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Safety of machinery - The positioning of protective equipment in respect of approch speeds of parts of the human body CONSOLIDATED TEXT

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 999:1999+A1:2008 sisaldab Euroopa standardi EN 999:1998+A1:2008 ingliskeelset teksti.	This Estonian standard EVS-EN 999:1999+A1:2008 consists of the English text of the European standard EN 999:1998+A1:2008.
Standard on kinnitatud Eesti Standardikeskuse 18.08.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 18.08.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 09.07.2008.	Date of Availability of the European standard text 09.07.2008.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 13.110, 13.180

Võtmesõnad: accident prevention, computation, control devices, distance, minimum value, openings, ports, safe service life, safety devices, safety of machines, work safety

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 13.110; 13.180

Supersedes EN 999:1998

English Version

Safety of machinery - The positioning of protective equipment in respect of approach speeds of parts of the human body

Sécurité des machines - Positionnement des équipements de protection en fonction de la vitesse d'approche des parties du corps

Sicherheit von Maschinen - Anordnung von Schutzeinrichtungen im Hinblick auf Annäherungsgeschwindigkeiten von Körperteilen

This European Standard was approved by CEN on 20 September 1998 and includes Amendment 1 approved by CEN on 6 June 2008.

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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 Management Centre has the same status as the official versions.

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Ref. No. EN 999:1998+A1:2008: E

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Foreword

This document (EN 999:1998+A1:2008) has been prepared by 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 January 2009, and conflicting national standards shall be withdrawn at the latest by January 2009.

This document includes Amendment 1, approved by CEN on 2008-06-06.

This document supersedes EN 999:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟩A1⟨ ⟨A1⟩.

It is a Type B1 standard and is intended to be an accompaniment to the European Standards EN 292-1 and EN 292-2.

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 Directive(s).

⟩A1⟨ For relationship with EC Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A1⟩

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 United Kingdom.

Introduction

The effectiveness of certain types of protective equipment described in this standard to minimise risk relies, in part, on the relevant parts of that equipment being correctly positioned in relation to the danger zone. In deciding on these positions a number of aspects will need to be taken into account such as:

— A need for the identification of hazards and an assessment of all the risks;

— Practical experiences of users including accident statistics and existing national standards;

— The state of the art and possible future technical developments;

— Type of equipment to be used;

— Response times of protective equipment used;

— Time taken to ensure the safe condition of the machine following operation of the protective equipment, e.g. to stop the machine;

— Bio-mechanical and anthropometric data of body parts;

— Path taken by body part when moving from the sensing or actuating means towards the danger zone;

— The possible presence of a person between the device and the danger zone;

— The possibility of undetected access to the danger zone.

If these aspects are further developed the current state of the art, reflected in this standard, will be improved.

1 Scope

1.1 This European Standard provides parameters based on values for hand/arm and approach speeds and the methodology to determine the minimum distances from specific sensing or actuating devices of protective equipment to a danger zone.

1.2 These specific devices are:

— Trip devices as defined in 3.23.5 of EN 292-1:1991 (specifically electro-sensitive protective equipment, including those used additionally to initiate operation, and pressure sensitive mats).

— Two-hand control devices as defined in 3.23.4 of EN 292-1:1991 and covered by EN 574.

NOTE For the purpose of this standard hold-to-run controls, which are designed to be actuated with one hand, are not considered to be protective equipment.

1.3 This standard gives guidance based on the assumption that the correct device has been chosen either by reference to the appropriate Type-C standard or by carrying out a risk assessment.

1.4 The calculated distances, when implemented, will provide sufficient protection for persons against the risks caused by approaching a danger zone which generate any of the following mechanical hazards, such as:

Crushing, shearing, cutting or severing, entanglement, drawing-in or trapping, friction or abrasion, stabbing or puncture and impact.

Protection against the risks from mechanical hazards arising from the ejection of solid or fluid materials and non-mechanical hazards such as toxic emissions, electricity, radiation etc. are not covered by this standard.

1.5 The distances are derived from data that take into account population groups likely to be found in European countries and are consequently applicable to those groups.

NOTE 1 If this standard is to be used for non-industrial purposes then the designer should take into account that this data is based on industrial experience.

NOTE 2 Until specific data is available for approach speeds for children, this standard uses adult speeds and lower detection factors, where relevant, to calculate the distances that could be within the reach of children.

1.6 This standard does not apply to protective equipment which is intended to be moved, without tools, nearer to the danger zone than the calculated distance, e.g. pendant two-hand control devices.

1.7 The minimum distances derived from this standard do not apply to protective equipment used to detect the presence of persons within an area already protected by a guard or electro-sensitive protective equipment.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1:1991, *Safety of machinery - Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

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

EN 294:1992, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs.*

EN 574, *Earth-moving machinery – Two-hand control devices – Functional aspects, principles for design.*

EN 1050, *Safety of machinery – Principles for risk assessment.*

EN 61496-1:1997, *Safety of machinery – Electro-sensitive protective equipment – Part 1: General requirements and tests (IEC 61496-1:1997).*