SLOVENSKI STANDARD
oSIST prEN ISO 14119:2011

01-december-2011

Varnost strojev - Zaporne naprave, povezane z varovali - Načela za načrtovanje in izbiro (ISO/DIS 14119:2011)

Safety of machinery - Interlocking devices associated with guards - Principles for design and selection (ISO/DIS 14119:2011)

Sicherheit von Maschinen - Verriegelungseinrichtungen in Verbindung mit trennenden Schutzeinrichtungen - Leitsätze für Gestaltung und Auswahl (ISO/DIS 14119:2011)

Sécurité des machines - Dispositifs de verrouillage associés à des protecteurs - Principes de conception et de choix (ISO/DIS 14119:2011)

Ta slovenski standard je istoveten z: **prEN ISO 14119**

ICS:

13.110	Varnost strojev	Safety of machinery

oSIST prEN ISO 14119:2011 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

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DRAFT
prEN ISO 14119

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ICS 13.110

Will supersede EN 1088:1995+A2:2008

English Version

Safety of machinery - Interlocking devices associated with guards - Principles for design and selection (ISO/DIS 14119:2011)

Sécurité des machines - Dispositifs de verrouillage associés à des protecteurs - Principes de conception et de choix (ISO/DIS 14119:2011)

Sicherheit von Maschinen - Verriegelungseinrichtungen in Verbindung mit trennenden Schutzeinrichtungen - Leitsätze für Gestaltung und Auswahl (ISO/DIS 14119:2011)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 114.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

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Foreword

This document (prEN ISO 14119:2011) has been prepared by Technical Committee ISO/TC 199 "Safety of machinery" in collaboration with Technical Committee CEN/TC 114 “Safety of machinery” the secretariat of which is held by DIN.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN 1088:1995+A2:2008.

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).

Endorsement notice

The text of ISO/DIS 14119:2011 has been approved by CEN as a prEN ISO 14119:2011 without any modification.

DRAFT INTERNATIONAL STANDARD ISO/DIS 14119

ISO/TC **199** Secretariat: **DIN**

Voting begins on **2011-09-22** Voting terminates on **2012-02-22**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Safety of machinery — Interlocking devices associated with guards — Principles for design and selection

Sécurité des machines — Dispositifs de verrouillage associés à des protecteurs — Principes de conception et de choix

[Revision of first edition (ISO 14119:1998) and ISO 14119:1998/Amd.1:2007]

ICS 13.110

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 14119 was prepared by Technical Committee ISO/TC 199, *Safety of machinery*, and by Technical Committee CEN/TC 114, *Safety of machinery* in collaboration.

This second edition cancels and replaces the first edition (ISO 14119:1998) and ISO 14119 AMD:1:2007 and contains the following features:

— improved structure as a result of the differentiation and definition of four types of interlocking devices;

— description of their technology and their advantages and disadvantages in the annexes;

— “defeat in a reasonably foreseeable manner” defined and considered;

— required measures to minimize defeat possibilities as a result of a risk assessment;

— new technologies are considered and new informative Annexes G, H, I and J are added.

NOTE By agreement between ISO and CEN, the CEN specific paragraphs and annexes are included up to the FDIS, but will not appear in the published ISO standard.

Introduction

The structure of safety standards in the field of machinery is as follows:

— type-A standards (basic safety standards) giving basic concepts, principles for design and general aspects that can be applied to machinery;

— type-B standards (generic safety standards) dealing with one safety aspect or one type of safeguard that can be used across a wide range of machinery:

  — type-B1 standards on particular safety aspects (for example, safety distances, surface temperature, noise);

- type-B2 standards on safeguards (for example, two-hand controls, interlocking devices, pressure-sensitive devices, guards);

- type-C standards (machine safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

This document is a type-B2 standard as stated in ISO 12100.

The requirements of this document can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

This International Standard has been prepared to give guidance to machinery designers and writers of product safety standards on how to design and select interlocking devices associated with guards.

Relevant clauses of this International Standard, used alone or in conjunction with provisions from other standards, may be used as a basis for verification procedures for the suitability of a device for interlocking duties.

The informative Annexes A to F describe the technology and the advantages and disadvantages of the defined 4 types of interlocking devices. Other solutions may be adopted, provided that they comply with the principles of this standard. The informative Annexes G to J give information on particular aspects like interlocking devices used within safety functions, risk assessment considering the motivation to defeat, static action forces and masking of faults in series connection of interlocking devices.

Safety of machinery — Interlocking devices associated with guards — Principles for design and selection

1 Scope

This International Standard specifies principles for the design and selection – independent of the nature of the energy source – of interlocking devices associated with guards.

It also provides requirements specifically intended for electrical interlocking devices.

This International Standard covers the parts of guards which actuate interlocking devices.

NOTE Requirements for guards are given in ISO 14120. The processing of the signal from the interlocking device to stop and immobilize the machine is dealt with in ISO 13849-1.

This International standard is intended to provide measures to minimize defeat of interlocking devices in a reasonably foreseeable manner.

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.

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

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

ISO 13849-2:2003, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation*

ISO 13855:2010, *Safety of machinery — Positioning of protective equipment with respect to the approach speeds of parts of the human body*

ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by the upper and lower limbs*

ISO 14118:2000, *Safety of machinery — Prevention of unexpected start-up*

ISO 14120:2002, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices*

IEC 60947-5-2, *Low-voltage switchgear and controlgear — Part 5-2: Control circuit devices and switching elements — Proximity switches*

IEC 60947-5-3, *Low-voltage switchgear and controlgear — Part 5-3: Control circuit devices and switching elements — Requirements for proximity devices with defined behaviour under fault conditions (PDF)*

IEC 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*

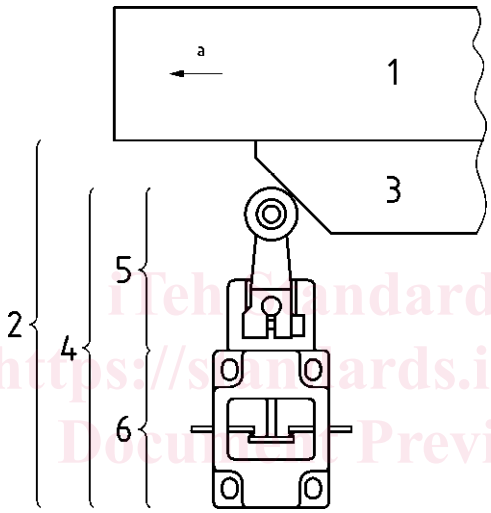
3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 13849-1:2006 and the following apply.

3.1
interlocking device
interlock
mechanical, electrical or other type of device, the purpose of which is to prevent the operation of hazardous machine functions under specified conditions (generally as long as a guard is not closed)

[ISO 12100:2010, 3.28.1]

NOTE See Figure 1 and Table 1.



Key

1	guard	4	position switch
2	interlocking device	5	actuating system
3	actuator (cam)	6	output system
a	direction of opening		

Figure 1 — Example of an interlocking device

3.2
interlocking guard
guard associated with an interlocking device so that, together with the control system of the machine, the following functions are performed:

— the hazardous machine functions "covered" by the guard cannot operate until the guard is closed;

— if the guard is opened while hazardous machine functions are operating, a stop command is given;

— when the guard is closed, the hazardous machine functions "covered" by the guard can operate. The closure of the guard does not by itself start the hazardous machine functions.

[ISO 12100:2010, 3.27.4]