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NSAI Standards

Irish Standard
I.S. EN 1005-1:2001+A1:2008

# Safety of machinery - Human physical performance - Part 1: Terms and definitions

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# I.S. EN 1005-1:2001+A1:2008

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 1005-1:2001+A1

October 2008

ICS 01.040.13; 13.110; 13.180

Supersedes EN 1005-1:2001

English Version

# Safety of machinery - Human physical performance - Part 1: Terms and definitions

Sécurité des machines - Performance physique humaine - Partie 1: Termes et définitions

Sicherheit von Maschinen - Menschliche körperliche Leistung - Teil 1: Begriffe

This European Standard was approved by CEN on 30 September 2001 and includes Amendment 1 approved by CEN on 18 August 2008.

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# Foreword

This document (EN 1005-1:2001+A1:2008) has been prepared by Technical Committee CEN/TC 122 "Ergonomics", 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2008-08-18.

This document supersedes EN 1005-1:2001.

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

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 EU Directive(s).

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

EN 1005 consists of the following Parts, under the general title "Safety of machinery – Human physical performance:

— Part 1: Terms and definitions;

— Part 2[1)]: Manual handling of machinery and component parts of machinery;

— Part 3: Recommended force limits for machinery operation;

— Part 4[1)]: Evaluation of working postures and movements in relation to machinery;

— Part 5[1)]: Risk assessment for repetitive handling at high frequency.

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.

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[1)] This European Standard is under preparation by CEN/TC 122/WG 4 "Biomechanics".

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# Introduction

Ergonomically designed work systems enhance safety, effectiveness and efficiency, improve human working and living conditions, and counteract adverse effects on human health and performance. Good ergonomic design therefore exerts a favourable influence on the work system, and on the reliability of the human being within it.

This European Standard is one of several ergonomic standards for the safety of machinery.

EN 614-1 describes the principles manufacturers should adopt in order to take account of ergonomic factors. This standard has been prepared to be a harmonised standard in the sense of the Machinery Directive and associated EFTA regulations.

This European Standard is a type B standard as stated in EN 1070. The provisions of this document may be supplemented or modified by a type C standard.

NOTE 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.

This European Standard has five parts that are intended to cover the range of human physical performance variables relating to machinery design. The scope contained within each document defines the boundaries of their application. Figure 1 illustrates the relationship between the standards concerning the different aspects of human performance. The relationship between standards proceed from those between the different aspects of human physical performance: body dimensions directly influence the shape of postures and movements as well as the available muscle strength, which further vary with postures and movements.

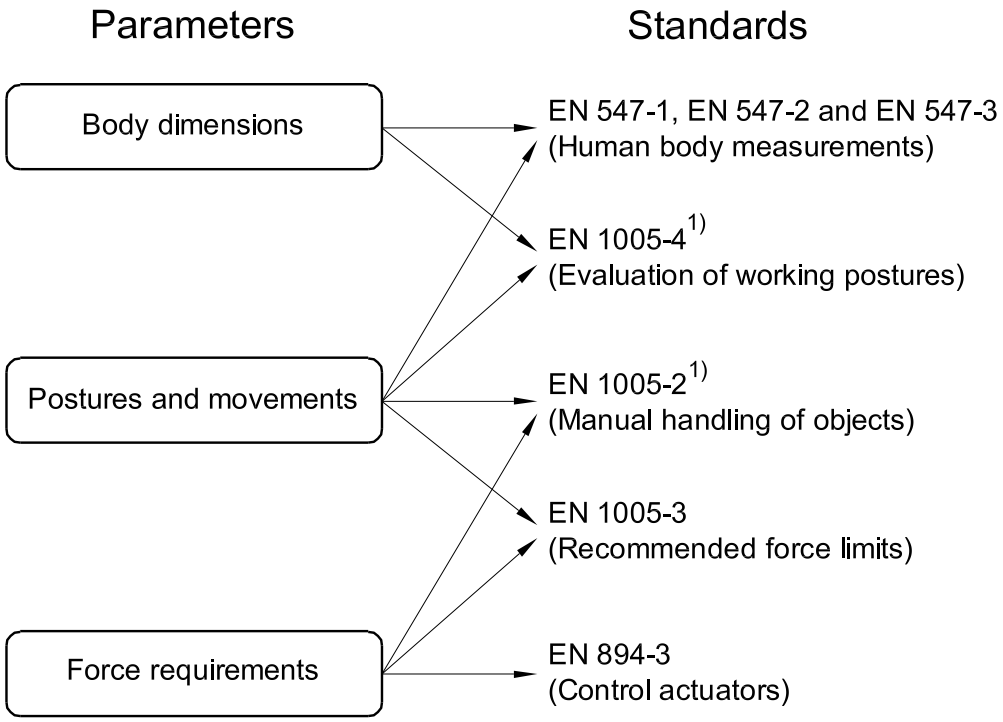


**Figure 1 — Relation between physical performance parameters and standards**

1) This European Standard is under preparation by CEN/TC 122/WG 4 "Biomechanics".

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EN 1005-2[1)], EN 1005-3 and EN 1005-4[1)] adopt a risk assessment approach. The procedures in each part of the standard are different.

The study of human physical loading whilst handling/operating machinery relies on methods and techniques developed by different research disciplines (e.g. epidemiology, biomechanics, physiology, psychophysics). This document aims to define relevant concepts to further co-operation between research disciplines in this field, and to improve the application of standards when designing machinery.

## 1 Scope

This European Standard provides terms and definitions on concepts and parameters used for EN 1005-2[1)], prEN 1005-3, EN 1005-4[1)] and EN 1005-5[1)].

Basic concepts and general ergonomic principles for the design of machinery are dealt with in EN 292-1, EN 292-2 and EN 614-1.

This document is not applicable to specify the machinery which is manufactured before the date of publication of this document by CEN.

## 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 (including amendments).

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

EN 1005-2[1)], *Safety of machinery – Human physical performance – Part 2: Manual handling of machinery and component parts of machinery.*

prEN 1005-3:2001, *Safety of machinery – Human physical performance – Part 3: Recommended force limits for machinery operation.*

EN 1005-4[1)], *Safety of machinery – Human physical performance – Part 4: Evaluation of working postures and movements in relation to machinery.*

EN 1005-5[1)], *Safety of machinery – Human physical performance – Part 5: Risk assessment for repetitive handling at high frequency.*

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070 together with the following apply.

**3.1**
**abduction**
movement of a limb away from the median plane. See Figure 2 and Figure 3

**3.2**
**action**
the activation of a muscle(s) during a task in order to perform a task/operation (as opposed to rest)

[1)] This European Standard is under preparation by CEN/TC 122/WG 4 "Biomechanics".

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