

INTERNATIONAL STANDARD

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Safety of machinery — Minimum gaps to avoid crushing of parts of the human body

*Sécurité des machines — Écartements minimaux pour prévenir les risques
d'écrasement de parties du corps humain*



Reference number
ISO 13854:1996(E)

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.

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.

International Standard ISO 13854 was prepared by the European Committee for Standardization (CEN) (as EN 349:1993) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 199, *Safety of machinery*, in parallel with its approval by the ISO member bodies.

Annex A of this International Standard is for information only.

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Introduction

According to ISO/TR 12100-1, in general machinery is said to be safe if it can perform its function, be transported, installed, adjusted, maintained, dismantled and disposed of under the conditions of its intended use without causing injury or damaging health.

One method of avoiding the hazard of crushing of parts of the human body is to make use of the minimum gaps specified in this International Standard.

In specifying minimum gaps, a number of aspects have to be taken into consideration, such as:

- accessibility of the crushing zones;
- anthropometric data, taking into account ethnic groups likely to be found in the countries concerned;
- technical and practical aspects.

If these aspects were further developed, the current state of the art, reflected in this International Standard, could be improved.

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Safety of machinery — Minimum gaps to avoid crushing of parts of the human body

1 Scope

The object of this International Standard is to enable the user (e.g. standard makers, designers of machinery) to avoid hazards from crushing zones. It specifies minimum gaps relative to parts of the human body and is applicable when adequate safety can be achieved by this method.

This International Standard is applicable to risks from crushing hazards only and is not applicable to other possible hazards (e.g. impact, shearing, drawing-in).

NOTE — For impact, shearing or drawing-in hazards, for example, additional or other measures need to be taken.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO 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 13852:1996, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO/TR 12100-1 and ISO 13852 and the following definition apply.

3.1 crushing zone: Zone in which the human body or parts of the human body are exposed to a crushing hazard. This hazard will be generated if