



SLOVENSKI STANDARD
oSIST prEN 12640:2019
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Intermodalne nakladalne enote in gospodarska vozila - Pritrdilna mesta za zavarovanje tovora - Minimalne zahteve in preskusi

Intermodal loading units and commercial vehicles - Lashing points for cargo securing - Minimum requirements and testing

Ladungssicherung auf Straßenfahrzeugen - Zurrpunkte an Nutzfahrzeugen zur Güterbeförderung - Mindestanforderungen und Prüfung

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EUROPEAN STANDARD
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English Version

Intermodal loading units and commercial vehicles - Lashing points for cargo securing - Minimum requirements and testing

Ladungssicherung auf Straßenfahrzeugen - Zurrpunkte
an Nutzfahrzeugen zur Güterbeförderung -
Mindestanforderungen und Prüfung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 119.

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

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European foreword

This document (prEN 12640:2018) has been prepared by Technical Committee CEN/TC 119 “Intermodal Loading Units and Cargo Securing (ILUCS)”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12460:2000.

Annex A is normative and Annex B is informative.

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prEN 12640:2018 (E)

1 Scope

This document specifies the minimum requirements and test methods for lashing points for cargo securing on commercial vehicles and intermodal loading units for cargo transport.

This document does not apply to:

- Vehicles and intermodal loading units manufactured before publication of this standard;
- Vehicles and intermodal loading units designed and constructed exclusively for the transport of bulk materials;
- Vehicles and intermodal loading units designed and constructed exclusively for the transport of specific cargo with particular securing requirements;
- Vehicles (delivery vans) in conformance to ISO 27956;
- ISO series 1 freight containers.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

Cargo Transport Unit (CTU)

commercial vehicle and intermodal loading unit Cargo transport unit (CTU)

3.2

cargo securing devices

components, which are form-fit, and / or force-fit acting in combination with the cargo and the vehicle or the vehicle structure (e.g. plug stakes/ stanchions, transverse beams, wedges)

3.3

horizontal lashing angle

3.3.1

longitudinal lashing angle β_x

angle between lashing device and longitudinal axis (x-axis) of a CTU in the plane of the loading area

3.3.2

transverse lashing angle β_y

angle between lashing device and transverse axis (y-axis) of a CTU in the plane of the loading area

3.4**lashing Capacity (LC)**

maximum allowed force that a lashing point is designed to sustain in use

3.5**lashing device**

device designed to be attached to the lashing points in order to secure the cargo

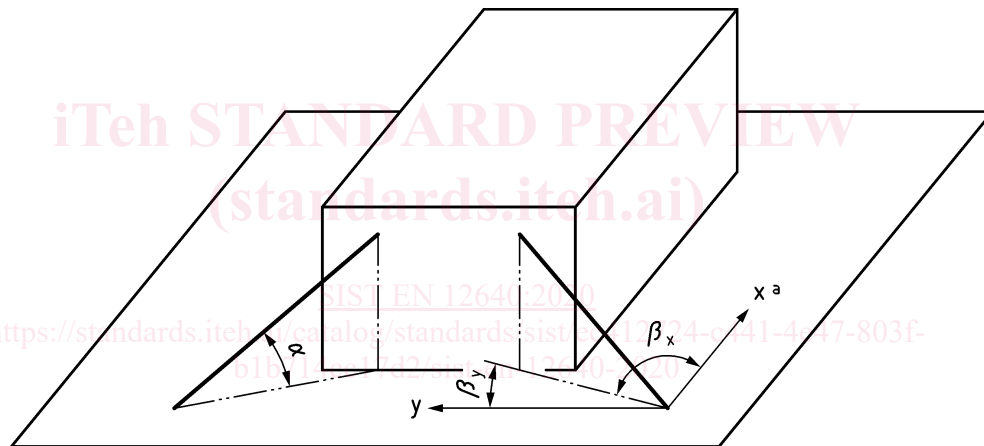
Note 1 to entry: Lashing devices as described in e.g. EN 12195-2/EN 12195-3/EN 12195-4.

3.6**lashing point**

securing device to which a lashing device may be directly attached and which can be e.g. an oval link, a hook, a ring, a lashing rail or a multi-point lashing system in the outer frame, or multiple fixation and continuous lashing systems at walls and/or floor/roof

3.7**vertical lashing angle α**

angle α between lashing device and the horizontal plane of the loading area (see Figure 1)

**Key**

- α vertical lashing angle
- β_x longitudinal lashing angle
- β_y transverse lashing angle

Figure 1 — Definition of lashing angles

4 Requirements**4.1 General**

The requirements shall be fulfilled either by lashing points or by multi-point lashing systems. Lashing points or multi-point lashing systems shall be designed such that they transmit the forces they receive into the structural elements of the CTU. They shall be located as near as possible to the platform longitudinal edges and/or integrated in the outer frame. For special load securing, optional lashing points and/or load securing devices may be fixed.

Lashing points or multi-point lashing systems should not be directly mounted in structure materials (e.g. wood, plastic), where the structure is subject to damage from normal loading operations.

4.2 Design requirements of lashing points

When mounted on top of the loading platform, in rest position they shall not project above the horizontal level of the loading platform.

The recesses in the loading platform required to accommodate the lashing points should be as small as possible.

Lashing points shall be available to withstand the lashing forces according to Table 1 applied from any direction within the conical area determined as follows (see Figure 1):

- vertical lashing angle α from about 0° to 90° , deviation of 5° is allowed;
- longitudinal lashing angle (β_x) from 0° to at least 180° , deviation of 5° is allowed.

The angle requirements may be fulfilled by combination of different types of lashing points and/or multi-point lashing systems.

Lashing points shall be able to take hooks as defined in Figure 2, when GVM of the CTU is more than 7 500 kg.

4.3 Design requirements of multi-point lashing system in the outer frame

Multi-point lashing systems shall be able to fulfil:

- vertical lashing angle α from 0° to 90° , deviation of 5° is allowed;
- longitudinal lashing angle (β_x) from 0° to at least 180° , deviation of 5° is allowed.

Multi-point lashing systems shall be able to take hooks as defined in Figure 2.

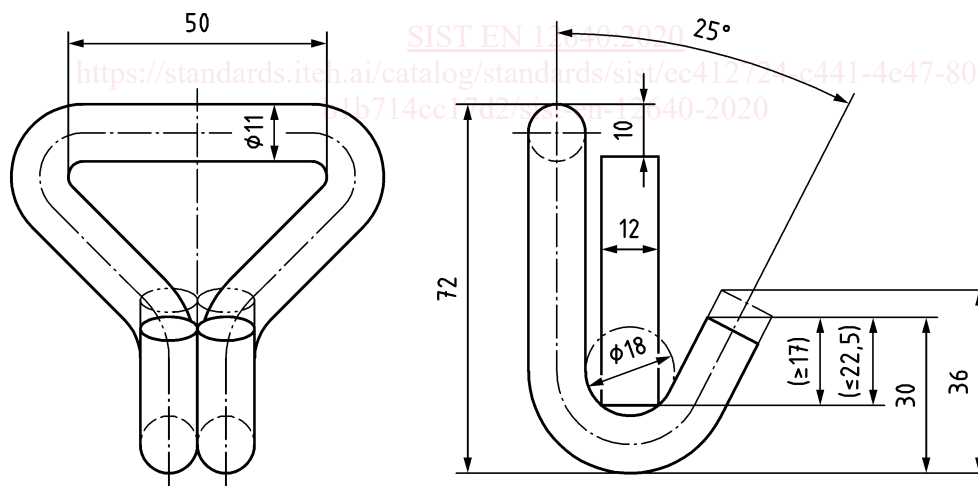


Figure 2 — Design hook

Multi-point lashing systems shall be able to withstand the lashing forces according to Table 1 on a length of 1 meter at 3 positions at the same time in the same direction.

The angle requirements may be fulfilled by combination of different types of lashing points and/or multi-point lashing systems.

4.4 Strength of the lashing points or multi-point lashing system

Each lashing point according to 3.1 and 3.2 shall be designed for a minimum lashing capacity as specified in Table 1.

Table 1 — Minimum lashing capacity

Gross vehicle mass [m] in kilogram [kg]	Minimum lashing capacity (LC) for lashing point in daN ^a
$m \leq 750$	400
$750 < m \leq 3\,500$	600
$3\,500 < m \leq 7\,500$	800
$7\,500 < m \leq 12\,000$	1 000
$m > 12\,000$ or Intermodal loading units	2 000
^a 100 daN = 1 kN.	

4.5 Number and layout of the lashing points

4.5.1 Number of lashing point pairs

The number of lashing point pairs n shall be determined by the highest result of the following:

- loading length in meters divided by 0,85;
- the payload in daN multiplied by 0,75 divided by LC in daN.

The number of lashing point pairs n shall be rounded down to next integer but not less than 2.

4.5.2 Arrangement of lashing point pairs

The lashing point pairs shall be arranged in such a way that:

- the lashing point pairs are distributed equidistantly along the length of the CTU;
- the distance between two adjacent lashing points shall be not more than 1 000 mm;
- in the area above the axles the distance between two adjacent lashing points shall be as close to 1 000 mm as practicable but in any case shall not be more than 1 200 mm;
- the distance from front or rear end wall shall not be greater than 500 mm.

4.6 Lashing points or multi-point lashing system in the front wall

The front wall of a CTU should be equipped with at least 2 lashing points mounted symmetrically on either side of the vehicle centre line. If so, the lashing points shall be located such that:

- the vertical distance of the two lashing points measured from the surface of the loading platform is $1\,000\text{ mm} \pm 200\text{ mm}$ (see Figure 1);
- the distance measured in transverse direction from the side of the front wall should be as small as possible and in any case not bigger than 250 mm.

Each lashing point on the front wall shall be able to withstand the lashing forces according to Table 1 but need not exceed 1 000 daN. Instead of lashing points also multi-point lashing systems can be fixed. Lashing capacity and operational angles shall be tested and labelled.

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4.7 Optional lashing points or multi-point lashing systems

CTU may be equipped with optional lashing points or multi-point lashing systems. Lashing capacity and operational angles shall be tested and labelled.

5 Verification

The reference test method for compliance with this standard shall be as specified in Clause 6. Upon completion of the test:

- up to $1,00 \times LC$, there shall be no visible deformation;
- up to $1,25 \times LC$, there shall be no permanent deformation which could impair the function of the lashing point.

The strength of the lashing points may also be determined by calculation, provided that the equivalence of the calculation to the reference test method can be demonstrated.

6 Testing

One of each type of the lashing points or multi-point lashing systems and, if available, one of each type of optional lashing points or multi-point lashing systems or lashing devices suitable to the systems connected to CTU shall be used for testing.

The test force F to be applied shall be in first step $1,00 \times LC$ and in the second step $1,25 \times LC$. In the test, the lashing point shall be connected to a suitable lashing hook, for example see Figure 2.

- The direction of application of the test force shall lie within the ranges of angles defined in 4.1 or 4.2. One test shall be performed in each of the three most unfavourable directions of application;
- the test force shall be applied for at least 3 min;
- a circle with radius of $500 \text{ mm} \pm 30 \text{ mm}$ with the test lashing point in the centre shall be kept free from reaction forces.

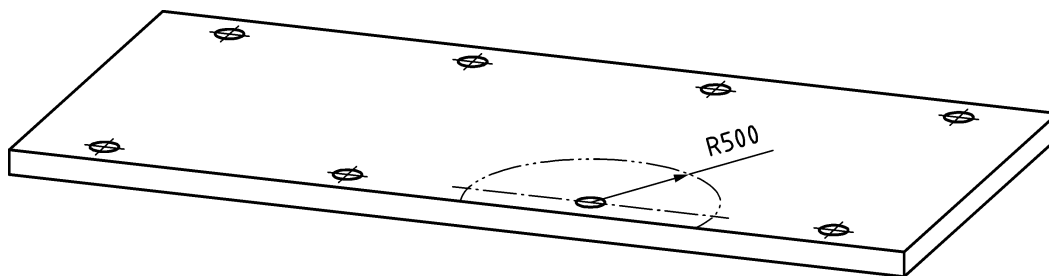


Figure 3 — Radius around test lashing point to be kept free from reaction force

7 Marking and identification

CTU with lashing points in compliance with this standard shall be fitted with one or more marking labels in accordance with Figure 4 in a clearly visible place. The LCs in daN by drawing and figures shall be indicated on the label. The operational angles differing from Subclauses 4.1 and 4.2 as well as differing LCs by drawing and figures shall be indicated on the label.

The label shall have a blue background, white lettering and white border and a minimum size of $150 \text{ mm} \times 100 \text{ mm}$.