

Ergonomic requirements for office work with visual display terminals (VDTs) —

Part 5: Workstation layout and postural requirements

The European Standard EN ISO 9241-5:1999 has the status of a
British Standard

ICS 13.180; 35.180

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
Documents

AVA

Document Sharing Hub

National foreword

This British Standard is the English language version of EN ISO 9241-5:1999. It is identical with ISO 9241-5:1998. It supersedes BS 7179-5:1990 which is withdrawn.

Attention is drawn to National annex NA which provides numerical data for use with this part of BS EN ISO 9241.

The UK participation in its preparation was entrusted by Technical Committee PH/9, Applied ergonomics, to Subcommittee PH/9/6, User system interfaces, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, page 2, the ISO title page, pages ii to iv, pages 1 to 24, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Health and Environment Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 July 1999

© BSI 04-2000

ISBN 0 580 29975 9

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
National foreword	Inside front cover
Foreword	2
Foreword	iii
Text of ISO 9241-5	1
National annex NA (informative) Measurements	23
Figure NA.1 — Legroom height and depth under desks	24

English version

Ergonomic requirements for office work with visual display terminals (VDTs) — Part 5: Workstation layout and postural requirements

(ISO 9241-5:1998)

Exigences ergonomiques pour travail de bureau avec terminaux à écrans de visualisation (TEV) — Partie 5: Aménagement du poste de travail et exigences relatives aux postures (ISO 9241-5:1998)

Ergonomische Anforderungen für Bürotätigkeiten mit Bildschirmgeräten — Teil 5: Anforderungen an Arbeitsplatzgestaltung und Körperhaltung (ISO 9241-5:1998)

This European Standard was approved by CEN on 26 September 1998.

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.

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 Central Secretariat has the same status as the official versions.

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

CEN

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

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

Foreword

The text of the International Standard from Technical Committee ISO/TC 159 “Ergonomics” of the International Organization for Standardization (ISO) has been taken over as an European Standard by CEN/CS.

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 1999, and conflicting national standards shall be withdrawn at the latest by September 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 9241-5:1998 has been approved by CEN as a European Standard without any modification.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

INTERNATIONAL STANDARD

ISO
9241-5

First edition
1998-10-01

Ergonomic requirements for office work with visual display terminals (VDTs) — Part 5: Workstation layout and postural requirements

*Exigences ergonomiques pour travail de bureau avec terminaux à écrans
de visualisation (TEV) —*

*Partie 5: Aménagement du poste de travail et exigences relatives aux
postures*



Contents

	Page
Foreword	iii
Introduction	1
1 Scope	1
2 Normative references	1
3 Definitions	1
4 Guiding principles	2
4.1 General considerations	2
4.2 Versatility and flexibility	3
4.3 Fit	3
4.4 Postural change	3
4.5 User information	3
4.6 Maintainability-adaptability	3
5 Design requirements and recommendations	4
5.1 General	4
5.2 Postures	4
5.3 Ease of adjustment	4
5.4 Support surfaces	7
5.5 Work chair	9
5.6 Additional support elements	10
5.7 Layout of workstations within the work space	12
6 Conformance	13
7 Measurement	13
7.1 Support surfaces	13
7.2 Safety and stability aspects of workstations	13
7.3 Seat height	13
7.4 Castors	13
7.5 Layout of workstations within the workspace	13
Annex A (informative) Anthropometric data needed for workstation design and selection	14
Bibliography	20
Annex ZA (normative) Normative references to international publications with their relevant European publications	21
Figure 1 — Design reference posture for sitting position	5
Figure 2 — Design reference posture for standing position	6
Figure 3 — Sit/stand posture and one way a workstation may support the postural change	6
Figure 4 — Recommendations for adjustability and for angles of view	8
Figure 5 — Support for postural changes by movement of back rest and seat-pan	11
Figure A.1 — Important anthropometric dimensions for determining design of sitting and standing VDT workplaces	15
Figure A.2 — Dimensioning of a workstation using anthropometric data of the intended user population (sitting position)	16
Figure A.3 — Dimensioning of a workstation using anthropometric data of the intended user population (standing position)	20
Table 1 — Design properties and relevant reference parameters	9
Table A.1 — Clothing and related allowances	14

Descriptors: Ergonomics, office machines, computer peripheral equipment, text processing, data terminal equipment, display devices, workplaces, specifications, layout, working conditions.

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 9241-5 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Sub-committee SC 4, *Ergonomics of human-system interaction*, Working Group WG 3, *Control, workplace and environmental requirements*.

ISO 9241 consists of the following parts, under the general title *Ergonomic requirements for office work with visual display terminals (VDTs)*;

- *Part 1: General introduction;*
- *Part 2: Guidance on task requirements;*
- *Part 3: Visual display requirements;*
- *Part 4: Keyboard requirements;*
- *Part 5: Workstation layout and postural requirements;*
- *Part 6: Guidance on the work environment;*
- *Part 7: Requirements for display with reflections;*
- *Part 8: Requirements for displayed colours;*
- *Part 9: Requirements for non-keyboard input devices;*
- *Part 10: Dialogue principles;*
- *Part 11: Guidance on usability;*
- *Part 12: Presentation of information;*
- *Part 13: User guidance;*
- *Part 14: Menu dialogues;*
- *Part 15: Command dialogues;*
- *Part 16: Direct-manipulation dialogues;*
- *Part 17: Form filling dialogues.*

Annex A of this part of ISO 9241 is for information only.

Introduction

The purpose of this part of ISO 9241 is to promote and enhance performance and comfort while minimizing risks to users' safety and health. Users of visual display terminals (VDTs) in office work typically adopt a range of postures (seated with leaning, upright or reclining torso, standing or a combination of both). Workplaces which accommodate such usage can encourage movement, promote comfort and reduce physical, mental and visual problems.

This part of ISO 9241 is intended for use by product and workstation designers and implementers.

While drafting the text, the concept concerning the Frankfurt Plane was discussed but not included. The concept will be considered in a revision of this part of ISO 9241 in due course.

1 Scope

This part of ISO 9241 specifies ergonomic guiding principles which apply to the user requirements, design, and procurement of workstation equipment for office tasks using VDTs.

In particular, the general principles and requirements specified in this part of ISO 9241 apply to the standards specifying technical design of furniture and equipment constituting the workplace.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9241. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9241 are encouraged to investigate the possibility applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6385:1981, *Ergonomic principles in the design of work systems*.

ISO 9241-2:1992, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 2: Guidance on task requirements*.

ISO 9241-3:1992, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 3: Visual display requirements*.

ISO 9241-6:—, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 6: Guidance on the work environment*¹⁾.

¹⁾ To be published.

3 Definitions

For the purposes of this part of ISO 9241, the following definitions apply.

3.1

angle of view

angle between the line-of-sight and the line orthogonal to the surface of the display at the point where the line-of-sight intersects the image surface of the display

[ISO 9241-3:1992]

3.2

anthropometry

study and measurement of the physical dimensions of the human body

3.3

armrest

support for the lower arms

3.4

back rest

part of a work chair which provides support for the back

3.5

castor

wheeled component on the bottom of furniture to facilitate appropriate movement on the floor surface

3.6

design reference posture

posture specified for the purpose of workstation design to define relative positions and dimensions

3.7

deviation

alteration from the neutral position

3.8

dynamic posture

body position which changes, with relative movements of the limbs or other parts of the human body in relation to one another or with respect to a fixed object (such as a workstation)

3.9

extension

movement that increases the angle between two adjacent bones; hand extension is the movement of the hand in the dorsal direction

NOTE Dorsal pertains to the back of the hand, palmar to the palm.