



SLOVENSKI STANDARD SIST EN 1335-1:2020

01-julij-2020

Nadomešča:

SIST EN 1335-1:2001

SIST EN 1335-1:2001/AC:2003

Pisarniško pohištvo - Pisarniški delovni stoli - 1. del: Mere - Ugotavljanje mer

Office furniture - Office work chair - Part 1: Dimensions - Determination of dimensions

Büromöbel - Büro-Arbeitsstuhl - Teil 1: Maße - Bestimmung der Maße

Mobilier de bureau - Sièges de travail de bureau - Partie 1: Dimensions - détermination des dimensions

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Ta slovenski standard je istoveten z: EN 1335-1:2020

ICS:

97.140

Pohištvo

Furniture

SIST EN 1335-1:2020

en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1335-1

April 2020

ICS 97.140

Supersedes EN 1335-1:2000

English Version

**Office furniture - Office work chair - Part 1: Dimensions -
Determination of dimensions**

Mobilier de bureau - Sièges de travail de bureau -
Partie 1 : Dimensions - Détermination des dimensions

Büromöbel - Büro-Arbeitsstuhl - Teil 1: Maße -
Bestimmung der Maße

This European Standard was approved by CEN on 27 January 2020.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Definitions of measurements.....	7
5 Measurement conditions.....	7
5.1 General.....	7
5.2 Decision rule for measurement uncertainty.....	7
6 Test equipment including CMD.....	7
7 Measurement methods and procedures.....	7
8 Dimensional requirements.....	12
9 Information for use	17
10 Test report.....	17
Annex A (informative) Rationale for determination of office chair dimensions: comparison of current published dimensions with European anthropometric data.....	18
Annex B (informative) Example of how to read Table 2.....	27
Annex C (informative) Dimensions of neck rests and headrests.....	28
Annex D (informative) Measurement uncertainty.....	29
Bibliography.....	30

European foreword

This document (EN 1335-1:2020) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

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 month year of DOP, and conflicting national standards shall be withdrawn at the latest by month year of DOW.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1335-1:2000.

Compared to EN 1335-1:2000, the following changes have been made:

- new test method of measurements based on ISO 24496;
- introduction of new chair type (Type Ax) to cover a wider range of the population than Type A chair;
- dimensional requirements moved from Annex to main part of standard;
- introduction of a new Annex A which gives a rationale for chair dimensions;
- introduction of a new Annex B which gives an example of “how to use” Table 2;
- introduction of a new Annex C which gives dimensions of neck rests and headrests;
- introduction of a new Annex D which gives measurement uncertainty;
- deletion of A-deviations.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 1335-1:2020 (E)**Introduction****0.1 General working condition**

The working conditions and the protection of office workers with respect to safety and health necessitates that these standards take ergonomic principles and minimum requirements into account. This applies in particular to the design of Visual Display Equipment (VDU) workstations where EU Directive (90/270/EEC) has been implemented. These workstations should be designed to allow different users to carry out a variety of work tasks.

0.2 Basis of dimensions and chair types

The dimensions in this document are based on anthropometric measurements, mechanical design subjective preference and other factors.

The aim of this document is to provide dimensions for the office work chairs which can accommodate a larger part of the European population. Due to the wide variation in population heights and other body dimensions, there will be a variation of the office population between each country, which the dimensions will accommodate. People with body dimensions outside this range may need furniture of different dimensions or adaptations to existing workstations e.g. a footrest.

In this document , office work chairs are categorized into types of chairs based on dimensional requirements.

Type Ax and Type A chairs have more adjustability with a greater range of adjustments than Type B and Type C chairs.

Annex A (Rationale) of this document gives the rationale for chair dimensions and information regarding the importance of good fit between the user and the chair.

0.3 Design reference seating posture

In order to articulate acceptable requirements for comfort and performance with respect to body dimensions, it is important to specify a design reference posture for purposes of specifying anthropometric data. While empirical evidence has indicated that the posture so specified could be comfortable for users carrying out certain tasks over short periods, it does not represent the optimum posture or the posture to strive for.

The reference seating posture is as follows:

- The sole of the foot is placed on the floor;
- The foot forms an angle of approximately 90° with the lower leg;
- The lower leg is approximately vertical;
- The lower leg forms an angle of approximately 90° with the thigh;
- The thigh is almost horizontal;
- The thigh forms an angle of approximately 90° with the trunk;
- The trunk is erect.

0.4 Seating postures

The purpose of well-designed seating is to provide stable support which allows movement, comfort, and task accomplishment. Together with job content and the design of other furniture elements, seating design plays an important role in encouraging movement. Thus, seat design should allow frequent postural variation by the user in order to avoid muscle stress and circulatory problems.

1 Scope

This document specifies the dimensions of four types of office work chairs as well as test methods for their determination.

It does not apply to seating for children for which a European Standard exists.

Annex A (informative) contains a rationale for office chair dimensions.

Annex B (informative) contains an example to clarify the use of Table 2.

Annex C (informative) contains proposals for dimensions for headrests.

Annex D (informative) contains the measurement uncertainty.

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 24496:2017, *Office furniture — Office chairs — Methods for the determination of dimensions*

3 Terms and definitions

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

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

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>
<https://standards.iteh.ai/catalog/standards/sist/f044c444-e7f2-498a-b713-a29b80fd5426/sist-en-1335-1-2020>

3.1

office work chair

chair for one person, which has an adjustable seat height, can rotate horizontally and is commonly used in conjunction with a work surface

Note 1 to entry: An office work chair may or may not have features such as armrests and/or a headrest,

3.2

type Ax work chair

office work chair with the largest range of adjustments

3.3

type A work chair

office work chair with a large range of adjustments

3.4

type B work chair

office work chair with a range of adjustments

3.5

type C work chair

office work chair with limited adjustments

EN 1335-1:2020 (E)**3.6****adjustability**

intentional change in the position of a component

Note 1 to entry: It can be continuous, within a range or in steps and may be lockable.

3.7**tall office work chair**

office work chair with a higher seat height, measured from the floor, than the maximum seat height specified in Table 2, also with a foot support

Note 1 to entry: A chair used for high work surfaces and desks.

3.8**foot support**

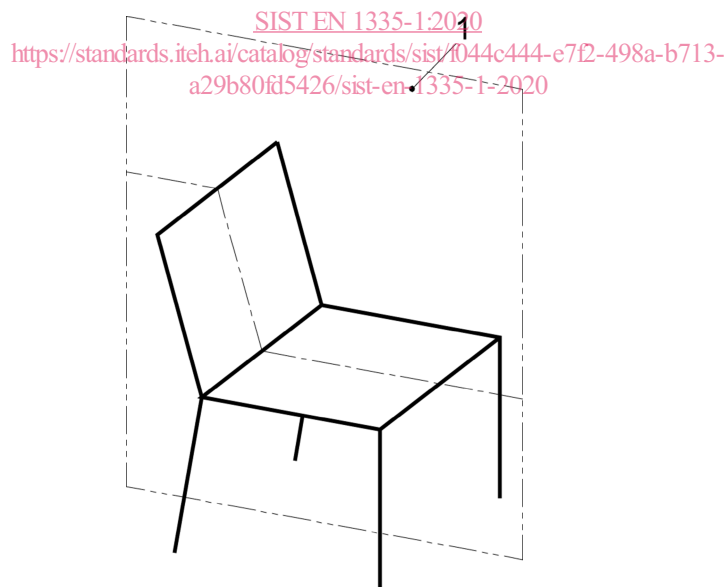
component intended to support the feet of the user and assist the user getting on or off a tall office work chair

Note 1 to entry: A foot support might or might not to be permanently attached to the structure of a high office work chair.

3.9**median plane**

vertical plane running from front to rear through the centre of the seat, dividing the chair into two equal parts

Note 1 to entry: See Figure 1.

**Key**

1 Median plane

Figure 1 — Illustration of the median plane

4 Definitions of measurements

The definitions of dimensions are specified in ISO 24496:2017.

5 Measurement conditions

5.1 General

The measurement conditions shall be as specified in ISO 24496:2017, Clause 4 with the derogation in 5.2 of the present document.

5.2 Decision rule for measurement uncertainty

The decision rule to judge if a result is compliant is when the measured value is within the requirement (i.e. less than or equal to an upper limit, greater than or equal to a lower limit), without taking into consideration the measurement uncertainty.

Table D.1 in Annex D (informative) contains values for the maximum measurement uncertainties.

6 Test equipment including CMD

The test equipment shall be as specified in ISO 24496:2017, Clause 5.

7 Measurement methods and procedures

The chair shall be set up as specified in ISO 24496:2017, 6.2.1.

The CMD shall be placed in the chair as specified in ISO 24496:2017, 6.2.2 and 6.2.3.

The chair dimensions shall be determined in the sequence specified in Table 1.

Table 1 — Sequence of determining measurements and measurement procedure

Sequence	Dimension	Dimension description	ISO 24496:2017 reference	Chair configuration
1	f_{\max}	Maximum vertical height of the lumbar support See footnote "a"	6.3.1.1, C ^a	Seat in maximum height, backrest and lumbar adjustments such as the lumbar support is at the greatest height that can be attained. All other adjustments in mid-position
2	f_{\min}	Minimum vertical height of the lumbar support See footnote "a"	6.3.1.1, D ^a 6.3.1.1, E ^a	Seat in maximum height, backrest and lumbar adjustments such that the lumbar support is at the least height that can be attained. All other adjustments in mid-position

EN 1335-1:2020 (E)

Sequence	Dimension	Dimension description	ISO 24496:2017 reference	Chair configuration
3	f_{range}	Lumbar support height adjustment range $f_{\text{max}} - f_{\text{min}}$, For chairs with mechanical moving backrests and/or lumbar devices, also measure "Vertical lumbar adjustment mechanism travel". Then report the higher of the two values.	6.3.1.1 Paragraph immediately below Table 2 6.3.1.1 E ^a	as above
4	γ	Angle between seat and back See also footnote "a" in Table 3	6.3.1.2, Go through the full sequence in Table 3 Check that $\gamma \geq 90^\circ$	Seat in maximum height, all other adjustments in mid-position
5	l	Backrest inclination range	6.3.1.2 -Table 3 Start with sequence 1 in Table 3. Pull back the backrest until it comes to a stop then record the angle of the backrest segment from vertical	Seat in maximum height, all other adjustments in mid-position
6	e (min.)	Seat pad angle adjustable / Seat pad angle fixed: minimum	6.3.1.2 – Table 3 Go through the full sequence in Table 3 then take the minimum.	Seat in maximum height and, if inclinable, in its rear inclined position, with the back in the most rearward position; all other adjustments in mid-position
7	e (max.)	Seat pad angle adjustable / Seat pad angle fixed: maximum	6.3.1.2 – Table 3 Go through the full sequence in Table 3 then take the maximum.	Seat in maximum height and, if inclinable, in its forward inclined position, with the back in the most upright position; all other adjustments in mid-position

Sequence	Dimension	Dimension description	ISO 24496:2017 reference	Chair configuration
8	a (min.)	Seat height, minimum. For chairs with seat pad angles zero or greater (+)	6.3.2.1 6.3.2.2	If independently adjustable: lumbar protrusion at minimum; lumbar height at midpoint; seat most horizontal; backrest most vertical; all other components including seat and backrest at minimum position
9	a (min)	Sitting height, minimum. Sitting heights are only applicable for chairs with seat pad angles less than 0 (rearwards slope)	6.3.2.1 6.3.2.2 Measure sitting height	as above
10	b (min.)	Adjustable depth of the seat / Fixed depth of the seat	6.3.2.3	as above
11	h (min.)	Backrest height	6.3.2.4	as above
12	q (max.)	Maximum distance from the backrest to the front of the armrests	6.3.2.5 In derogation to ISO 24496:2017, the dimension shall be 214 mm instead of 180mm	everything adjusted to their minimum position
13	p (min.)	Height of armrests adjustable / Height of armrests not adjustable	6.3.2.7	as above
14	a (max.)	Seat height maximum For chairs with seat pad angles zero or greater (+)	6.3.3.1 6.3.3.2	Re-adjust the chair according to 6.3.3. If independently adjustable: lumbar protrusion to minimum; lumbar height at midpoint; seat most horizontal; backrest most vertical; all other components including seat and backrest at maximum position

EN 1335-1:2020 (E)

Sequence	Dimension	Dimension description	ISO 24496:2017 reference	Chair configuration
15	a (max)	Sitting height max Sitting heights are only applicable for chairs with seat pad angles less than 0 (rearwards slope)	6.3.3.1 6.3.3.2 Measure sitting height	as above
16	b (max.)	Adjustable depth of the seat / Fixed depth of the seat	6.3.3.3	as above
17	h (max.)	Backrest height	6.3.3.4	as above
18	p (max.)	Height of armrests adjustable / Height of armrests not adjustable	6.3.3.6	as above
19	d	Seat pad width	Remove the CMD and carry out according to 6.3.4.2	as above
20	c	Seat pad depth	6.3.4.3	as above
21	j	Backrest width	6.3.4.4 In derogation to ISO 24496:2017, measure the backrest width at the mid-position of the lumbar zone as defined in 3.18	as above
22	k	Radius of backrest	6.3.4.5	as above
23	n	Armrest length	6.3.4.6	as above, armrest pad in the most horizontal position
24	o	Armrest width	6.3.4.7	as above
25	r	Minimum clearance between armrest assembly when armrests are in their widest position	6.3.4.8	as above, armrests in their widest possible position