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Varnostne zahteve za dvižne mize

Safety requirements for lifting tables

Sicherheitsanforderungen an Hubtische

Prescriptions de sécurité des tables élévatrices

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Safety requirements for lifting tables

Prescriptions de sécurité des tables élévatrices

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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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (prEN 1570:2008) 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 will supersede EN 1570:1998.

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 EC Directive(s).

For relationship with EC Directives, see informative Annex ZA and ZB, which are integral part of this document.

Introduction

This European Standard is a Type C standard as stated in EN ISO 12100 parts-1 and -2.

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

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

As lifting tables are used in a wide range of applications it is also necessary to make individual risk assessments in accordance with EN 1050 for the actual operating conditions.

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

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:

— only trained persons 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.

1 Scope

1.1 This European Standard specifies the safety requirements for lifting tables for raising and/or lowering goods and/or persons.

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 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:

— permanently and temporarily installed lifting tables, serving specific levels of a building for lifting persons, with a vertical travel speed exceeding 0,15 m/s (EN 81-1 and EN 81-2);

— 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 (prEN 81-40 and prEN 81-41);

— mobile lifting tables for airport ground support equipment (EN 5-1/-2/-3/-4, EN 1915-2 and EN 12312-1-20);

— 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;

— scissor lift pallet trucks (EN 1757-4);

— suspended lifting tables.

— lifting tables operated by pushing chains

1.5 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;

— the power supply to the lifting table by internal combustion engine.

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

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

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 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 controlgear — 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 controlgear — 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)*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995)*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:1995)*

EN 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators (IEC 61310-3:1999)*

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

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

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*

3 Terms and definitions

For the purposes of this standard the following terms and definitions 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
moveable 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 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 linking/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
nominal 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
that component of emergency stop equipment which generates the emergency stop signal when the associated manual control (actuator) is operated

3.14
operator
person operating the lifting table

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
person carrying lifting table
lifting table whose platform is entered by a person or persons for the purpose of loading or unloading or on which persons may travel and is provided with controls on the platform

3.17
car
load carrying platform completely enclosed by full length walls, door(s) and ceiling with the exception of ventilation apertures

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 platform and any attachment to it moves

3.20
public areas
areas to which the public and especially small children have unrestricted access

4 List of hazards

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.

Table 1 — List of hazards

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	5.2.1,5.2.5, 5.2.10.1
	b) Relative location	5.2.2.1.3, 5.2.3/4/5, 5.2.10.2
	c) Mass and stability (potential energy of elements which may 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)	5.9.7, 6.2.6
1.1	Crushing hazard	5.2.1/2/3/4, 6.2.1
1.2	Shearing hazard	5.2.1/2/3/4/5, 5.2.10.2, 6.2.4
1.3	Cutting or severing hazard	5.2.5
1.4	Entanglement hazard	5.2.6
1.5	Drawing-in or trapping hazard	5.2.7
1.6	Impact hazard	5.2.8
1.9	High pressure fluid injection or ejection hazard	5.8.3
2	**Electrical hazards due to:**	
2.1	Contact of persons with live parts (direct contact)	5.10.1

Table 1 *(continued)*

Hazard reference no.	Hazards, hazardous situations and hazardous events	Clause no. in this standard
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
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 by flames or explosions and also by the radiation of heat sources	5.2.13
4	**Hazards generated by noise**	See Annex B
7	**Hazards generated by materials and substances (and their constituent element) processed or used by the machinery**	**5.8.2/3, 7.3.5**
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	5.8.2/3, 7.3.5
8	**Hazards generated by neglecting ergonomic principles in machinery design as, e. g. hazards from:**	
8.1	Unhealthy postures or excessive effort	5.6.4, 5.6.11/12, 5.8.11
8.2	Inadequate consideration of hand-arm or foot-leg anatomy	5.2.1/2
8.4	Inadequate local lighting	Introduction
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, 7.2.8
10	**Unexpected start-up, unexpected overrun/overspeed (or any similar malfunction) from:**	
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
10.6	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
13	**Failure of the power supply**	5.10.1
14	**Failure of the control circuit**	5.10.1
15	**Errors of fitting**	7.4
16	**Break up during operation**	5.1.1, 5.7.5, 5.8.7, 5.9.8, 7.3.6
17	**Falling or ejected objects or fluids**	5.8.1/2/3/4, 5.2.10/11