



SLOVENSKI STANDARD
oSIST prEN 1493:2024
01-maj-2024

Dvigala za servisiranje vozil

Vehicle lifts

Fahrzeug-Hebebühnen

Élévateurs de véhicules

Ta slovenski standard je istoveten z: prEN 1493

ICS:

43.180	Diagnostična, vrževalna in preskusna oprema	Diagnostic, maintenance and test equipment
53.020.99	Druga dvigalna oprema	Other lifting equipment

oSIST prEN 1493:2024

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Vehicle lifts

Constructeurs de véhicules

Fahrzeug-Hebebühnen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 98.

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European foreword

This document (prEN 1493:2024) 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 1493:2023.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

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

Compared to EN 1493:2010, the following changes have been made:

- The Terms and Definitions chapter (and consequently the entire text of the standard) has been completely revised
- The presence of people on the raised vehicle is admitted but only in special cases
- References for motorcycles and light quadricycles were added
- Resolved the inconsistency on the interpretation of the normative vehicle in the case of chassis supporting lifts with arms
- Control devices: completely revised, dividing the controls into two categories: Fixed controls and mobile controls
- For multiple element lifts (e.g. mobile columns) the “rated load”, intended as the maximum weight of the vehicle to be lifted, is replaced by the “lifting capacity” referred to the single column
- In the case of special vehicles lifts, two distinct rated loads can be provided: One for normal vehicles (and therefore based on the Normative Vehicle) and the other specific for the special vehicles for which the vehicle lift is intended
- Rope calculation: completely revised, with reference to ISO16625: 2013 and ISO 4301-1: 2016 standards
- Vehicle stop devices in wheel support lifts: revised calculation and verification method
- Arm locking devices: revised calculation and verification method. Added prescriptions for anti-slip safety and play limitation between the various elements of the arms
- Important interventions on the instruction manual requirements

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Introduction

This document is a type-C standard as stated in EN ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

The object of this document is to define rules for safeguarding persons against the risk of accidents associated with the operation of vehicle lifts.

While devising this document it was assumed that only authorized persons operate or use the vehicle lifts and that the working area is sufficiently lit.

This standard assumes that an operator will lower a raised vehicle to the ground level or as low as possible when he/she is not working on it.

The requirement concerning loading control is not deemed pertinent to this standard in so far as:

- experience and the state of the art suggests that failing to observe this requirement has not historically given rise to unsafe situations;
- such devices which would give protection against overall and local overloading are not currently available in forms which cover all eventualities;
- the weight and weight distribution is freely available for the type of vehicles to be lifted and as such it is the responsibility of the user to prevent an unsafe situation arising;
- vehicle lifts are generally designed to suit the maximum weight of vehicle to which it would reasonably be subjected, hence the normal duty of a vehicle lift is substantially lower than the maximum.

1 Scope

This document is applicable to vehicle lifts designed to raise vehicles for the purpose of examining and working on or under the vehicles whilst in a raised position.

Vehicle lifts are not intended to lift persons, but in case of particular use like lift for vehicles periodical technical inspection or lifts for railbound vehicles, it is allowed for a person to enter a lifted vehicle, provided that adequate safety measures are defined by the manufacturer and highlighted in the instruction manual.

The vehicle lift may consist of one or more lifting units, stationary or mobile.

The floor or ground supporting the vehicle lift in use is assumed to be horizontal (tolerance should be indicated).

This document does not apply to:

- o Vehicle lifts designed to lift the vehicle partially
- o Vehicle lifts movable when loaded
- o Vehicle lifts where the load carrying device can be tilted
- o Vehicle lifts where power supply is given by internal combustion engines
- o Equipment for power driven parking of motor vehicles (see EN1410:2003 +A1:2009)

Noise is not considered in this document because in practice it does not play a role in vehicle lifts.

This document is applicable to vehicle lifts which are manufactured six months after the date of its publication as a European Standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13557:2003+A2:2008, *Cranes - Controls and control stations*

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)*

EN 60529:1991,¹⁾ *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989 + A1:1999 + A2:2013)*

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices (IEC 60947-5-1:2016 + COR1:2016)*

EN ISO 3691-5:2015+AC:2016+A1:2020, *Industrial trucks - Safety requirements and verification - Part 5: Pedestrian-propelled trucks (ISO 3691-5:2014)*

EN ISO 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

¹⁾ This document is impacted by A1:2000 and A2:2013.

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EN ISO 4414:2010, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1:2015, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13849-2:2012, *Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2:2012)*

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

ISO 4301-1:2016, *Cranes — Classification — Part 1: General*

ISO 16625:2013, *Cranes and hoists — Selection of wire ropes, drums and sheaves*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 General**3.1.1 vehicle lift**

lifting device with guided load carrying device for lifting land based means of transportation and which is designed to allow working on or under the raised vehicle

Note 1 to entry: Land based means of transportation are cars, motorcycles, lorries, buses, trams, rail vehicles, industrial trucks and similar,

Note 2 to entry: The following types of vehicle lift are examples of those covered by this definition: single and multi-column lifts (e.g. two or four column lifts), single and multi-cylinder lifts, mobile column lifts, scissor and parallelogram lifts, double scissor lifts, in-ground piston lifts, in-ground scissor lifts, short stroke lifts, which support vehicle wheels, chassis or other designated lifting points (see Annex C).

3.1.2 normative vehicle

theoretical vehicle representative of the normal vehicles on which a vehicle lift is intended to operate, used as reference vehicle for structural calculations of the vehicle lift itself (see 4.7.4.2, 4.7.4.3 and Table 3)

3.1.3 normal vehicle

land based mean of transport such as cars, motorcycles, lorries, buses, trams, trucks and similar commonly on the road

3.1.4

special vehicle

vehicle that does not fall within the *normal vehicle* types and for which the Normative Vehicle is no longer representative (i.e.: fork-lifts, dumpers, snowcats, rail bound vehicles, mobile cranes, ...)

3.1.5

wheel track (WT)

distance between the centre lines of the wheels on one axle or between centre lines of wheel pairs on twin wheel axles

3.1.6

wheelbase

distance between the centres of wheels of front and rear axle or from the centre of the wheels on the front axle to a point mid-way between axle pairs on twin axle vehicles

3.1.7

rated load

maximum load that a vehicle lift has been designed to carry referring to the normative vehicle or to special vehicles

3.1.8

lifting capacity

maximum load that a single independent lifting unit has been designed to carry when part of a multiple lifting unit lift

3.1.9

lifting height

distance between the floor where the user is standing and the vehicle's pickup points

3.1.10

hazardous area

area under the load carrying device and under the lifted vehicle

Note 1 to entry: The hazardous area is part of the hazard zone according to EN ISO 12100:2010, 3.11.

3.1.11

operator

trained person authorised to use the vehicle lift by the workshop safety manager

3.1.12

bystander

person other than the operator near the vehicle lift

3.1.13

initial position

lower limit position of the carrying device

3.1.14

unauthorised use

use by a person who has not received permission to operate the vehicle lift and instruction on its safe operation

3.1.15

periodical test investigation (PTI)

periodic roadworthiness tests for motor vehicles and their trailers in accordance with current legislation

prEN 1493:2024 (E)**3.2 Vehicle lift parts****3.2.1****drive system**

components and systems for lifting and lowering movements, including power source, controls and lifting elements

Note 1 to entry: Examples are

- in electrohydraulic vehicle lifts: Electrohydraulic unit, cylinders, ropes, electric controls;
- in electromechanical vehicle lifts: Electric motor + transmission (pulley, gear box, ...), lifting screws, electric controls.

3.2.2**lifting unit**

lifting device in general made up of a load carrying device, a supporting structure and its drive system

Note 1 to entry: A lifting unit may share parts of its drive system with other lifting units.

Note 2 to entry: Examples of lifting units are one column of a two column lift (see Figure C.2), one unit of a double-scissor lift (see Figure C.3).

3.2.3**independent lifting unit**

lifting unit not sharing any part of or all of the drive system with other lifting units

Note 1 to entry: Example of an independent lifting unit is a single column of a mobile column lift.

3.2.4**supporting structure**

part(s) of the vehicle lift which offer guidance to the load carrying device, but which do not move when the load is raised/lowered

EXAMPLE: The posts on a two/four post lift.

3.2.5**load carrying device**

part(s) of the vehicle lift which support the load either by direct contact with the vehicle or through contact with pick-up plates and/or pads

Note 1 to entry: The load carrying device is the part of the structure of the vehicle lift which is moving when the load is raised/lowered.

EXAMPLE: Platforms, carrying arms or other mechanical devices designed to raise and support a vehicle by designated lifting points.

3.2.6**lifting element**

medium through which the force is transmitted from the power source to the load carrying device

Note 1 to entry: Lifting elements include hydraulic and pneumatic cylinders, lead screw and nut systems as well as any flexible connections such as steel wire ropes and chains but excluding the ropes/chains having the sole scope of synchronising different lifting units.

3.2.7

mechanical lifting element

lifting element constructed from engineering materials and which may be reasonably subjected to wear

Note 1 to entry: Mechanical lifting elements are e.g. ropes, chains, carrying nuts and gears. Hydraulic and pneumatic cylinders do not fall under this definition.

3.2.8

carrying arm

load carrying device attached at one end, directly or indirectly to the lifting element and supporting the load at its other end

Note 1 to entry: Carrying arms are as an example used on two column lifts.

3.2.9

platform

horizontal surface or structure, part of the load carrying device, designed to drive on it with the vehicle when entering/leaving the vehicle lift

Note 1 to entry: E.g. tracks in scissor lifts

3.2.10

pick-up plate

part of the load carrying device, e.g. on two column lifts with carrying arms, which has direct contact to the vehicle and which has an assigned position on the load carrying device

Note 1 to entry: See Figure 1.

3.2.11

pick-up pad

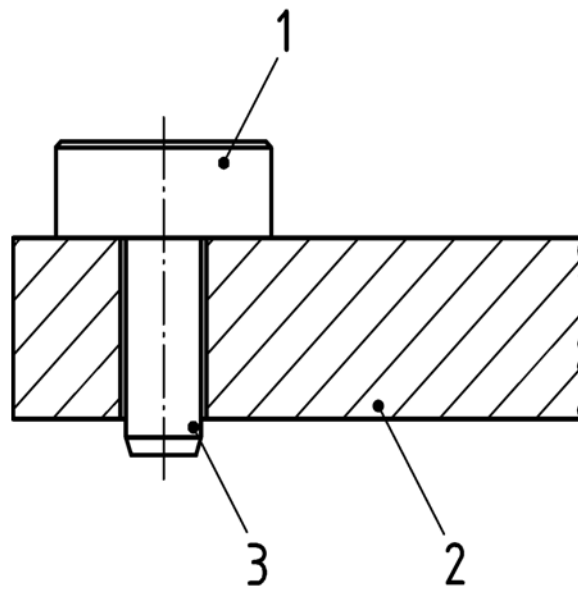
vehicle supporting pad which has direct contact with the vehicle but which does not have an assigned position, e.g. pads used on wheel free systems with platforms

Note 1 to entry: See Figure 2.

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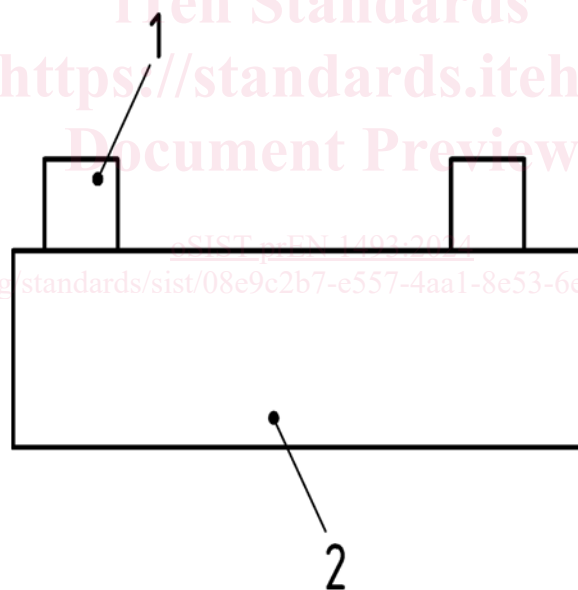
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**Key**

- 1 pick-up plate
- 2 load carrying device
- 3 pin

Figure 1 — Pick-up plate

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**Key**

- 1 pick-up pad
- 2 platform

Figure 2 — Pick-up pad