



SLOVENSKI STANDARD

SIST EN 1570:1999

01-julij-1999

Varnostne zahteve za dvizne mize

Safety requirements for lifting tables

Sicherheitsanforderungen an Hubtische

Prescriptions de sécurité des tables élévatrices

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: ^{SIST EN 1570:1999} EN 1570:1998

<https://standards.iteh.ai/catalog/standards/sist/79159b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

ICS:

53.020.99

Druga dvigalna oprema

Other lifting equipment

SIST EN 1570:1999

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1570:1999

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1570

May 1998

ICS 53.020.99

Descriptors: elevators, machine tables, safety of machines, accident prevention, definitions, hazards, specifications, safety measures, safety devices, stability, distance, control devices, electrical installation, hydraulic equipment, pneumatic equipment, inspection, information, utilization, marking

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.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1570:1999

<https://standards.iteh.ai/catalog/standards/sist/701391b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents	Page
Foreword	4
Introduction	5
1 Scope	6
2 Normative references	7
3 Definitions	9
4 List of hazards	10
5 Safety requirements	13
5.1 Calculations	13
5.1.1 Stress	13
5.1.2 Stability	14
5.2 Safeguarding	15
5.3 Speeds	20
5.4 Platform	20
5.5 Operator control position	21
5.6 Mobile lifting tables	22
5.7 Mechanical driving system	24
5.8 Hydraulic system	27
5.9 Pneumatic system	28
5.10 Electrical System	29
5.11 Safety devices	30
6 Marking	30
7 Information for use	31
8 Verification of the safety requirements and/or measures.	34

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1570:1999](https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999)

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>



Annexes

A (informative) Overloading	37
B (informative) Noise	38
C (normative) Test procedures	39
D (normative) Test certificate for lifting tables	42
E (informative) Controls	44
F (normative) Manual force measurement methods	48
ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	50

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1570:1999](https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999)

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

Foreword

This European Standard 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 November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

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).

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

Normative annexes C and D give Test procedure.

Any standards that are published after January 1996 are not referred to in this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1570:1999](https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999)

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

Introduction

This standard is a Type C standard as stated in EN 292.

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 EN 292 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1570:1999](https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999)

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

1 Scope

1.1 This European Standard 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, for a vertical travel of up to 3,0 m.

NOTE. These lifting tables are intended for the transport of goods and not for the movement of passengers.

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 The standard 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.

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

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1	Safety of machinery - Basic concepts - General principles for design Part 1: Basic terminology, methodology
EN 292-2	Safety of machinery - Basic concepts - General principles for design Part 2: Technical principles and specifications
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	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 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
EN 45014	General criteria for supplier's declaration of conformity (ISO/IEC Guide 22: 1996)
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 529:1989)

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.

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-1197ed81e76/sist-en-1570-1998>

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.

3.12 “safe by position”: The condition when a table or part of table is sufficiently shielded from access, by the manufacturer, to avoid any hazard to persons or goods.

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

This clause contains all hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by risk assessment significant for this type of machinery and which require action to eliminate or reduce risk.

These 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:

Hazard reference No	Hazard	Clause No. in this standard
1	Mechanical	5.1.1; 5.2; 5.2.1.1; 5.2.6.1; 7.3
1.1	Crushing	5.2.1.1/2/3/4
1.2	Shearing	5.2.1.1/2/3/4
1.3	Cutting	5.2.8
1.4	Entanglement	5.2.9
1.5	Drawing-in	5.2.10
1.6	Impact	5.2.11
1.7	Stabbing	Not applicable
1.8	Friction	Not significant.
1.9	Fluid ejection	5.3.3; 5.8.2/3

1.10	Parts ejection	Not applicable
1.11	Stability	5.1.2
1.12	Slip, trip, fall	5.2.3.1; 5.2.1.12; 5.2.3.6
2	Electrical	5.5
2.1	Electrical contact	5.5.2.2; 5.5.1
2.2	Electrostatic	Not applicable
2.3	Thermal radiation	Not applicable
2.4	External influences	5.5.2
3	Thermal	5.2.1.16
3.1	Burns and scalds	5.2.1.16
3.2	Hot or cold environment	Not applicable
4	Noise	Not dealt with. Annex B.
4.1	Hearing loss	Not significant
4.2	Acoustic interference	Not applicable
5	Vibration	Not applicable
6	Radiation	Not dealt with.
6.1	Electrical arcs	Not applicable
6.2	Lasers	Not applicable
6.3	Ionising radiation	Not applicable
6.4	High frequency	Not applicable
7	Materials	5.3.1/2; 7.2
7.1	Contact	5.3.1/2/3
7.2	Fire/Explosion	Not significant.
7.3	Biological	Not applicable
8	Ergonomic	5.2.4.4; only partly dealt with.
8.1	Postures	5.2.4.1; 5.2.5.4/10; 5.3.11
8.2	Human anatomy	5.2.1.1
8.3	Personal protection	5.2.1.2
8.4	Inadequate lighting	Not applicable
8.5	Mental overload	Not applicable
8.6	Human error	5.2.4.2/4/6; 5.2.6.6
9	Combinations	Not specifically dealt with.
10.1	Energy failure	5.3; 5.4; 5.5
10.2	Fluid ejection	5.3.1/2; 5.3.1; 5.4.1/2/3
10.3	Control malfunction	5.2.4.5; 5.2.5.3/7
10.4	Error of fitting	7.3
10.5	Overturn	5.1.2
11.1	Missing guards	7.3
11.2	Missing safety devices	7.3
11.3	Starting and stopping devices	5.5.3.1; 5.2.4.6/7; 5.5.1
11.4	Safety signs	6.0
11.5	Information	7.0
11.6	Energy disconnecting devices	5.5.1
11.7	Emergency devices	5.2.3.5
11.8	Workpiece feeding	Not Applicable
11.9	Maintenance equipment	5.2.1.17; 5.3.4; 5.3.6
11.10	Gas evacuation	Not applicable

Hazards due to mobility		
12	Inadequate lighting	Introduction
13	Instability	5.2.1; 5.2.19; 5.6.1/3
14	Control position	5.2.12; 5.5.1
14.1	Dangerous environments	Not applicable
14.2	Inadequate visibility	5.5.1
14.3	Inadequate seating	Not applicable
14.4	Inadequate controls	5.5.1; 5.5.4
14.5	Starting	5.6.2/3
14.6	Road traffic	Not applicable
14.7	Pedestrian control	5.6.1/4/9
15.1	Uncontrolled movement	5.5.2; 5.6.1/2/3
15.2	Parts ejection	Not applicable
15.3	Roll over	5.1.2.1
15.4	Falling objects	5.2.13/14
15.5	Access	5.2.12. 5.4.1
15.6	Towing	5.6.5; 7.1.5
15.7	Batteries	Not applicable
Hazards due to lifting operation		
16.1	Stability	5.1.2.1
16.2	Derailment	5.6.8
16.3	Mechanical strength	5.1.1
16.4	Uncontrolled movement	5.5.2; 5.6.1/2/3
16.5	Falling loads	5.2.13/14; 7.1
17	Inadequate view	5.5.1
18	Lighting	Introduction
19	Overloading	Annex A; 5.8.4; 5.9.4; 5.7.11/12
Hazards due to lifting persons		
20.1	Mechanical strength	5.1.1
20.2	Overloading	Annex A; 5.8.4; 5.9.4; 5.7.10/11
21.1	Platform movement	5.5.2; 5.5.4
21.2	Travel control	5.5.1; 5.5.2
21.3	Speed control	5.3
22.1	Personal equipment	Not applicable
22.2	Trapdoors	5.2.14
22.3	Platform tilt	5.5.8
23.1	Overturning	5.1.2
23.2	Braking	5.6.2
24	Markings	6.0

iteh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1570:1999

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-d197edb81e76/sist-en-1570-1999>

5 Safety requirements

5.1 Calculations

5.1.1 Stress

5.1.1.1 The lifting table shall be designed in accordance with usual calculation codes and good engineering practice and all failure modes of the material shall be considered including fatigue failure.

5.1.1.2 The stresses in any part of the lifting table, using the permissible stress method, under normal working conditions, shall not exceed the following:

- a) 0,66 times the yield stress of the material used;
- b) 0,50 times the ultimate tensile stress of the material used.

5.1.1.3 The stresses shall be calculated for the condition of the lifting table carrying its rated load and being used in accordance with the manufacturers instructions.

The loads shall include all actual static and dynamic forces both vertical and horizontal, all wind forces, and all forces applied to the platform during loading and unloading.

5.1.1.4 The minimum dynamic forces to be used for the calculations of 5.1.1.3 shall result from:

- a) the total vertical load (this includes the rated load and the selfweight of the moving parts of the structure) increased by 40 % and;
- b) 10 % of the rated load taken as acting horizontally at platform level, in the direction causing the maximum stress in the part being considered.

If side barriers prevent movement of the load in a particular direction this direction need not be considered.

iTeh STANDARD PREVIEW

5.1.1.5 If persons are to be carried on the platform, their load shall be taken as 80 kg, concentrated in an area of 0,2 m by 0,2 m for each person, spaced apart at 0,5 m centre to centre and placed in the most unfavourable position on the platform for stress calculations.

<https://standards.iteh.ai/catalog/standards/sist/79f39b48-6987-4736-8316-1570-1999>

5.1.1.6 It shall be possible for the forces produced when the safety device is operated, to be accepted without permanent deformation of the normal load bearing parts, when used in accordance with the manufacturer's instructions.