



SLOVENSKI STANDARD
SIST EN 1493:2023

01-januar-2023

Nadomešča:
SIST EN 1493:2010

Dvigala za servisiranje vozil

Vehicle lifts

Fahrzeug-Hebebühnen

Élévateurs de véhicules

Ta slovenski standard je istoveten z: EN 1493:2022

ICS:

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

SIST EN 1493:2023

en,fr,de

EUROPEAN STANDARD

EN 1493

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2022

ICS 43.180; 53.020.99

Supersedes EN 1493:2010

English Version

Vehicle lifts

Élévateurs de véhicules

Fahrzeug-Hebebühnen

This European Standard was approved by CEN on 12 September 2022.

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Contents	Page
European foreword.....	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
3.1 General.....	8
3.2 Lift parts	10
3.3 Lift type	13
3.4 Safety related parts	15
4 Safety requirements and/or measures	17
4.1 General.....	17
4.2 Preventing unauthorised operation.....	17
4.3 Control devices.....	17
4.3.1 Hold-to-run control	17
4.3.2 Grouped control devices.....	17
4.3.3 Logical operation.....	17
4.3.4 Marking.....	17
4.3.5 Unintentional operation.....	17
4.4 Controls.....	17
4.4.1 General.....	17
4.4.2 Fixed controls	18
4.4.3 Mobile controls	18
4.4.4 Controlling multiple Lifting Unit Lift.....	19
4.4.5 Emergency stop device.....	19
4.4.6 Stopping device.....	20
4.5 Duplicated drive systems	20
4.6 Speeds.....	20
4.7 Structural design of the supporting structure.....	20
4.7.1 General.....	20
4.7.2 Loads and forces.....	20
4.7.3 Load combinations	23
4.7.4 Load distribution.....	24
4.7.5 Lifting elements	32
4.7.6 Proof of stability against overturning	35
4.8 Drive system	36
4.8.1 Preventing uncontrolled motion.....	36
4.8.2 Preventing inadvertent moving from stationary condition when raised.....	36
4.8.3 Additional requirements for mechanical drives	36
4.8.4 Additional requirements for hydraulic drives	36
4.8.5 Additional requirements for pneumatic drives.....	37
4.9 Load carrying devices.....	38
4.9.1 Unintended motion of the load carrying device.....	38
4.9.2 Vehicle pick-up-plates	38
4.9.3 Vehicle pick-up pads	40

4.9.4	Locking systems of carrying arms	40
4.9.5	Prevention of rolling off	41
4.10	Additional requirements for lifts with balconies.....	42
4.11	Limiting the travel of the load carrying device.....	42
4.12	Unintended blocking of the load carrying device	43
4.13	Safety against rupture of mechanical lifting elements.....	43
4.14	Safety against leakage.....	44
4.14.1	Limiting the lowering speed.....	44
4.14.2	Protection against leakage.....	44
4.15	Additional requirements for lifts with more than one lifting units	44
4.16	Additional requirements for mobile lifts.....	45
4.16.1	Safety against unintended motion.....	45
4.16.2	Service brakes for vehicle lifts using powered mobility	45
4.16.3	Devices for moving manually mobile lifts	45
4.16.4	Derailment protection	45
4.16.5	Forces.....	45
4.16.6	Visibility.....	45
4.17	Protection against pinching and shearing.....	45
4.17.1	General	45
4.17.2	Safety distances.....	46
4.17.3	Other safety measures	46
4.18	Safety devices.....	47
4.18.1	General	47
4.18.2	Arrangement.....	47
4.18.3	Function of mechanical safety devices.....	47
4.18.4	Safety switches	47
4.18.5	Springs in safety devices	47
4.19	Protection against damage.....	48
4.19.1	Wearing parts	48
4.19.2	Lead screws.....	48
4.19.3	Installation of hoses, pipes and electrical equipment.....	48
4.20	Manually driven vehicle lifts	48
4.21	Electrical equipment	48
4.21.1	General	48
4.21.2	IP-code.....	48
4.21.3	Means of disconnecting the power supply	48
4.21.4	Batteries.....	49
4.22	Special requirements for vehicle lifts where it is permitted to stand under the load during lifting and lowering movement.....	49
4.22.1	Control devices	49
4.22.2	Control positions.....	49
4.22.3	Lifting and lowering speed.....	49
4.22.4	Safety against rupture or leakage of load bearing devices.....	49
4.22.5	Operation instructions	49
4.23	Additional requirements for vehicle lifts for motorcycles.....	49
5	Verification of the safety requirements and/or measures.....	50
5.1	General	50
5.2	Introduction	53
5.3	Design check.....	53
5.4	Manufacturing check.....	54
5.5	Visual verification	54
5.6	Practical tests.....	54

EN 1493:2022 (E)

5.6.1	General.....	54
5.6.2	Overload dynamic test.....	54
5.6.3	Overload static test.....	54
5.6.4	Functional tests.....	55
5.6.5	Electrical tests	55
6	Information for use	55
6.1	General.....	55
6.2	Marking.....	55
6.3	Operation instructions.....	56
6.3.1	Complete instructions	56
6.3.2	Digest of the instructions for use.....	58
6.4	Name plate.....	58
Annex A (informative) List of significant hazards		59
Annex B (informative) Structural calculations.....		61
Annex C (informative) Examples of solutions.....		66
Annex D (informative) Example of information about wind		98
Annex E (normative) Test procedure for unintended blocking of the load carrying device (4.12)		99
Annex F (normative) Additional requirements for wireless controls and control systems		100
Annex G (normative) Deflection test of a chassis supporting lift with carrying arms		104
Annex H (normative) Test method for platform end stop.....		106
Annex I (normative) Arm locking device proof test procedure		110
Annex J (normative) Test method for end stop of telescopic arms		111
Bibliography.....		112

European foreword

This document (EN 1493:2022) 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 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1493:2010.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered, are both indicated in the scope of this document. In addition, machinery should comply as appropriate with EN ISO 12100:2010 for hazards which are not covered by this document.

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.

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.

The requirement concerning loading control is not deemed pertinent to this document 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 lift is substantially lower than the maximum.

1 Scope

This document is applicable to stationary and mobile vehicle lifts, which are not intended to lift persons but which are designed to raise vehicles totally, for the purpose of examining and working on or under the vehicles whilst in a raised position. The vehicle lift may consist of one or more lifting units.

Power supply to the vehicle lift by internal combustion engines is not considered.

The floor or ground supporting the vehicle lift in use is assumed to be horizontal.

This document does not exclude a person from entering a lifted vehicle on wheel supporting lifts, e.g. for special works or for periodical technical inspection, and vehicle lifts for rail-bound vehicles.

This document does not contain requirements for hazards which may arise on vehicle lifts where the carrying device can be tilted.

NOTE Noise does not play a role in vehicle lifts in the majority of cases and is therefore not considered in this document.

This document does not apply to:

- vehicle lifts movable when loaded;
- equipment for power driven parking of motor vehicles (see EN 14010:2003+A1:2009).

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 60204-32:2008, *Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

EN 60529:1991¹, *Degrees of protection provided by enclosures (IP Code)*

EN 60947-5-1:2017², *Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices*

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

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

¹ As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

² As impacted by EN 60947-5-1:2017/AC:2020-05.

EN 1493:2022 (E)

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 such as cars, motorcycles, lorries, buses, trams, rail vehicles, industrial trucks and similar, and which is designed to allow working on or under the raised vehicle

Note 1 to entry: The guidance of the load carrying device is given by the supporting structure.

Note 2 to entry: The following types of vehicle lift are examples of those covered by this definition: single and multi-column lifts, single and multi-cylinder lifts, mobile column lifts, scissor and parallelogram 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 lift is intended to operate, used as reference vehicle for structural calculations of the lift itself (see 4.7.4.2, 4.7.4.3)

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 lift has been designed to carry referring to the normative vehicle or to special vehicles mentioned in 4.7.4.4

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**

competent and authorized person to operate the lift and work on the vehicle

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 lift and instruction on its safe operation

EN 1493:2022 (E)**3.1.15****periodical test investigation****PTI**

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

3.2 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 lifts: Electrohydraulic unit, cylinders, ropes, electric controls;
- in electromechanical 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 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

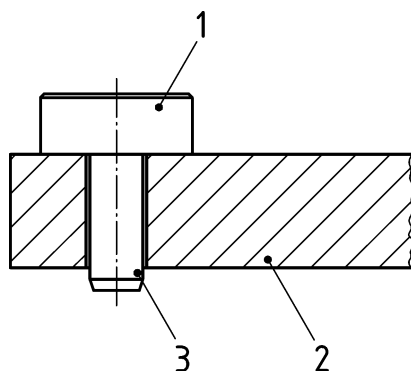
Note 1 to entry: See Figure 1.

3.2.11

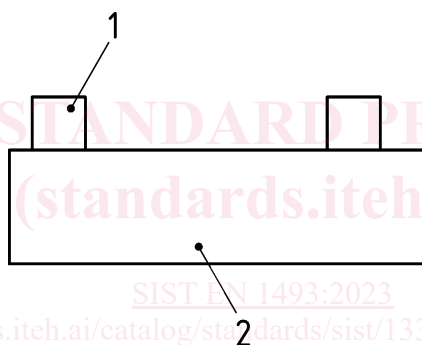
pick-up pad

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.

**Key**

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

Figure 1 — Pick-up plate**Key**

- 1 pick-up pad
- 2 platform

Figure 2 — Pick-up pad**3.2.12****roll off safety device**

device that prevents the vehicle from rolling off the platforms of wheel support vehicle lifts in the event of involuntary movement of the vehicle

Note 1 to entry: The roll off safety device is not the single wheel stop but is the whole system that prevents the vehicle from falling off (i.e. both wheel stops when you have two, the single wheel stop when you have one ...).

3.2.13**wheel stop**

part of roll off safety device at the end of a platform on vehicle lifts which opposes the movement of the wheel of the vehicle

3.2.14**end stop**

mechanical stop that limits the movement of elements within maximum admissible values, ensuring the maintenance of the intended function of the system

3.2.15**control device**

device through which the operator commands at least one of the working functions of the lift

3.2.16**fixed control**

control device fixed to the structure of the lift or in any case set in a predefined fixed position when the lift is installed (e.g. fixed control console, controls installed on the walls of the workshop where the lift is installed)

3.2.17**mobile control**

control device not fixed to the lift structure or somewhere else

3.2.18**remote control**

handheld control device connected to the lift's electrical system via cable or wireless that allows the lift to be operated remotely from the main control

3.2.19**consensus control device**

additional control having the sole function of confirming the command implemented by the main control

3.2.20**wheel free system**

lifting unit which is used in conjunction with a pit or vehicle lift with platform lifting the whole vehicle and allows the wheels to be removed

3.3 Lift type**3.3.1****multiple lifting unit lift**

combination of independent units lifts or two or more vehicle lifts matched to each other

Note 1 to entry: A mobile column lift or two or more lifts installed each one after in tandem with the other and synchronized with each other are examples of multiple lifting unit lift.

3.3.2**short stroke lift**

floor mounted vehicle lift with a maximum vertical travel of not more than 500 mm, which is not designed for working under the raised load

Note 1 to entry: These lifts are different to wheel free systems according to 3.2.20.

3.3.3**long lifting system**

lifting system consisting of several lifting units distributed over a distance of more than 15 m

3.3.4**scissor lift**

vehicle lift where the vehicle is supported on its wheels or chassis by one or two platforms, supported on a single foldable supporting structure