SLOVENSKI STANDARD
oSIST prEN 14238:2024

01-julij-2024

Dvigala - Ročno upravljane naprave za ravnanje s tovorom

Cranes - Manually controlled load manipulators

Krane - Handgeführte Manipulatoren

Appareils de levage à charge suspendue - Manipulateurs de charge à contrôle manuel

Ta slovenski standard je istoveten z: **prEN 14238**

ICS:

53.020.20 Dvigala Cranes

oSIST prEN 14238:2024 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 14238

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ICS 53.020.20

Will supersede EN 14238:2004+A1:2009

English Version

Cranes - Manually controlled load manipulators

Appareils de levage à charge suspendue - Manipulateurs de charge à contrôle manuel

Krane - Handgeführte Manipulatoren

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.

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

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

Ref. No. prEN 14238:2024 E

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European foreword

This document (prEN 14238:2024) has been prepared by Technical Committee CEN/TC 147 “Cranes — Safety”, the secretariat of which is held by SFS.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14238:2009.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States. For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of the document.

prEN 14238:2024 includes the following significant technical changes with respect to EN 14238:2009:

— integration and rules for application of EN 13001 series of standards;

— integration and rules for application of EN ISO 13849-1:2023;

— reference to EN 13155:2020 and to EN 16851:2017+A1:2020.

To select a suitable set of crane standards for a given application see Annex C.

Introduction

This document has been prepared to be a harmonized standard to provide one means for manually controlled load manipulators to conform with the essential health and safety requirements of the Machinery Directive, as mentioned in Annex ZA.

This document is a type-C standard as stated in EN ISO 12100:2010.

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);

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— 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 requirements for manually controlled load manipulating cranes (herein referred to as manipulators), powered by an energy other than human energy, to assist an operator in the handling of loads.

This document does not cover:

— mechanically operated balancers that are based on springs, counterweights or automatons;

— manipulating robots;

— operation in severe conditions (e.g. extreme environmental conditions such as: freezer applications, high temperatures, corrosive environment, strong magnetic fields);

— operation subject to special rules;

— handling of loads the nature of which could lead to dangerous situations (e.g. molten metal, acids/alkalies, radiating materials, specially brittle loads);

NOTE High risk applications are dealt by EN 13135:2018 and EN 13001-2:2021.

— hazards occurring during construction, transportation, decommissioning and disposal.

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

The significant hazards covered by this document are identified in Annex A. For hazards that are not significant, EN ISO 12100:2010 applies.

This document is not applicable to manipulators manufactured before the date of its publication.

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 1999-1-1:2023, *Eurocode 9 — Design of aluminum structures — Part 1-1: General structural rules*

EN 1999-1-3:2023, *Eurocode 9 — Design of aluminum structures — Part 1-3: Structures susceptible to fatigue*

EN 1999-1-5:2023, *Eurocode 9 — Design of aluminum structures — Part 1-5: Shell structures*

EN 12077-2:1998+A1:2008, *Cranes safety — Requirements for health and safety — Part 2: Limiting and indicating devices*

EN 13001-1:2015, *Cranes — General design — Part 1: General principles and requirements*

EN 13001-2:2021, *Cranes safety — General design — Part 2: Load actions*

EN 13001-3-1:2012+A2:2018, *Cranes — General design — Part 3-1: Limit states and proof of competence of steel structure*

EN 13001-3-2:2014, *Cranes — General design — Part 3-2: Limit states and proof competence of wire ropes in reeving systems*

EN 13155:2020[1], *Cranes — Safety — Non-fixed load lifting attachments*

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

EN 14492-2:2019, *Cranes — Power driven winches and hoists — Part 2: Power driven hoists*

EN 16851:2017+A1:2020, *Cranes — Light crane systems*

EN 60204-32:2008, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (ISO 60204-32:1998)*

EN ISO 3744:2010, *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 3746:2010, *Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:2010, *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 11688-1:2009, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

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

EN ISO 13849-1:2023, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2023)*

EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, ISO 4306-1:2007and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1
operator
person who uses (operates) the crane controls

[see SOURCE: ISO 4306-1:2007, definition 7.1]

3.2
load lifting attachment
device (hook, grab, electromagnet, fork, traverse, spreader or other) for grabbing, holding or handling the load

Note 1 to entry: alternate term: load-handling device.

[see SOURCE: ISO 4306-1:2007, definition 4.28, modified]

3.3
balancing of a load
condition when a load is submitted to a vertical upward force equal to its weight and where additional external force is required to change the position of the load

3.4
control
actuating device which forms an interface between the operator and the manipulator control system

3.5
drift
uncontrolled and unintended movement of the manipulator and / or load

3.6
manipulator
crane, where the operator has to be in contact with the load or load lifting attachment, in order to guide and control the motion of the load to bring it to a position in space.

Manipulators include three basic functional elements:

— the load lifting attachment;

— devices to move and place the load in space;

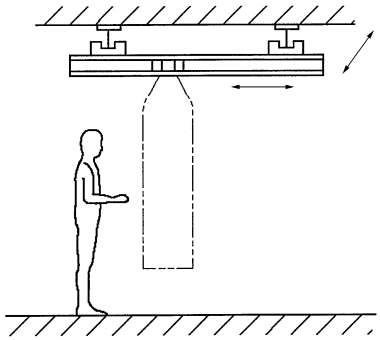
— the supporting structure

Note 1 to entry: Examples of manipulator systems are shown in Figure 1.

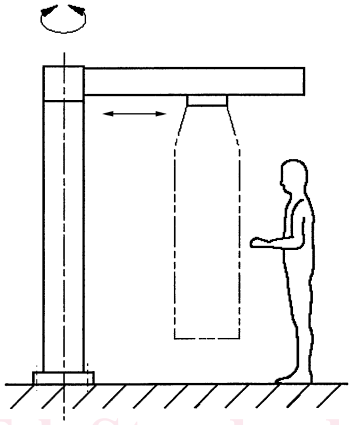
3.7
supporting structure
all parts of the manipulator that are affected by the force of the suspended load

3.8
working load limit (WLL)
maximum load the manipulator is designed to lift under the conditions specified by the manufacturer

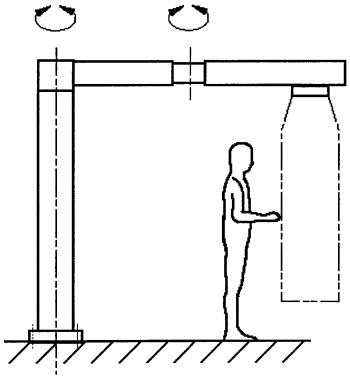
[SOURCE: ISO 17096:2015, 3.22, modified]



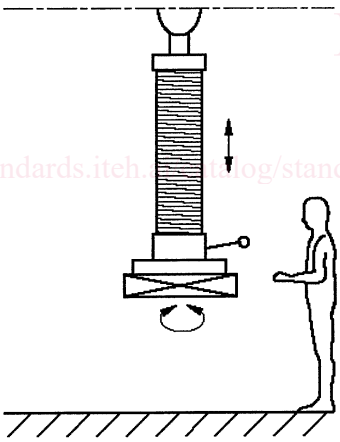
1. Overhead mounted system



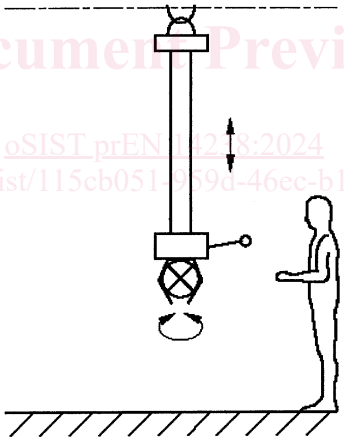
2. Floor mounted system



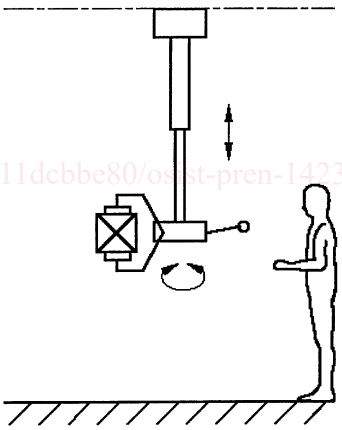
3. Floor mounted system with articulation



4. Vacuum lifting tube manipulator



5. Winch or hoist driven manipulator



6. Telescopic manipulator