# Masinate ohutus. Inimkeha mõõtmed. Osa 2: Juurdepääsuavade nõutavate mõõtmete määramise põhialused

Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings



## **EESTI STANDARDI EESSÕNA**

# **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 547-
2:1999 sisaldab Euroopa standardi EN
547-2:1996 ingliskeelset teksti.

Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 547-2:1999 consists of the English text of the European standard EN 547-2:1996.

This document is endorsed on 23.11.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.

The standard is available from Estonian standardisation organisation.

### Käsitlusala:

See Euroopa standard määrab kindlaks seadmete juurdepääsuavade mõõtmed vastavalt standardi EN 292-1 määratlusele. Standard esitab mõõtmed, mille kohta kehtivad standardis EN 547-3 toodud väärtused. Lisaruumi kohta kehtivate nõuete väärtused on toodud lisas A. Selle standardi peamine rakendusvaldkond on liikumatud seadmed; liikuvate seadmete kohta võivad kehtida spetsiifilised lisanõuded.

## Scope:

**ICS** 13.110, 13.180

**Võtmesõnad:** avad, avaused, ergonoomiline masinaehitus, inimkeha, pordid, seadmeohutus, töötajad, õnnetuste vältimine

# EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN 547-2

December 1996

ICS 13.110; 13.180

Descriptors: Human body, work station, dimensions, ergonomics.

## **English version**

Safety of machinery

# Human body measurements

Part 2: Principles for determining the dimensions required for access openings

Sécurité des machines – Mesures du corps humain – Partie 2: Principes de détermination des dimensions requises pour les orifices d'accès Sicherheit von Maschinen – Körpermaße des Menschen – Teil 2: Grundlagen für die Bemessung von Zugangsöffnungen

This European Standard was approved by CEN on 1996-11-15.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions. CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France,

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

# CEN

European Committee for Standardization Comité Européen de Normalisation Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

#### **Contents**

	P	age	Page
0	Introduction	3	4.8 Access opening for flat hand to wrist, including
1	Scope	3	thumb
2	Normative references	3	base of thumb10
3	General requirements	4	4.10 Access opening for index finger, restricted by the other fingers
4	Access openings	5	4.11 Access opening for one foot to ankle bone 11
	Access opening for the upper body and arms  Access opening for the head as far as the	6	4.12 Access opening for forefoot operated control actuators
4.3	shoulders for inspection tasks	7	Annex A (normative) Application of the measurements in practice
	downward)	7	Annex B (informative) Position of access openings 16
	Access opening for both lower arms up to elbow (either forward or downward)	8	Annex C (informative) Notations for dimensions and anthropometric body measurements 24
4.5	Opening for access to the side for one arm up to	•	·
	shoulder joint	9	Annex D (informative) Bibliography
4.6	Access opening for one lower arm up to the elbow	9	Annex ZA (informative) Relationship between this European Standard and the EU
4.7	7 Access opening for fist	9	Directive for Machinery

### **Foreword**

This European Standard has been prepared by Technical Committee CEN/TC 122 'Ergonomics', the Secretariat of which is held by DIN.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of the relevant EU Directive.

For relationship with this directive, see Annex ZA.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by June 1997 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

### 0 Introduction

This European Standard is one of several ergonomics standards for the safety of machinery. EN 614-1 "Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles" describes the principles designers should adopt in order to take account of ergonomic factors.

This European Standard describes how these principles should be applied to the design of access openings.

This standard has been prepared to be a harmonized standard in the sense of the Machinery Directive and associated EFTA regulations.

## 1 Scope

This European Standard specifies the dimensions of openings for access as applied to machinery as defined in EN 292-1. It provides the dimensions to which the values given in EN 547-3 are applicable. Values for additional space requirements are given in annex A. This European Standard has been prepared primarily for non-mobile machinery, there may be additional specific requirements for mobile machinery.

Dimensions for access openings are based on the values for the 95th percentile, whereas reach distances are based on the values for the 5th percentile, in each case the least favourable body dimension of the expected user population being used as a basis. The same considerations apply to the location of access openings.

The anthropometric data given in EN 547-3 originate from static measurements of nude persons and do not take into account body movements, clothing, equipment, machinery operating conditions or environmental conditions.

This European Standard shows how to combine the anthropometric data with suitable allowances to take these factors into account.

Situations where people are to be prevented from reaching a hazard are dealt with in EN 294.

# 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	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN	294	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs
EN	547-3	Safety of machinery - Human body measurements - Part 3: Anthropometric data
ΕN	614-1	Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles