SLOVENSKI STANDARD
SIST EN 14238:2004+A1:2009

01-november-2009

Dvigala - Roļ no upravljane naprave za ravnanje s tovorom

Cranes - Manually controlled load manipulating devices

Krane - Handgeführte Manipulatoren

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 14238:2004+A1:2009**

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

ICS:

53.020.20 Dvigala Cranes

SIST EN 14238:2004+A1:2009 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 14238:2004+A1:2009

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

SIST EN 14238:2004+A1:2009

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14238:2004+A1

August 2009

ICS 53.020.20

Supersedes EN 14238:2004

English Version

Cranes - Manually controlled load manipulating devices

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

Krane - Handgeführte Manipulatoren

This European Standard was approved by CEN on 21 May 2004 and includes Amendment 1 approved by CEN on 16 July 2009.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2009 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

SIST EN 14238:2004+A1:2009

Contents

page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

SIST EN 14238:2004+A1:2009

Foreword

This document (EN 14238:2004+A1:2009) 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 February 2010, and conflicting national standards shall be withdrawn at the latest by February 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 includes Amendment 1, approved by CEN on 2009-07-16.

This document supersedes EN 14238:2004.

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).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

⟩A1⟨ For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟩A1⟨

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08653e6-6840-4331-853e-ac1303ec7662/sist-en-14238-2004a1-2009

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, 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 United Kingdom.

SIST EN 14238:2004+A1:2009

Introduction

This document is a harmonized standard to provide one means for manually controlled load manipulating devices to conform to the essential health and safety requirements of the Machinery Directive, as amended.

This document 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 events are covered are indicated in the scope of this document.

When provisions of this type C document are different from those are stated in type A or B documents, the provisions of this type C document take precedence over the provision of the other documents, for machines that have been designed and built according to the provisions of this type C document.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

SIST EN 14238:2004+A1:2009

1 Scope

This document specifies requirements for manually controlled load manipulating devices (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 or counterweights;

— manipulating robots;

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

This document does not establish the additional requirements for:

— 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);

iTeh STANDARD PREVIEW

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

(standards.iteh.ai)

The significant hazards covered by this document are identified in Clause 4. For hazards that are not significant, EN ISO 12100-2 applies.

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

This document is applicable to manipulators which are manufactured after the date of approval by CEN of this standard.

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 294, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*

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

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

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

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

EN 1050:1996, *Safety of machinery — Principles for risk assessment*

〚A1〛 *deleted text* 〚A1〛

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

SIST EN 14238:2004+A1:2009

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

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

EN 13001-2, *Cranes — General design — Part 2: Load effects*

EN 13155:2003, *Cranes — Safety — Non-fixed load lifting attachments*

EN 13557, *Cranes — Controls and control stations*

prEN 14492-2:2002, *Cranes — Power driven winches and hoists — Part 2: Power driven hoists*

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

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 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

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

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)*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ (ISO 11202:1995)*

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1998)*

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)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ▌A1⟩ EN ISO 12100-1:2003 ⟨A1▌ and the following definitions apply.

3.1
operator
person using the manipulator

3.2
load holding device
device to pick up and hold the load.

An interchangeable load holding device is a device that can be changed by the operator

NOTE Load holding can be achieved for instance by:

SIST EN 14238:2004+A1:2009

— adhesion (suction pads, magnets etc.);

— gripping (clamps etc.);

— mechanical connection (hooks, forks, C-hooks, etc.).

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
powered machine, where the operator has to be in contact with the load or holding device, in order to guide and/or control the motion of the load to bring it to a position in space.

Manipulators include 3 basic functional elements:

– the load holding device;

– devices to move and place the load in space;

– the supporting structure

iTeh STANDARD PREVIEW
(standards.iteh.ai)

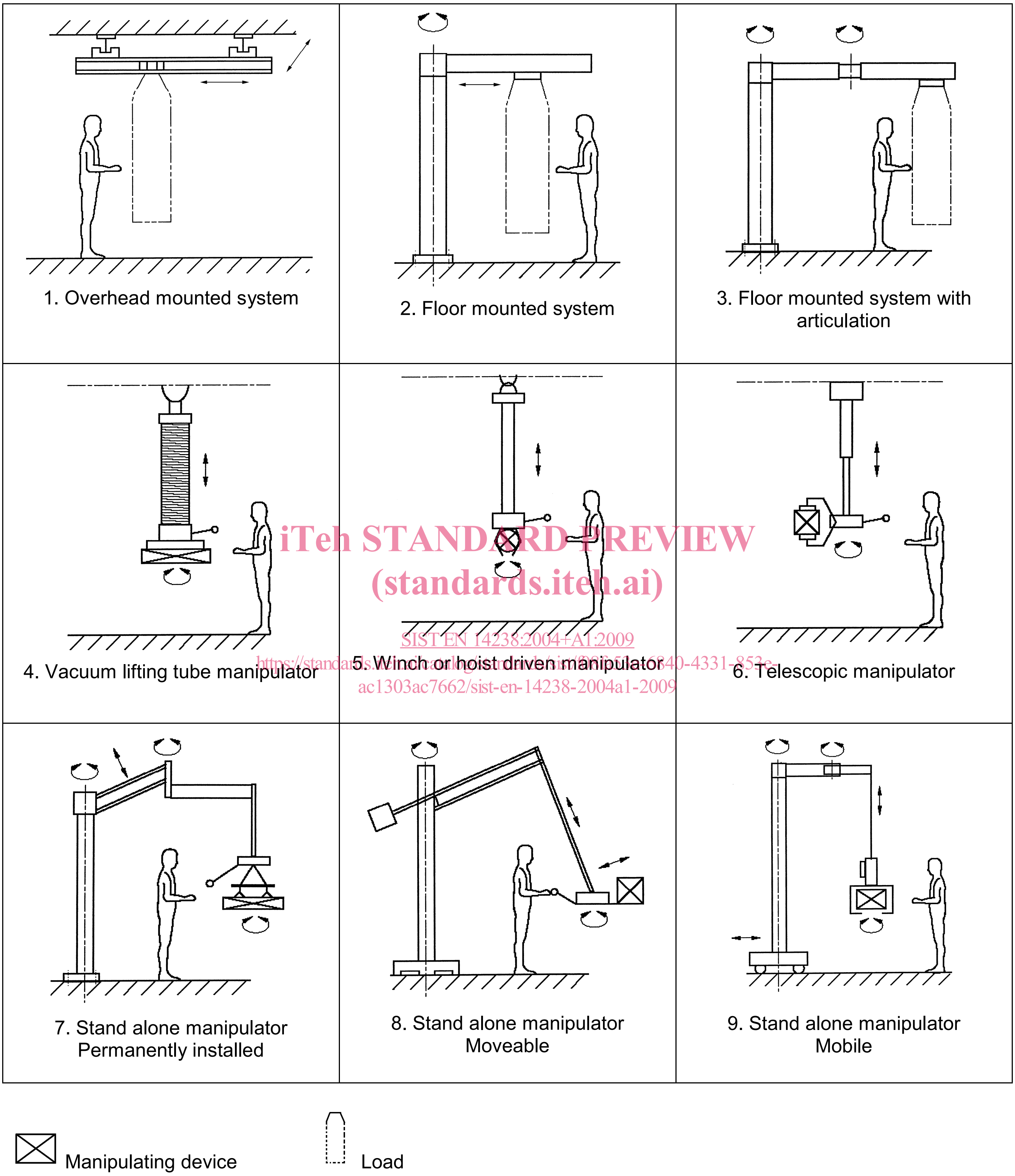
NOTE Examples of manipulator systems are shown in Figure 1.

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

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 that the manipulator is designed to handle under specified operating conditions, e.g. characteristics of the load (e.g. shape, material), gripping points, configuration

SIST EN 14238:2004+A1:2009



iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08b5...6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

1 to 3: examples of supporting systems for horizontal motion;

4 to 6: examples of manipulating devices that can be suspended from supporting systems shown in 1 to 3;

7 to 9: examples of stand-alone manipulators.

Figure 1 - Examples of manipulators systems

SIST EN 14238:2004+A1:2009

4 List of significant hazards

Tables 1, 2 and 3 show a list of significant hazardous situations and hazardous events that could result in risks to persons during normal use and foreseeable misuse. It also contains the relevant Clauses in this standard that are necessary to reduce or eliminate the risks associated with those hazards.

Table 1 — List of significant hazards and associated requirements – General

Hazard (as listed in EN 1050:1996)		Relevant Clause(s) in this standard
1	Mechanical hazards due to:	
a)	Shape	5.2.2
e)	Inadequacy of mechanical strength	5.2.1, 5.2.13, 6.3.2.1, 6.3.2.2
	- accumulation of energy inside the machinery, e.g.:	
h)	The effect of vacuum	5.2.6, 5.3, 5.4.2.1, 5.4.2.2, 5.4.2.3
1.1 and 1.2	Crushing, shearing hazards etc.	5.2.2, 5.4.1
1.9	High pressure fluid injection or ejection hazard	5.2.5, 5.2.6, 5.4.2.1, 5.4.2.2, 5.4.2.3, 5.4.4.1, 5.4.4.2, 5.4.4.3, 5.6.1
2	Electrical hazards	5.2.7, 5.4.3.1, 5.4.3.2, 5.4.3.3, 5.4.3.4
2.1	Contact of persons with live parts (direct contact)	5.2.7, 5.4.3.1, 5.4.3.2, 5.4.3.3, 5.4.3.4
4	Hazards generated by noise, resulting in:	5.6.6, 7.2.1.j, Annex A
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	5.6.6, 7.2.1.j, Annex A
4.2	Interference with speech communication, acoustic signals, etc.	5.6.6, 7.2.1.j, Annex A
8	Hazards generated by neglecting ergonomic principles in machinery design as, e.g. hazards from:	5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.6.4
8.7	Inadequate design, location or identification of manual controls	5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.6.4
10	Unexpected start-up, unexpected overrun / overspeed (or any similar function) from:	5.5.1, 5.5.3, 5.6.2, 5.6.3
11	Impossibility of stopping the machine	5.5.2
13	Failure of the power supply	5.4.2.2, 5.4.2.3, 5.4.3.3, 5.4.3.4, 5.4.4.3, 5.6.3
17	Falling or ejected objects or fluids	5.2.3, 5.2.5, 5.2.6, 5.3, 5.4.1.1, 5.4.1.3

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1303ac7662/sist-en-14238-2004a1-2009

SIST EN 14238:2004+A1:2009

Table 2 — Additional hazards, hazardous situations and hazardous events due to mobility

Hazard (as listed in EN 1050:1996)		Relevant Clause(s) in this standard
20 (1 - 6)	Relating to the travelling function	7.2. 7.3.1.1
21 (1 - 10)	Linked to the work position on the machine	5.6.1, 5.6.4, 7.2
22	Due to the control system	5.5, 7.2
23	Lack of stability	5.2.3
24	Due to the power source and to the transmission of power	5.4.2, 5.4.3, 5.4.4
25.3	Lack or inadequacy of visual or acoustic warning means	5.4.2.2, 5.4.3.3, 5.4.4.3, 5.6.3
26	Insufficient instructions for the driver / operator	7.2

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Table 3 — Additional hazards, hazardous situations and hazardous events due to lifting

Hazard (as listed in EN 1050:1996)		Relevant Clause(s) in this standard
27	Mechanical hazards and hazardous events:	
27.1	From load falls, collisions, machine tipping caused by:	5.2.13, 5.3, 5.4, 7.3.2
27.1.1	Lack of stability	5.2.3
27.1.2	Uncontrolled loading - overloading - overturning moments exceeded	5.2.3, 5.3, 5.6.2, 5.6.5
27.1.5	Inadequate holding of devices/accessories	5.4.1, 5.4.2, 5.4.3, 5.4.4, 7.3.2
27.4	From insufficient mechanical strength of parts	5.2.1, 5.3, 6.3.1, 6.3.2, 6.3.3
27.6	From inadequate selection/integration into the machine of chains, ropes, lifting accessories and their inadequate integration into the machine	5.2.13
27.8	From abnormal conditions of assembly/testing/use/maintenance	6.3, 7.2

SIST EN 14238:2004+A1:2009
https://standards.iteh.ai/catalog/standards/sist/f08fa53e-6840-4331-853e-ac1903ae7602/sist-en-14238-2004a1-2009