

STN	Bezpečnosť strojov. Ochranné kryty. Všeobecné požiadavky na navrhovanie a konštrukciu pevných a pohyblivých krytov (ISO 14120: 2015).	STN EN ISO 14120 83 3006
------------	--	--

Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/16

Obsahuje: EN ISO 14120:2015, ISO 14120:2015

Oznámením tejto normy sa ruší
STN EN 953+A1 (83 3006) z júla 2009

122878

EUROPEAN STANDARD

EN ISO 14120

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2015

ICS 13.110

Supersedes EN 953:1997+A1:2009

English Version

Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)

Sécurité des machines - Protecteurs - Prescriptions
générales pour la conception et la construction des
protecteurs fixes et mobiles (ISO 14120:2015)

Sicherheit von Maschinen - Trennende
Schutzeinrichtungen - Allgemeine Anforderungen an
Gestaltung, Bau und Auswahl von feststehenden und
beweglichen trennenden Schutzeinrichtungen (ISO
14120:2015)

This European Standard was approved by CEN on 3 October 2015.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword.....	3
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC.....	4

European foreword

This document (EN ISO 14120:2015) 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 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 May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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 953:1997+A1:2009.

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.

Endorsement notice

The text of ISO 14120:2015 has been approved by CEN as EN ISO 14120:2015 without any modification.

Annex ZA
(informative)
**Relationship between this European Standard and the Essential
Requirements of EU Directive 2006/42/EC**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Machinery 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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

*Sécurité des machines — Protecteurs — Prescriptions générales pour
la conception et la construction des protecteurs fixes et mobiles*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Risk assessment	8
5 General requirements for the design and construction of guards	8
5.1 Machine aspects.....	8
5.1.1 General.....	8
5.1.2 Access to hazard zones.....	8
5.1.3 Containment of ejected parts and other impacts.....	8
5.1.4 Containment of hazardous substances.....	9
5.1.5 Noise.....	9
5.1.6 Radiation.....	9
5.1.7 Potentially explosive atmosphere.....	9
5.2 Human aspects.....	9
5.2.1 General.....	9
5.2.2 Safety distances.....	9
5.2.3 Control of access to the hazard zone.....	9
5.2.4 Viewing.....	10
5.2.5 Ergonomic aspects.....	10
5.2.6 Intended use.....	10
5.3 Guard design and construction aspects.....	11
5.3.1 General.....	11
5.3.2 Crushing or trapping points.....	11
5.3.3 Durability.....	11
5.3.4 Hygiene.....	11
5.3.5 Cleaning.....	11
5.3.6 Exclusion of contaminants.....	11
5.3.7 Sharp edges, etc.....	11
5.3.8 Integrity of joints.....	11
5.3.9 Removal of fixed guards.....	11
5.3.10 Mounting of removable fixed guards.....	12
5.3.11 Adjustable guards.....	12
5.3.12 Movable guards.....	12
5.3.13 Closed position of movable guards.....	12
5.3.14 Interlocking guards with a start function (control guards).....	12
5.4 Materials, rigidity, and impact requirements.....	13
5.4.1 General.....	13
5.4.2 Impact and ejection resistance.....	13
5.4.3 Rigidity.....	13
5.4.4 Secure fixing.....	13
5.4.5 Reliability of moving parts.....	13
5.5 Containment.....	13
5.6 Resistance to corrosion.....	13
5.7 Resistance to microorganisms.....	13
5.8 Non-toxicity.....	14
5.9 Machine viewing.....	14
5.10 Transparency.....	14
5.11 Shadows and stroboscopic effects.....	14
5.12 Electrostatic properties.....	14
5.13 Guards with electrically conductive parts.....	14

5.14	Thermal stability	14
5.15	Fire and flammability	14
5.16	Noise and vibration reduction	15
5.17	Radiation protection	15
5.18	Climbing	15
5.19	Retained fastenings	15
5.20	Vibration resistance	15
5.21	Warning signs	15
5.22	Colour	16
5.23	Appearance	16
6	Selection of types of guards	16
6.1	General	16
6.2	Combination of different guards or of guards with other devices	16
6.3	Selection of guards according to the number and size of the hazards	17
6.4	Selection of guards according to the nature and frequency of access required	18
6.4.1	General	18
6.4.2	Moving transmission parts	18
6.4.3	Where access is not required during use	18
6.4.4	Where access is required during use	18
7	Verification of the safety requirements for guards	19
7.1	General	19
7.2	Verification and validation methods	19
7.3	Required verification and validation	19
8	Information for use	23
8.1	General	23
8.2	Guard hazards	23
8.3	Installation	23
8.4	Operation	23
8.5	Removal of guards	23
8.6	Inspection and maintenance	24
	Annex A (informative) Example of retained fastening	25
	Annex B (informative) Example of projectile test method for mechanically testing guards	26
	Annex C (informative) Example of pendulum test method for mechanically testing guards	30
	Annex D (informative) Relationship between International Standards referenced in Clause 2 and corresponding European Standards	34
	Bibliography	35

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 199, *Safety of machinery*.

This second edition cancels and replaces the first edition (ISO 14120:2002), which has been technically revised. The main changes from the previous edition are as follows.

- Definitions have been brought into line with ISO 12100. The figures showing examples of guards have been updated where appropriate.
- [Clause 5](#) has been updated with new references to ISO 13855 and ISO 14119. Requirements on the removal of guards have been amended. [Subclause 5.3.9](#) describes requirements for the removal of fixed guards only with a tool. In addition, there is a requirement that fixed guards be designed to prevent easy removal. The subclause about impact and ejection resistance ([5.4](#)) has been strengthened. Subclauses on Climbing ([5.18](#)), Retained fastenings ([5.19](#)), Warning signs ([5.21](#)), Colour ([5.22](#)) and Appearance ([5.23](#)) have been added.
- [Clause 6](#) has been amended and updated to better include cover combinations of different guards or of guards with other devices. Selection of guards according to the number and size of the hazards ([6.3](#)) has been changed and updated. [Subclause 6.4.4.2](#), where access is required during the working cycle, has been changed and updated.
- Clauses on verification and validation have been introduced ([Clause 7](#)). This includes a table which outlines the safety requirements and/or measures by subclause.
- The text of [Clause 8](#) has been updated, including requirements for procedures for removal of guards (use of a tool and the safe working procedure). The subclause for removal of guards ([8.5](#)) has changed.
- Two new informative annexes on test methods, one on projectile tests and the other on impact tests, have been added.
- The Bibliography, which contains a list of International and European Standards published or in preparation that can be helpful in the design and commissioning of guards, has been updated.

Introduction

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

- a) **type-A standards** (basic safety standards) giving basic concepts, principles for design, and general aspects that can be applied to all machinery;
- b) **type-B standards** (generic safety standards) dealing with one safety aspect or one or more type(s) of safeguard that can be used across a wide range of machinery:
 - type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);
 - type-B2 standards on safeguards (e.g. two-hand controls, interlocking devices, pressure-sensitive devices, guards);
- c) **type-C standards** (machine safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

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

Guards provide a risk reduction for both protection against unintended access and against ejected parts and substances. The guarding can also give protection against others hazards, e.g. noise, fire, biological hazards, and radiation.

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

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

Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards

1 Scope

This International Standard specifies general requirements for the design, construction, and selection of guards provided to protect persons from mechanical hazards.

This International Standard indicates other hazards that can influence the design and construction of guards.

This International Standard applies to guards for machinery which will be manufactured after it is published.

The requirements are applicable if fixed and movable guards are used. This International Standard does not cover interlocking devices. These are covered in ISO 14119.

This International Standard does not provide requirements for special systems relating specifically to mobility such as ROPS (rollover protective structures), FOPS (falling-object protective structures), and TOPS (tip over protective structures) or to the ability of machinery to lift loads.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 13855, *Safety of machinery — Positioning of safeguards 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 upper and lower limbs*

ISO 14119, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

ISO 14123-1, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

ISO 14159, *Safety of machinery — Hygiene requirements for the design of machinery*

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

koniec náhľadu – text ďalej pokračuje v platenej verzii STN