
**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*



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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14120 was prepared by Technical Committee ISO/TC 199, *Safety of machinery*.

Annexes A and B form a normative part of this International Standard. Annex C is for information only.

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Introduction

This International Standard specifies general principles for the design and construction of guards, both fixed and movable. It is intended for use by manufacturers, designers, standards makers and other interested parties.

As a Type-B2 standard, it is intended to provide assistance in the production of Type-C standards which cover detailed aspects for specific groups of machines, and to provide guidance in the absence of an appropriate Type-C standard.

In accordance with the requirements laid down in ISO/TR 12100-1:1992 and ISO/TR 12100-2:1992, the machine designer shall identify the hazards present at a machine, carry out a risk assessment and reduce risk by design before considering safeguarding techniques.

This International Standard has been prepared to be a harmonized standard in the sense of the Machinery Directive of the European Union and associated regulations of the European Free Trade association (EFTA). This International Standard is based on EN 958:1997, published by the European Committee for Standardisation (CEN).

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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 and construction of guards provided primarily to protect persons from mechanical hazards.

This International Standard applies primarily to machines which will be manufactured after it is published.

Attention is drawn to the use of guards to minimize exposure to non-mechanical hazards.

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

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

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/TR 12100-1:1992, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*

ISO/TR 12100-2:1992, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications*

ISO 13852, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*

ISO 13853, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*

ISO 13854, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

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

ISO 14121, *Safety of machinery — Principles of risk assessment*

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*

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

prEN 1005-3:—¹⁾, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 292-2:1991/A1:1995, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications*

EN 1070, *Safety of machinery — Terminology*

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1672-2, *Food processing machinery — Basic concepts — Part 2: Hygiene requirements*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO/TR 12100-1 and EN 1070 and the following apply.

3.1 guard

part of a machine specifically used to provide protection by means of a physical barrier

NOTE 1 Depending on its construction, a guard may be called casing, cover, screen, door, enclosing guard, etc.

NOTE 2 A guard may act:

- alone, in which case it is only effective when it is closed,
- in conjunction with an interlocking device with or without guard locking, in which case protection is ensured whatever the position of the guard (see also 3.5).

NOTE 3 “Closed” means “kept in place” for a fixed guard.

[ISO/TR 12100-1:1992, 3.22]

3.2 fixed guard

guard kept in place, that is closed, either permanently (by welding, etc.), or by means of fasteners (screws, nuts, etc.) making removal/opening impossible without using tools

[ISO/TR 12100-1:1992, 3.22.1]

3.2.1 enclosing guard

guard which prevents access to the danger zone from all sides

See Figure 1.

1) To be published.