



**SLOVENSKI STANDARD**  
**oSIST prEN 16842-10:2019**  
**01-maj-2019**

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**Vozila za talni transport - Gnana vozila za talni transport - Vidno polje voznika - Preskusna metoda in preverjanje - 10. del: Vlačilci in vlečni traktorji ter tovorna vozila**

Powered industrial trucks - Visibility - test methods and verification - Part 10: Towing and Pushing tractors and Burden carrier

Kraftbetriebene Flurförderzeuge - Sichtverhältnisse - Prüfverfahren und Verifikation - Teil 10: Schlepper und Schubschlepper und Lastentransportfahrzeuge

Chariots de manutention - □ Visibilité - Méthode d'essai pour la vérification - □ Partie 10 : Tracteur et Pousseur et Transporteur de charge

**Ta slovenski standard je istoveten z: prEN 16842-10**

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**ICS:**

53.060                      Industrijski tovornjaki                      Industrial trucks

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**DRAFT**  
**prEN 16842-10**

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English Version

**Powered industrial trucks - Visibility - test methods and  
verification - Part 10: Towing and Pushing tractors and  
Burden carrier**

Chariots de manutention - Visibilité - Méthode d'essai  
pour la vérification - Partie 10 : Tracteur et Pousseur  
et Transporteur de charge

Kraftbetriebene Flurförderzeuge - Sichtverhältnisse -  
Prüfverfahren und Verifikation - Teil 10: Schlepper und  
Schubschlepper und Lastentransportfahrzeuge

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 150.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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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 16842-10:2019) has been prepared by Technical Committee CEN/TC 150 “Powered industrial trucks -Visibility - Test method for verification - Part 10: Towing- and Pushing tractors and Burden and personnel carrier”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This European Standard is intended to be used in combination with the requirements in EN 16842-1.

EN 16842 consists of the following parts under the general title *Powered industrial trucks –Visibility – Test methods and verification*:

- *Part 1: General requirements;*
- *Part 2: Sit-on counterbalance trucks and rough terrain masted trucks up to and including 10 000 kg capacity;*
- *Part 3: Reach trucks up to and including 10 000 kg capacity;*
- *Part 4: Industrial variable-reach trucks up to and including 10 000 kg capacity;*
- *Part 5: Industrial variable-reach trucks greater than 10 000 kg capacity (under preparation);*
- *Part 6: Sit-on counterbalance trucks and rough terrain masted trucks greater than 10 000 kg capacity;*
- *Part 7: Variable-reach and masted container trucks handling freight containers of 6 m (20 ft) length and longer;*
- *Part 8: Stand-on counterbalance trucks up to and including 10 000 kg capacity (under preparation);*
- *Part 9: Order-picking, lateral- and front-stacking trucks with elevating operator position;*
- *Part 10: Towing and Pushing tractors and Burden carrier*

It is intended to develop the parts related to the following machinery:

- Pallet-stacking trucks (rider controlled);
- Single side loader;
- Multi-directional forklift truck;
- Articulated counterbalance lift truck;
- Non-Stacking low-lift straddle carriers (as defined in ISO 5053-1:2015 Clause 3.18);
- Stacking high-lift straddle carriers (as defined in ISO 5053-1:2015 Clause 3.19).

## 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.”

## 1 Scope

This document specifies the requirements and test procedures for 360° visibility of sit-on and stand-on self-propelled

- towing and pushing tractors in accordance with 3.1 and 3.2 of ISO 5053-1:2015;
- burden carrier in accordance with 3.25 of ISO 5053-1:2015 without load and
- baggage and equipment tractors with driver's accommodation in accordance with EN 12312-15, without load

(herein after referred to as trucks) and is intended to be used in conjunction with EN 16842-1.

Where specific requirements in this part are modified from the general requirements in EN 16842-1, the requirements of this part are truck specific and to be used for sit-on and stand-on self-propelled Towing and Pushing tractors and Burden carrier.

This part of EN 16842 deals with all significant hazards, hazardous situations or hazardous events relevant to the visibility of the operator for applicable machines when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

This part of the document does not apply to personnel carrier in accordance with 3.25 of ISO 5053-1:2015.

## 2 Normative reference(s)

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 16842-1:2018, *Powered industrial trucks — Visibility — Test methods and verification — Part 1: General requirements*

EN ISO 3691-1:2015, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks (ISO 3691-1:2011, including Cor 1:2013)*

EN ISO 3691-6:2015, *Industrial trucks — Safety requirements and verification — Part 6: Burden and personnel carriers (ISO 3691-6:2013, including Cor 1:2016)*

ISO 5053-1:2015, *Industrial trucks - Terminology and classification - Part 1: Types of industrial trucks*

ISO 5353, *Earth-moving machinery, and tractors and machinery for agriculture and forestry – Seat index point*

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### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16842-1:2018 and ISO 5053-1:2015, together 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>

NOTE: Definition 3.1 of EN 16842-1 is not applicable for trucks covered by this part.

#### 3.1 truck profile

contour which is determined by the largest rectangular width and length parallel or rectangular to the longitudinal axis of the truck

Note 1 to entry: Excludes external projections such as, mirrors or coupling.

Note 2 to entry: For width dimension, see Figure 3, key W.

### 4 Truck configuration

EN 16842-1:2018, Clause 4 does not apply.

The test shall be conducted with an unladen truck on a level, horizontal floor. The truck shall be equipped with:

- coupling means,
- a buffer plate at the front-end,
- an open loading platform or closed loading structure or
- combinations of these,

whichever is applicable.

The test method of this standard applies to all truck configurations, including additional tests for various types of coupling, external fuel tanks, cabs, structures etc. that adversely affect visibility.

The test shall be valid for the determined configuration of the truck and this shall be recorded in the test report according Clause 8.

### 5 Test equipment

For test equipment EN 16842-1:2018, Clause 5 shall apply .

### 6 Test procedures for direct visibility

#### 6.1 General

For trucks without any restricted visibility by cabs, structure or similar means (e.g. stand-on tractors without cab) no visibility test is needed. That shall be reported in the test report, see Clause 8.



## 6.2 Lighting equipment position

### 6.2.1 General

The visibility from the truck shall be determined from the operating position with lighting equipment and test body or screen. The lighting equipment simulates the range of eye positions of the operator. The test body simulates an obstacle to be seen.

### 6.2.2 Sit-on operated trucks

The lighting equipment shall be positioned relative to the seat index point (SIP) as specified in ISO 5353. The seat shall be placed at the closest adjustment position to the mid-point of horizontal and vertical adjustment and the mid-point of the suspension height, if so equipped.

- a) Sit-on truck where the operator is facing the line of travel.
- b) Sit-on truck where the operator is facing in 90° angle to the line of travel.



- a) Sit-on trucks where the operator is facing the line of travel.
- b) Sit-on truck where the operator is facing in 90° angle to the line of travel.

#### Key

1	0° seat direction	5	+135° test direction
2	SIP	6	-135° test direction
3	row of lights	7	the row of lights cannot be turned to this area for tests
4	row of lights axis of rotation	8	forward and rearward truck direction for all seat positions shown

**Figure 1 — Seat position and test direction**

### 6.2.3 Stand-on operated trucks

The lighting equipment shall be positioned relative to the standing index point (STIP).

The STIP is given for a stand-on operator in the normal operating position, with the operator standing at the platform and controlling all functions.

Procedure for locating the STIP:

- a) determine the appropriate foot positions for the truck being evaluated;
- b) determine the position of the ankle pivot point by the shoe outline and the data given in Figure 2;
- c) determine the mid-point of the line connecting the ankle pivot points to establish the STIP;
- d) the 0° position (before any rotation of the operator's head, shoulders, or torso) is a line through the STIP perpendicular to the line connecting the ankle pivot points as shown or any angle up to 90° whatever is foreseen by the manufacturer as normal operating position, see Figure 2; the row of lights may be rotated  $\pm 135^\circ$  as shown in Figure 1;

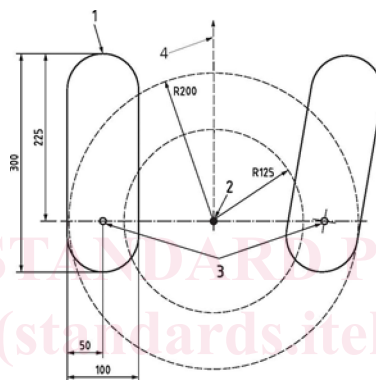
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e) measure the height of the STIP above the floor as well as the location of the STIP relative to a permanent feature of the truck and record.

To simulate body movement during truck operation, an adjusted STIP (ASTIP) may be positioned within an area circumscribed by:

- a 125 mm radius about the STIP for a stand-on operated truck with defined compartment space where the operator's feet/lower body movements are limited due to truck design;
- a 200 mm radius about STIP for stand-on operated truck with space for movement.

When the STIP for a truck has been established, the location of the STIP shall remain fixed throughout the visibility evaluation. The ASTIP of the test fixture for a particular test may be relocated as defined above, and shown in Figure 2, i.e. Tests 1 to 9 (see Table 1 or Table 2) may have different locations for the axis of rotation. Each test shall have only one location for the ASTIP which shall be referenced from the STIP and recorded.

**Key**

- 1 foot/shoe profile
- 2 STIP
- 3 ankle pivot points
- 4 0° direction

**Figure 2 — Determination of standing index point (STIP)**

### 6.3 Test paths for tractors and burden carriers

Test paths P1 to P9 shall consist of lines laid out on the floor around the test truck, parallel or perpendicular to the truck longitudinal axis. The distance between truck profile, as defined in 3.1 and the test paths are specified in Figure 3.