



SLOVENSKI STANDARD
SIST EN 1756-1:2002

01-maj-2002

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Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 1:
Tail lifts for goods

Hubladebühnen - Plattformlifte für die Anbringung an Radfahrzeugen -
Sicherheitsanforderungen - Teil 1: Hubladebühnen für Güter

Hayons élévateurs - Plates-formes élévatrices à monter sur véhicules roulants -
Exigences de sécurité - Partie 1: Hayons élévateurs pour marchandises

Ta slovenski standard je istoveten z: EN 1756-1:2001

ICS:

53.020.99 Druga dvigalna oprema Other lifting equipment

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ICS 53.020.99

English version

Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 1: Tail lifts for goods

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Hubladebühnen - Plattformlifte für die Anbringung an Radfahrzeugen - Sicherheitsanforderungen - Teil 1: Hubladebühnen für Güter

This European Standard was approved by CEN on 30 September 2001.

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 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 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 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of an identical text or by endorsement, at the latest by May 2002, and conflicting national standards shall be withdrawn at the latest by May 2002.

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 Directive(s), see informative annex ZA, which is an integral part of this standard.

This standard comprises two parts :

Part 1 relates specifically to tail lifts for goods (whether or not accompanied by an operator);

Part 2 covers the special requirements of tail lifts for passengers, including those with disabilities.

This part comprises ten annexes as follows :

- annex A (informative) - Tail lift mechanisms and types ;
- annex B (normative) - Crushing and shearing ;
- annex C (informative) - Structure and drive system ;
- annex D (normative) - Drive systems - Steel wire ropes and chains ;
- annex E (normative) - Examples for logicity ;
- annex F (informative) - Marking ;
- annex G (informative - Unintentional operation ;
- annex H (normative) - Verification by the installer ;
- annex I (informative) - Overloads onto a platform at vehicle floor level ;
- annex ZA (informative) - Relationship of this European Standard with EU Directives.

This standard includes a Bibliography.

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.

Introduction

This European Standard is a type C standard, as stated in EN 1070.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

While producing this standard, it was assumed that :

- only trained persons operate the machine ;
- components without specific requirements are :
 - a) designed in accordance with the usual engineering practice and calculation codes, Including all failure modes,
 - b) of sound mechanical and electrical construction ;
 - c) made of materials, with adequate strength and of suitable quality ;
 - d) free of defects ;
- harmful materials, such as asbestos are not used ;
- components are kept in good repair and working order, so that the required dimensions remain fulfilled despite wear ;
- by design of the load bearing elements, a safe operation of the machine is assured for loading ranging from zero to 100 % of the rated possibilities and during the tests ;
- with the exception of the items listed below, a mechanical device built according to good practice and the requirements of the standard, will not deteriorate to a point of creating a hazard without the possibility of detection ;
- the equipment is capable of operating correctly within a temperature range of -15 °C to + 40 °C ;
- a negotiation takes place between the manufacturer of the tail lift and the installer for the characteristics of the supporting wheeled vehicle (see also clause 6 of the standard), the fitting of the tail lift on the vehicle and between the installer and the user relating to the specific conditions of the use, places of use of the machinery, also some of the characteristics of the vehicle, the appropriate language ;
- the working area is adequately lit (if lighting is not provided with the tail lift) ;
- if the place of installations allows a vertical falling height of persons of more than 3 meters notwithstanding the limited travel height indicated in the scope, means external to the machine are used to limit this falling height to 3 meters.

1 Scope

This European Standard specifies safety requirements for design of tail lifts as defined in 3.1 for mounting on wheeled goods vehicles. It also specifies the verification of such tail lifts and the safety information that shall be provided for their use.

This European Standard deals with the technical requirements to minimize the hazards listed in clause 4 which can arise during the operation of tail lifts when carried out in accordance with the specifications as intended by the manufacturer or his authorized representative.

It applies to tail lifts :

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- used for the purpose of loading and/or unloading such vehicles ;
- intended to be fitted, temporarily or permanently, either inside or on the front, side or rear of the wheeled vehicle ;
- driven either by hand or electric powered ;
- equipped with a platform to support loads which comprise goods, an operator, or a combination of the two ;
- with a maximum lifting height not exceeding 3 m above ground, the measurement shall be made when the platform is unloaded ;
- rotary type with a maximum lifting height not exceeding 2 m ;
- used as a link bridge when intended by the manufacturer.

NOTE A tail lift should not be confused with a link bridge attached to a loading dock which is included within the definition of a dock leveller and is outside the scope of this standard.

Loading and/or unloading operations include the use of a tail lift to lift and/or lower loads

This European Standard does not establish the additional requirements for :

- operation in severe conditions (e.g extreme environmental conditions such as freezer applications, high temperatures, corrosive environment, tropical environment, contaminating environments, strong magnetic fields) ;
- operations subject to special rules (e.g potentially explosive atmospheres) ;
- supply by electrical networks and the electrical circuit ;
- power take off part of the system ;
- cable less remote control and electronic equipment ;
- electromagnetic compatibility (emission-immunity) ;
- static electricity problems ;
- handling of loads the nature of which could lead to dangerous situations (e.g molten metal, acids/bases, radiating materials, specially brittle loads) ;
- hazards occurring during installation, transportation, decommissioning ;
- hazards occurring when handling suspended loads which may swing freely ;
- requirement related to the use on public roads ;
- wind pressure in and out of use ;
- direct contact with foodstuffs ;
- earthquake ;
- lightning.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the 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 (including amendments).

EN 292-1:1991, *Safety of machinery - Basic concepts, general principles for design - Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery - Basic concepts, general principles for design - Technical principles and specifications.*

EN 292-2:1991/A1:1995, *Safety of machinery - Basic concepts, general principles for design - Technical principles and specifications (Amendment 1:1995).*

EN 457, *Auditory danger signals - General requirements - Design and testing.*

EN 574:1996, *Safety of machinery - Two hand control device – Functional aspects – Principles for design.*

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

EN 982, *Safety of machinery - Safety requirements for fluid power systems and components – Hydraulics.*

EN 1005-3, *Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation.*

EN 1050, *Safety of machinery - Principles for risk assessment.*

EN ISO 14122-2, *Safety of machinery - Permanent means of access to machinery - Part 2: Working platforms and walkways (ISO 14122-2:2001).*

EN 61310-1, *Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals.*

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3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

tail lift

lifting device intended for installation on or in a wheeled vehicle and which is used for loading and/or unloading this vehicle. The device consists essentially of a platform, a drive system, supporting elements and one or more control positions

3.2

light tail lift

tail lift whose nominal load does not exceed 500 kg

3.3

link bridge

application of a tail lift in which the platform is used to span from its associated vehicle, to any elevated position (that may be for example a dock or another vehicle), for the purpose of transferring loads to or from the vehicle

3.4

tail lift mechanisms

see examples in annex A (informative)

3.5

types of tail lifts

see annex A (informative)

3.6

wheeled vehicle

vehicle, or vehicle body which is intended for carrying goods and/or persons, for road, off-road or rail transport, but excluding aircraft ground support equipment and/or marine applications

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3.7

operator

any person given the task of operating the tail lift

NOTE This is a restricted version of the definition given in EN 292-1:1991.

3.8

manufacturer

one which makes the tail lift

3.9

travelling position

any configuration which the tail lift is intended to have while the vehicle is in motion

3.10

working position

any configuration of the tail lift in which the platform is intended to handle a load in an operating position

3.11

operating position

any configuration of the tail lift other than its travelling position

3.11.1

opening

any movement of the platform between a travelling position and a working position

3.11.2

closing

any movement of the platform from a working position to a travelling position

3.11.3

tilting

any angular movement to adjust vertically the platform when it is in a working position

3.12

working area

area on and around the platform and the controls

3.13

danger zone

any zone on, under or in the path of the platform as well as around any part of the mechanism in which a person is exposed to risk of injury or damage to health

NOTE This definition shall not preclude the platform being a working area

3.14

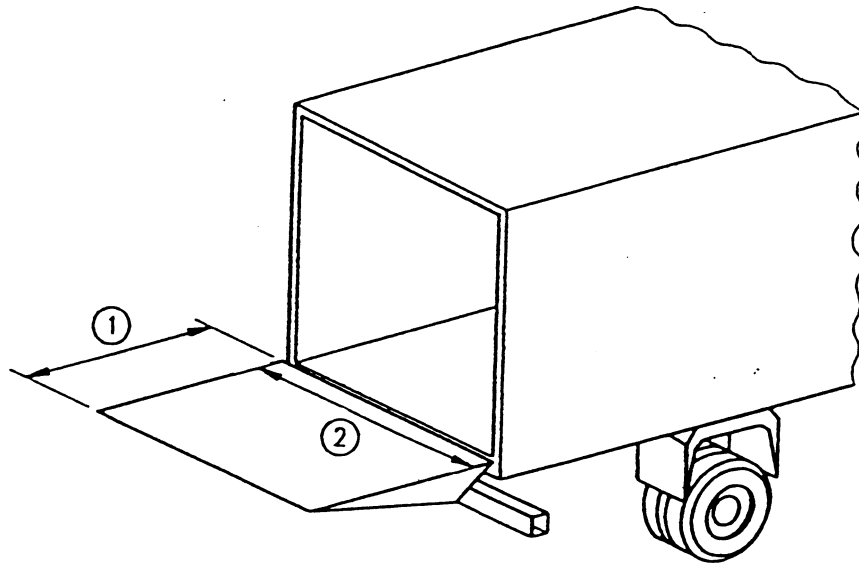
platform width

dimension of the platform measured parallel to the edge adjacent to the vehicle in the position of Figure 1

3.15

platform depth

dimension of the platform measured perpendicularly to the edge adjacent to the vehicle in the position of Figure 1

**Key**

- 1 Platform depth
- 2 Platform width

Figure 1 — Platform width and depth

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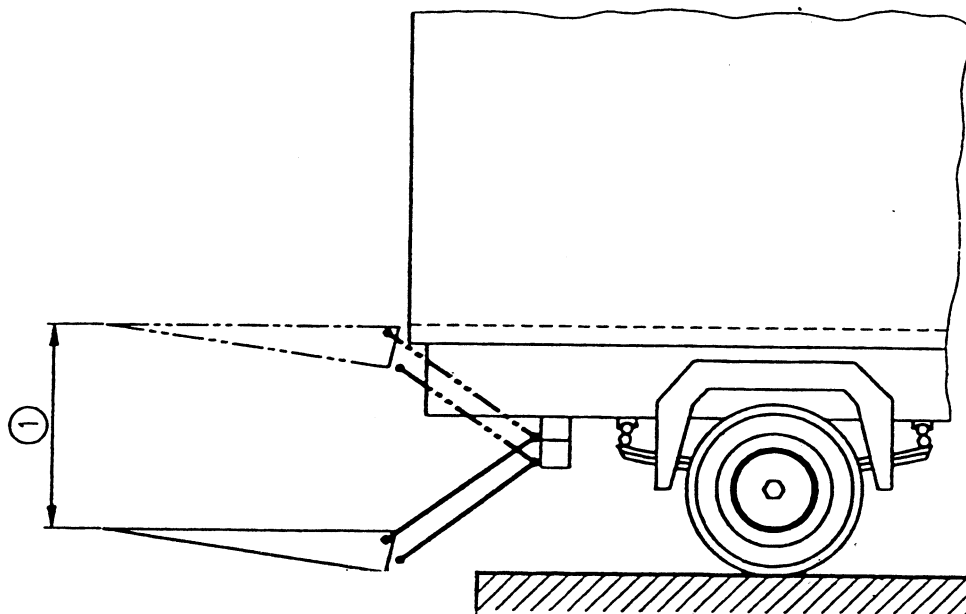
3.16**platform vertical travel distance**

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distance between the lowest and the highest positions respectively the platform can assume when its surface is horizontal (see Figure 2)

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NOTE The travel distance is a different concept from the height.

**Key**

- 1 Vertical travel distance

Figure 2 — Platform vertical travel distance

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3.17

vertical speed

platform vertical travel distance divided by the time taken by the platform to move through this distance

3.18

load

any mass applied to the platform surface. It includes payload plus any load handling equipment and the mass of the operator if he is standing on the platform

3.19

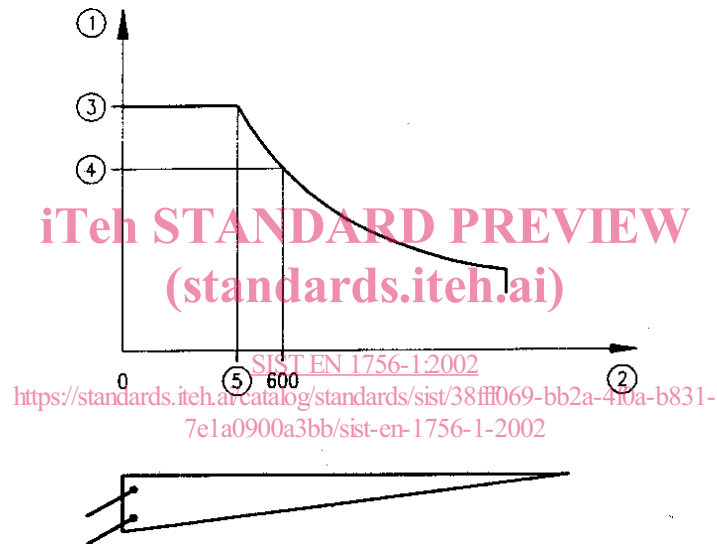
maximum load

greatest permitted load as a function of the position of its centre of gravity on the platform as specified by the manufacturer (see Figure 3)

3.20

nominal load

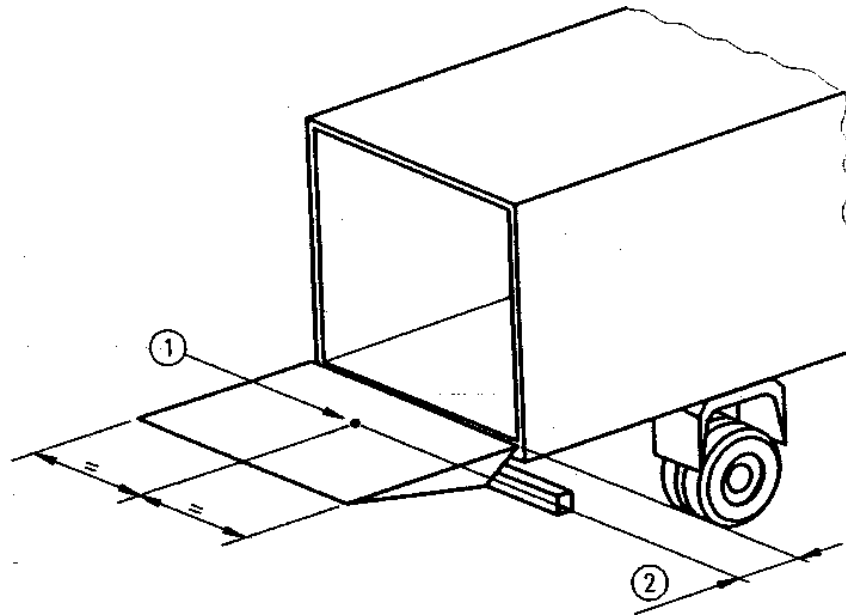
maximum load having its centre of gravity on the centre line of the platform and placed at a distance from the edge adjacent to the vehicle in elevated working position of either half the platform depth or 600 mm, whichever is the lesser distance (see Figures 3 and 4)



Key

- 1 Load
- 2 Distance
- 3 Maximum load
- 4 Nominal load
- 5 Distance as defined by the manufacturer

Figure 3 — Maximum and nominal load on the platform



Key

- 1 Centre of gravity of the load
- 2 Half platform depth or 600 mm

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Figure 4 — Nominal load

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3.21

control device

any device used to operate the tail lift

EXAMPLE button, switch, joystick, pedal, lever or a combination of these.

3.22

control position

any location equipped with the necessary control devices to allow the tail lift to be operated. In the case of portable controls, the control position is any location in which the operator may stand when using the portable control

3.23

drive system

any devices used to generate the movements of the tail lift (see for examples annex C)

3.24

working pressure

pressure at which each components is designed to operate in steady-state lifting and/or tilting conditions

3.25

maximum working pressure

pressure resulting from transient conditions or from the application of permitted load to the platform for example during link bridge operations or when the vehicle is standing on a gradient

3.26

installer

any person or organization fitting the tail lift onto the vehicle and commissioning it

3.27

trained person

designated person, suitably trained qualified by knowledge and practical experience, and provided with the necessary instructions to enable the required operation, test and/or examination to be carried out safely

3.28

appropriate language

language of the country in which the tail lift's wheeled vehicle is first registered, or, by agreement with the user, a language of the country in which the vehicle will be predominantly used

4 List of hazards

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce risk (see Table 1 based on EN 1050).

Table 1 — List of significant hazards

Clause	Significant hazards	Ap- plica- -ble	Not Ap- plica- -ble	Clause of this standard
4.1	Mechanical hazards, due to :			
	- machine parts or workpieces, e.g. :			
	a) shape ;	X		5.13.3
	b) relative location		X	
	c) mass and stability (potential energy of elements which may move under the effect of gravity)	X		5.5.2 ; 5.13 ; annex I
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion) ;	X		5.4.2 ; 5.4.3 ; 5.4.4
	e) inadequacy of mechanical strength	X		5.12 ; 5.14.2.1 ; 5.14.2.2 ; 5.14.3.2 ; 5.14.3.3
	- accumulation of energy inside the machinery, e.g. :			
	f) elastic elements (springs)	X		8.4.2.4
	g) liquids and gases under pressure ;	X		5.14.3.2 ; 5.14.3.3
4.1.1	Crushing hazard	X		5.11 ; annex B
4.1.2	Shearing hazard	X		5.11 ; annex B
4.1.3	Cutting or severing hazard	X		NOT DEALT WITH
4.1.4	Entanglement hazard	X		5.14.2.1
4.1.5	Drawing-in or trapping hazard	X		8.4.1 ; annex B
4.1.6	Impact hazard	X		5.2 ; 5.4 ; 5.10.2 ; 5.13.3 ; 5.18.2
4.1.7	Stabbing or puncture hazard		X	

(continued)

Table 1 – List of significant hazards (continued)

Clause	Significant hazards	Ap- plica- -ble	Not Ap- plica- -ble	Clause of this standard
4.1.8	Friction or abrasion hazard		X	
4.1.9	High pressure fluid injection or ejection hazard	X		5.14.3.2 ; 5.14.3.3
4.2	Electrical hazards, due to :			
4.2.1	Contact of persons with live parts (direct contact)	X		NOT DEALT WITH
4.2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	X		NOT DEALT WITH
4.2.3	Approach to live parts under high voltage	X		NOT DEALT WITH
4.2.4	Electrostatics phenomena		X	
4.2.5	Thermal radiation or other phenomena such as the projection of molten particles and chemical effects from short circuits, overloads, etc..		X	
4.3	Thermal hazards, resulting in :			
4.3.1	Burns, scalds and other injuries by a possible contact of persons with object or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	X		
4.3.2	Damage to health by hot or cold working environment		X	
4.4	Hazards generated by noise, resulting in			
4.4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)		X	
4.4.2	Interference with speech communication, acoustic signals, etc.		X	
4.5	Hazards generated by vibration			
4.5.1	Use of hand-held machines resulting in a variety of neurological and vascular disorders		X	

(continued)