6.2.5	
1.6.3. Isolation of energy sources	6.2.5, 6.3.3.4	
1.6.4. Operator intervention	4.2, 4.3	
1.7.1. Information and warnings on the machinery	6.1, 6.3.1.3, 6.3.3, 6.3.4	
1.7.1.1. Information and information devices	6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2, 6.3.3, 6.3.4	
1.7.1.2. Warning devices	6.2.2, 6.2.3, 6.2.5	
1.7.2. Warning of residual risks	6.1	
1.7.3. Marking of machinery	6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2	
1.7.4. Instructions	6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2, 6.3.3, 6.3.4	
1.7.4.1. General principles for the drafting of instructions		not covered

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.7.4.2. Contents of the instructions	6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6	
1.7.4.3. Sales literature		not covered
2.2.1. General	4.2, 4.3	
3.2.1. Driving position	4.10.1	
3.3. Control systems	4.11.1	
3.3.1. Control devices	4.2	
3.3.3. Travelling function	4.5	
3.3.4. Movement of pedestrian-controlled machinery	4.10.1	
3.4.1. Uncontrolled movements	4.6	
3.5.1. Batteries		not covered
3.5.2. Fire	6.2.2	
3.6.1. Signs, signals and warnings	6.3.1.3, 6.3.3	
3.6.2. Marking	6.3.1.1	
3.6.3.2. Multiple uses	6.2.2, 6.2.6, 6.3.1.1, 6.3.1.2, 6.3.1.3	
4.1.2.1. Risks due to lack of stability	4.6, 4.7, 4.12	
4.1.2.3. Mechanical strength	4.4, 5	
4.1.2.4. Pulleys, drums, wheels, ropes and chains	4.4.1, 4.4.2	
4.1.2.6. Control of movements	4.3, 4.4.3.1, 4.4.3.2, 4.4.3.5, 4.4.3.6, 4.4.6.2, 4.11.1	
4.1.2.7. Movements of loads during handling	4.10.3, 4.10.4	
4.1.3. Fitness for purpose	5	

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
4.2.1. Control of movements	4.3, 4.11.1	
4.2.2. Loading control	4.4.3.3	
4.3.2. Lifting accessories	6.3.1.2	
4.4. Instructions	6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6	
4.4.2. Lifting machinery	6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6	

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

Contents

Page

Foreword	12
Introduction	13
1 Scope	15
2 Normative references	16
3 Terms and definitions	16
4 Safety requirements and/or protective measures	18
4.1 General	18
4.2 Propelling, steering	18
4.3 Load-handling controls	22
4.4 Lifting systems	23
4.5 Parking brake	26
4.6 Stability	26
4.7 Lateral stabilizers	26
4.8 Protection against crushing, shearing and entanglement points	26
4.9 Edges and angles	27
4.10 Protective devices	27
4.11 Additional requirements for trucks with battery-powered lifting	28
4.12 Lifting points	28
5 Verification of safety requirements and/or protective measures	28
5.1 General	28
5.2 Functional verification	28
5.3 Design verification (type test)	29
6 Information for use	29
6.1 General	29
6.2 Instruction handbooks	29
6.3 Marking	31
Annex A (normative) Method for measurement of forces, F	33
Annex B (normative) Rated capacity	38
Annex C (informative) List of significant hazards	41
Bibliography	45

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: http://www.iso.org/iso/home/standards_development/resources-for-technical-work/foreword.htm

The committee responsible for this document is ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of industrial trucks*.

This second edition cancels and replaces the first edition (ISO 3691-5:2009), of which it constitutes a minor revision.

ISO 3691 consists of the following parts, under the general title *Industrial trucks — Safety requirements and verification*:

- *Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*
- *Part 2: Self-propelled variable-reach trucks*
- *Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads*
- *Part 5: Pedestrian-propelled trucks*
- *Part 6: Burden and personnel carriers*
- *Part 7: Regional requirements for countries within the European Community* [Technical Specification]
- *Part 8: Regional requirements for countries outside the European Community* [Technical Specification]

Introduction

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

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 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 ISO 3691 series of standards covers safety requirements and their verification for industrial trucks as defined in ISO 5053.

Structure

An important step forward in the work on the ISO 3691 series of standards was the agreement to issue a new structure of International Standards for industrial trucks having on one side basic standards for all kinds of trucks (see Foreword) and on the other side independent standards to cover the respective specific functions of industrial trucks, e.g. visibility, noise, vibration, electrical requirements, etc.

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 manufacturer's instructions will need to draw the user's attention to ways shown by experience in which the machinery ought not to be used.

This part of ISO 3691 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 ISO 12100.

Legislative situation/Vienna Agreement

From the very beginning, the task of the working group was to revise ISO 3691:1980 and establish worldwide basic standards to comply with the major legislative regulations in, for example, the EU, Japan, Australia and North America.

Every effort was made to develop a globally relevant International Standard. That goal was achieved with most of the issues. For several potential problem areas compromises were needed and will be needed in the future. Where divergent regional requirements remain, these are addressed by ISO/TS 3691-7 and ISO/TS 3691-8.

In order to ensure that the revised International Standard will be actively used in the ISO member countries, worldwide, procedures are necessary to replace the existing national standards and technical regulations by the revised International Standard. In the European Community, ISO and the European Committee for Standardization (CEN) agreed on technical co-operation under the Vienna Agreement, with the aim of replacing European Standards (EN) by International Standards. Other countries are asked to make similar agreements to ensure that their national standards and technical regulations are replaced by this International Standard.

Only by these actions will there be the guarantee that products in accordance with International Standards can be shipped worldwide freely without any technical barriers.