



**SLOVENSKI STANDARD**  
**SIST EN 16973:2018**

**01-februar-2018**

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**Cestna vozila za kombiniran prevoz - Polpriklopnik - Vertikalno pretovarjanje**

Road vehicles for combined goods transport - Semitrailer - Vertical transhipment

Straßenfahrzeuge für den kombinierten Verkehr - Sattelanhänger - Vertikalumschlag, Anforderungen

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**Ta slovenski standard je istoveten z: EN 16973:2017**

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**ICS:**

43.080.10      Tovornjaki in priklopniki      Trucks and trailers

**SIST EN 16973:2018**

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EUROPEAN STANDARD

EN 16973

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 43.080.10

English Version

## Road vehicles for combined transport - Semitrailer - Vertical transshipment

Véhicules routiers destinés au transport combiné -  
Semi-remorque - Transbordement vertical

Straßenfahrzeuge für den kombinierten Verkehr -  
Sattelanhänger - Vertikalumschlag

This European Standard was approved by CEN on 21 August 2017.

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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 CEN-CENELEC 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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (EN 16973:2017) 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 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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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.

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

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## 1 Scope

This European Standard describes the railway-specific requirements relating to semi-trailers which are transported by rail with pocket wagons. For this, the semi-trailers is meant to be suitable for handling by crane. They are handled by gantry cranes or mobile transshipment equipment by the grapples using grabs and lifted into the pocket wagons. The semi-trailers rests with their wheels on the sunken loading area (pocket) of the wagon and at the front with the fifth-wheel plate on the jack. The king pin is locked in the jack and is responsible for the fixing of the semi-trailer in all directions and hence also for withstanding the relevant forces.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13044-3, *Intermodal Loading Units — Marking — Part 3: Markings of semi-trailers related to rail operation*

UIC 596-5, *Transport of road vehicles on wagons - Technical Organisation - Conveyance of semi-trailers with P coding or N coding on recess wagons*

UIC 596-6, *Conditions for coding intermodal transport units in combined transport, Combined transport lines and wagons*

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## 3 Terms and definitions

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

### 3.1

#### **grappler pocket**

position for vertical lifting of the semi-trailer

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### 3.2

#### **pocket wagon**

railway wagon with recessed pocket to accept the axle/wheel assembly of a semi-trailer and to remain within the loading (clearance) gauge

### 3.3

#### **swept envelope**

maximum space provided by a semi-trailer - empty and loaded - in the pocket wagon in the stipulated loading position and may not be exceeded

### 3.4

#### **vertical transshipment**

lifting and moving the semi-trailer in vertical direction

## 4 General requirements

### 4.1 Swept envelope

The swept envelope for the semi-trailer already contains the necessary clearances needed between the structural components of the pocket wagon and the structural components of a semi-trailer for damage-

free transshipment and transport. The lower part of the swept envelope is determined by the wagon design and the upper part of the swept envelope by the railway track profile (height).

Semi-trailers in accordance with this European Standard may not exceed the lower swept envelope in accordance with Figure 1 in the stipulated loading position on the pocket wagon when the maximum load is present with the air suspension in lowest position.

In respect of maintaining the lower swept envelope, the following points apply:

- vehicle components may be movable and shall be secured to ensure that these parts do not swing out or fall out during the journey and the transshipment;
- evidence of this shall be provided in the form of a drawing.

The swept envelope boundary above the pocket wagon should be checked in accordance with the selected track profile as per UIC 596-6.

The semi-trailer may be constructed up to the dimensions showed in Figure 1:

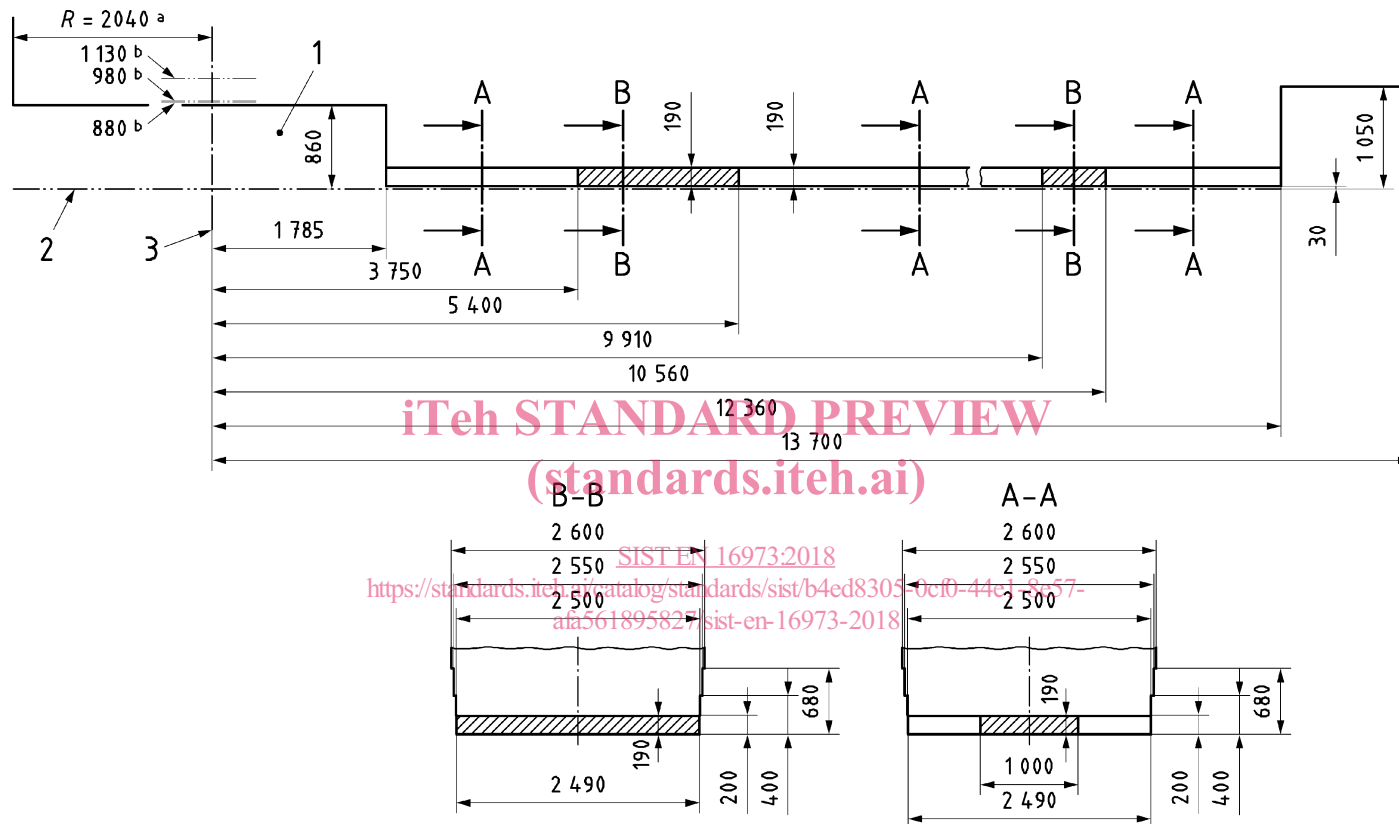
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EN 16973:2017 (E)

Dimensions in millimetres

**Key**

- 1 free space according to ISO 1726-1 and ISO 1726-2
- 2 basic level
- 3 king pin
- a according to the ISO 1726 series
- b coupling height

**Figure 1 — Semi-trailer - maximum lower swept envelope**



## 4.2 King pin

The king pin measures 2 inches and has a standard D-value of at least 162 kN. It also complies with Directive 94/20/EC:2014 of the European Parliament and the European Council.

Force-steered trailers with a steering wedge (in accordance with UN/ECE Regulation No. 55) may only be loaded onto compatible wagons (clearance for steering wedge).

## 4.3 Air suspension

The semi-trailers shall be equipped with air suspension.

The axle assembly shall be suitable for vertical transshipment of the semi-trailer.

The transshipment operations and the transport shall be performed with air suspension in lowest position and with the brake disengaged.

## 4.4 Grappler pockets

### 4.4.1 Dimensions and positioning of the grappler pockets

The dimensions of the grappler pockets are shown in Figure 2.

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