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Safety of machinery - Safety distances to prevent danger zones being reached by upper and lower limbs

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13857:2008 sisaldab Euroopa standardi EN ISO 13857:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 24.04.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 05.03.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13857:2008 consists of the English text of the European standard EN ISO 13857:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 24.04.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 05.03.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English Version

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

Sécurité des machines - Distances de sécurité empêchant  
les membres supérieurs et inférieurs d'atteindre les zones  
dangereuses (ISO 13857:2008)

Sicherheit von Maschinen - Sicherheitsabstände gegen das  
Erreichen von Gefährdungsbereichen mit den oberen und  
unteren Gliedmaßen (ISO 13857:2008)

This European Standard was approved by CEN on 16 February 2008.

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## Foreword

This document (EN ISO 13857:2008) has been prepared by Technical Committee ISO/TC 199 "Safety of machinery" in collaboration with Technical Committee CEN/TC 114 "Safety of machinery", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.

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 294:1992, EN 811:1996.

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 EC Directives.

For relationship with EC Directives, see informative Annex ZA and ZB, which are 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, 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.

### Endorsement notice

The text of ISO 13857:2008 has been approved by CEN as a EN ISO 13857:2008 without any modification.

## **Annex ZA** **(informative)**

### **Relationship between this International Standard and the Essential Requirements of EU Directive 98/37/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 a means of conforming to Essential Requirements of the New Approach Directive 98/37/EC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements 1.1.2, 1.3.7, 1.4.1 of that Directive and associated EFTA regulations.

**WARNING:** Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

## **Annex ZB (informative)**

### **Relationship between this International Standard and the Essential Requirements of EU Directive 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 on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements 1.1.2, 1.3.7, 1.4.1 of that Directive and associated EFTA regulations.

**WARNING:** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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## Introduction

This document is a type B standard as stated in ISO 12100-1.

The provisions of this document can be supplemented or modified by a type C standard.

For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.

One method of eliminating or reducing risks caused by machinery is to make use of safety distances preventing hazard zones from being reached by the upper and lower limbs.

In specifying safety distances, a number of aspects have to be taken into consideration, such as

- reach situations occurring when machinery is being used,
- reliable surveys of anthropometric data, taking into account population groups likely to be found in the countries concerned,
- biomechanical factors, such as compression and stretching of parts of the body and limits of joint rotation,
- technical and practical aspects, and
- additional measures for particular groups of persons (e.g. persons with special needs), which could be required due to a deviation from the specified body dimensions.



# Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs

## 1 Scope

This International Standard establishes values for safety distances in both industrial and non-industrial environments to prevent machinery hazard zones being reached. The safety distances are appropriate for protective structures. It also gives information about distances to impede free access by the lower limbs (see 4.3).

This International Standard covers people of 14 years and older (the 5<sup>th</sup> percentile stature of 14 year olds is approximately 1 400 mm). In addition, for upper limbs only, it provides information for children older than 3 years (5<sup>th</sup> percentile stature of 3 year olds is approximately 900 mm) where reaching through openings needs to be addressed.

NOTE 1 Data for preventing lower limb access for children is not considered.

The distances apply when adequate safety can be achieved by distance alone. Because safety distances depend on size, there will be some people of extreme dimensions who will be able to reach hazard zones even when the requirements of this International Standard are complied with.

NOTE 2 These safety distances will not provide sufficient protection against certain hazards, for example, radiation and emission of substances. For such hazards, additional or other measures need to be taken.

The clauses of the International Standard covering lower limbs apply when access by the upper limbs is not foreseeable according to the risk assessment.

The safety distances are intended to protect those persons trying to reach hazard zones under the conditions specified (see 4.1.1).

NOTE 3 This International Standard is not intended to provide measures against reaching a hazard zone by climbing over.

## 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 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*