BS EN ISO 3691-1:2012

Incorporating corrigenda August 2013 and November 2013

BSI Standards Publication

Industrial trucks — Safety requirements and verification

Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks

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National foreword

This British Standard is the UK implementation of EN ISO 3691-1:2012. It is identical to ISO 3691-1:2011, incorporating corrigendum August 2013. It supersedes BS EN 1551:2000 which is withdrawn. Together with BS EN ISO 3691-6:2013, it supersedes BS EN 1726-1:1999 which is withdrawn.

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.

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Published by BSI Standards Limited 2013

ISBN 978 0 580 84554 3

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 30 September 2012.

Amendments/corrigenda issued since publication

Date	Text affected
31 August 2013	Implementation of ISO corrigendum August 2013: first bullet point of A.2.2 amended
30 November 2013	Supersession details in national foreword corrected

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EUROPEAN STANDARD

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EN ISO 3691-1

August 2012

ICS 53.060

English Version

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

Chariots de manutention - Exigences de sécurité et vérification - Partie 1: Chariots de manutention automoteurs, autres que les chariots sans conducteurs, les chariots à portée variable et les chariots transporteurs de charges (ISO 3691-1:2011)

Sicherheit von Flurförderzeugen - Sicherheitsanforderungen und Verifizierung - Teil 1: Motorkraftbetriebene Flurförderzeuge mit Ausnahme von fahrerlosen Flurförderzeugen, Staplern mit veränderlicher Reichweite und Lastentransportfahrzeugen (ISO 3691-1:2011)

This European Standard was approved by CEN on 20 July 2012.

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Foreword

The text of ISO 3691-1:2011 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 3691-1:2012 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 February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

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 1551:2000, EN 1726-1:1998.

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 16307-1, *Industrial trucks – Safety requirements and verification – Part 1: Supplementary requirements for self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier 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 2006/42/EC.

For 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, 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 3691-1:2011 has been approved by CEN as a EN ISO 3691-1:2012 without any modification.

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Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC on machinery.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard with the exclusion of all references to ISO/TS 3691-8 confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard

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Introduction

General

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

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

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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 3691-7:2011 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 will be 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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INTERNATIONAL STANDARD ISO 3691-1:2011(E)

Industrial trucks — Safety requirements and verification —

Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks

1 Scope

This part of ISO 3691 gives safety requirements and the means for their verification for the following types of self-propelled industrial trucks (hereafter referred to as *trucks*), as defined in ISO 5053:

a) industrial counterbalanced trucks;

b) reach trucks with retractable mast or retractable fork arm carriage;

c) straddle trucks;

d) pallet-stacking trucks;

e) high-lift platform trucks;

f) trucks with elevating operator position up to 1 200 mm;

g) side-loading trucks (one side only);

h) lateral-stacking trucks (both sides), and lateral- and front-stacking trucks;

i) pallet trucks;

j) bidirectional and multidirectional trucks;

k) tractors with a drawbar pull up to and including 20 000 N;

l) rough-terrain counterbalanced trucks;

m) industrial trucks powered by battery, diesel, gasoline or LPG (liquefied petroleum gas).

NOTE 1 Trucks powered by CNG (compressed natural gas) are not dealt with. It is intended that CNG and other power sources be addressed in future revisions of this part of ISO 3691.

For trucks with an elevating operator position of more than 1 200 mm and/or trucks designed to travel with an elevated load of more than 1 200 mm, this part of ISO 3691 is intended to be used in conjunction with ISO 3691-3.

NOTE 2 ISO 3691-3 is not applicable to counterbalanced fork lift trucks or trucks intended for container handling.

NOTE 3 Some low-level order pickers with an elevating operator's position up to and including 1 200 mm lift height can be equipped with an additional lifting device to lift the load to a maximum lift height of 1 800 mm.

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This part of ISO 3691 is not applicable to self-propelled variable-reach trucks, driverless trucks or burden carriers, which are covered in ISO 3691-2, ISO 3691-4 and ISO 3691-6, respectively.

It is not applicable to industrial trucks operating in severe conditions (e.g. extreme climates, freezer applications, hazardous environments), where special precautions can be necessary.

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.

This part of ISO 3691 deals with all significant hazards, hazardous situations or hazardous events, as listed in Annex B, with the exception of the following, 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

— during construction,

— when handling suspended loads that can swing freely,

— when using trucks on public roads,

— when operating in potentially explosive atmospheres,

— when using trucks in very narrow aisles with clearance of less than 500 mm to the racks,

— arising from a non-ergonomic body attitude when driving sit-on trucks, load trailing,

— during travelling with unladen trucks having a rated capacity of more than 10 000 kg, due to visibility concerns,

— due to overload.

NOTE 4 For the purposes of this part of ISO 3691, fork arms, load platforms and integrated attachments are considered to be parts of the industrial 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 industrial truck. Requirements for attachments are given in the appropriate clauses.

2 Normative references

The following referenced documents are indispensable for the application 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 2328:2007, *Fork-lift trucks — Hook-on type fork arms and fork arm carriages — Mounting dimensions*

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

ISO 2867:2006, *Earth-moving machinery — Access systems*

ISO 3287:1999, *Powered industrial trucks — Symbols for operator controls and other displays*

ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

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ISO 3691-3:—[1)], *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 3691-5:2009, *Industrial trucks — Safety requirements and verification — Part 5: Pedestrian-propelled trucks*

ISO 3795:1989, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

ISO 5053, *Powered industrial trucks — Terminology*

ISO 6055:2004, *Industrial trucks — Overhead guards — Specification and testing*

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

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13284:2003, *Fork-lift trucks — Fork-arm extensions and telescopic fork arms —Technical characteristics and strength requirements*

ISO 13564-1:—[1)], *Powered industrial trucks — Test methods for verification of visibility — Part 1: Sit-on and stand-on operator trucks up to and including 10 t capacity*

ISO 13849-1:2006, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design*

ISO 15870:2000, *Powered industrial trucks — Safety signs and hazard pictorials — General principles*

ISO 15871:2000, *Industrial trucks — Specifications for indicator lights for container handling and grappler arm operations*

ISO 20898:2008, *Industrial trucks — Electrical requirements*

ISO 21281:2005, *Construction and layout of pedals of self-propelled sit-down rider-controlled industrial trucks — Rules for the construction and layout of pedals*

ISO 22915-1:2008, *Industrial trucks — Verification of stability — Part 1: General*

ISO 22915-2:2008, *Industrial trucks — Verification of stability — Part 2: Counterbalanced trucks with mast*

ISO 22915-3:2008, *Industrial trucks — Verification of stability — Part 3: Reach and straddle trucks*

ISO 22915-4:2009, *Industrial trucks — Verification of stability — Part 4: Pallet stackers, double stackers and order-picking trucks with operator position elevating up to and including 1 200 mm lift height*

ISO 22915-7:2009, *Industrial trucks — Verification of stability — Part 7: Bidirectional and multidirectional trucks*

ISO 22915-8:2008, *Industrial trucks — Verification of stability — Part 8: Additional stability test for trucks operating in the special condition of stacking with mast tilted forward and load elevated*

ISO 22915-10:2008, *Industrial trucks — Verification of stability — Part 10: Additional stability test for trucks operating in the special condition of stacking with load laterally displaced by powered devices*

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ISO 22915-11:—[2], *Industrial trucks — Verification of stability — Part 11: Industrial variable-reach trucks*

ISO 22915-20:2008, *Industrial trucks — Verification of stability — Part 20: Additional stability test for trucks operating in the special condition of offset load, offset by utilization*

ISO 22915-21:2009, *Industrial trucks — Verification of stability — Part 21: Order-picking trucks with operator position elevating above 1 200 mm*

ISO 24134:2006, *Industrial trucks — Additional requirements for automated functions on trucks*

ISO 24135-1:2006, *Industrial trucks — Specifications and test methods for operator restraint systems — Part 1: Lap-type seat belts*

IEC 60695-11-10:2003, *Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods*

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
self-propelled industrial truck
wheeled vehicle having at least three wheels with a powered driving mechanism, except for those running on rails, designed either to carry, tow, push, lift, stack or tier in racks any kind of load and controlled by an **operator** (3.7)

NOTE See ISO 5053 for a comprehensive terminology.

3.2
pedestrian-controlled truck
truck designed to be controlled by an **operator** (3.7) walking with the truck by means of, for example, a tiller or remote control

NOTE The truck may be equipped with a stand-on option.

3.3
ride-on truck
truck designed to be controlled by an **operator** (3.7) riding on a seat or a driving platform on the truck

NOTE Stand-on industrial trucks with a seat for the operator are considered as being stand-on trucks.

3.4
low-lift truck
truck having a lift height of 500 mm or less

3.5
bidirectional truck
truck designed to travel in either direction on a line parallel with its longitudinal axis, or perpendicular to this axis

NOTE Adapted from ISO 5053:1987, 3.6.1.2.

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3.6
multidirectional truck
truck designed to travel in any direction relative to its longitudinal axis

NOTE Adapted from ISO 5053:1987, 3.6.1.3.

3.7
operator
designated person, appropriately trained and authorized, who is responsible for the movement and load handling of an industrial truck

NOTE 1 Depending on the truck type, the operator can be riding on the industrial truck, on foot accompanying the truck (e.g. tiller-, cable-controlled) or remote from the truck (e.g. remote radio-controlled).

NOTE 2 National regulations can apply.

3.8
normal operating position
position in which the operator is able to control all functions for driving and load handling as defined by the manufacturer

NOTE Additional positions are permitted to be defined by the manufacturer if it is not possible to control all the functions of the truck from a single position. A rotating seat or stand-up end-control truck with more than one operating direction is considered as being or having a single operating position.

3.9
lift height
vertical distance between the upper face of the fork blades or the lifting platform and the ground

3.10
lift height for travelling
lifting height up to and including 500 mm providing sufficient ground clearance for travelling

NOTE It is identical to the maximum lift height for the stability test for travelling.

3.11
low lift height
maximum lift height up to and including 500 mm, where the vertical centre of gravity of the load does not exceed 1 100 mm above the ground

3.12
automatically acting brakes
mechanical brakes which automatically apply in the non-travelling condition until released by the control of the operator

3.13
lost load centre
horizontal shift in the standard load centre that may occur when removable attachments are added to a truck

NOTE For standard load centre, see Annex A.

3.14
actual capacity
maximum load, expressed in kilograms, established by the manufacturer based on component strength and truck stability, that a truck can carry, lift and stack to a specified height, at a specified load centre distance and reach, if applicable, in normal operation

NOTE The actual capacity depends on the configuration of the truck, including variables such as the type and lift height of the mast fitted, the actual load centre and any attachments that might be fitted. This actual capacity defines the

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load-handling ability of the particular truck, as equipped. Additional actual capacity ratings with removable attachments can also be established where permitted by the appropriate stability tests or by calculation verified by empirical data.

3.15
rated capacity
maximum load, expressed in kilograms, established by the manufacturer based on component strength and truck stability, that the truck can carry, lift and stack to the standard lift height and at the standard position of the centre of gravity

NOTE 1 For centre of gravity, see Annex A.

NOTE 2 If the lifting height of the mast is lower than the standard lift height, H, the rated capacity is still assessed at the standard lift height.

NOTE 3 The rated capacity is used to compare the capacity of different manufacturers' trucks and to provide the break points used in technical standards and statistics. The operating limits for the truck are defined by its actual capacity.

4 Safety requirements and/or protective measures

4.1 General

4.1.1 Overall requirements

The truck shall comply with the safety requirements and/or protective measures of this clause.

In addition, the truck shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this document.

4.1.2 Normal climatic conditions

For truck operation, the following climatic conditions apply:

— average ambient temperature for continuous duty: + 25 °C;

— maximum ambient temperature, short term (up to 1 h): + 40 °C;

— lowest ambient temperature for trucks intended for use in normal indoor conditions: + 5 °C;

— lowest ambient temperature for trucks intended for use in normal outdoor conditions: – 20 °C;

— altitude: up to 2 000 m.

4.1.3 Normal operating conditions

Normal operating conditions are the following:

— driving (travelling and lifting) on substantially firm, smooth, level and prepared surfaces — the surface conditions on which the truck is designed to operate shall be specified in the instruction handbook (see 6.2);

— driving with the horizontal load centre of gravity approximately on the longitudinal centre plane of the truck;

— travelling with the mast or fork arms tilted backwards, where applicable, and the load in the lowered (travel) position.

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If the above is not sufficient to allow the conditions for stability of a particular truck type to be specified, then the operating conditions shall be according to the International Standards referenced for stability in 4.8.

4.1.4 Electrical requirements

Electrical requirements are subject to regional requirements. See ISO/TS 3691-7:2011 and ISO/TS 3691-8.

4.1.5 Edges or angles

There shall be no sharp edges or angles posing a hazard in the area of the operator in the normal operating position or in the area of access and egress during normal operation and daily checks.

4.1.6 Stored energy components

Components which store energy and that would cause a risk during removal or disassembly, e.g. hydraulic accumulator or spring-applied brakes, shall be provided with a means to release the energy before removal or disassembly.

4.2 Starting/moving

4.2.1 Unauthorized starting

Trucks shall be provided with a device (e.g. key, code, magnetic card) which prevents starting without its use.

Such devices for pedestrian-controlled and rider-controlled trucks manufactured by the same manufacturer shall not be interchangeable between the two truck types. Where devices, e.g. magnetic cards, are destined for an individual operator, one device may be used on both truck types but shall not allow starting by unauthorized persons.

4.2.2 Unintended movement and inadvertent activation

Truck movement from the holding position, other than by actuation of the controls by the operator, due to drift or creep (e.g. by leakage), shall be avoided.

4.2.2.1 Parking brakes

A parking brake complying with 4.3.1 shall be provided.

For sit-on rider trucks, the parking brake system should be manually operable by hand or foot from the normal operating position or automatically applied by leaving the normal operating position. Trucks with only non-automatically applied parking brake(s) shall have a warning to the operator to apply the brakes before leaving the truck.

Failure of the control system of an automatically applied parking brake shall be indicated to the operator.

4.2.2.2 Internal-combustion-engine powered trucks

Internal-combustion-engine powered trucks shall be fitted with a device which prevents the engine being started while the transmission is engaged.

4.2.2.3 Travel controls

Travel controls on internal-combustion-engine powered trucks shall be so arranged that on level ground the truck will not move from rest until the transmission has been engaged.

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4.2.2.4 Powered travel movement

Powered travel movement of the truck with a ride-on operator shall be possible only if the operator is in the normal operating position.

Powered travel shall not occur automatically when the operator returns to the normal operating position without an additional operation, e.g. by requiring a resetting of the direction control or reactivation of the speed control.

4.2.2.5 Manual gearbox and manually operated clutch pedal

A truck with an automotive-type manual gearbox and manually operated clutch pedal satisfies the requirements of 4.2.2.2 and 4.2.2.4.

4.2.3 Travel speed

4.2.3.1 Pedestrian-controlled trucks

Single-speed pedestrian-controlled trucks operating on level ground shall not exceed a travel speed of 4 km/h and an acceleration of 0,5 m/s^2 and shall be designed for low-lift only.

Variable-speed pedestrian-controlled trucks operating on level ground shall be controllable by the operator to be aligned with their walking speed.

The maximum speed is subject to regional requirements, additional to the requirements of this part of ISO 3691. See ISO/TS 3691-7:2011 and ISO/TS 3691-8.

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

The maximum speed on level ground of stand-on trucks and pedestrian-controlled trucks fitted with a foldable platform when the operator is on the platform is subject to regional requirements, additional to the requirements of this part of ISO 3691. See ISO/TS 3691-7:2011 and ISO/TS 3691-8.

For trucks with a foldable operator platform, see 4.7.3.3.

For trucks with stand-on options, see 4.7.3.2 and 4.7.3.4.

4.2.3.3 Travel with mast raised

Travel with mast raised is subject to regional requirements. See ISO/TS 3691-8.

4.3 Brakes

4.3.1 General

All industrial trucks shall be designed with service and parking brakes. Brakes shall comply with ISO 6292.

The parking brake shall be equipped with a system preventing unintentional release. The parking brake force shall be applied by mechanical means.

Braking requirements are subject to regional requirements, additional to the requirements of this part of ISO 3691. See ISO/TS 3691-7:2011 and ISO/TS 3691-8.

4.3.2 Failure of energy supply to service brake

Failure of the energy supply to the service brake shall not result in a total loss of braking and shall enable a controlled stop.

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4.3.3 Stand-on and pedestrian-controlled trucks

Stand-on and pedestrian-controlled trucks shall be equipped with a brake system that will automatically engage upon release of the brake actuating control by the operator. This system may serve as the service and parking brake.

4.4 Manual control actuators

4.4.1 General

4.4.1.1 Consistency with the truck motions

Movement of these controls shall be consistent with the motions of the truck being operated, wherever practicable. They shall be confined within the plan view outline of the truck or tiller.

4.4.1.2 Multiple operators

If additional operating positions are fitted, e.g. for more than one operator, the operation of these controls shall only be possible from one operating position at a time, excepting the emergency disconnect switch, which shall be operable from all positions.

4.4.1.3 Multiple operating positions

If more than one operating position is fitted for a single operator, the use of the controls for one of these operating positions shall preclude the use of the controls of another operating position. The exception to this is the emergency disconnect switch, which shall be operable from all positions.

4.4.2 Travel and braking controls

4.4.2.1 General

The motion of the speed operating control shall be so designed that an increase in the movement of the control increases the travel speed. When the control is released, it shall return to the neutral position of the control actuator.

4.4.2.2 Sit-on trucks

Trucks with pedal-operated travel and braking controls shall comply with ISO 21281.

4.4.2.3 Stand-on trucks

The requirements for travel and braking controls for a stand-on truck are as follows.

a) **Travel control functions**

— Where a tiller is used, it shall be fitted with control devices for travel direction and speed.

— Where a steering wheel or similar control is used, the controls for travel direction and speed shall be positioned in close proximity to the steering control.

The service brake function shall be engaged

— automatically when the tiller is released, if operated by the tiller,

— automatically when the travel-control is released, if operated by the travel-control,

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