
Varnostne zahteve za dvizne mize - 1. del: Dvizne mize za dvigovanje do dveh stalnih nivojev

Safety requirements for lifting tables - Part 1: Lifting tables serving up to two fixed landings

Sicherheitsanforderungen an Hubtische - Teil 1: Hubtische, die bis zu zwei feste Haltestellen anfahren

Prescriptions de sécurité des tables élévatrices - Partie 1 : Tables élévatrices desservant jusqu'à deux niveaux définis

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Other lifting equipment

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**Safety requirements for lifting tables - Part 1: Lifting tables
serving up to two fixed landings**

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die bis zu zwei feste Haltestellen anfahren

This European Standard was approved by CEN on 17 September 2011 and includes Amendment 1 approved by CEN on 11 August 2014.

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COMITÉ EUROPÉEN DE NORMALISATION
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EN 1570-1:2011+A1:2014 (E)**Foreword**

This document (EN 1570-1:2011+A1:2014) has been prepared by Technical Committee CEN/TC 98 "Lifting tables", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.

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 includes Amendment 1 approved by CEN on 11 August 2014.

This document supersedes A1 EN 1570-1:2011 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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 EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The revisions to the standard are based mainly on the following points:

- the incorporation of essential health and safety requirements of the relevant EU Directives;
- the elimination of obvious errors;
- the incorporation of proposals resulting from interpretation requests dealing with the improvement relative to the progress in technology;
- the improvement of references to other standards according to improvements in the field.

The revision of this standard is needed because of the change of the relevant scope and relationship of the machinery and lift Directives.

Part 1 of this standard deals with the protection at landings and safety requirements of lifting tables serving up to two fixed landings. Part 2 will deal with slow lifting tables serving more than 2 fixed landings for accessible only goods lifts and Part 3 will deal with slow lifting tables serving more than 2 fixed landings for operator carrying lifts.

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.

Introduction

This European Standard is a Type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this European Standard.

As lifting tables are used in a wide range of applications it is also essential to make individual risk assessments in accordance with EN ISO 12100 for the actual operating conditions.

Products sold indirectly to end users should be made for all the risks, which are related to the use and conditions foreseen by the manufacturer, as described in the instruction manual.

While producing this standard, it was assumed that:

- only trained operators using the equipment in accordance with manufacturers instructions operate the lifting tables and that the working area is adequately lit;
- lifting tables are operating on substantially firm, smooth, even and prepared surfaces. It is not necessary to consider centrifugal forces specifically as the current requirements consider all lateral forces;
- where there is a special requirement for a low noise level, e.g. hospital applications, theatre applications etc. this will be specified by the customer and appropriate measures taken by the manufacturer.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

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EN 1570-1:2011+A1:2014 (E)

1 Scope

1.1 This European Standard specifies the safety requirements for industrial lifting tables for raising and/or lowering goods and the operator(s):

- where the lifting table does not pass a fixed landing;
- serving not more than 2 fixed landings.

1.2 This European Standard deals with all significant hazards pertinent to lifting tables when they are used as intended by the operating instructions and under the conditions foreseen (including foreseeable misuse) with the operating instructions (see Clause 4). This European Standard specifies the appropriate technical measures to eliminate or reduce the risks arising from the significant hazards.

1.3 Both power operated and manually operated lifting tables are included whether stationary or mobile.

1.4 This European Standard does **not** apply to the following equipment:

- lifting tables, serving more than 2 fixed landings of a building, for lifting goods with a vertical travel speed not exceeding 0,15 m/s (EN 1570-2);
- lifting tables, serving more than 2 fixed landings of a building for lifting operators, with a vertical travel speed not exceeding 0,15 m/s (EN 1570-3);
- lifting tables carrying operators and installed in full enclosures (EN 1570-3);
- permanently and temporarily installed lifting tables, serving specific levels of a building for lifting operators, with a vertical travel speed exceeding 0,15 m/s (EN 81-1 and EN 81-2);
- lifting tables with flat or toothed belts lifting systems for the carrying of operators;
- lifting tables whose vertical travel speed exceeds 0,15 m/s (unless safe by position and non person carrying);
- power operated lifting platforms for persons with impaired mobility (EN 81-41);
- mobile lifting tables for airport ground support equipment (EN 1915-2 and EN 12312-1);
- lifting tables which are designed as part of a lift according to Directive (95/16/EC);
- lifting tables used on ships;
- mobile elevating work platforms (EN 280);
- static elevating work platforms;
- vehicle lifts for maintenance (EN 1493);
- mobile lifting tables used for fire fighting (EN 1777);
- mobile lifting tables used as fork lift trucks and order pickers;
- mobile lifting tables with a horizontal travelling speed of more than 1,6 m/s;
- rail dependent storage and retrieval equipment (EN 528);

- theatre stage lifts intended to move performers;
- scissor lift pallet trucks (EN ISO 3691-5);
- suspended lifting tables;
- lifting tables operated by pushing chains.

1.5 This standard does not establish the additional requirements for:

- electromagnetic compatibility;
- operation in severe conditions (e.g. extreme climates, freezer applications, strong magnetic fields);
- operation subject to special rules (e.g. potentially explosive atmospheres, mines);
- handling of loads, the nature of which could lead to dangerous situations (e.g. molten metal, acids, radiating materials, especially brittle loads);
- hazards occurring during construction, transportation and disposal;
- equipment installed on the load platform or replacing it;
- integration into systems or other machines, control from more than two control stations, etc.;
- cable-less controls;
- lifting tables where the hydraulic pressure is derived directly from gas pressure;
- the power supply to the lifting table by internal combustion engine.

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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.

EN 1088:1995+A2:2008, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 13241-1:2003+A1:2011, *Industrial, commercial and garage doors and gates — Product standard — Part 1: Products without fire resistance or smoke control characteristics*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60947-5-1, *Low-voltage switchgear and control gear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)*

EN 60947-5-3, *Low-voltage switchgear and control gear — Part 5-3: Control circuit devices and switching elements — Requirements for proximity devices with defined behaviour under fault conditions (PDF) (IEC 60947-5-3:1999)*

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EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals* (IEC 61310-1:2007)

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking* (IEC 61310-2:2007)

EN 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators* (IEC 61310-3:2007)

EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests* (IEC 61496-1:2004, modified)

CLC/TS 61496-2:2006, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)* (IEC 61496-2:2006)

EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components* (ISO 4413:2010)

EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components* (ISO 4414:2010)

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

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design* (ISO 13849-1:2006)

EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design* (ISO 13850:2006)

EN ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs* (ISO 13857:2008)

EN ISO 14122-3:2001, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails* (ISO 14122-3:2001)

ISO 606, *Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets*

ISO 2408, *Steel wire ropes for general purposes — Minimum requirements*

ISO 4301-1, *Cranes and lifting appliances — Classification — Part 1: General*

ISO 4308-1, *Cranes and lifting appliances — Selection of wire ropes — Part 1: General*

ISO 4308-2, *Cranes and lifting appliances — Selection of wire ropes — Part 2: Mobile cranes — Coefficient of utilization*

ISO 11228-1, *Ergonomics — Manual handling — Part 1: Lifting and carrying*

ISO 11228-2, *Ergonomics — Manual handling — Part 2: Pushing and pulling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.1**lifting table**

load lifting device with a load supporting platform rigidly guided throughout its travel (e.g. guided by its own mechanism)

3.2**fixed lifting table**

lifting table where the place of installation is not intended by the manufacturer to be changed

3.3**movable lifting table**

lifting table installed so that the place of installation may be readily changed

3.4**mobile lifting table**

lifting table which is mobile by one or more integrated devices (e.g. wheels, air cushions etc.)

3.5**guided mobile lifting table**

lifting table which runs on a pre-set route, (e.g. on rails, in tracks etc.)

3.6**self-propelled lifting table**

lifting table, other than vehicle mounted, which is capable of horizontal movement under its own power

3.7**automatic programme controlled lifting table**

lifting table designed for the lifting of goods only where movement takes place that is not initiated by hold-to-run manual controls (e.g. self levelling, etc.)

3.8**platform**

part of the lifting table (including connecting/bridging plate) designed to accommodate the working load and/or persons; fork arms are considered as a load platform for goods only

3.9**vertical travel**

vertical distance between the highest and the lowest working position for which the lifting table is designed

3.10**rated load**

load that the manufacturer has guaranteed that the machine will lift when used in accordance with the instruction handbook

3.11**guard**

part of the machine specifically used to provide protection by means of a physical barrier

3.12**safe by position**

condition when a lifting table or part of a lifting table is sufficiently shielded from access to avoid any hazard to persons or goods

3.13**emergency stop control**

component of emergency stop equipment which generates the emergency stop signal when the associated manual control (actuator) is operated

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EN 1570-1:2011+A1:2014 (E)**3.14****operator carrying lift table**

lifting table whose platform is entered by operator(s) for the purpose of loading or unloading or on which an operator may travel and is provided with controls on the platform

3.15**maximum working pressure**

highest pressure in the hydraulic or pneumatic system or part of system at which it is intended to operate under normal working conditions with rated load

3.16**operator**

person who is trained to operate the lifting table safely according to the manufacturer's instructions

3.17**remote control**

cable-connected control that is not situated on the platform of the lifting table

3.18**restricted area**

area to which access is restricted only to persons who are authorized to be in that area and not accessible to the general public

3.19**travel zone**

space through which the lifting mechanism and load, platform and any attachment to it moves

3.20**public areas**

areas to which the public have access

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3.21**hinged connecting plate**

plate mounted to the edge of the platform by a hinge to connect the platform to a landing

3.22**unassisted hinged connecting plate**

hinged connecting plate that is entirely manually operated

3.23**assisted hinged connecting plate**

hinged connecting plate that is counterbalanced by spring force or weights to reduce the manual effort of operating the plate

3.24**power actuated hinged connecting plate**

hinged connecting plate that requires no manual effort to operate

3.25**split hinged connecting plate**

hinged connecting plate that is divided into two or more sections

3.26**full enclosure**

where the whole of the travel zone of the lifting table is protected with rigid panels to make the lifting table inaccessible whilst in operation

4 List of hazards

The list of hazards according to the following table is based on EN ISO 12100.

The table has been formulated to show the hazards, hazardous situations and hazardous events which have been identified by risk assessment to be relevant for this type of machinery and which require action to eliminate or reduce risk.

Table 1a — List of hazards

No.	Type group or	Examples of hazards		Clause number in this standard
		Origin ^a	Potential consequences ^b	
1	Mechanical hazards	Acceleration, deceleration (kinetic energy)	Being run over Being thrown	5.1.2.6, 5.1.2.7, 5.3.2,
		Angular parts	Crushing	5.2.1, 5.2.5, 5.2.10.1
		Approach of a moving element to a fixed part	Cutting or severing Drawing-in or trapping Entanglement	5.2.1, 5.2.2.2.3, 5.2.2.3.1, 5.2.2.5, ^{A1} 5.2.3/5.2.4/5.2.5 ^{A1} , 5.2.10.3, 5.2.10.6
		Cutting parts	Friction or abrasion	5.2.5
		Elastic elements	Impact	5.9.7, 7.2.6
		Falling objects	Injection	5.2.9, 5.2.10.11, 5.2.12, 5.4.2
		Gravity (stored energy)	Shearing	5.1.2.7
		Height from the ground	Slipping, tripping and falling	5.2.9, ^{A1} 5.2.11/5.2.12 ^{A1}
		High pressure	Stabbing or puncture Suffocation	^{A1} 5.8.2/5.8.3 ^{A1} , 5.8.4.1, 5.8.8, ^{A1} 5.9.3/5.9.4/5.9.5/5.9.6/5.9.7/5.9.9 ^{A1} , 7.3.5, 7.5.7
		Machinery mobility		5.3.2, 5.5.1, 5.6
		Moving elements		^{A1} 5.2.2.2/5.2.2.3/5.2.2.4/5.2.2.5/5.2.2.6 ^{A1} , ^{A1} 5.2.5/5.2.6/5.2.7 ^{A1} , 5.6
		Rotating elements		5.2.11, 5.2.12.2, ^{A1} 5.2.13.3/5.2.13.4 ^{A1} , 5.3.3, 5.4.4
		Rough, slippery surface		5.2.5, 5.4.1, 5.4.4
		Sharp edges		5.2.5, 5.2.10.13, 5.7.5.4, D.4 d)
		Stability		5.1.3, 6.2
		Vacuum		Not applicable
2	Electrical hazards	Arc	Burn	Not applicable
		Electromagnetic phenomena	Chemical effects	5.10.2
		Electrostatic phenomena	Effects on medical implants	5.10.2

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		Live parts	Electrocution	5.10.2, 6.6, 7.3.6
		Not enough distance to live parts under high voltage	Falling, being thrown	5.10.2
		Overload	Fire	
		Parts which have become live under fault conditions	Projection of molten particles	5.7.2.2, 5.7.3.2, 5.7.4.2, 5.7.5.6, 5.7.6.5
		Short-circuit	Shock	5.10.1/5.10.2 (A1)
		Thermal radiation		5.10.1/5.10.2 (A1)
3	Thermal hazards	Explosion	Burn	5.2.14
		Flame	Dehydration	Not applicable
		Objects or materials with a high or low temperature	Discomfort	Not applicable
		Radiation from heat sources	Frostbite	5.2.14, 5.9.12
4	Noise hazards		Injuries by the radiation of heat sources	Not applicable
			Scald	
		Cavitation phenomena	Discomfort	Not applicable
		Exhausting system	Loss of awareness	Not applicable
		Gas leaking at high speed	Loss of balance	Not applicable
		Manufacturing process (stamping, cutting, etc.)	Permanent hearing loss	Not applicable
		Moving parts	Stress	7.4.2.3, Annex B
		Scraping surfaces	Tinnitus	7.4.2.3
		Unbalanced rotating parts	Tiredness	
5	Vibration hazards	Whistling pneumatics	Any other (e.g. mechanical, electrical) as a consequence of an interference with speech communication or with acoustic signals	Not applicable
		Worn parts		Not applicable
		Cavitation phenomena	Discomfort	Not applicable
		Misalignment of moving parts	Low-back morbidity	Not applicable
		Mobile equipment	Neurological disorder	
		Scraping surfaces	Osteo-articular disorder	Not applicable
		Unbalanced rotating parts	Trauma of the spine	Not applicable
			Vascular disorder	Not applicable
				Not applicable

		Vibrating equipment		Not applicable
		Worn parts		Not applicable
6	Radiation hazards	Ionising radiation source	Burn	Not applicable
		Low frequency electromagnetic radiation	Damage to eyes and skin	
		Optical radiation (infrared, visible and ultraviolet), including laser	Effects on reproductive capability Genetic mutation	Not applicable
		Radio frequency electromagnetic radiation	Headache, insomnia, etc.	Not applicable
7	Material substance hazards	Aerosol	Breathing difficulties, suffocation	Not applicable
		Biological and microbiological (viral or bacterial) agent	Cancer Corrosion	Not applicable
		Combustible	Effects on reproductive capability	Not applicable
		Dust	Explosion	Not applicable
		Explosive	Fire	Not applicable
		Fibre	Infection	Not applicable
		Flammable	Mutation	
		Fluid	Poisoning	7.5.4/7.5.6
		Fume	Sensitization	Not applicable
		Gas		Not applicable
		Mist		Not applicable
		Oxidizer		Not applicable
8	Ergonomic hazards	Access	Discomfort	5.2.15
		Design or location of indicators and visual displays units	Fatigue Musculoskeletal disorder	5.8.4.2
		Design, location or identification of control devices	Stress Any other (e.g. mechanical, electrical) as a consequence of human error	Annex D, 5.2.12.1, 5.2.12.4, 5.5.1, 5.5.6, 5.7.7.1, 7.4.2.14
		Effort		5.2.11 d), 5.6.4, 5.6.12, 5.8.11
		Flicker, dazzling, shadow, stroboscopic effect		Not applicable
		Local lighting		Introduction
		Mental overload/underload		
		Posture Repetitive activity		5.6.4, 5.6.11, 5.8.11
		Visibility		7.1, Table 3, 5.2.2.2.4, 5.2.2.5, 5.2.12.1, 5.5.1, 7.4.2.14