# SLOVENSKI STANDARD
# SIST EN 1570:1999+A2:2010

**01-februar-2010**

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**Varnostne zahteve za dvižne mize**

Safety requirements for lifting tables

Sicherheitsanforderungen an Hubtische

Prescriptions de sécurité des tables élévatrices



**Ta slovenski standard je istoveten z:** **EN 1570:1998+A2:2009**

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**ICS:**

53.020.99 Druga dvigalna oprema Other lifting equipment

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EUROPEAN STANDARD

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# EN 1570:1998+A2

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English Version

# Safety requirements for lifting tables

Prescriptions de sécurité des tables élévatrices

Sicherheitsanforderungen an Hubtische

This European Standard was approved by CEN on 7 May 1998 and includes Amendment 1 approved by CEN on 7 June 2004 and Amendment 2 approved by CEN on 19 June 2009.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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# Foreword

This document (EN 1570:1998+A1:2009) has been prepared by Technical Committee CEN/TC 98 "Lifting platforms", 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

This document includes Amendment 1, approved by CEN on 2004-06-07 and Amendment 2, approved by CEN on 2009-06-19.

This document supersedes EN 1570:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟨A1⟩ ⟨A1⟩ and ⟨A2⟩ ⟨A2⟩.

This European Standard 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).

⟨A2⟩ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A2⟩



Normative annexes C and D give Test procedure.



⟨A2⟩ *deleted text* ⟨A2⟩

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

# Introduction

[A2] This European Standard is a type C standard as stated in EN ISO 12100-1:2003. [A2]

This standard has been prepared to be a harmonised standard to provide one means of conforming with the Essential Safety Requirements of the Machinery Directive and associated EFTA Regulations.

The extent to which hazards are covered is indicated in the scope of this standard. In addition, lifting tables should comply as appropriate with [A2] EN ISO 12100 [A2] for hazards which are not covered by this standard.

Where, for clarity, an example of a safety measure is given in the text this shall not be considered as the only possible solution. Any other solution leading to the same risk reduction is permissible if an equivalent level of safety is achieved.

While producing this standard it was assumed that 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.

While producing this standard, it was assumed that only trained persons operate the lifting tables and that the working area is adequately lit.



While producing this standard it was assumed that if the positioning of the lifting table creates a danger of falling more than 3,0 m, then the necessary external precautions to reduce this to less than 3,0 m, will be taken by the user.





## 1 Scope

**1.1** [A1] This document specifies the safety requirements for lifting tables for raising and/or lowering goods and/or persons associated with the movement of goods carried by the lifting table (i.e. not for passenger use), for a vertical travel of up to 3,0 m. [A1]

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

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

**1.4** [A1] This document does **not** apply to the following equipment:

— permanently installed lifting tables, serving specific levels of a building and fitted with a car;

— permanently installed lifting tables, serving specific levels of a building, not fitted with a car but with a vertical travel of more than 2,0 m;

— power operated lifting platforms for persons with impaired mobility;

— lifting tables for airport ground equipment;

— lifting tables for marine use;

— mobile elevating work platforms;

— vehicle lifts for maintenance;

— mobile lifting tables used for fire fighting;

— mobile lifting tables used as fork lift trucks, pallet trucks and order pickers;

— mobile lifting tables with a travelling speed of more than 1,6 m/s;

— rail dependent storage and retrieval equipment;

— theatre stage lifts. ⟨A1⟩

**1.5** This standard does not consider the Power Supply to the lifting table by Internal Combustion Engine.

This standard does not establish the additional requirements for:

— 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.

## 2 Normative references

⟨A2⟩ 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. ⟨A2⟩

⟨A2⟩ *deleted text* ⟨A2⟩

EN 294, *Safety of machinery — Safety distances to prevent danger zones being reached by upper limbs*

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 414, *Safety of machinery — Rules for the drafting and preparation of safety standards*

EN 418, *Safety of machinery — Emergency stop equipment, functional aspects - Principles for design*

EN 563, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

EN 954-1:1996, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design*

EN 982, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

EN 983, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

EN 1050, *Safety of machinery — Principles for risk assessment*

EN 1088, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

prEN 1760-1, *Safety of machinery — Pressure sensitive devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

*deleted text*

EN 60204-1:1992, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 204-1:1992)*

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

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*



EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*



ISO 606, *Short-pitch transmission precision roller chains and chain wheels*

ISO 2408, *Steel wire ropes for general purposes — Characteristics*

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 utilisation*

## 3 Definitions

For the purposes of this standard the following definitions apply:

**3.1**
**lifting table**
load lifting device with a load supporting platform guided throughout its travel (e.g. guided by its own mechanism)

**3.2**
**fixed lifting table**
a lifting table where the place of installation is not intended to be changed

**3.3**
**moveable lifting table**
a lifting table installed so that the place of installation may be readily changed

**3.4**
**mobile lifting table**
a load lifting device which is mobile by one or more integrated devices (e.g. wheels, air cushions etc)

**3.5**
**guided mobile lifting table**
a lifting table which runs on wheels on a pre-set route, (e.g. on rails, in tracks etc)

**3.6**
**self-propelled lifting table**
a lifting table, other than vehicle mounted, which is capable of horizontal movement under its own power

**3.7**
**automatic programme controlled lifting table**
a lifting table where movement takes place that is not initiated by the normal manual controls (e.g. self levelling etc)

**3.8**
**load platform**
the part of the lifting table designed to accommodate the working load and/or persons. Fork arms are considered as a load platform for goods only

**3.9**
**vertical travel**
the vertical distance between the highest and the lowest working position for which the lifting table is designed.



**3.10**
**nominal load**
the load that the manufacturer has guaranteed that the machine will lift when used in accordance with the instruction handbook



**3.11**
**guard**
part of machine specifically used to provide protection by means of a physical barrier

〚A1〛 **3.12**
**safe by position**
condition when a table or part of table is sufficiently shielded from access to avoid any hazard to persons or goods 〚A1〛

**3.13**
**emergency stop control**
that component of the emergency stop equipment which generates the emergency stop signal when the associated manual control (actuator) is operated

**3.14**
**operator**
the person operating the lifting table

**3.15**
**maximum working pressure**
the maximum pressure in the hydraulic system under normal working conditions with rated load (normally pre-set by the pressure relief valve)

## 4 List of hazards

〈A1〉 The list of hazards according to the following table is based on EN 1050.

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.

Hazards are shown as “not applicable” where they are considered not to exist on lifting tables and “not significant” where they are unlikely to cause risk to persons.

**Table 1**

| Hazard Reference No | Hazards, hazardous situations and hazardous events | Clause No in this standard |
|---|---|---|
| 1 | **Mechanical hazards** due to: | |
| | — Machine parts or work pieces, e.g.: | |
| | a) shape; | **5.2.1, 5.2.8** |
| | b) relative location | **5.2.8** |
| | c) mass and stability (potential energy of elements whichmay move under the effect of gravity); | **5.1.1.7** |
| | d) mass and velocity (kinetic energy of elements in controlled and uncontrolled motion; | **5.1.1.6** |
| | e) inadequacy of mechanical strength | **5.1** |
| | — accumulation of energy inside the machinery, e.g.: | |
| | f) elastic elements (springs); | **5.8.10, 5.9.6** |
| | g) liquids and gases under pressure; | **5.8, 5.9** |
| | h) the effect of vacuum | Not applicable |
| 1.1 | Crushing hazard | **5.2.1/2/3/4/6** |
| 1.2 | Shearing hazard | **5.2.1/2/3/4/6** |
| 1.3 | Cutting or severing hazard | **5.2.8** |
| 1.4 | Entanglement hazard | **5.2.9** |
| 1.5 | Drawing-in or trapping hazard | **5.2.10** |
| 1.6 | Impact hazard | **5.2.11** |
| 1.7 | Stabbing or puncture hazard | Not applicable |
| 1.8 | Friction or abrasion hazard | Not significant |
| 1.9 | High pressure fluid injection or ejection hazard | **5.8.3** |

**Table 1** *(continued)*

| Hazard Reference No | Hazards, hazardous situations and hazardous events | Clause No in this standard |
|---|---|---|
| **2** | **Electrical hazards** due to: | |
| 2.1 | Contact of persons with live parts (direct contact) | **5.10.1** |
| 2.2 | Contact of persons with parts which have become live under faulty conditions (indirect contact) | **5.10.1/2** |
| 2.3 | Approach to live parts under high voltage | **5.10.1/2** |
| 2.4 | Electrostatic phenomena | Not applicable |
| 2.5 | Thermal radiation or other phenomena such as the projection of molten particles and chemical effects from short circuits, overloads, etc. | Not applicable |
| **3** | **Thermal hazards,** resulting in: | |
| 3.1 | Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources | **5.2.16** |
| 3.2 | Damage to health by hot or cold working environment | Not applicable |
| **4** | **Hazards generated by noise,** resulting in | A2 Annex B A2 |
| 4.1 | Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness) | Not applicable |
| 4.2 | Interference with speech communication, acoustic signals, etc. | Not applicable |
| **5** | **Hazards generated by vibration** | |
| 5.1 | Use of hand-held machines resulting in a variety of neurological and vascular disorders | Not applicable |
| 5.2 | Whole body vibration, particularly when combined with poor postures | Not applicable |
| **6** | **Hazards generated by radiation** | |
| 6.1 | Low frequency, radio frequency radiation, micro waves | Not applicable |
| 6.2 | Infrared, visible and ultraviolet light | Not applicable |
| 6.3 | X and gamma rays | Not applicable |
| 6.4 | Alpha, beta rays, electron or ion beams, neutrons | Not applicable |
| 6.5 | Lasers | Not applicable |
| **7** | **Hazards generated by materials and substances** (and their constituent element) processed or used by the machinery | **5.8.2/3, 7.2.3** |
| 7.1 | Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts | **5.8.2/3, 7.2.3** |
| 7.2 | Fire or explosion hazard | Not significant |
| 7.3 | Biological or microbiological (viral or bacterial) hazards | Not applicable |
| **8** | **Hazards generated by neglecting ergonomic principles in machinery design** as, e.g. hazards from: | **5.6.4, 5.6.11, 5.8.11** |
| 8.1 | Unhealthy postures or excessive effort | **5.6.4, 5.6.11, 5.8.11** |
| 8.2 | Inadequate consideration of hand-arm or foot-leg anatomy | **5.2.1/2** |
| 8.3 | Neglected use of personal protection of equipment | Not applicable |
| 8.4 | Inadequate local lighting | Introduction |

**Table 1** *(continued)*

| Hazard Reference No | Hazards, hazardous situations and hazardous events | Clause No in this standard |
|---|---|---|
| 8.5 | Mental overload and underload, stress | Not applicable |
| 8.6 | Human error, human behaviour | **5.5.2, 5.5.4, 5.5.6, 5.7.7** |
| 8.7 | Inadequate design, location or identification of manual controls | **5.5.1, 5.5.3/4/5/6/7** |
| 8.8 | Inadequate design or location of visual display units | Not applicable |
| **9** | **Combination of hazards** | Not specifically dealt with |
| **10** | **Unexpected start-up, unexpected overrun/overspeed** (or any similar malfunction) from; | |
| 10.1 | Failure/disorder of the control system | **5.10.1** |
| 10.2 | Restoration of energy supply after an interruption | **5.10.1** |
| 10.3 | External influences on electrical equipment | **5.10.1** |
| 10.4 | Other external influences (gravity, wind, etc.) | **5.5.3/4/5** |
| 10.5 | Errors in the software | Not dealt with |
| 10.6 | Errors made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6) | **5.5.3/4/5/6** |
| **11** | **Impossibility of stopping the machine in the best possible conditions** | **5.5.7** |
| **12** | **Variations in the rotational speed of tools** | Not applicable |
| **13** | **Failure of the power supply** | **5.10.1** |
| **14** | **Failure of the control circuit** | **5.10.1** |
| **15** | **Errors of fitting** | **7.3** |
| **16** | **Break up during operation** | **5.1.1, 5.7.5, 5.8.7, 5.9.7, 7.1, 7.2** |
| **17** | **Falling or ejected objects or fluids** | **5.8.1/2/3/4, 5.9.1/2/3/4, 5.2.13/14, 7.1** |
| **18** | **Loss of stability / overturning of machinery** | **5.1.2** |
| **19** | **Slip, trip and fall of persons (related to machinery)** | **5.2.13/14, 5.4.1, 5.2.17** |
| Additional Hazards, hazardous situations and hazardous events due to mobility | | |
| **20** | **Relating to the travelling function** | |
| 20.1 | Movement when starting the engine | **5.6.3** |
| 20.2 | Movement without a driver at the driving position | **5.6.2** |
| 20.3 | Movement without all parts in safe position | **5.2.19, 5.3.2** |
| 20.4 | Excessive speed of pedestrian controlled machinery | **5.3.2** |
| 20.5 | Excessive oscillations when moving | **5.3.3** |
| 20.6 | Insufficient ability of machinery to be slowed down, stopped and immobilised | **5.6.2, 5.6.5, 5.6.8** |