Kraanad. Sild- ja pukk-kraanad

Cranes - Bridge and gantry cranes

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 15011:2011+A1:2014 sisaldab Euroopa standardi EN 15011:2011+A1:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 15011:2011+A1:2014 consists of the English text of the European standard EN 15011:2011+A1:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.02.2014.	Date of Availability of the European standard is 19.02.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Cranes - Bridge and gantry cranes

Appareils de levage à charge suspendue - Ponts roulants et portiques

Krane - Brücken- und Portalkrane

This European Standard was approved by CEN on 18 December 2010 and includes Amendment 1 approved by CEN on 19 November 2013.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 15011:2011+A1:2014) has been prepared by Technical Committee CEN/TC 147 “Cranes - 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of an identical text or by endorsement, at the latest by August 2014, and conflicting national standards shall be withdrawn at the latest by August 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15011:2011.

This document includes Amendment 1 approved by CEN on 2013-11-19.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1〉 〈A1▌.

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.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

As many of the hazards related to bridge and gantry cranes relate to their operating environment and use, it is assumed in the preparation of this European Standard that all the relevant information relating to the use and operating environment of the crane has been exchanged between the manufacturer and user (as recommended in ISO 9374, Parts 1 and 5), covering such issues as, for example:

— clearances;

— requirements concerning protection against hazardous environments;

— processed materials, such as potentially flammable or explosive material (e.g. coal, powder type materials).

This standard is a type C standard as stated in [A1] EN ISO 12100 [A1].

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

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

1 Scope

[A1] This European Standard applies to bridge and gantry cranes able to travel by wheels on rails, runways or roadway surfaces, and to gantry cranes without wheels mounted in a stationary position. [A1]

This European Standard specifies requirements for all significant hazards, hazardous situations and events relevant to bridge and gantry cranes when used as intended and under conditions foreseen by the manufacturer (see Clause 4).

This European Standard does not include requirements for the lifting of persons.

The specific hazards due to potentially explosive atmospheres, ionising radiation and operation in electromagnetic fields beyond the range of EN 61000-6-2 are not covered by this European Standard.

This European Standard is applicable to bridge and gantry cranes manufactured after the date of its publication as an EN.

2 Normative references

The following referenced documents are indispensable for the application 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, *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, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 795, *Protection against falls from a height — Anchor devices — Requirements and testing*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

[A1] EN 1993-6 [A1], *Eurocode 3 - Design of steel structures - Part 6: Crane supporting structures*

[A1] EN 12077-2 [A1], *Cranes safety — Requirements for health and safety — Part 2: Limiting and indicating devices*

EN 12385-4, *Steel wire ropes — Safety — Part 4: Stranded ropes for general lifting applications*

EN 12644-1, *Cranes — Information for use and testing — Part 1: Instructions*

EN 12644-2, *Cranes — Information for use and testing — Part 2: Marking*

EN 13001-1, *Cranes — General design — Part 1: General principles and requirements*

[A1] EN 13001-2 [A1], *Crane safety — General design — Part 2: Load [A1] actions [A1]*

[A1] EN 13001-3-1 [A1], *Cranes — General Design — Part 3-1: Limit States and proof competence of steel structures*

CEN/TS 13001-3-2, *Cranes - General design — Part 3-2: Limit states and proof of competence of wire ropes in reeving systems*

[A1] EN 13135, *Cranes — Safety — Design — Requirements for equipment* [A1]

EN 13155, *Cranes — Safety — Non-fixed load lifting attachments*

EN 13157, *Cranes — Safety — Hand powered cranes*

[A1] EN 13557:2003+A2:2008 [A1], *Cranes — Controls and control stations*

[A1] EN 13586 [A1], *Cranes — Access*

EN 14492-2, *Cranes — Power driven winches and hoists — Part 2: Power driven hoists*

EN 60204-11, *Safety of machinery — Electrical equipment of machines — Part 11: Requirements for HV equipment for voltages above 1000 V a.c. or 1500 V d.c. and not exceeding 36 kV (IEC 60204-11:2000)*

EN 60204-32:2008, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

HD 60364-4-41, *Low-voltage electrical installations — Part 4-41: Protection for safety — Protection against electric shock (IEC 60364-4-41:2005, mod.)*

EN 60825-1, *Safety of laser products — Part 1: Equipment classification and requirements (IEC 60825-1:2007)*

EN 60947-5-5, *Low-voltage switchgear and controlgear — Part 5-5: Control circuit devices and switching elements — Electrical emergency stop device with mechanical latching function (IEC 60947-5-5:1997)*

EN ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 11202:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 11203:2009, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level (ISO 11203:1995)*

EN ISO 11204:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections (ISO 11204:2010)*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

[A1] EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100)* [A1]

EN ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

ISO 2631-1, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*

ISO 3864 (all parts), *Graphical symbols — Safety colours and safety signs*

ISO 6336-1, *Calculation of load capacity of spur and helical gears — Part 1: Basic principles, introduction and general influence factors*

ISO 7752-5, *Lifting appliances — Controls — Layout and characteristics — Part 5: Overhead travelling cranes and portal bridge cranes*

ISO 12488-1, *Cranes — Tolerances for wheels and travel and traversing tracks — Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100, EN ISO 3744, EN ISO 11202, EN ISO 11203, EN ISO 11204 and the following apply.

3.1
bridge crane
crane able to move along rails or runways having at least one primarily horizontal girder and equipped with at least one hoisting mechanism

NOTE Building structures, where hoists are mounted, are not regarded as bridge cranes.

3.2
gantry crane
crane able to travel by wheels on rails, runways or roadway surfaces, or crane without wheels mounted in a stationary position, having at least one primarily horizontal girder supported by at least one leg and equipped with at least one hoisting mechanism

NOTE Building structures, where hoists are mounted, are not regarded as gantry cranes.

3.3
rated capacity
m_{RC}
maximum net load (the sum of the payload and non-fixed load-lifting attachment) that the crane is designed to lift for a given crane configuration and load location during normal operation

3.4
hoist load
m_H
sum of the masses of the load equal to the rated capacity, the fixed lifting attachment and the hoist medium

3.5
hoist medium
part of the hoisting mechanism, either rope, belt or chain, by which the fixed load lifting attachment is suspended