



Industrial trucks — Safety requirements and verification

Part 3: Additional requirements for trucks with elevated operator position and trucks specifically designed to travel with elevated loads (ISO 3691-3:2016, MOD)

STANDARDS
Australia



AS 5144.3:2019

This Australian Standard® was prepared by ME-026, Industrial Trucks. It was approved on behalf of the Council of Standards Australia on 5 August 2019.

This Standard was published on 20 August 2019.

The following are represented on Committee ME-026:

- Australian Industrial Truck Association
- Australian Industry Group
- Australian Institute for Health and Safety
- Construction and Mining Equipment Industry Group
- Hire and Rental Industry Association of Australia
- National Road Transport Association
- SafeWork NSW
- Telescopic Handler Association of Australia
- WorkSafe Victoria

This Standard was issued in draft form for comment as DR AS 5144.3:2019.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

ISBN 978 1 76072 548 8



Industrial trucks — Safety requirements and verification

Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads (ISO 3691-3:2016, MOD)

First published as AS 5144.3:2019.

COPYRIGHT

© ISO 2019 — All rights reserved
© Standards Australia Limited 2019

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Preface

This Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks.

The objective of this Standard is to provide safety requirements and the means for their verification, for trucks intended for travel with elevated loads and an elevating operator position.

This Standard is an adoption with national modifications, and has been reproduced from, ISO 3691-3:2016, *Industrial trucks — Safety requirements and verification — Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads*. [Appendix ZZ](#) lists the variations to ISO 3691-3:2016 for the application of this Standard in Australia.

Committee ME-026 has agreed to adopt ISO 3691-3:2016, with additional requirements given in [Appendix ZZ](#) that were not covered by ISO 3691-3:2016. These are longstanding local requirements for operator protection previously included in AS 2359.1, *Powered industrial trucks, Part 1: General requirements*. As this document has been reproduced from an International Standard, the following applies:

- (a) In the source text “this part of ISO 3691” should read “this Australian Standard”.
- (b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

Contents

Preface	ii
National Foreword	iv
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Safety requirements and/or protective measures	3
4.1 General	3
4.2 Modes of operation when lateral stacking	3
4.3 Brakes	3
4.3.1 Operation without guidance systems	3
4.3.2 Operation within guided systems	3
4.4 Additional requirements for trucks with elevating operator position	3
4.4.1 Travel speed	3
4.4.2 Brakes	4
4.4.3 Controls	4
4.4.4 Systems for lifting and lowering	4
4.4.5 Operator position	5
4.4.6 Emergency lowering control	9
4.5 Optical warning devices	9
4.6 Stability	9
5 Verification of requirements	9
6 Information for use	9
6.1 General	9
6.2 Instruction handbook — Operation of truck — Requirements additional to those of ISO 3691-1	10
6.3 Marking	10
6.4 Installation information	10
Annex A (informative) List of significant hazards	11
Bibliography	14
Appendix ZZ (normative) Variations to ISO 3691-3:2016 for Australia	15

National Foreword

The Standards Australia Committee ME-026, Industrial Trucks, has agreed to adopt ISO 3691-3:2016, *Industrial trucks — Safety requirements and verification — Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads*, with additional requirements given in Appendix ZZ that were not covered by ISO 3691-3:2016, due to longstanding local requirements for operator protection previously included in AS 2359.1, *Powered industrial trucks, Part 1: General requirements*.

Currently in preview, click buy full vers.

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 (see 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 (see 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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

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

This first edition of ISO 3691-3, together with ISO 3691-1, ISO 3691-2, ISO 3691-4, ISO 3691-5, ISO 3691-6, ISO/TS 3691-7, and ISO/TS 3691-8, cancels and replaces ISO 3691:1980, of which it constitutes a technical 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]*

The following parts are under preparation:

- *Part 4: Driverless industrial trucks and their systems*

Introduction

General

This part of ISO 3691 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 part of ISO 3691.

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 covers safety requirements and their verification for industrial trucks as defined in ISO 5053-1.

Structure

An important step forward in the work on the ISO 3691 series 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 method, the manufacturer will need to apply the following principles in the order given here:

- a) eliminate or reduce risk 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.

Australian Standard®

Industrial trucks — Safety requirements and verification

Part 3: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads (ISO 3691-3:2016, MOD)

1 Scope

This part of ISO 3691 gives safety requirements and the means for their verification, additional to those of ISO 3691-1, for industrial trucks with a vertical, non-tilting mast:

- a) those trucks having an elevating operator position, and order-picking trucks, as defined in ISO 5053-1, where the elevating operator position and the load-handling device lift to a height of more than 1 200 mm above ground level;
- b) lateral- and front-stacking trucks, as defined in ISO 5053-1, designed to travel with a load-handling device elevated more than 1 200 mm above ground level, with the load-handling device elevated, lowered or laterally displaced, laden or unladen, while the truck is travelling.

These trucks are designed to travel indoors on a smooth, level surface (e.g. concrete) and can be guided, unguided, or both, when in use; they are not intended to tow or push.

This part of ISO 3691 is not applicable to stacker trucks which handle two loads, one on the forks and the other on the support arms, this type of truck being covered by ISO 3691-1.

It is not applicable to trucks with an elevating operator position up to and including 1 200 mm, or to trucks specifically designed to travel with an elevated load having a fork height up to and including 1 200 mm above ground level.

It is not applicable to low-level order pickers with elevating operator's position up to and including 1 200 mm lift height which can be equipped with an additional load lifting device having a maximum lift height of 1 800 mm from ground level.

This part of ISO 3691 deals with all significant hazards, hazardous situations, or hazardous events, as listed in [Annex A](#), relevant to the applicable machines when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

It does not establish requirements for hazards that can occur when using trucks on public roads or when operating in potentially explosive atmospheres.

Regional requirements, additional to the requirements given in this part of ISO 3691, are addressed in ISO/TS 3691-7 and ISO/TS 3691-8.

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.

ISO 2860, *Earth-moving machinery — Minimum access dimensions*

ISO 3691-1:2011, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*

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

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