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ISO/TC- 159/SC- 4

Secretariat:- BSI

Date: ~~2023-06-05~~2024-04-02

Ergonomics of human-system interaction— —

Part 5:
Workstation layout and postural requirements

Ergonomie de l'interaction homme-système —

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

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 122, *Ergonomics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 9241-5:1998), which has been technically revised.

The main changes are as follows:

— ~~Bibliography~~ Expansion and correction of Clause 3.

— Additional information added to Clause 4.

— Additional requirements and recommendations given in Clause 5.

— Revision of Annex A.

A list of all parts in the ISO 9241 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at ~~www.iso.org/members.html~~www.iso.org/members.html.

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Introduction

The purpose of this document is to promote and enhance performance and comfort while minimizing risks to users' safety and health. Users of interactive systems typically adopt a range of postures ~~(~~, such as 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 document is intended for use by product and workstation designers and implementers.

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Ergonomics of human-system interaction~~—~~ —

Part 5: Workstation layout and postural requirements

1 Scope

This document specifies ergonomic guiding principles which apply to the ~~user~~ requirements, design and procurement of workstation equipment for using interactive systems with visual displays.

In particular, the general principles and requirements specified in this document apply to the ~~standards specifying~~ technical design of furniture and equipment constituting the workplace. They are intended for use by product and workstation designers and implementers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 ~~2813, *Paints and varnishes — Determination of gloss value at 20°, 60° and 85°*~~

~~ISO 6385~~ 9241-11:2018, Ergonomics ~~*principles in the design of work systems*~~*of human-system interaction — Part 11: Usability: Definitions and concepts*

ISO 9241-302:2008, *Ergonomics of human-system interaction — Part 302: Terminology for electronic visual displays*

CIE S 017:2020, *ILV: International Lighting Vocabulary*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ~~—~~ISO Online browsing platform: available at ~~https://www.iso.org/obp~~https://www.iso.org/obp

— ~~—~~IEC Electropedia: available at ~~https://www.electropedia.org/~~https://www.electropedia.org/

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

[SOURCE: ISO 9241~~–~~302:2008, 3.3.5, modified — Definition revised.]

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3.2
anthropometric data~~anthropometry~~

data relating to the 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 (e.g. a workstation)

3.9
extension
movement that increases the angle between two adjacent bones

Note 1 to entry: Dorsal pertains to the back of the hand, and palmar pertains to the palm.

Note 2 to entry: Hand extension is the movement of the hand in the dorsal direction.

Note 3 to entry: Neck extension (cervical extension) is the movement of the head backward.

3.10
flexion
movement that decreases the angle between two adjacent bones

Note 1 to entry: Palmar pertains to the palm of the hand.

Note 2 to entry: Hand flexion is the movement of the hand in the palmar direction.

Note 3 to entry: Neck flexion is the movement of lowering the chin down to the chest.

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3.11
gloss
mode of appearance by which reflected highlights of objects are perceived as superimposed on the surface due to the directionally selective properties of that surface

[SOURCE: http://cie.co.at/eilvterm/17-24-080, downloaded 2021-04-22]

[SOURCE: CIE S 017:2020, 17-24-080]

3.12
gloss unit
measure for quantifying the gloss of a surface

3.13
interactive system
combination of hardware and/or software and/or services and/or people that users interact with in order to achieve specific goals

Note 1 to entry: This includes, where appropriate, packaging, user documentation, online and human help, support and training.

[SOURCE: ISO 9241-11:2018, 3.1.5]

3.14
kyphosis
convex curvature of the thoracic spine

3.15
intended user population
group of human beings for which a product or a workstation is designed

EXAMPLE Male and female workers of South-East Asian origin, aged between 45 and 65 years.

3.16
line-of-sight angle
angle between a horizontal line and the visual axis of the eye

Note 1 to entry: The visual axis of the eye (is the line connecting the point of fixation and the centre of the pupil).

3.17
lordosis
concave curvature of the spine

3.18
lumbar
region of the back between the thorax and the pelvis

3.19
popliteal
back of the knee

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3.20
posture
overall position of the body, or body parts in relation to each other, with respect to the workplace and its components

3.21
reference plane
surface designed to support the feet

Note 1 to entry: If not otherwise indicated, the reference plane is the ground. Any other level higher or lower than ground level may be used as a reference plane for the calculation of the height of support surfaces.

3.22
static posture
adoption of a body position which is fixed over time and where there is muscle contraction without motion

3.23
task analysis
analytical process employed to determine the specific behaviours required of people when operating equipment or doing work

Note 1 to entry: The task analysis is not a risk assessment of the workplace according to legal requirements.

3.24
workplace
arrangement of workstations allocated to one person to complete a work task

3.25
~~**work space**~~
workspace
volume of space allocated to one or more persons in the work system to complete a work task

3.26
worksurface
surface on which equipment and task materials are used

3.27
workstation
assembly comprising display equipment, with or without a central processing unit, which can be provided with ~~a~~ either or all of the following:

— keyboard ~~and/or~~ ;

— input device ~~and/or~~ ;

— software determining the operator–machine-interface~~,~~

and includes optional accessories, peripherals and the immediate work environment

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