SLOVENSKI STANDARD
SIST EN 1756-2:2004

01-november-2004

Dvigne plošči adi - Dvigne plošči adi, nameščene na cestna vozila - Varnostne zahteve - 2. del: Dvigne plošči adi za potnike

Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 2: Tail lifts for passengers

Hubladebühnen - Plattformlifte für die Anbringung an Radfahrzeugen - Sicherheitsanforderungen - Teil 2: Hubladebühnen für Passagiere

Hayons élévateurs - Hayons élévateurs à monter sur véhicules roulants - Prescriptions de sécurité - Partie 2: Hayons élévateurs pour passagers

Ta slovenski standard je istoveten z: **EN 1756-2:2004**

ICS:

53.020.99	Druga dvigalna oprema	Other lifting equipment

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English version

Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 2: Tail lifts for passengers

Hayons élévateurs - Hayons élévateurs à monter sur véhicules roulants - Exigences de sécurité - Partie 2: Hayons élévateurs pour passagers

Hubladebühnen - Plattformlifte für die Anbringung an Radfahrzeugen - Sicherheitsanforderungen - Teil 2: Hubladebühnen für Passagiere

This European Standard was approved by CEN on 5 May 2004.

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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.

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Foreword

This document (EN 1756:2004) 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of an identical text or by endorsement, at the latest by January 2005 and conflicting national standards shall be withdrawn at the latest by January 2005.

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 EU Directive(s).

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

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 document 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 implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

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;

— 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), the fitting of the tail lift on or in 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 and 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 m notwithstanding the limited travel height indicated in the scope, means external to the machine are used to limit this falling height to 3 m.

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

When the 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 built according to the provisions of this type C standard.

1 Scope

Part 2 of standard EN 1756 specifies safety requirements for design of tail lifts as defined in 3.1 for mounting on wheeled passenger vehicles.

Vehicles for the loading of disabled passengers onto aircraft and ships are included within the scope of the standard (although dock-mounted lifts are excluded).

It also specifies the verification of such tail lifts and the safety information that shall be provided for their use.

This document deals with the technical requirements to minimise 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 authorised representative.

It applies to passenger tail lifts:

— used for the purpose of embarking and/or disembarking passengers to and from 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 by electric power;

— equipped with a platform to support passengers who may be pedestrians or riders in wheelchairs and may be accompanied by an attendant.

Embarking and/or disembarking operations include the use of a tail lift to lift and/or lower passengers, and if specifically approved by the manufacturer, for use as a link bridge.

The standard covers the significant hazards which could occur when a tail lift is used as intended and under the conditions foreseen by the manufacturer. A list of significant hazards is given in clause 4.

This document is not applicable to tail lifts which are manufactured before the date of publication of this document by CEN.

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 574,1996, *Safety of machinery — Two-hand control devices — 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 their components — Hydraulics.*

EN 60204-1,1997, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997).*

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

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

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

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

3 Terms and definitions

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

3.1
tail lift
lifting device suitable for installation on or in a wheeled passenger vehicle and which is used for embarking passengers into or disembarking passengers from such a vehicle. Such passengers may in particular be of reduced mobility and include those in wheelchairs

The device consists essentially of a platform, a drive system, a support structure and one or more control positions

3.2
link bridge
application of a tail lift in which the platform is used to span from its associated vehicle to any elevated position for the purpose of transferring passengers to or from the vehicle

3.3
tail lift mechanisms
see annex A (informative)

3.4
types of Tail lifts
see annex A (informative)

3.5
wheeled passenger **vehicle**
vehicle, or vehicle body which is intended for carrying persons, for road, off-road or rail transport, see also scope

3.6
operator
any person given the task of operating the tail lift

NOTE 1 This is a restricted version of the definition given in EN ISO 12100-1.

NOTE 2 The operator may in certain cases be a trained passenger.

3.7
responsible person
any person – driver, trained attendant, conductor – who is in charge of supervising the use of the tail lift

3.8
manufacturer
the 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 passengers

3.11
operating position
any configuration of the tail lift other than its travelling position

3.12
opening
any movement of the platform between a travelling position and a working position

3.13
closing
any movement of the platform from a working position to a travelling position

3.14
tilting
any angular movement to adjust vertically the platform when it is in a working position

3.15
working area
area on and around the platform and the controls

3.16
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 should not preclude the platform being a working area.

3.17
platform width
dimension of the platform measured parallel to the edge adjacent to the vehicle (see Figure 1)

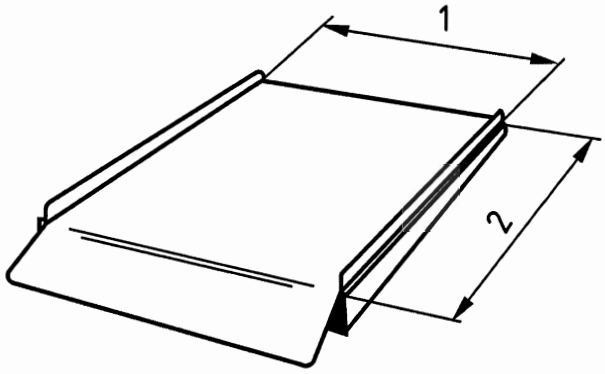
In the case of a rotary lift having a rectangular platform, the width is the dimension of the platform perpendicular to the direction in which the passenger moves when entering and leaving the platform.

The *effective* width is that available to support passengers and/or wheelchairs.

3.18
platform depth
dimension of the platform measured perpendicularly to the edge adjacent to the vehicle (see Figure 1)

In the case of a rotary lift having a rectangular platform, the depth is the dimension of the platform parallel with the direction in which the passenger moves when entering and leaving the platform.

The *effective* depth is that available to support passengers and/or wheelchairs.



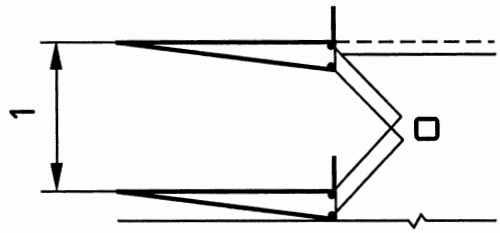
Key

1 Platform width
2 Platform depth

Figure 1 — Platform width and depth

3.19
effective area
area defined by the effective width and the effective depth of the platform

3.20
platform vertical travel distance
distance between the lowest and the highest positions respectively the platform can assume when its surface is horizontal (see Figure 2)



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

Key

1 Vertical travel distance

Figure 2 — Platform vertical travel distance

3.21
vertical speed
platform vertical travel distance divided by the time taken by the platform to move through this distance

3.22
load
any mass applied to the platform surface. It includes the mass of any passenger, attendant, wheelchair or mobility aid

3.23
maximum load
highest permissible load uniformly distributed over the effective area of the platform

3.24
control device
any device used to operate the tail lift

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

3.25
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

3.26
drive system
any devices used to generate the movements of the tail lift (see annex D (normative))

3.27
working pressure
pressure at which each component is designed to operate in steady-state lifting and/or tilting conditions

3.28
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

3.29
installer
any person or organisation given the task of fitting and commissioning the tail lift onto the vehicle

3.30
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

3.31
appropriate language
language of the country in which the tail lift's wheeled vehicle is first registered, or, by agreement with the vehicle specifier, a language of the country in which the vehicle will be predominantly used

4 List of hazards

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

Table 1 — List of hazards

Clause	Hazards	Appli cable	Not Appli-cable	Clause of EN 1756-2
4.1	**Mechanical hazards, due to:**			
	-machine parts or work pieces, 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		5.6; 5.13, annex G
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion);	X		5.4.1; 5.4.2; 5.4.3
	e) inadequacy of mechanical strength	X		5.12; 5.14.2.1; 5.14.2.2; 5.14.3.1; 5.14.3.2
	- accumulation of energy inside the machinery, e.g.:			
	f) elastic elements (springs)	**X**		8.4.2.4
	g) liquids and gases under pressure;	X		5.14.3.1; 5.14.3.2
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

Table 1 *(continued)*

Clause	Hazards	Appli cable	Not Appli-cable	Clause of EN 1756-2
4.1.7	Stabbing or puncture hazard		X	
4.1.8	Friction or abrasion hazard		X	
4.1.9	High pressure fluid injection or ejection hazard	X		5.14.3.1; 5.14.3.2
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**		X	
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	

Table 1 *(continued)*

Clause	Hazards	Appli cable	Not Appli-cable	Clause of EN 1756-2
4.5	**Hazards generated by vibration**			
4.5.1	Use of hand-held machines resulting in a variety of neurological and vascular disorders		X	
4.5.2	Whole body vibration, particularly when combined with poor postures		X	
4.6	Hazards generated by radiation			
4.6.1	Low frequency, radio frequency radiation, micro waves		X	
4.6.2	Infrared, visible and ultraviolet light		X	
4.6.3	X and gamma rays		X	
4.6.4	Alpha, bet rays, electron or ion beams, neutrons		X	
4.6.5	Lasers		X	
4.7	**Hazards generated by materials and substances (and their constituent elements) processed or used by the machinery**			
4.7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts		X	
4.7.2	Fire or explosion hazard	X		5.9
4.7.3	Biological or microbiological (viral or bacterial) hazards		X	
4.8	**Hazards generated by neglecting ergonomic principles in machinery design as, e.g. hazards from:**			
4.8.1	Unhealthy postures or excessive effort	X		5.2; 5.3; 5.18.2; annex B
4.8.2	Inadequate consideration of hand-arm or foot-leg anatomy	X		5.2; 5.18.2, annex B; annex E
4.8.3	Neglected use of personal protection equipment	X		8.4.2.3