



SLOVENSKI STANDARD

SIST EN 16842-3:2019

01-april-2019

Vozila za talni transport - Gnana vozila za talni transport - Vidno polje voznika - Preskusna metoda in preverjanje - 3. del: Tovarna vozila z zmogljivostjo do vključno 10 000 kg

Powered industrial trucks - Visibility - Test methods and verification - Part 3: Reach trucks up to and including 10 000 kg capacity

Kraftbetriebene Flurförderzeuge - Sichtverhältnisse - Prüfverfahren und Verifikation - Teil 3: Schubstapler bis zu und einschließlich einer Nenntragfähigkeit von 10 000 kg

Chariots de manutention automoteurs - Visibilité - Méthodes d'essai et vérification - Partie 3 : Chariots rétract ayant une capacité allant jusqu'à 10 000 kg inclus

SIST EN 16842-3:2019
<https://standards.iteh.ai/catalog/standards/sist/91277534-0146-481e-a62e-f0788ff0c718/sist-en-16842-3-2019>

Ta slovenski standard je istoveten z: EN 16842-3:2018

ICS:

53.060 Industrijski tovornjaki Industrial trucks

SIST EN 16842-3:2019

en,fr

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 16842-3:2019

<https://standards.iteh.ai/catalog/standards/sist/9f277534-0f46-481e-a62e-f0788ff0c718/sist-en-16842-3-2019>

EUROPEAN STANDARD

EN 16842-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2018

ICS 53.060

English Version

Powered industrial trucks - Visibility - Test methods and verification - Part 3: Reach trucks up to and including 10 000 kg capacity

Chariots de manutention automoteurs - Visibilité -
Méthodes d'essai et vérification - Partie 3 : Chariots
rétract ayant une capacité allant jusqu'à 10 000 kg
inclus

Kraftbetriebene Flurförderzeuge - Sichtverhältnisse -
Prüfverfahren und Verifikation - Teil 3: Schubstapler
bis zu und einschließlich einer Nenntragfähigkeit von
10 000 kg

This European Standard was approved by CEN on 29 July 2018.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Truck configuration	6
4.1 General.....	6
4.2 Fork arm dimensions.....	6
5 Test equipment.....	6
6 Test procedures for direct visibility.....	6
6.1 Lighting equipment position.....	6
6.1.1 General.....	6
6.1.2 Stand-on operated trucks.....	6
6.1.3 Sit-on operated trucks.....	8
6.2 Test paths for reach trucks $\leq 10\,000$ kg.....	8
6.3 Measurement procedure	10
6.4 Test procedure for indirect visibility.....	10
7 Acceptance criteria.....	10
7.1 General.....	10
7.2 Direct visibility.....	10
7.2.1 General.....	10
7.2.2 Travelling visibility	10
7.2.3 Manoeuvring visibility	10
7.2.4 Fork arms	10
7.3 Indirect visibility.....	10
7.4 Criteria for reach trucks up to and including 10 000 kg rated capacity	11
8 Test report.....	12
9 Information for use	12

European foreword

This document (EN 16842-3:2018) has been prepared by Technical Committee CEN/TC 150 “Industrial trucks – Safety”, the secretariat of which is held by BSI.

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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 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 (in 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 (in preparation);*
- *Part 9: Order-picking, lateral- and front-stacking trucks with elevating operator position*
- *Part 10: Towing and pushing tractors and burden carriers*

It is intended to develop additional 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, 3.18);
- Stacking high lift straddle carriers (as defined in ISO 5053-1:2015, 3.19).

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, 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.

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 reach trucks with a sit-on or stand-on operator (herein after referred to as trucks), without a load with a capacity up to and including 10 000 kg in accordance with ISO 5053-1 and it 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 reach trucks with a sit-on or stand-on operator with a capacity $\leq 10\ 000$ kg.

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.

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 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)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16842-1, ISO 5053-1 and the following apply.

NOTE Definition 3.1 of EN 16842-1:2018 is not applicable for trucks covered by this part.

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

truck profile

contour which is determined by the largest rectangular width and length parallel to the longitudinal axis of the truck, including the front vertical surface of the outriggers

Note 1 to entry: The blades of the fork arms are not taken into account.

Note 2 to entry: Excludes external projections such as, rail guidance systems, stabilizers or attachments that extend beyond the profile of the truck.

3.2

outriggers

supporting structure of the truck to enable the positioning of the load centre of gravity within the stability polygon

EN 16842-3:2018 (E)**4 Truck configuration****4.1 General**

For truck test configuration, EN 16842-1:2018, Clause 4 shall apply.

4.2 Fork arm dimensions

Reach trucks up to and including 10 000 kg rated capacity shall be equipped with fork arms of the following nominal length: 1 200 mm.

Other fork arm lengths shall be tested if these adversely affect visibility (e.g. shorter fork arms).

Lengths of forks arms shall be noted in the test report in accordance with EN 16842-1:2018, 8.2 i).

NOTE Fork arm lengths in mm are given as two times the length of the standard load centre distance as defined in EN ISO 3691-1:2015, A.2.3.

5 Test equipment

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

6 Test procedures for direct visibility**6.1 Lighting equipment position****6.1.1 General**

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

6.1.2 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:

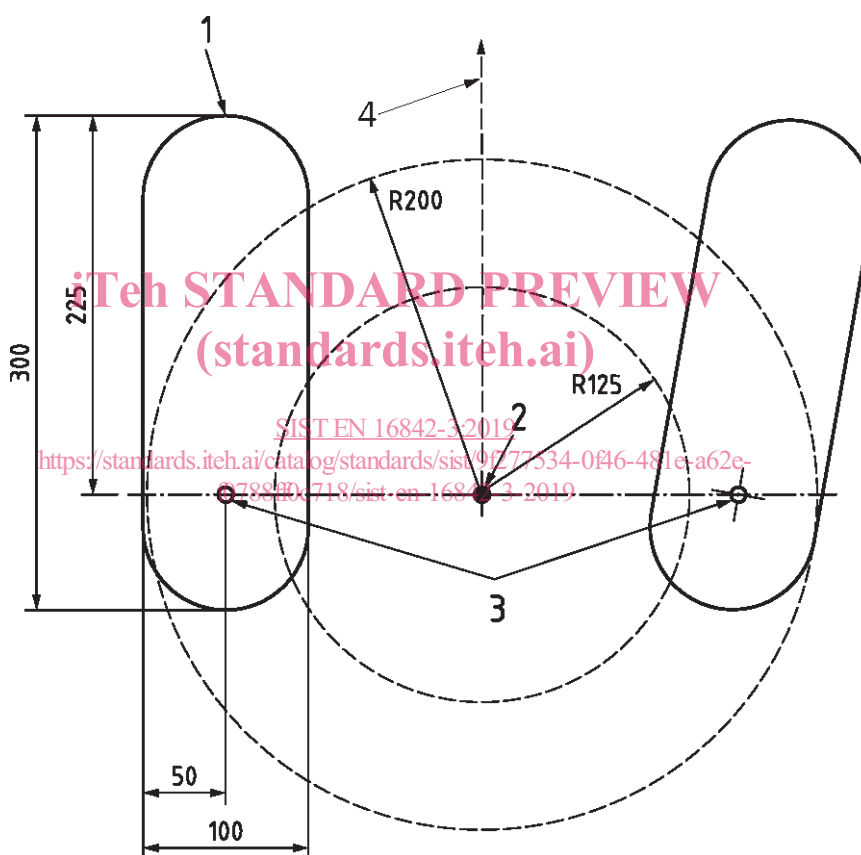
- a) determine the appropriate foot positions for the truck being evaluated;
- b) determine the position of the ankle pivot point by the shoe outline and the data given in Figure 1;
- c) determine the mid-point of the line connecting the ankle pivot points to establish the STIP;
- d) the 0° position (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 in Figure 1; the row of lights may be rotated $\pm 135^\circ$ as shown in Figure 2;
- 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 the STIP for a stand-on operated truck with space for movement, e.g. order picking trucks, lateral stacking trucks.

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 1, i.e. Tests 1 to 9 (see Table 1) 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.

Dimensions in millimetres



Key

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

Figure 1 — Determination of standing index point (STIP)