

DIN EN ISO 16090-1



ICS 25.080.01

Supersedes
DIN EN 12417:2009-07,
DIN EN 13128:2009-09 and
DIN EN 14070:2009-07

**Machine tools safety –
Machining centres, Milling machines, Transfer machines –
Part 1: Safety requirements (ISO 16090-1:2017);
English version EN ISO 16090-1:2018,
English translation of DIN EN ISO 16090-1:2019-12**

Werkzeugmaschinen-Sicherheit –
Bearbeitungszentren, Fräsmaschinen, Transfermaschinen –
Teil 1: Sicherheitsanforderungen (ISO 16090-1:2017);
Englische Fassung EN ISO 16090-1:2018,
Englische Übersetzung von DIN EN ISO 16090-1:2019-12

Sécurité des machines-outils –
Centres d'usinage, fraiseuses, machines transfert –
Partie 1: Exigences de sécurité (ISO 16090-1:2017);
Version anglaise EN ISO 16090-1:2018,
Traduction anglaise de DIN EN ISO 16090-1:2019-12

Document comprises 165 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.

A comma is used as the decimal marker.

Start of application

The start of application of this standard is 2019-12-01.

National foreword

This standard includes safety requirements and specifications.

This document (EN ISO 16090-1:2013) has been prepared by Technical Committee ISO/TC 39 “Machine tools”, Subcommittee SC 10 “Safety” in collaboration with Technical Committee CEN/TC 143 “Machine tools — Safety” (Secretariat: SNV, Switzerland).

The responsible German body involved in its preparation was *DIN-Normenausschuss Werkzeugmaschinen* (DIN Standards Committee Machine Tools), Working Committee NA 122-10-04 AA “Machining Centres — Safety” which played a major role in the development of this document and also oversaw the German translation.

The International Standards produced by ISO/TC 39/SC 10 in collaboration with CEN/TC 143 apply in particular to machine tools and complement the relevant A and B standards on the subject of general safety (see Introduction to ISO 12100:2010 for a description of type A, type B and type C standards).

This standard describes the current state of technology as regards safety and occupational health in the presence of machining centres, milling machines and transfer machines. It is a type C standard for machines meeting the essential safety and health requirements laid down in Annex I of the revised Machinery Directive (Directive 2006/42/EC).

With the publication of DIN EN ISO 16090-1 the following standards are withdrawn:

- DIN EN 12417:2009-07
- DIN EN 13128:2009-09
- DIN EN 14070:2009-07

Due to a negative assessment by the HAS consultant who checked this standard with regard to the Machinery Directive, the above mentioned standards will remain in the Official Journal of the European Union until further notice and thus fulfil the presumption of conformity.

The DIN documents corresponding to the International Standards referred to in Clause 2 and in the Bibliography of this document are as follows:

ISO 230-5:2000	DIN ISO 230-5:2004-07
ISO 3744	DIN EN ISO 3744
ISO 3746:2010	DIN EN ISO 3746:2011-03
ISO 4413:2010	DIN EN ISO 4413:2011-04
ISO 4414:2010	DIN EN ISO 4414:2011-04
ISO 4871	DIN EN ISO 4871
ISO 6385	DIN EN ISO 6385

ISO 11161:2007	DIN EN ISO 11161:2008-01
ISO 11202:2010	DIN EN ISO 11202:2010-10
ISO 11204:2010	DIN EN ISO 11204:2010-10
ISO 12100:2010	DIN EN ISO 12100:2011-03
ISO 13849-1:2015	DIN EN ISO 13849-1:2016-06
ISO 13849-2	DIN EN ISO 13849-2
ISO 13850:2015	DIN EN ISO 13850:2016-05
ISO 13855:2010	DIN EN ISO 13855:2010-10
ISO 13856-1	DIN EN ISO 13856-1
ISO 13856-2	DIN EN ISO 13856-2
ISO 13857:2008	DIN EN ISO 13857:2008-06
ISO 14119:2013	DIN EN ISO 14119:2014-03
ISO 14120:2015	DIN EN ISO 14120:2016-05
ISO 14122-1	DIN EN ISO 14122-1
ISO 14122-2	DIN EN ISO 14122-2
ISO 14122-3	DIN EN ISO 14122-3
ISO 14122-4	DIN EN ISO 14122-4
ISO 14738	DIN EN ISO 14738
ISO 15641	DIN EN ISO 15641
ISO 19085-1	DIN EN ISO 19085-1
ISO 19353	DIN EN ISO 19353
ISO 23125:2015	DIN EN ISO 23125:2015-04

Amendments

This standard differs from DIN EN 12417:2009-07, DIN EN 13128:2009-09 and DIN EN 14070:2009-07 as follows:

- a) the previous editions of DIN EN 12417, DIN EN 13128 and DIN EN 14070 have been combined in this document and the machines have been divided into Groups 1 to 4;
- b) instead of the categories used for the definition of safety functions in DIN EN 12417, DIN EN 13128 and DIN EN 14070, the required performance level according to DIN EN ISO 13849-1 has been defined for relevant safety functions;
- c) the list of safety functions has been extended and brought in line with the state of the art;
- d) the technical safety requirements for the machines have been brought in line with the state of the art;
- e) the mode of safe operation service has been defined and described;
- f) the requirements for the noise test have been revised;
- g) normative references have been updated.

Previous editions

DIN EN 13128: 2001-07, 2007-03, 2009-09
DIN EN 12417: 2001-12, 2007-03, 2009-07
DIN EN 14070: 2004-01, 2009-07

National Annex NA
(informative)

Bibliography

DIN ISO 230-5:2004-07, *Test code for machine tools — Part 5: Determination of the noise emission (ISO 230-5:2000)*

DIN EN ISO 3744, *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*

DIN EN ISO 3746:2011-03, *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 3746:2010)*

DIN EN ISO 4413:2011-04, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

DIN EN ISO 4414:2011-04, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

DIN EN ISO 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

DIN EN ISO 6385, *Ergonomic principles in the design of work systems*

DIN EN ISO 11161:2008-01, *Safety of machinery — Integrated manufacturing systems — Basic requirements (ISO 11161:2007)*

DIN EN ISO 11202:2010-10, *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 11202:2010)*

DIN EN ISO 11204:2010-10, *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)*

DIN EN ISO 12100:2011-03, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

DIN EN ISO 13849-1:2016-06, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

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

DIN EN ISO 13850:2016-05, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

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

DIN EN ISO 13856-1, *Safety of machinery — Pressure-sensitive protective devices — Part 1: General principles for design and testing of pressure-sensitive mats and pressure-sensitive floors*

DIN EN ISO 13856-2, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars*

DIN EN ISO 13857:2008-06, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

DIN EN 14119:2014-03, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

DIN EN ISO 14120:2016-05, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

DIN EN ISO 14122-1, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means and general requirements of access*

DIN EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

DIN EN ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails*

DIN EN ISO 14122-4, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders*

DIN EN ISO 14738, *Safety of machinery — Anthropometric requirements for the design of workstations at machinery*

DIN EN ISO 15641, *Milling cutters for high speed machining — Safety requirements*

DIN EN ISO 19085-1, *Woodworking machines — Safety — Part 1: Common requirements*

DIN EN ISO 19353, *Safety of machinery — Fire prevention and fire protection*

DIN EN ISO 23125:2015-04, *Machine tools — Safety — Turning machines (ISO 23125:2015)*

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English Version

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Teil 1: Sicherheitsanforderungen
(ISO 16090-1:2017)

This European Standard was approved by CEN on 24 January 2018.

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.

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European foreword

This document (EN ISO 16090-1:2018) 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 October 2018, and conflicting national standards shall be withdrawn at the latest by April 2021.

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

This document supersedes EN 13128:2001+A2:2009, EN 12417:2001+A2:2009 and EN 14070:2003+A1:2009.

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, 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 16090-1:2017 has been approved by CEN as EN ISO 16090-1:2018 without any modification.

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).

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 10, *Safety*.