

Office furniture —

Part 1: Specification for design and dimensions of office workstations, desks, tables and chairs

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Foreword

This Part of BS 5940 has been prepared under the direction of the Furniture Standards Committee. It supersedes:

BS 3079:1959, *Anthropometric recommendations for dimensions of non-adjustable office chairs, desks and tables.*

BS 3404:1961, *Anthropometric recommendations for dimensions of office machine operators' chairs and desks.*

BS 3893:1965, *Specification for office desks, tables and seating.*

Since the publication of those standards most British office furniture has been designed to comply with the requirements of BS 3893 and the anthropometric recommendations it contained. To some extent, those recommendations need to be modified in the light of more recent research, and in particular that undertaken by the University of Technology, Loughborough, for the British Standards Institution.

Research has confirmed the validity of the underlying considerations and principles set out in BS 3044. The complex relationship between the human visual, anthropometric and functional requirements involved in the design of furniture for office work has been reassessed, taking account of the subjective preferences of users. The dimensional requirements resulting have been included in this standard.

In order not to inhibit the development of good design and the use of new materials, this standard defines only the basic ergonomic and functional requirements. Performer requirements are defined in BS 5459-1 and BS 5459-2 and in BS 4875-1.

By following these standards office furniture can be developed in a variety of different ways to satisfy the individual needs of a wide range of office jobs and organizations. In a period of rapid change, with automation and technology affecting office methods and furniture requirements, it is considered appropriate to do no more than lay down the limits and basic requirements which should be respected in all designs.

Since 1969, attempts have been made in CEN Technical Committee 43, Office furniture, to agree a European Standard on this subject. Agreements reached have been taken fully into account in this Part of BS 5940.

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, pages 1 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

0 Introduction

An understanding of the underlying considerations set out in BS 3044 is necessary for the correct interpretation of this standard.

The workstation including the chair and the desk, table or worktop should be considered as one unit. They should be matched so that as nearly as possible the user's arms are unhampered, the feet are in a comfortable position on the floor, the trunk is correctly supported in the lumbar region and the eyes are at a comfortable distance from the work. When the angle of the knees is approximately 90° there should be a minimum of pressure from the chair seat on the underpart of the thighs and a space between the front of the seat and the back of the calf. The relationship between the floor, seat plane, work plane and eye level is critical, and so is the depth of the seat and the relationship of the backrest to it.

Changes of posture, as well as correctness of posture, contribute to comfort and the lessening of fatigue. There should be adequate space for movement of the trunk, arms, legs and feet, within the limits imposed by the need to optimize the relationships described above.

The subjective preferences of users as well as their anthropometric and physiological characteristics should be taken into account in determining these critical factors.

The range of human dimensions found in a typical sample of men and women is large. There is, however, a certain tolerance of departure from the ideal and some 90 % of the population can be suited by a careful choice of fixed furniture dimensions. It would be difficult to provide furniture exactly tailor-made for each individual. The combination of a fixed worktop and an adjustable chair suits most people.

Stature, elbow height and leg length are proportional, but these proportions vary according to age, sex and race. People also have individual preferences as to the height at which they sit that are not strictly in accord with their leg length. Individuals may therefore require a footrest and, with a seat of fixed height, a cushion.

Incorrect seating and work positions cause fatigue and consequently inefficiency. Absence of the correct floor or footrest to seat-plane and work-plane relationship and of proper back support cannot be borne indefinitely without detriment to health and efficiency. On both humanitarian and economic grounds users should be encouraged to understand and make correct use of well designed office furniture.

Appendix B is a table of anthropometric data relating to the British population annotated to show its relevance to the dimensional requirements of this standard.

1 Scope

This Part of BS 5940 specifies dimensions and other design requirements for office workstations including desks, tables, worktops, drawers, chairs and footrests. It does not specify other chairs and seating units or low tables or stands and tables for use in a standing position.

Section 1 is introductory and includes definitions and methods of measurement. Section 2 deals with design requirements. Section 3 deals with dimensions of office chairs and footrests.

Section 4 deals with dimensions of desks, tables, worktops and drawers.

2 References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this standard the following definitions apply.

NOTE Some of the terms are defined in relation to their method of measurement and should be read in association with Figure 1 to Figure 4.

3.1 Office chairs (see Figure 1 and Figure 2)

3.1.1 seat

a) **seat height A**. The height *A* of a chair seat is the height of the highest point of the front edge of the seat measured from the floor on the centre line of seat width *C*, the upholstery and central springing, if fitted, being compressed (see appendix A).

b) **effective seat depth B**. The effective depth *B* of the seat is the horizontal distance measured on the centre line of seat width *C* from the front edge to the vertical projection of the point *X* of the chair back on this centre line. If the back is adjustable, *B* is measured with the back adjusted to its mid height.

c) **seat pad depth B₁**. The depth *B₁* of the seat pad is the horizontal distance measured on the centre line of seat width *C* between the vertical projections of the front and back seat edges.

d) **seat width C** . The width C of the seat is the horizontal distance between the upper edges of the chair sides, measured perpendicularly to the centre line of width of the seat, at a point 125 mm forward from the vertical projection of the point X of the chair back on this line, and with the chair back (if adjustable) placed in its most forward position.

e) **seat slope α** . The angle α of the seat slope is the slope of the loaded plate in relation to the horizontal in the conditions described in appendix A. The slope is downward from front to back.

3.1.2 backrest

a) **reference point X** . Point X is the centre of the area on the backpad that provides essential lumbar support.

b) **height V** . Height V is the height of the area on the backpad that provides essential lumbar support.

c) **backrest height W** . The backrest height W is the vertical height from X to Z , measured with the seat (if upholstered) compressed as described in appendix A. If the backrest is adjustable, it is placed in its most forward position. If the backpad is pivoted about a horizontal axis, it is put in a vertical position.

d) **reference point Z** . Point Z is the intersection of the axis of rotation of the seat and the upper surface of the seat compressed by the plate loaded as indicated in appendix A.

3.1.3 armrests

a) **height G** . The height G is the vertical distance measured from point Z to the substantially flat part of the armrest.

b) **inside dimension G_1** . The inside dimension G_1 is the horizontal distance between armrests measured at the height of the substantially flat part of the armrest.

c) **length G_3** . The length G_3 is the horizontal distance between the front and back of the substantially flat part of the armrest.

d) **width G_4** . The width G_4 is the horizontal distance between the edges of the substantially flat part of the armrest.

3.2 Desks, tables and worktops

(see Figure 3 and Figure 4)

3.2.1 length O

the length O is the horizontal dimension of the longer side of the top of the work surface

3.2.2 width P

the width P is the horizontal dimension of the shorter side of the top of the work surface

3.2.3 height H

the height H is the vertical dimension from the floor to the top of the work surface measured on the front edge of the surface at the mid-point of the length

3.2.4 worktop

a work surface attached to a screen or other support

3.2.5 general-purpose desk, table or worktop

a desk or table for writing and other office work excluding machine operating referred to in 3.2.6

3.2.6 machine operator's desk, table or worktop

a desk, table or worktop to support any hand-operated office machinery, including a typewriter, where the operating plane of the machine is substantially higher than the desk, table or worktop

3.2.7 leg room

the free space for the legs and feet under the work surface

a) **height R** . The height R is the vertical dimension from the floor to the underside of the top of the desk, table or worktop.

b) **length T** . The length T is the horizontal dimension across the kneehole.

c) **width S** . The width S is the horizontal dimension of the leg room at the underside of the top of the desk, table or worktop.

d) **width S_1** . The width S_1 is the horizontal dimension of the leg room measured at a reference point Y 100 mm above the floor.