



SLOVENSKI STANDARD

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Varnostne zahteve za dvizhne mize - 1. del: Dvizhne 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 2 niveaux définis

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ICS:

53.020.99	Druga dvigalna oprema	Other lifting equipment
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English Version

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

Prescriptions de sécurité des tables élévatrices - Partie
1 : Tables élévatrices desservant jusqu'à 2 niveaux
définis

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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 98.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 1570-1:2020) has been prepared by Technical Committee CEN/TC 98 “Lifting platforms”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2006/42/EC.

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

This document will supersede EN 1570-1:2011+A1:2014.

The revisions to the standard are based mainly on the following points, which are embedded throughout the document:

- a wholesale restructure of the document;
- the inclusion for lifting tables in non-industrial applications; Static Elevating Work Platforms and lifting tables used in Skillet lines or Autonomous Ground Vehicles;
- the ability to pass a fixed landing and to carry authorised persons when under operator control;
- the introduction of rated and structural loads;
- the replacement of EN 1570-1:2011+A1:2014, Table 3 – Lift installation safeguard requirements with new flow charts within Annex I – Guide to travel zone risks;
- where appropriate, risk of falling is now associated with the height of fall rather than the travel height of the machine;
- greater emphasis on protection of the public when the lifting tables are used in public accessible areas;
- the reintroduction of boom barriers and clarity on interlocking and locking requirements for removable guardrails;
- locking of the lift table when at an upper fixed landing;
- the relaxation of overload monitoring limits due to the lack of appropriate state of the art equipment;
- restrictions on the use of pipe rupture protection devices in hydraulic systems;
- the introduction of rigid / pusher chains and the removal of pneumatic drives.

Introduction

This document was drafted as a design guidance manual to provide a means of achieving conformance to the essential safety requirements stipulated under Machinery Directive 2006/42/EC.

The machines concerned and the extent to which hazards, hazardous situations and hazardous incidents are covered are indicated in the scope of this document. In addition, the machines should be designed according to the principles of EN ISO 12100:2010 for relevant but non-significant hazards, which are not dealt with in this document.

As lifting tables are used in a wide range of applications, it is equally necessary to perform individual risk assessments in accordance with EN ISO 12100:2010 for the actual operating conditions.

Products sold indirectly to end-users should be built to cover all the risks related to the use and all conditions foreseeable by the manufacturer, as described in the instruction manual.

Where the text gives an example of a safety measure for the purposes of greater clarity, this should not be considered as the only possible solution. Any other solution leading to the same risk reduction is permissible if an equivalent or increased level of safety is achieved.

While drafting this document, it was assumed that:

- the lifting tables are only operated by persons trained in using the equipment in accordance with the manufacturer's instructions, and that the working area is adequately lit;
- the lifting tables are installed or used on hard standing, even, appropriately prepared surfaces
- where there are special requirements, on low noise levels, such as for hospital applications and theatres etc., the customer should specify these requirements and the manufacturer should then take all appropriate measures.

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.

1 Scope

1.1 This document specifies the safety requirements for lifting tables with the following characteristics:

- serving no more than 2 fixed landings but are able to pass a fixed landing and,
- having a vertical travel speed of no more than 0,15 m/s, unless safe by position and,
 - for raising or lowering goods (with or without operator(s) and/or authorized person(s)), or;
 - for raising or lowering operator(s) and/or authorized person(s) with or without goods, to positions where they can carry out work from a fixed or movable lifting table that is guided throughout its vertical travel only.

1.2 This document deals with all significant hazards pertinent, with the exception of noise, to lifting tables when used as intended and under the conditions foreseen by the manufacturer (see List of Hazards, Annex B). This document specifies the appropriate technical measures for eliminating and reducing the risks arising from the significant hazards.

1.3 This document does not apply to the following equipment:

- lifting tables with a vertical travel speed exceeding 0,15 m/s, unless safe by position;
- lifting tables, serving more than 2 fixed landings of a construction, 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 construction, for lifting operators, with a vertical travel speed not exceeding 0,15 m/s;
- lifting tables carrying operators and installed in full enclosures with a vertical travel speed not exceeding 0,15 m/s;
- lifting tables used on ships;
- lifting tables designed for artists and stage set features during artistic performances;
- 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);
- mobile elevating work platforms (EN 280);
- static Group B elevating work platforms (EN 280);
- vehicle servicing lifts (EN 1493:2010);
- mobile lifting tables used for firefighting (EN 1777);
- mobile lifting tables with a horizontal travelling speed of more than 1,6 m/s;
- rail dependent storage and retrieval equipment (EN 528);

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- scissor lift pallet trucks (EN ISO 3691-5);
- lifting tables suspended from a ceiling.

1.4 This document does not consider 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, particularly brittle loads, loose loads (gravel, tubes));
- hazards occurring during construction, transportation and disposal;
- equipment installed on the load platform or the replacing or maintaining of it;
- integration into broader systems or other machines, etc.;
- cable-less controls;
- lifting tables where the hydraulic pressure is derived directly from gas pressure;
- lifting tables powered by internal combustion engines

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.

prEN 280-1:2018, *Mobile elevating work platforms — Part 1: Design calculations — Stability criteria — Construction — Safety — Examinations and tests*

EN 1493:2010, *Vehicle lifts*

EN 13001-3-1:2012+A2:2018, *Cranes — General Design — Part 3-1: Limit States and proof competence of steel structure*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016, modified)*

EN 60204-32:2008, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

EN 60529:1991,¹ *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear — Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2016)*

¹ As impacted by EN 60529:1991/AC:2006-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.

EN 60947-5-3:2013, *Low-voltage switchgear and controlgear — Part 5-3: Control circuit devices and switching elements — Requirements for proximity devices with defined behaviour under fault conditions (PDDb) (IEC 60947-5-3:2013)*

EN 61310-2:2008, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:2007)*

EN 61496-1:2013,² *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2012)*

EN 61496-2:2013, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2013)*

EN 61800-5-2:2017, *Adjustable speed electrical power drive systems — Part 5-2: Safety requirements — Functional (IEC 61800-5-2:2016)*

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

EN ISO 11161:2007,³ *Safety of machinery — Integrated manufacturing systems — Basic requirements (ISO 11161:2007)*

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

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

ISO 606:2015, *Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets*

ISO 2408:2017, *Steel wire ropes — Minimum requirements*

ISO 4301-1:2016, *Cranes — Classification — Part 1: General*

² As impacted by EN 61496-1:2013/AC:2015.

³ As impacted by EN ISO 11161:2007/A1:2010.

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ISO 4347:2015, *Leaf chains, clevises and sheaves — Dimensions, measuring forces, tensile strengths and dynamic strengths*

ISO 11228-1:2003, *Ergonomics — Manual handling — Lifting and carrying*

ISO 11228-2:2007, *Ergonomics — Manual handling — Pushing and pulling*

ISO 16625:2013, *Cranes and hoists — Selection of wire ropes, drums and sheaves*

3 Terms and definitions

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

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

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

3.1**lifting table**

lifting device with a load supporting platform rigidly guided throughout its travel (e.g. scissor lift or mast lift)

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3.2**fixed lifting table**

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

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3.3**movable lifting table**

lifting table installed so that the place of installation may be readily changed without integrated devices (e.g. by a fork lift, crane or similar)

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**blocking device**

device that is fitted to allow maintenance and repair work to be carried out below the platform safely

3.7**self-propelled lifting table**

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

3.8**operator**

person who is trained and authorised/permitted by the machine owner to operate the lifting table, according to the manufacturer's instructions

3.9**authorised person**

person whose presence in the area is authorised/permitted by the operator and whose safety is the responsibility of the operator

3.10**fixed landing**

permanent level of the construction for loading and unloading the lifting table

3.11**variable landing**

non-permanent level for loading and unloading of the lifting table, e.g. vehicle serving

3.12**platform**

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

3.13**rated load**

load that consists of goods, persons, tools and material acting vertically on the work platform and that the manufacturer has stated the machine is capable of lifting/lowering when used in accordance with the instruction manual

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3.14**structural load**

load, excluding rated load, comprising of any equipment that is fixed on the platform (e.g. guard-rails, gates, roller conveyor etc.)

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Note 1 to entry:

Structural load shall be considered as part of the lifting table self-weight.

3.15**guard**

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

3.16**maximum working pressure**

highest pressure in the hydraulic system at which it is intended to operate under normal working conditions with rated load and, if any, structural load

3.17**travel zone**

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

3.18**non-public area**

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

3.19**public area**

space open to persons without specific training, instruction or awareness including children

prEN 1570-1:2020 (E)**3.20****vertical travel speed**

average lifting and lowering speed of the platform when measured throughout its normal travel range

3.21**screen**

permanent protection from access to the hazard for the whole body, also called distance guards in EN ISO 14120:2015

3.22**guard-rail**

device for protection against accidental fall or accidental access to a hazardous area, with which stairs, step ladders, landings or platforms and walkways (level surface used for moving from one point to another) may be equipped

3.23**removable guard-rail**

guard-rail designed to be removable without the use of a tool

3.24**enclosure**

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

3.25**automatic programmable controlled lifting table**

lifting table for the lifting of goods only when the lift is safe by position and is either semi-automatic where the movement is instigated by an operator or fully automatic where the movement is instigated by a programme controlled by a third party

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Note 1 to entry: Relevelling systems alone shall not be considered as programme controlled lifting tables.

3.26**gate**

opening part within a guard-rail, enclosure or screen, to give access from a landing or a platform

3.27**inward opening gate**

platform mounted inward opening gate is always opened towards the centre of the platform; and a landing mounted inward opening gate is opened away from the centre of the platform

3.28**outward opening gate**

platform mounted outward opening gate is always opened away from the centre of the platform and a landing mounted outward opening gate is opened towards the centre of the platform

3.29**safe by position**

condition when a lifting table or any part of a lifting table or load is sufficiently shielded from being reached or accessed during operation, to avoid any hazard to persons or goods according to EN ISO 13857:2019

3.30**remote control**

cable connected control, station or pendant, that is not situated on the platform of the lifting table to give the operator a clear view of the travel zone

3.31**hinged connecting plate**

plate mounted to the edge of the platform by a hinge to connect the platform to a landing (fixed or variable)

3.32**unassisted hinged connecting plate**

hinged connecting plate that is entirely manually operated

3.33**assisted hinged connecting plate**

hinged connecting plate that is counterbalanced (e.g. by spring force or weights) to reduce the manual effort of operating the plate

3.34**power actuated hinged connecting plate**

hinged connecting plate that requires no manual effort to operate

3.35**interlocking device**

mechanical, electrical or other type of device, the purpose of which is to prevent the operation of hazardous machine functions under specified conditions (generally as long as a guard is not closed)

[SOURCE: EN ISO 12100:2010, 3.28.1]
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3.36**interlocking guard**

guard associated with an interlocking device so that, together with the control system of the machine, the following functions are performed:

- the hazardous machine functions “covered” by the guard cannot operate until the guard is closed;
- if the guard is opened while hazardous machine functions are operating, a stop command is given;
- when the guard is closed, the hazardous machine functions “covered” by the guard can operate (the closure of the guard does not by itself start the hazardous machine functions)

[SOURCE: EN ISO 12100:2010, 3.27.4.]

Note 1 to entry: An interlocking guard may contain/be equipped with one or more interlocking devices, and these interlocking devices may be of different types.

3.37**interlocking guard with guard locking**

guard associated with an interlocking device and a guard locking device so that, together with the control system of the machine, the following functions are performed:

- the hazardous machine functions “covered” by the guard cannot operate until the guard is closed and locked;