



SLOVENSKI STANDARD SIST EN ISO 23125:2010

01-december-2010

Nadomešča:

SIST EN 12415:2001

SIST EN 12415:2001/A1:2003

SIST EN 12478:2001

SIST EN 12478:2001/AC:2002

SIST EN 12840:2001

SIST EN 13788:2003

Obdelovalni stroji - Varnost - Stroji za struženje (ISO 23125:2010)

Machine tools - Safety - Turning machines (ISO 23125:2010)

Werkzeugmaschinen - Sicherheit - Drehmaschinen (ISO 23125:2010)

Machines-outils - Sécurité - Machines de tournage (ISO 23125:2010)

Ta slovenski standard je istoveten z: EN ISO 23125:2010

ICS:

13.110	Varnost strojev	Safety of machinery
25.080.10	Stružnice	Lathes

SIST EN ISO 23125:2010 en,fr

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 23125:2010

<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010>

EUROPEAN STANDARD

EN ISO 23125

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2010

ICS 25.080.01

Supersedes EN 12415:2000, EN 12478:2000, EN
12840:2001, EN 13788:2001

English Version

Machine tools - Safety - Turning machines (ISO 23125:2010)Machines-outils - Sécurité - Machines de tournage (ISO
23125:2010)Werkzeugmaschinen - Sicherheit - Drehmaschinen (ISO
23125:2010)

This European Standard was approved by CEN on 13 February 2010.

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, 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 United Kingdom.

iTeh STANDARD PREVIEW
[https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-
fe79db0afe58/sist-en-iso-23125-2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010)

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG**Management Centre: Avenue Marnix 17, B-1000 Brussels**

Contents	Page
Foreword.....	3
Annex ZA (informative) Relationship between this International Standard and the Essential Requirements of 2006/42/EC	4

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 23125:2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010)
<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010>

Foreword

This document (EN ISO 23125:2010) has been prepared by Technical Committee ISO/TC 39 "Machine tools" in collaboration with Technical Committee CEN/TC 143 "Machine tools - Safety" the secretariat of which is held by SNV.

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 November 2010, and conflicting national standards shall be withdrawn at the latest by November 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 12478:2000, EN 12415:2000, EN 12840:2001, EN 13788:2001.

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.

For relationship with EU Directive, 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, 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.

[SIST EN ISO 23125:2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0af658/sist-en-iso-23125-2010)

[https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0af658/sist-en-iso-23125-2010)

[fe79db0af658/sist-en-iso-23125-2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0af658/sist-en-iso-23125-2010)

Endorsement notice

The text of ISO 23125:2010 has been approved by CEN as a EN ISO 23125:2010 without any modification.

Annex ZA (informative)

Relationship between this International Standard and the Essential Requirements of 2006/42/EC

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

Once this International 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 International Standard confers, within the limits of the scope of this International Standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives (e.g. 2004/108/EC “Electromagnetic compatibility”) may be applicable to the products falling within the scope of this International Standard.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 23125:2010

<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010>

INTERNATIONAL STANDARD

ISO
23125

First edition
2010-05-01

Machine tools — Safety — Turning machines

Machines-outils — Sécurité — Machines de tournage

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 23125:2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010)

[https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-
fe79db0afe58/sist-en-iso-23125-2010](https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010)



Reference number
ISO 23125:2010(E)

© ISO 2010

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 23125:2010

<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010>

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2010

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	V
Introduction.....	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	5
3.1 General terms	5
3.2 Parts of turning machines	6
3.3 Modes of operation	7
3.4 Size and groups of turning machines defined in this International Standard	8
3.4.1 General	8
3.5 Mandatory and optional modes of operation for turning machines	14
3.6 Maximum permissible spindle speeds and axes feeds	14
4 List of significant hazards	15
4.1 Main hazard zones	15
4.2 Significant hazards and hazardous situations covered by this International Standard	16
5 Safety requirements and/or measures	21
5.1 General requirements	21
5.1.1 Required characteristics for guards for all machine groups	21
5.2 Specific requirements resulting from mechanical hazards identified in Clause 4	22
5.2.1 Group 1 machines	22
5.2.2 Groups 2, 3 and 4 machines	23
5.2.3 Workpiece clamping conditions	26
5.2.4 Modes of machine operation	27
5.2.5 Optional or additional equipment for turning machines	31
5.3 Specific requirements resulting from electrical hazards	33
5.4 Specific requirements resulting from noise hazards	34
5.5 Specific requirements resulting from radiation hazards	34
5.6 Specific requirements resulting from material or substance hazards	34
5.7 Specific requirements resulting from neglect of ergonomic principles hazards	35
5.8 Specific requirements resulting from unexpected start-up, over-run or over-speed hazards	37
5.9 Specific requirements resulting from variation in the rotational speed of tools hazards	39
5.10 Specific requirements resulting from failure of the power supply hazards	39
5.11 Specific requirements resulting from failure of the control circuit hazards	39
5.12 Specific requirements resulting from errors of fitting hazards	41
5.13 Specific requirements resulting from ejected fluids or objects hazards	41
5.13.1 General requirements	41
5.13.2 Guards for large vertical Group 3 machines (NC turning machines and turning centres)	42
5.13.3 Guards for large horizontal Group 3 machines (NC turning machines and turning centres)	42
5.14 Specific requirements resulting from loss of stability hazards	43
5.15 Specific requirements resulting from slips, trips and fall of persons hazards	43
5.16 Verification of the safety requirements and/or protective measures	43
6 Information for use	46
6.1 Marking	46
6.2 Instruction for use	46
6.2.1 General	46
6.2.2 Tooling	48
6.2.3 Workpiece clamping	48
6.2.4 Machine functions accessible from the NC panel	49

ISO 23125:2010(E)

6.2.5	Restart	49
6.2.6	Noise	49
6.2.7	Ancillary handling devices	50
6.2.8	Residual risks to be addressed by the machinery user	50
6.2.9	Installation instructions for the turning machine	51
6.2.10	Cleaning instruction for the machine	51
Annex A	(normative) Impact test method for guards on turning machines	52
Annex B	(informative) Test equipment for impact test and examples of materials	57
Annex C	(informative) Calculation of direct impact energy	60
Annex D	(informative) Example of check list for safety functions	62
Annex E	(informative) Examples of exhaust and extinguishing systems	64
Annex F	(informative) Example of the determination of performance level for interlocked guard	68
	Bibliography	73

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 23125:2010

<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-fe79db0afe58/sist-en-iso-23125-2010>

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 23125 was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 10, *Safety*, in collaboration with Technical Committee CEN/TC 143, *Machine tools — Safety*.

This first edition cancels and replaces:

EN 12415:2000+A1:2002, *Safety of machine tools — Small numerically controlled turning machines and turning centres*

EN 12478:2000, *Safety of machine tools — Large numerically controlled turning machines and turning centres*

EN 12840:2001, *Safety of machine-tools — Manually controlled turning machines with or without automatic control*

EN 13788:2001, *Machine tools — Safety — Multi-spindle automatic turning machines*

which have been technically revised.

The International Standards produced by ISO/TC 39/SC 10 in collaboration with CEN/TC 143 are particular to machine tools and complement the relevant A and B standards on the subject of general safety (see Introduction to ISO 12100-1 for a description of type-A, -B and -C standards).

This International Standard 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).

ISO 23125:2010(E)**Introduction**

This International Standard has been prepared to be a Harmonized Standard to provide one means of conforming to the Essential Safety Requirements of the Machinery Directive of the European Union and associated EFTA regulations.

This International Standard is a type-C standard as defined in ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered is indicated in the Scope of this International Standard. In addition, turning machines shall comply as appropriate with ISO 12100-1 and ISO 12100-2 for hazards which are not covered by this International Standard.

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 International Standards for machines that have been designed and built in accordance with the provisions of this type-C standard.

This International Standard replaces the “safety categories” defined in EN 954-1¹⁾ as resistance to faults and their subsequent behaviour in the fault condition, by introducing the “performance level” defined in ISO 13849-1:2006 in terms of probability of dangerous failure per hour.

The requirements of this International Standard concern designers, manufacturers, suppliers and importers of machines described in the Scope.

This International Standard also includes a list of informative items to be provided by the manufacturer to the user.

<https://standards.iteh.ai/catalog/standards/sist/ea42a5d5-d72a-43c9-9933-f79db0afe58/sist-en-iso-23125-2010>

The requirements for a new mode of operation, Mode 3 “manual intervention machining mode” will be discussed in the future.

1) The application of EN 954-1:1996 in harmonized standards has been prolonged until 2011-12-31. After that date, “performance levels” are to be applied.

Machine tools — Safety — Turning machines

1 Scope

This International Standard specifies the requirements and/or measures to eliminate the hazards or reduce the risks in the following groups of turning machines and turning centres, which are designed primarily to shape metal by cutting.

- **Group 1:** Manually controlled turning machines without numerical control.
- **Group 2:** Manually controlled turning machines with limited numerically controlled capability.
- **Group 3:** Numerically controlled turning machines and turning centres.
- **Group 4:** Single- or multi-spindle automatic turning machines.

NOTE 1 For detailed information on the machine groups, see the definitions in 3.4 and mandatory and optional modes of operation in 3.5.

NOTE 2 Requirements in this International Standard are, in general, applicable to all groups of turning machines. If requirements are applicable to some special group(s) of turning machines only, then the special group(s) of turning machine(s) is/are specified.

NOTE 3 Hazards arising from other metalworking processes (e.g. grinding and laser processing) are covered by other International Standards (see Bibliography).

This International Standard covers the significant hazards listed in Clause 4 and applies to ancillary devices (e.g. for workpieces, tools and work clamping devices, handling devices and chip handling equipment), which are integral to the machine.

This International Standard also applies to machines which are integrated into an automatic production line or turning cell inasmuch as the hazards and risks arising are comparable to those of machines working separately.

This International Standard also includes a minimum list of safety-relevant information which the manufacturer has to provide to the user. See also ISO 12100-1:2003, Figure 1, which illustrates the interaction of manufacturer's and user's responsibility for the operational safety.

The user's responsibility to identify specific hazards (e.g. fire and explosion) and reduce the associated risks can be critical (e.g. whether the central extraction system is working correctly).

Where additional processes (e.g. milling, grinding, etc.) are involved, this International Standard can be taken as a basis for safety requirements; for specific information see the Bibliography.

This International Standard applies to machines that are manufactured after the date of issue of this International Standard.

ISO 23125:2010(E)

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 230-5:2000, *Test code for machine tools — Part 5: Determination of the noise emission*

ISO 447:1984, *Machine tools — Direction of operation of controls*

ISO 702-1:2009, *Machine tools — Connecting dimensions of spindle noses and work holding chucks — Part 1: Conical connection*

ISO 841:2001, *Industrial automation systems and integration — Numerical control of machines — Coordinate system and motion nomenclature*

ISO 3744:—²⁾, *Acoustics — Determination of sound power level of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane*

ISO 3746:—³⁾, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane*

ISO 4413:—⁴⁾, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

ISO 4414:—⁵⁾, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

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

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

ISO 8525:2008, *Airborne noise emitted by machine tools — Operating conditions for metal-cutting machines*

ISO 9241(all parts), *Ergonomics of human-system interaction*

ISO 10218-2:—⁶⁾, *Robots and robotic devices — Safety requirements — Part 2: Industrial robot system and integration*

ISO 11202:—⁷⁾, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections*

ISO 11204:—⁸⁾, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections*

2) To be published. (Revision of ISO 3744:1994)

3) To be published. (Revision of ISO 3746:1995)

4) To be published. (Revision of ISO 4413:1998)

5) To be published. (Revision of ISO 4414:1998)

6) To be published.

7) To be published. (Revision of ISO 11202:1995)

8) To be published. (Revision of ISO 11204:1995)

- ISO/TR 11688-1:1995, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning*
- ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*
- ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles*
- 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 13850:2006, *Safety of machinery — Emergency stop — Principles for design*
- ISO 13851:2002, *Safety of machinery — Two-hand control devices — Functional aspects and design principles*
- ISO 13854:1996, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*
- ISO 13855:—⁹⁾, *Safety of machinery — Positioning of protective equipment with respect to the approach speeds of parts of the human body*
- ISO 13856-2:2005, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for the design and testing of pressure-sensitive edges and pressure-sensitive bars*
- ISO 13856-3:2006, *Safety of machinery — Pressure-sensitive protective devices — Part 3: General principles for the design and testing of pressure-sensitive bumpers, plates, wires and similar devices*
- ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*
- ISO 14118:2000, *Safety of machinery — Prevention of unexpected start-up*
- ISO 14119:1998, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*
- ISO 14120:2002, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*
- ISO 14121-1:2007, *Safety of machinery — Risk assessment — Part 1: Principles*
- ISO 14122-1:2001, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between two levels*
- ISO 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*
- ISO 14122-3:2001, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails*
- ISO 14122-4:2004, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders*
- ISO 14159:2002, *Safety of machinery — Hygiene requirements for the design of machinery*

9) To be published.