
**Industrial trucks — Safety
requirements and verification —**

Part 8:

**Regional requirements for countries
outside the European Community**

Chariots de manutention — Exigences de sécurité et vérification —

*Partie 8: Exigences régionales pour les pays en dehors de la
Communauté européenne*

STANDARDSISO.COM : Click to view the full PDF of ISO/TS 3691-8:2019



STANDARDSISO.COM : Click to view the full PDF of ISO/TS 3691 8:2019



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Safety requirements and/or protective measures	2
4.1 Regional requirements additional to or replacing those given in ISO 3691-1, ISO 3691-2, ISO 3691-4 and ISO 3691-6.....	2
4.1.1 Electrical requirements.....	2
4.1.2 Travel speed.....	3
4.1.3 Brakes.....	3
4.1.4 Additional operation from alongside pedestrian-controlled and stand-on trucks (coasting).....	3
4.1.5 Liquefied petroleum gas (LPG) trucks.....	4
4.1.6 Lift chains.....	4
4.1.7 Fork arms.....	4
4.1.8 Platforms.....	4
4.1.9 Operator restraint.....	5
4.1.10 Electromagnetic compatibility (EMC).....	5
4.1.11 Visibility.....	5
4.1.12 User responsibilities.....	5
4.1.13 Marking.....	5
4.1.14 Noise emissions.....	5
4.2 Regional requirements additional to or replacing those given in ISO 3691-3.....	6
4.2.1 Platforms equipped with a fall protection device.....	6
4.2.2 Anchorage points of fall protection device(s).....	6
4.2.3 Operator protection.....	6
4.2.4 Marking.....	6
4.2.5 Installation information between truck and load.....	6
4.3 Truck modification.....	7
Bibliography	8

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 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.

This document was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of powered industrial trucks*.

It is intended to be used in conjunction with ISO 3691-1, ISO 3691-2, ISO 3691-3, ISO 3691-4 and ISO 3691-6.

This second edition cancels and replaces the first edition (ISO/TS 3691-8:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- changes to the Australian requirements in relation to electrical requirements, fork arms, operator restraints, electromagnetic compatibility, platforms equipped with fall protection, lift chains, fork arms, platforms, operator protection and noise emission;
- changes to the North American requirements in relation to fork arms.

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.

Introduction

The ISO 3691 series has been developed to provide globally relevant International Standards for industrial trucks. This goal was achieved with most of the issues. Where divergent regional requirements remain, these are addressed by this document and by ISO/TS 3691-7.

ISO/TS 3691-7 addresses the legal requirements related to European Directives which could not be accepted worldwide. ISO/TS 3691-8 addresses requirements related to regulations in force in other countries that are not applicable elsewhere.

This document does not repeat all the technical rules which are state-of-the-art and are applicable to the material used to construct the industrial truck. For these, see ISO 12100.

STANDARDSISO.COM : Click to view the full PDF of ISO/TS 3691 8:2019

STANDARDSISO.COM : Click to view the full PDF of ISO/TS 3691 8:2019

Industrial trucks — Safety requirements and verification —

Part 8:

Regional requirements for countries outside the European Community

1 Scope

This document gives regional requirements for specific countries outside the European Community (EC) and European Economic Area (EEA) for the types of industrial trucks specified in the scopes of ISO 3691-1, ISO 3691-2, ISO 3691-3, ISO 3691-4 and ISO 3691-6.

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 2330, *Fork-lift trucks — Fork arms — Technical characteristics and testing*

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 3691-2, *Industrial trucks — Safety requirements and verification — Part 2: Self-propelled variable-reach trucks*

ISO 3691-3, *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 3691-4,¹⁾ *Industrial trucks — Safety requirements and verification — Part 4: Driverless industrial trucks and their systems*

ISO 3691-6, *Industrial trucks — Safety requirements and verification — Part 6: Burden and personnel carriers*

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

ISO 20898, *Industrial trucks — Electrical requirements*

ICES-002, *Vehicles, Boats and Other Devices Propelled by an Internal Combustion Engine, Electrical Means or Both*

ANSI/ITSDF B56 (all parts), *Safety Standard for Low Lift and High Lift Trucks*

ANSI/NFPA 505, *Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Maintenance, and Operation*

AS 2359-2, *Industrial trucks — Operation*

AS 4983, *Gas fuel systems for forklifts and industrial engines*

1) Under preparation. (Stage at the time of publication: ISO/DIS 3691-4:2018.)

AS/NZS 1891-1, *Industrial fall-arrest systems and devices — Part 1: Harnesses and ancillary equipment*

AS/NZS CISPR 14-1, *Electromagnetic Compatibility — Requirements for household appliances, electrical tools and similar apparatus — Part 1: Emission*

EN 1175-1, *Safety of industrial trucks — Electrical requirements — Part 1: General requirements for battery powered trucks*

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

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

EN 12053, *Safety of industrial trucks. Test methods for measuring noise emissions*

EN 12895, *Industrial trucks - Electromagnetic compatibility*

UL 558,²⁾ *Industrial Trucks, Internal Combustion Engine-Powered*

UL 583,²⁾ *Electric-Battery-Powered Industrial Trucks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5053-1, ISO 3691-1, ISO 3691-2, ISO 3691-3, ISO 3691-4 and ISO 3691-6 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Safety requirements and/or protective measures

4.1 Regional requirements additional to or replacing those given in ISO 3691-1, ISO 3691-2, ISO 3691-4 and ISO 3691-6

4.1.1 Electrical requirements

- For North America, trucks and batteries used in hazardous areas shall be approved and of the type required by ANSI/NFPA 505.

Depending on the proposed type of truck and area, approved trucks shall be built in compliance with one of the following, applicable at the time of manufacture:

- UL 558 for internal-combustion-engine powered trucks; and
- UL 583 for electric-battery-powered trucks.
- For Australia, power systems and accessories shall comply with one of the following: ISO 20898, UL 583, UL 558, EN 1175-1, EN 1175-2 or EN 1175-3.
- For all other regions, electrical systems and equipment shall be in accordance with ISO 20898.

2) Underwriters Laboratories (UL) standard.

4.1.2 Travel speed

4.1.2.1 Pedestrian-controlled trucks

- For North America, the maximum speed shall meet the requirements of ANSI/ITSDF B56.1 applicable at the time of manufacture.
- For all other regions, the maximum speed shall not exceed 6 km/h.

See ISO 3691-1:2011, 4.2.3.1.

4.1.2.2 Stand-on trucks and pedestrian-controlled trucks with foldable platform

- For North America, the maximum speed shall meet the requirements of ANSI/ITSDF B56.1 applicable at the time of manufacture.
- For all other regions, the maximum speed shall not exceed 16 km/h.

See ISO 3691-1:2011, 4.2.3.2.

4.1.2.3 Travelling with mast elevated

For Australia, the following applies to electric counterbalanced trucks and reach trucks when travelling with the mast elevated.

The truck speed shall be reduced to a maximum speed of 3 km/h when:

- the mast is above staging for trucks with a mast with full free lift;
- the forks are lifted more than 800 mm from the ground for trucks with a mast with limited free lift.

4.1.3 Brakes

For Japan, the following applies to brakes.

- At 20 km/h travel speed (if maximum speed is less than 20 km/h, at the maximum speed of the truck), unladen trucks shall stop within 5 m.
- At 10 km/h travel speed (if maximum speed less than 10 km/h, at the maximum speed of the truck), laden trucks shall stop within 2,5 m.
- The parking brake, without the assistance of operator, shall be capable of holding the truck on the following gradients:
 - 1) for unladen trucks, 20 %;
 - 2) for laden trucks, 15 %.

See ISO 3691-1:2011, 4.3.1.

4.1.4 Additional operation from alongside pedestrian-controlled and stand-on trucks (coasting)

- For Australia:

Low-lift order-picker trucks may be provided with a coasting system which cuts off current to the drive motor but which does not apply the brake when the travel control device is released. Means to apply the brake and activate the truck's warning device shall be readily operable while walking alongside the truck. The speed with this system shall not exceed 4 km/h whenever the coasting system is activated. Activation of the travel control device from outside of the truck shall only be possible when the truck is stationary.

Additionally, a label or symbol shall be affixed to the truck, indicating that the truck is equipped with a coasting system.

NOTE The described function is commonly known as “coasting”.

- For North America, low-lift order-picker trucks provided with a coasting system shall meet the requirements of ANSI/ITSDF B56.1 applicable at the time of manufacture.
- For all other regions (and including Australia), activation of the travel control device from outside of the truck shall only be possible when the truck is stationary.

While operating the travel control from outside of the truck, the speed shall not exceed 4 km/h. Brakes shall be automatically applied when the travel control device is released.

NOTE Trucks compliant with either a) or c) are currently allowed in Australia.

See ISO 3691-1:2011, 4.4.2.7.

4.1.5 Liquefied petroleum gas (LPG) trucks

For Australia, LPG component installations for trucks shall comply with the requirements of AS 4983.

4.1.6 Lift chains

The minimum safety factor of the lifting mechanism, K_1 , shall be as follows.

- For Japan and South Africa, for all trucks: $K_1 \geq 5$.
- For Australia and North America:
 - 1) for trucks $\leq 10\,000$ kg rated capacity: $K_1 \geq 5$;
 - 2) for trucks $> 10\,000$ kg rated capacity: $K_1 \geq 5 - 0,2 (Q' - 10)$, but not less than 4, where Q' is the truck rated capacity in tonnes.

See ISO 3691-1:2011, 4.6.1.

4.1.7 Fork arms

- For Japan, the safety factor shall be 3 for all trucks.
- For North America, solid-section fork arms shall meet the requirements of ANSI/ITSDF B56.1 applicable at time of manufacture.
- For Australia, solid-section fork arms shall be manufactured and tested in accordance with ISO 2330.

See ISO 3691-1:2011 4.6.5.6.1

4.1.8 Platforms

For Australia, for trucks where the operator is elevating, guarding shall be provided as per the requirements of ISO 3691-3:2016, 4.4.5.1 and 4.4.5.3.

NOTE There is no lift height limitation on this requirement and includes low level order-pickers.

4.1.9 Operator restraint

- For Australia:

The operator's seat shall have a lateral support device that reduces the risk of entrapment of the operator's torso between the truck and the ground in the event of a tip-over, provided the operator wears a properly adjusted lap-type seat belt.

Where seatbelts are fitted to a high lift ride-on truck they shall be interlocked to prevent the truck from travel motion (forward or reverse) unless the seatbelt is buckled. In addition, the seatbelt interlock shall include the sequencing/logic of the seatbelt switch with a seat pressure switch. The weight of the operator on the seat shall be detected prior to the seatbelt switch being engaged. The system shall not be readily overridden. Means shall be provided to discourage unbuckling of the seat belt while the truck is in motion. For example, activation of an audible alarm or switching to neutral.

- For North America, the operator restraint shall meet the requirements of ANSI/ITSDF B56.1 applicable at time of manufacture.

See ISO 3691-1:2011 4.7.8.

4.1.10 Electromagnetic compatibility (EMC)

- For Australia:

- trucks shall be tested for EMC and comply with EN 12895;
- trucks equipped with an on-board battery charger shall comply with AS/NZS CISPR 14.1.

- For Canada, trucks shall be tested for EMC and comply with ICES-002 Issue 6.

4.1.11 Visibility

For North America, the manufacturer and user, in consultation with each other, shall determine the ancillary devices or alternated operating procedures that are necessary to assist the operator or alert personnel in the vicinity when the design requirements for a specific truck application preclude meeting the visibility criteria of ISO 13564-1.

4.1.12 User responsibilities

- For Australia, users shall follow the requirements of AS 2359.2.
- For North America, users shall follow the requirements of the applicable part of ANSI/ITSDF B56.

4.1.13 Marking

For Australia:

- the requirements given in ISO 3691-1:2011, 6.3.1.1 i) and j) are not required except for tractors;
- for trucks with a tilting mast, the actual capacity at maximum elevation with mast tilted forward and with load centre shall be shown.

See ISO 3691-1:2011 6.3.1.1.

4.1.14 Noise emissions

For Australia, noise emissions shall be tested in accordance with EN 12053 and the resultant noise emission to be made available.

4.2 Regional requirements additional to or replacing those given in ISO 3691-3

4.2.1 Platforms equipped with a fall protection device

- For Australia, the fall protection harness and lanyard shall comply with AS/NZS 1891-1.
- For North America, operator stand-on platforms not equipped with a guarding system shall be equipped with a fall protection device that meets the requirements of ANSI/ITSDF B56.1 applicable at the time of manufacture. The guarding specified in ISO 3691-3:2016, 4.4.5.2 and 4.4.5.3 is not required if using this type of protection.
- For Japan, the operator platforms may be equipped with operator bars in lieu of guard rails, and shall be equipped with a fall protection device for not only type of operator bars but also type of guard rails.

4.2.2 Anchorage points of fall protection device(s)

- For North America, the anchorage point(s) of the fall protection device(s) shall meet the requirements of ANSI/ITSDF B56.1 applicable at the time of manufacture.

- For Australia:

The operator platform anchorage point(s) shall be capable of supporting a load of 15 kN for one person with maximum deflection of 10 mm. If a second person is to use the same anchorage point, then the anchorage point shall be capable of supporting a load of 21 kN.

The anchorage point shall be marked to show the test loading and how many lanyards it is capable of supporting.

4.2.3 Operator protection

For Australia:

- for trucks where the operator is elevated, guarding shall be provided as per the requirements of ISO 3691-3:2016, 4.4.5.1 and 4.4.5.3;
- low level order-pickers with an elevating operator shall be designed to incorporate operator platform guard rails all around the operator platform. Where guard rails are provided, travel and lift shall not be possible unless all operator platform guard rails are closed.

NOTE There is no lift height limitation on this requirement.

4.2.4 Marking

For Australia, the marking of the anchorage point shall be marked with:

- the manufacturer's details; and
- free fall arrest — one person 15 kN; or
- if tested for two persons, free fall arrest — two persons 21 kN.

4.2.5 Installation information between truck and load

For Japan, the truck manufacturer shall provide information to the (end) user that trucks operating in aisles with guidance systems shall have a designed minimum side clearance between any elevating part of the truck, including the load and the racking or loads in the rack in their proper stacked position.