

oSIST prEN 13586:2019

# SLOVENSKI STANDARD oSIST prEN 13586:2019

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#### oSIST prEN 13586:2019

# EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

# DRAFT prEN 13586

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ICS 53.020.20

Will supersede EN 13586:2004+A1:2008

Krane - Zugang

**English Version** 

# Cranes - Access

Appareils de levage à charge suspendue - Accès

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 147.

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.

This draft European Standard was established by CEN 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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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. TEN 13586:2021

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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 13586:2019) has been prepared by Technical Committee CEN/TC 147 "Cranes safety", the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document will supersede EN 13586:2004+A1:2008.

For the relationship with other European Standards for cranes, see Annex A.

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### Introduction

This European Standard has been prepared to be a harmonized standard to provide one means for crane access to conform with the essential health and safety requirements of the Machinery Directive, as mentioned in Annex ZA.

This European Standard is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered, are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in a type B standard, 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.

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### 1 Scope

This document specifies design requirements for non-powered access installed on cranes.

NOTE 1 For other type of access a requirement for information to be supplied is specified.

This document covers access to control stations and all access required for maintenance, certain erection and dismantling operations (see below) and emergency.

For those cranes which are intended to be erected and dismantled at their places of work, specific requirements for the access needed during these operations are given in the appropriate European Standards for specific crane types.

NOTE 2 Specific requirements for access on particular types of cranes are given in the appropriate European Standard for the particular crane type.

The dimensions given in this document do not take into account the safety distances related to:

- guarding;
- relative movement between crane and adjacent structure;
- hazardous surface temperature;
- electrical equipment. STANDARD PREVERW

The significant hazards covered by this document are identified in Clause 4.

This document is not applicable to cranes which are manufactured before the date of publication by CEN of this standard.

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### 2 Normative references 7d154975bd/sist-en-13586-2021

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 81-43:2009, Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 43: Lifts for cranes

EN 349:1993+A1:2008, Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

EN 363:2018, Personal fall protection equipment - Personal fall protection systems

EN 795:2012, Personal fall protection equipment - Anchor devices

EN 13001-3-1:2012+A2:2018, Cranes - General Design - Part 3-1: Limit States and proof competence of steel structure

EN ISO 12100:2010, Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

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#### 3 **Terms and definitions**

For the purposes of this document the terms and definitions given in EN ISO 12100:2010 and the following apply.

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 <a href="http://www.electropedia.org/">http://www.electropedia.org/</a> .
- ISO Online browsing platform: available at https://www.iso.org/obp

#### 3.1

#### rest platform

standing area for persons to rest, situated at intervals between flights of ladders or stairs

#### 3.2

#### platform

standing area for persons to work from, e.g. for maintenance or inspection

#### 3.3

#### handrail

device, which provides continuous hand support between two locations

#### 3.4

#### handhold

means of providing support by a single hand placement

#### 3.5

foothold means of providing support for one or two feet for vertical access

#### 3.6

#### manhole

access opening to allow the passage of persons, and which could have a cover fitted

#### 3.7

#### hatch

access opening to allow the passage of persons, provided with a cover openable without use of tools

#### List of significant hazards 4

Table 1 of this clause contains all the significant hazards as listed in CEN Guide 414, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

| No.  | Hazard   | Relevant clause(s) in this<br>European Standard |
|------|--|---|
| 1    | Mechanical hazards   |   |
| 1.1  | Inadequacy of mechanical strength of the crane and its parts                           | 5.13  |
| 1.5  | Crushing hazard  | 5.3, 5.12                                       |
| 1.6  | Shearing hazard  | 5.3   |
| 1.7  | Cutting or severing hazard   | 5.3, 5.6.1, 5.10                                |
| 1.8  | Entanglement hazard  | 5.6.1, 5.10                                     |
| 1.9  | Drawing-in or trapping hazard  | 5.6.1, 5.10                                     |
| 1.13 | Slipping, tripping and falling   | 5   |
| 7    | Material/substance hazards   |   |
| 7.2  | Fire or explosion hazard   | 5.3.3   |
| 8    | Ergonomic hazards  |   |
| 8.1  | Unhealthy postures or excessive efforts  | 5.1, 5.3, 5.6.1, 5.9, 5.12                      |
| 8.2  | Inadequate consideration of hand-arm or foot-leg<br>anatomy                            | 5.3, 5.4, 5.6, 5.11                             |
| 8.4  | Neglected use of personal protection equipment   | 5.2, 5.4, 5.6.1, 7                              |
| 9    | Hazards associated with the environment in which the machine is used                   | d5-4bad-b44d-                                   |
| 9.1  | Snow, water, wind, temperature   | 5.3.3   |
| 11   | Hazards caused by missing and/or incorrectly positioned safety related measures/ means |   |
| 11.1 | Guards   | 5   |
| 11.3 | Safety signs, signals, symbols   | 7   |
| 13   | Hazards linked to work position (including driving station) on the machine             |   |
| 13.1 | Fall of persons during access to (or at/from) the work position                        | 5   |
| 17   | Mechanical hazards and events, supplementary   |   |
| 17.1 | Falling or ejected objects or fluids   | 5.3, 5.10                                       |

## Table 1 — List of significant hazards and associated requirements

### 5 Safety requirements and protective measures

#### 5.1 Selection of means of access

Means of access shall conform to the safety requirements and protective measures of this clause. In addition, the equipment shall be designed in accordance with the principles of EN ISO 12100 for hazards relevant but not significant which are not dealt with by this document.

Manufacturers shall take into consideration the following, when determining the means of access to be provided:

- frequency of use;
- equipment and tools to be carried;
- vertical distance to cover;
- nature of use, e.g. regular operator access, maintenance, inspection.

Provision of access should be in the preferential order: stair, rung ladder, stepped ladder. Furthermore, fixed means (e.g. hoop guard, side protection) shall be preferred to personnel protective equipment. The type of the means of the access depending on its steepness shall be selected in accordance with the Figure 1.



#### Key

- 1 rung ladder
- 2 stepped ladder
- 3 range to be avoided
- 4 stair
- 5 inclined walkway
- 6 walkway
- 7 not permitted zone
- D access direction when going upwards

#### Figure 1 — Ranges of angles for different means of access in their working position

For structural requirements of means of access, the term "ladder" is used to refer both to rung ladders and stepped ladders.

Where the height that the crane driver has to climb from the point of access on the crane to the control station is more than 25 m, a powered access system should be provided. For lifts in cranes, see EN 81-43. Where a powered access system is provided, the crane shall be designed to receive it and an additional access way of Type 1 shall also be provided.

#### 5.2 Classification of access

Type 1 access shall be used in the following cases:

- the main access way of the crane driver to the control station and to starting equipment;
- the access way to maintenance locations, with a maintenance or inspection period shorter than one month.

Type 2 access may be used, instead of Type 1 access, in the following cases:

- the access way to maintenance locations, with a maintenance or inspection period one month or longer;
- emergency access;
- access for erection and dismantling.

Other means of access, than those in the scope of this standard, may be utilized, e.g. for inspection locations with an inspection interval longer than one year, for emergency access or for access for erection and dismantling. Access in such cases may be designed to rely on use of personal protective devices against falls from a height (see EN 363 and EN 795) or use of mobile elevating work platforms.

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5.3 General design principles

**5.3.1** When ascending or descending provisions shall be made to provide simultaneous three-point support; two hand holds and one foot hold or two feet holds and one hand hold.

**5.3.2** Where a lateral body move is necessary from a rung of a ladder to another support surface, the distance between the step or rung and the nearest edge of the support surface shall be within a spherical radius of 300 mm or shorter, see Figure 2.

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#### Key

- R spherical radius
- S support surface

#### Figure 2 — Distance between a step or rung and the nearest edge of any support surface

**5.3.3** Means of access, walking and standing areas shall:

- have their working position(s) designated; (for example platform on articulated boom needs defined position of the boom for the access);
- take into account the number of the persons, and the presence of objects such as tools and spare parts;
- be constructed of materials specified as being incombustible and with slip resistant surfaces, which do not retain liquid. See Annex B.

The steps between adjacent floor sections shall not exceed s/sist/0d8452d6-5dd5-4bad-b44d-

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- 4 mm in height for Type 1 access;
- 8 mm in height for Type 2 access.

The gaps between adjacent floor sections shall be less than 20 mm.

Every control station shall have at least one exit onto a fixed means of access. An alternative means of egress shall be provided, where a fixed means of access cannot be reached from all working positions of the control station or of the crane.

**5.3.4** Any aperture in the floor of a gangway, inclined walkway, landing or platform situated above an area, where persons could be present, shall have slots or interstices which:

- do not allow a sphere of 20 mm to pass through;
- have a maximum width of 12 mm when the length is equal or greater than 200 mm.

**5.3.5** Hand supports shall have smooth surfaces. Edges shall have radii (minimum 2 mm) or be chamfered (minimum  $2 \times 2 \text{ mm}$ ).

Obstacles to retain the hands or feet, shall be provided at the ends of handholds and footholds.

**5.3.6** Where access is foreseen with portable ladders, permanent means shall be provided to prevent the top of the ladder from moving.

Portable ladders shall meet the requirements of this standard for ladders.