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# Industrial trucks — Safety requirements and verification —

## Part 4: Driverless industrial trucks and their systems

*Chariots de manutention — Exigences de sécurité et vérification —  
Partie 4: Chariots sans conducteur et leurs systèmes*



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## Contents

	Page
Foreword.....	v
Introduction.....	vi
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>2</b>
<b>3 Terms and definitions.....</b>	<b>4</b>
<b>4 Safety requirements and/or protective/risk reduction measures.....</b>	<b>10</b>
4.1 General.....	10
4.1.1 Overall requirements.....	10
4.1.2 Normal climatic conditions.....	10
4.1.3 Electrical requirements.....	11
4.1.4 Stored energy components.....	12
4.1.5 Edges or angles.....	12
4.1.6 Guards.....	12
4.1.7 Interlocking devices for guards.....	12
4.1.8 Two-hand control devices.....	12
4.1.9 Transmission parts.....	12
4.1.10 Electro-sensitive protective equipment.....	12
4.1.11 Pressure-sensitive protective devices.....	12
4.1.12 Hydraulic systems.....	12
4.1.13 Pneumatic systems.....	13
4.1.14 Avoidance of automatic restart.....	13
4.1.15 Foot protection.....	13
4.1.16 Transport of the truck and removable attachments.....	13
4.1.17 Seats.....	14
4.1.18 Means of access.....	14
4.1.19 High temperatures.....	14
4.1.20 Exhaust emissions.....	14
4.1.21 Access and emergency exit.....	14
4.1.22 Driving position.....	15
4.1.23 Electrostatic charges.....	15
4.1.24 Protective structures.....	15
4.1.25 Errors of fitting.....	15
4.1.26 Normal stop.....	15
4.1.27 Operational stop.....	16
4.2 Braking system.....	16
4.3 Speed control.....	16
4.3.1 Overspeed detection.....	16
4.3.2 Speed and stability.....	16
4.4 Automatic battery charging.....	16
4.5 Load handling.....	16
4.6 Steering.....	17
4.7 Stability.....	17
4.7.1 General.....	17
4.7.2 Tilting platform stability test.....	17
4.7.3 Stability requirements for trucks not covered by <a href="#">4.7.2</a> .....	18
4.8 Protective devices and complementary measures.....	18
4.8.1 Emergency stop.....	18
4.8.2 Detection of persons in the path.....	19
4.9 Modes of operation.....	21
4.9.1 General.....	21
4.9.2 Automatic mode.....	22
4.9.3 Manual mode.....	23
4.9.4 Maintenance mode.....	24

This is a preview of "ISO 3691-4:2023". Click here to purchase the full version from the ANSI store.

4.10	Trucks intended to tow trailers.....	24
4.11	Safety-related parts of the control system.....	24
4.12	Electromagnetic immunity .....	29
4.13	Conveyors fitted to a truck.....	30
4.13.1	Trucks fitted with conveyors .....	30
4.13.2	Conveyors .....	30
4.14	Warning systems.....	31
<b>5</b>	<b>Verification of the safety requirements and/or protective/risk reduction measures.....</b>	<b>32</b>
5.1	General.....	32
5.2	Tests for detection of persons.....	32
5.3	Stability tests.....	33
5.3.1	General.....	33
5.3.2	Stability tests for trucks not covered by <a href="#">4.7.2</a> .....	33
5.4	Fitness for purpose.....	34
5.4.1	General.....	34
5.4.2	Structural tests.....	34
5.4.3	Dynamic tests.....	34
<b>6</b>	<b>Information for use.....</b>	<b>35</b>
6.1	General.....	35
6.2	Instruction handbook.....	35
6.2.1	General.....	35
6.2.2	Concerning the trucks and system.....	35
6.2.3	Operation of the trucks and system.....	36
6.2.4	Routine service and maintenance of the trucks and system.....	36
6.2.5	Operating information.....	37
6.2.6	Information for the application.....	37
6.2.7	Details for floor/ground conditions.....	38
6.2.8	Details for power sources.....	38
6.2.9	Truck modification.....	38
6.3	Minimum marking.....	38
6.3.1	Marking.....	38
6.3.2	Warning signs.....	38
6.3.3	Information plates.....	39
6.4	Putting into service (commissioning).....	40
	<b>Annex A (normative) Requirements for preparation of the operating zones .....</b>	<b>41</b>
	<b>Annex B (informative) List of significant hazards.....</b>	<b>51</b>
	<b>Annex C (normative) Determination of rated capacity .....</b>	<b>57</b>
	<b>Annex D (informative) Load transfer operations.....</b>	<b>59</b>
	<b>Annex E (normative) Verification of the safety requirements and/or protective/risk reduction measures.....</b>	<b>62</b>
	<b>Bibliography.....</b>	<b>74</b>

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## 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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of powered industrial trucks*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 150, *Industrial Trucks - Safety*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 3691-4:2020), which has been technically revised.

The main changes are as follows:

- the Scope has been updated to include a list of significant hazards not covered;
- the list of normative references has been updated to include the most recent editions of documents;
- the term entries "active detection field" and "operational stop" have been added to [Clause 3](#);
- [Clause 4](#), [Clause 5](#), [Clause 6](#), [Annex A](#), [Annex B](#) and [Annex C](#) have been updated, with new requirements added in [subclauses 4.1.16](#) to [4.1.27](#);
- the verification of the safety requirements lists in [Annex E](#) have been reworded.

A list of all parts in the ISO 3691 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

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

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 requirements of this type-C standard are different from those which are stated in type-A or type-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.

This document takes into consideration the current state of the art and especially:

- virtual bumper technology;
- hybrid (i.e. manual and automatic) mode trucks;
- performance level versus category;
- further specified clearances;
- guarding for specific zones.