AS 5144.5:2015
ISO 3691-5:2014
ISO 3691-5:2014/Amd.1:2020
(Incorporating Amendments up to and including No. 2)

Australian STANDARD®

STANDARDS Australia

Industrial trucks — Safety requirements and verification

Part 5: Pedestrian-propelled trucks



AS 5144.5:2015

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Australian Industry Group
Construction and Mining Equipment Industry Group
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Safety Institute of Australia
WorkCover New South Wales
WorkSafe Victoria

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Preface

[A1] This Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks, to supersede part of AS 2359.1-1995, *Powered industrial trucks, Part 1: General requirements*. References to 'manually propelled high lift trucks' in AS 2359.1-1995 are now covered by this Standard. [A1]

[A2] Amendment No. 2 to this Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks. [A2]

[A2] *This Standard incorporates Amendment No. 1 (March 2021) and Amendment No. 2 (May 2024). The start and end of changes introduced by the Amendment are indicated in the text by tags including the Amendment number.* [A2]

The objective of this Standard is to specify safety requirements and the means for their verification for the following types of pedestrian-propelled trucks (hereafter referred to as 'trucks'), equipped with load-handling devices for normal industrial duties, e.g. fork arms and platforms, or integrated attachments for special applications.

[A2] This Standard is identical with, and has been reproduced from, ISO 3691-5:2014, *Industrial trucks—Safety requirements and verification, Part 5: Pedestrian-propelled trucks* and its Amendment 1 (2020) which has been added the end of the source text. [A2]

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of ISO 3691' should read 'Australian Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

This second edition (ISO 3691.5:2014) cancels and replaces the first edition (ISO 3691-5:2009), of which it constitutes a minor revision.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO will 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.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard	*Australian/New Zealand Standard*
ISO 2328, Fork-lift trucks—Hook-on type fork arms and fork arm carriages—Mounting dimensions	AS 2359.11, Powered industrial trucks, Part 11: Fork-lift trucks—Hook-on type fork arms and fork carriers—Mounting dimensions
ISO 3287, Powered industrial trucks—Symbols for operator controls and other displays	AS 2359.5, Powered industrial trucks, Part 5: Symbols for operator controls and other displays
ISO 5053, Powered industrial trucks—Terminology	AS 2359.7, Powered industrial trucks, Part 7: Terminology
ISO 12100, Safety of machinery—General principles for design—Risk assessment and risk reduction	AS/NZS 4024.1201, Safety of machinery, Part 1201: General principles for design—Risk assessment and risk reduction

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ISO 13857, Safety of machinery—Safety distances to prevent hazard zones being reached by upper and lower limbs	AS/NZS 4024.1801, Safety of machinery, Part 1801: Safety distances to prevent danger zones being reached by upper and lower limbs
ISO 15870, Powered industrial trucks—Safety signs and hazard pictorials—General principles	AS 2359.16, Powered industrial trucks, Part 16: Safety signs and hazard pictorials—General principles

Only normative references that have been adopted as Australian or Australian/New Zealand Standard have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annexes to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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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 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]

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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.

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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.

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Industrial trucks — Safety requirements and verification

Part 5: Pedestrian-propelled trucks

1 Scope

This part of ISO 3691 gives safety requirements and the means for their verification for the following types of pedestrian-propelled trucks (hereafter referred to as *trucks*), equipped with load-handling devices for normal industrial duties, e.g. fork arms and platforms, or integrated attachments for special applications:

— pedestrian-propelled straddle stackers,

— pallet stackers,

— industrial trucks with capacities not exceeding 1 000 kg with manual or electrical battery-powered lifting,

— low-lift pallet trucks with lift height up to 300 mm and rated capacity up to 2 300 kg,

— scissor-lift pallet trucks with lift heights up to 1 000 mm or rated capacity up to 1 000 kg with manual or electrical battery-powered lifting.

It is applicable to trucks provided with either manual or electrical battery-powered lifting, operating on smooth, level, hard surfaces.

NOTE On-board battery chargers are considered to be part of the truck. Attachments mounted on the load-carrier or on the fork arms which are removable by the user are not considered to be part of the truck.

This part of ISO 3691 deals with significant hazards, hazardous situations and events relevant to the applicable machines when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex C).

It does not establish the additional requirements for

a) climatic conditions,

b) operation in severe conditions (e.g. extreme environmental conditions such as freezer applications, high temperatures, corrosive environments, strong magnetic fields),

c) electromagnetic compatibility (emission/immunity),

d) handling of loads the nature of which could lead to dangerous situations (e.g. molten metal, acids/alkalis, radiating materials, especially brittle loads),

e) handling suspended loads which may swing freely handling,

f) use on public roads,

g) direct contact with foodstuffs,

h) operation on gradients or on surfaces other than smooth, level, hard surfaces,

i) lifting systems using belts,

j) lifting of persons,

k) trucks with overturning moment greater than 40 000 N·m,

l) scissor-lift trucks whose lifting is powered by external means (electric, pneumatic),

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m) roll containers,

n) trucks that are intended to be towed by powered vehicles,

o) trucks designed for special applications (e.g. hospitals, restaurant trolleys),

p) winch-operated trucks,

q) mobile lifting tables.

Hazards relevant to noise, vibration and visibility are not significant and are not dealt with in this part of ISO 3691.

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

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.

ISO 2328, *Fork-lift trucks — Hook-on type fork arms and fork arm carriages — Mounting dimensions*

ISO 3287, *Powered industrial trucks — Symbols for operator controls and other displays*

ISO 5053, *Powered industrial trucks — Terminology*

ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 15870, *Powered industrial trucks — Safety signs and hazard pictorials — General principles*

ISO 20898, *Industrial trucks — Electrical requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5053 and ISO 12100, and the following apply.

3.1
stacker truck
masted truck without tilt, with load-bearing outriggers, equipped with fork arms, a platform or other load-handling device, designed to be manually pushed, pulled and steered by one pedestrian operator

Note 1 to entry: The load can be raised by either manual means or battery power.

3.1.1
straddle stacker
stacking truck with outriggers, equipped with fork arms that are located between the outriggers

3.1.2
pallet stacker
stacking truck where the fork arms extend over the outriggers

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