



SLOVENSKI STANDARD
SIST EN 13000:2010

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Nadomešča:
SIST EN 13000:2004

Dvigala (žerjavi) - Mobilna dvigala

Cranes - Mobile cranes

Krane - Fahrzeugkrane

Appareils de levage à charge suspendue - Grues mobiles

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53.020.20 Dvigala

Cranes

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Cranes - Mobile cranes

Appareils de levage à charge suspendue - Grues mobiles

Krane - Fahrzeugkrane

This European Standard was approved by CEN on 19 December 2009.

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

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Foreword

This document (EN 13000:2010) 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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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 13000:2004.

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 Annexes ZA and ZB, which are integral parts of this document.

This standard applies to mobile cranes which are put on the market 12 months after the date of ratification by CEN of this standard or at the latest 2010-01-01.

This document has been prepared by Product Working Group CEN/TC 147/WG 11 "Mobile Cranes", the secretariat of which is held by DIN.

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Annexes A, C, D, E, F, G.1 and G.2, H, J.1 to J.4, K.1 to K.5, L, M, P, R, S and U are normative. Annexes B.1 and B.2, N.1 to N.3, Q, T, V and W are informative.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard is a type C standard.

This European Standard has been prepared to provide one means for mobile cranes to conform with the essential health and safety requirements of the Machinery Directive.

The machinery concerned and the extent to which hazards, hazardous situations and 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 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.

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1 Scope

This European Standard is applicable to the design, construction, installation of safety devices, information for use, maintenance and testing of mobile cranes as defined in ISO 4306-2 with the exception of loader cranes (see 3.1.1 of EN 12999:2002). Examples of mobile crane types and of their major parts are given in Annexes A and B.

This standard does not cover hazards related to the lifting of persons.

NOTE The use of mobile cranes for the lifting of persons is subject to specific national regulations.

Mobile cranes covered by this European Standard are designed for a limited number of stress cycles and particular properties of motions, e.g. smooth application of the driving forces and loading conditions according to ISO 4301-2:1985, group A1.

For a duty cycle such as grab, magnet or similar work, additional provisions are required which are outside the scope of this European Standard.

The hazards covered by this European Standard are identified by Annex C.

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

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 2:1992, *Classification of fires*

EN 294:1992, *Safety of machinery — Safety distance to prevent danger zones being reached by the upper limbs*

EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 547-1:1996, *Safety of machinery — Human body measurements — Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 626-1:1994, *Safety of machinery — Reduction of risk to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

EN 811:1996, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

EN 842:1996, *Safety of machinery — Visual danger signals — General requirements, design and testing*

EN 853:1996, *Rubber hoses and hose assemblies — Wire braid reinforced hydraulic type — Specification*

EN 854:1996, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification*

EN 856:1996, *Rubber hoses and hose assemblies — Rubber-covered spiral wire reinforced hydraulic type — Specification*

EN 894-2:1997, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3:2000, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

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EN 954-1:1996, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

EN 1005-3:2002, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

EN 10025-2:2005, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10025-3:2004, *Hot rolled products of structural steels — Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels*

EN 10025-6:2005, *Hot rolled products of structural steels — Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition*

EN 12077-2:1998, *Cranes safety — Requirements for health and safety — Part 2: Limiting and indicating devices*

EN 12644-1:2001, *Cranes — Information for use and testing — Part 1: Instructions*

EN 13557:2003, *Cranes — Control and control stations*

EN 13586:1999, *Cranes — Access*

EN 14502-2:2005, *Cranes — Equipment for the lifting of persons — Part 2: Elevating control stations*

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

EN 61000-6-2:2005, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (IEC 61000-6-2:2005)*

EN 61000-6-4:2007, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards; Emission standard for industrial environments (IEC 61000-6-4:2006)*

EN 61310-1:2008, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61310-2:2008, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:2007)*

EN ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope (ISO 3411:2007)*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

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

EN ISO 5349-1:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 1: General requirements (ISO 5349-1:2001)*

EN ISO 5349-2:2001, *Mechanical vibration — Measurement and evaluation of human exposure to hand-transmitted vibration — Part 2: Practical guidance for measurement at the workplace (ISO 5349-2:2001)*

EN ISO 5353, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point (ISO 5353:1995)*

EN ISO 6385:2004, *Ergonomic principles in the design of work systems (ISO 6385:2004)*

EN ISO 6683:2008, *Earth-moving machinery — Seat belts and seat belt anchorages — Performance requirements and tests (ISO 6683:2005)*

EN ISO 7096:2008, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2000)*

EN ISO 7250:1997, *Basic human body measurements for technological design (ISO 7250:1996)*

EN ISO 7731:2008, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731:2003)*

EN ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

ISO 2631-1:1997, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*

ISO 3795:1989, *Road vehicles and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

ISO 3864-1:2002, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 4301-1:1986, *Cranes and lifting appliances — Classification — Part 1: General*

ISO 4301-2:1985, *Lifting appliances — Classification — Part 2: Mobile cranes*

ISO 4305:1991, *Mobile cranes — Determination of stability*

ISO 4306-1:2007, *Cranes — Vocabulary — Part 1: General*

ISO 4306-2:1994, *Cranes — Vocabulary — Part 2: Mobile cranes*

ISO 4308-1:2003, *Cranes and lifting appliances — Selection of wire ropes — Part 1: General*

ISO 4308-2:1988, *Cranes and lifting appliances — Selection of wire ropes — Part 2: Mobile cranes — Coefficient of utilisation*

ISO 4309:2004, *Cranes — Wire ropes — Care, maintenance, installation, examination and discard*

ISO 4310:1981, *Cranes — Test code and procedures*

ISO 6309:1987, *Fire protection — Safety signs*

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ISO 7000:2004, *Graphical symbols for use on equipment — Index and synopsis*

ISO 7296-1:1991, *Cranes — Graphic symbols — Part 1: General*

ISO 7296-2:1996, *Cranes — Graphic symbols — Part 2: Mobile cranes*

ISO 7752-2:1985, *Lifting appliances — Controls layout and characteristics — Part 2: Basic arrangement and requirements for mobile cranes*

ISO 8087:1985, *Mobile cranes — Drum and sheave sizes*

ISO 8566-2:1995, *Cranes — Cabins — Part 2: Mobile cranes*

ISO/CIE 8995-1:2002, *Lighting of indoor work places — Part 1: Indoor*

ISO/DIS 8995-2:2006, *Lighting of indoor work places — Part 2: Outdoor*

ISO/CIE 8995-3:2006, *Lighting of indoor work places — Part 3: Lighting requirements for safety and security of outdoor work places*

ISO 11660-2:1994, *Cranes — Access guards and restraints — Part 2: Mobile cranes*

ISO 11662-1:1995, *Mobile cranes — Experimental determination of crane performance — Part 1: Tipping loads and radii*

ISO 12480-1:1997, *Cranes — Safe use — Part 1: General*

ISO 13200:1995, *Cranes — Safety signs and hazard pictorials — General principles*

FEM 1.001:1998, *Rules for the design of hoisting appliances* (3rd edition)

FEM 5.004:1994, *Rules for the design of the steel structures of general use mobile cranes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4306-1:2007 and ISO 4306-2:1994 and the following apply¹⁾.

3.1

angle indicator

device to display the actual angle of parts of the crane to the horizontal

EXAMPLES Jib angle indicator, fixed fly jib angle indicator, luffing fly jib indicator and/or mast angle indicator.

3.2

angle limiter

device to limit the motion of parts of the crane regarding their angles

EXAMPLES Jib angle limiter, fly jib angle limiter and/or mast angle limiter.

3.3

cabin

control station with protective enclosure

NOTE See 3.6, 3.7 and 3.9.

1) The definitions are listed alphabetically.

3.4**configuration**

combination of structural members, counterweights, support or outrigger position, hook block reeving and similar items assembled, positioned and erected according to manufacturer's instructions and ready for operation

3.5**control station**

permanent position of controls on or off the crane

3.6**crane**

machine for cyclic lifting or cyclic lifting and handling of loads suspended on hooks or other load handling devices, whether manufactured to an individual design, in series or from prefabricated components

NOTE "Suspended" can include additional means fitted to prevent swinging, rotation of the load, etc.

3.7**crane level indicator**

device to indicate the "levelled position" of the crane

3.8**crane operating cabin**

cabin provided for the operation of the crane motions to move the load

3.9**crane travelling cabin**

cabin provided for the transportation of the crane by road from one job site to another

3.10**derricking (luffing) limiter**

device to prevent derricking (luffing) motions of the jib and/or fly jib beyond specified limits

3.11**hoisting limiter**

device either to prevent the fixed load lifting attachment from being raised such that it strikes the crane structure, or to prevent any other specified upper limitation of the load lifting attachment from being exceeded

NOTE It can also include any other design limitation imposing a restriction on lifting.

3.12**hook load indicator**

device to display the actual mass (weight) of the load

3.13**indicator**

device which provides warnings and/or data to facilitate the competent control of the crane within its design parameters

3.14**jib length indicator**

device to display the actual jib length

3.15**load bearing component**

single part or assembly of parts of a crane, which are directly subjected to load effects

EXAMPLES Hooks, ropes (stationary or running), traverse beams, pendant bars, wheels, axles, gears, couplings, brakes, hoists, hydraulic cylinders, shafts and pins.

NOTE In contrast to (steel) structures components can be regarded as independent units.