INTERNATIONAL STANDARD

ISO 23125

First edition
2010-05-01

AMENDMENT 1
2012-04-01

Machine tools — Safety — Turning machines

AMENDMENT 1

Machines-outils — Sécurité — Machines de tournage

AMENDEMENT 1

Reference number
ISO 23125:2010/Amd.1:2012(E)

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Published in Switzerland

Foreword

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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.

Amendment 1 to ISO 23125:2010 was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 10, *Safety*.

Machine tools — Safety — Turning machines

AMENDMENT 1

Page v, Foreword

Replace the reference to ISO 12100-1 with ISO 12100.

Page vi, Introduction

Replace the reference to ISO 12100-1 with ISO 12100.

Replace the reference to ISO 12100-1 and ISO 12100-2 with ISO 12100.

Replace the fifth paragraph, beginning: "This International Standard replaces" with the following (which includes deletion of the footnote):

> This International Standard makes reference to the "safety categories" in EN 954-1:1996 as resistance to faults and their subsequent behaviour in the fault condition together with the "performance level" defined in ISO 13849-1:2006 in terms of probability of dangerous failure per hour. It is the decision of the user of this International Standard to apply "safety categories" or "performance levels".

Page 1, Scope

Replace the reference to ISO 12100-1:2003, Figure 1, with ISO 12100:2010, Figure 2.

Pages 2 to 4, Normative references

Replace the references to ISO 3744, ISO 3746, ISO 4413, ISO 4414, ISO 10218-2, ISO 11202, ISO 11204, ISO 12100-1, ISO 12100-2, ISO 13855, ISO 14119, IEC 61000-6-4, EN 1005-1:2001+A1:2008, EN 1005-2:2003+A1:2008 and EN 1005-3:2002+A1:2008 with the following:

> ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*
>
> ISO 3746:2010, *Acoustics — 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 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

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

ISO 10218-2:2011, *Robots and robotic devices — Safety requirements for industrial robots — Part 2: Robot systems and integration*

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 11204:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections*

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

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

ISO 14119:—[1)], *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

IEC 61000-6-4:2011, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments*

EN 1005-1:2009, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

EN 1005-2:2009, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3:2009, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

Add the following references:

ISO 11161:2007+Amd.1:2010, *Safety of machinery — Integrated manufacturing systems — Basic requirements*

EN 954-1:1996, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design*

Pages 2 to 4, Normative references

Delete footnotes 2 to 9.

Add the following footnote to correspond with ISO 14119:—[1)]:

[1)] To be published. (Revision of ISO 14119:1998)

Delete the references to ISO 14121-1:2007, IEC 62061:2005, EN 982:1996 and EN 983:1996+A1:2008.

Page 5, Terms and definitions

Replace the introductory paragraph with the following:

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 13849-1:2006 and EN 954-1:1996 and the following apply.

Page 6, Terms and definitions

Add the following new term after 3.1.9:

3.1.10
category
classification of safety-related parts of a control system in respect of its resistance to fault and its subsequent behaviour in the fault condition, and which is achieved by the structural arrangement of the parts and/or their reliability

[EN 954-1:1996, definition 3.2.]

Page 7, 3.3.1

Delete the Note.

Page 15, Clause 4

In the first paragraph, replace the reference to ISO 14121-1 with ISO 12100. Replace "ISO 14121-1:2007, Clause 6" with "ISO 12100:2010, 5.4".

In the first paragraph, replace "ISO 12100-1:2003, Clause 5" with "ISO 12100:2010, Clause 5"; in list item a), replace "(see ISO 12100-1:2003, 3.22 and 3.23)" with "(see ISO 12100:2010, 3.23 and 3.24)".

Pages 17 to 20, Table 3

Replace the table, thus modifying the following items, in particular:

a) in the fourth and fifth column headings, replace "ISO 12100 ISO 12100-1:2003 ISO 12100-2:2003" with "ISO 12100:2010";

b) in the first column, replace the numbers A.1 to A.4 with B.1 to B.4;

c) in table footnote a, replace the reference "ISO 14121-1:2007, Annex A" with "ISO 12100:2010, Annex B";

d) merge the fourth and fifth columns, and replace the references to the subclauses of ISO 12100-1:2003 and ISO 12100-2:2003 with references to the subclauses of ISO 12100:2010;

e) in the sixth column entitled "Relevant type-B standard", replace EN 982 with ISO 4413, and EN 983 with ISO 4414;

f) in the row for A.4 entitled "Failure of control system" (on page 18), insert "EN 954-1" after ISO 14118; delete IEC 62061, which follows IEC 60204.

Table 3 — Overview of hazards and reference to type-B standards

No.[a]	Hazards, hazardous situations and hazardous events	Situations on turning machines	ISO 12100:2010	Relevant type-B standard	Relevant clause in this International Standard
B.1	**1 Mechanical hazards**				
—	Acceleration, deceleration (kinetic energy)		6.2.2.1 6.2.2.2 6.2.3 a) 6.2.3 b) 6.2.6 6.2.10 6.3.1 6.3.2 6.3.3 6.3.5.2 6.3.5.4 6.3.5.5 6.3.5.6 6.4.1 6.4.3 6.4.4 6.4.5	ISO 13851 ISO 13854 ISO 13855 ISO 13856-2 ISO 13856-3 ISO 13857 ISO 14118 ISO 14119 ISO 14120 ISO 14122-1 ISO 14122-2 ISO 14122-3 ISO 14122-4 ISO 16156 IEC 60204-1 EN 614-1	5.2.1.1 g) 5.2.3 a) 4) ii)
—	Angular parts				5.1.1, 5.2
—	Approach of a moving element to a fixed part				5.1.1 5.2
—	Cutting parts, sharp edges: crushing and shearing				5.1.1 5.2
—	Elastic elements High pressure: fluid injection or ejection Vacuum, Gravity (stored energy) High pressure Height from the ground	Dissipation of accumulated energy inside the machine			5.2.4.5 b) 1) iii) 5.2.2.4 a) 1) 5.2.2.4 c) 6) 5.2.4.4 b) 5.2.4.3 a) 3) 5.2.4.4.1 c) 5.2.4.5 a) 3) 5.8 e) 1) iv) 5.8 h) 4) 5.10 d)
—	Falling of objects	Falling of workpiece			5.2.3
—	Moving elements: entanglement				5.1.1 5.2
—	Rotating elements: entanglement				5.1.1 5.2
—	Rough, slippery surface: slipping, tripping and falling of persons (related to machinery)	Ejection or spillage of metal cutting fluid (metal removal fluid), lubricants or hydraulic fluid; fall of persons during access to/or at/from the work position on large machines during setting and machining mode			5.15
—	Sharp edges				5.1.1, 5.2
—	Stability	Loss of stability			5.14

Table 3 (*continued*)

No.[a]	Hazards, hazardous situations and hazardous events	Situations on turning machines	ISO 12100:2010	Relevant type-B standard	Relevant clause in this International Standard
B.3	Assembly and installation Error of fitting	During tool workpiece clamping change	5.5.2.2, 6.4.1.3 6.4.5.1		5.12 6.2.1 to 6.2.3 6.2.9
—	Operation	Restarting the machine after stopping/interruption	5.5.2.2 6.2.11.4 6.2.11.5	ISO 14118 IEC 60204-1 ISO 4413 ISO 4414	5.10
—	Fault finding and troubleshooting	Isolation and energy dissipation	6.2.10	ISO 4413 ISO 4414 ISO 14118 IEC 60204-1	5.8 h)
B.4	Falling or ejection of objects	At work clamping, during machining, at bar feed and coolant (workpiece, part of tool, swarf)	6.2.3, 6.2.5 6.2.10 to 6.2.12 6.3.2.1, 6.3.2.2, 6.3.2.7 6.3.3, 6.3.5.2, 6.3.5.4, 6.3.5.5, 6.4.4, 6.4.5	ISO 4413 ISO 4414 ISO 14120	5.13 Annex A Annex B Annex C
B.4	Failure of control system	— dropping or ejection of moving parts of the machine or of a work-piece clamped by the machine — failure to stop moving parts — uncontrolled move-ments (including speed change) — unintended/ unexpected start-up — other hazardous events due to failure(s) or poor design of the control system — variation of speed of tools (during setting)	5.5.2.2 6.2.2 6.2.3 6.2.5 6.2.11 to 6.2.13 6.3.5.2 to 6.3.5.4 6.4.3 to 6.4.5	ISO 4413 ISO 4414 ISO 13849-1 ISO 13849-2 ISO 14118 EN 954-1 IEC 60204-1	5.8 5.9 5.10 5.11
B.1	**2 Electrical hazards**				
—	Live parts (direct contact)	At electrical equipment during maintenance			5.3 a)
—	Parts which have become live under fault conditions (indirect contact)	At electrical equipment during setting, machining and maintenance	6.2.9 6.3.2 6.3.3.2 6.3.5.4 6.4.4 6.4.5	IEC 60204-1	5.3 b)
—	Short circuit	At any mode of operation, in case of penetration of conducting substances			5.3 c)