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Ophthalmic optics — Spectacle frames — Measuring system and vocabulary

Optique ophtalmique — Montures de lunettes — Système de mesure et terminologie

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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 documents 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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 170, *Ophthalmic optics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 8624:2011), which has been technically revised. It also incorporates the Amendment ISO 8624:2011/Amd.1.

The main changes compared to the previous edition are as follows:

— the informative annex with its complementary definitions has been transferred to 3.2;

— minor asymmetry of only the nasal bearing surfaces has been included in this edition. Since such asymmetry does not affect the lens shapes, only the definition of bridge height is affected. See the explanation in 3.2.6, Note 2 to entry.

— the plane of the lens shape has been redefined and now relates to the orientation and position of the vertical centre line, in turn based on the apex of the groove in the frame and not a dummy lens;

— the definition of overall length of side for those without joints has been amended slightly, while the Figures now take account of the 3-dimensional nature of spectacle fronts where there is a significant face form angle;

— an informative annex (Annex A) has been added to discuss measurement of 3-dimensional spectacle frames.

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.

Ophthalmic optics — Spectacle frames — Measuring system and vocabulary

1 Scope

This document specifies a measuring system for spectacle frames and related vocabulary. It is applicable to spectacle frames with fronts that are intended to be symmetrical.

2 Normative references

There are no normative references in this document.

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:

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

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

3.1 Principal terms of the boxed lens system[1)]

3.1.1
boxed lens system
system of measurement and definitions of spectacle frames based on rectangular boxes that circumscribe the lens shapes and that are used for the determination of the dimensions of the spectacle front and in which the upper tangent is both common to the right and left lens shapes and regarded as being horizontal

Note 1 to entry: In the case of spectacle frames having a significant *face form angle*, the line touching the uppermost edges of the right and left *lens shapes* shall be regarded as horizontal.

Note 2 to entry: For measurement of a lens aperture, the measurements should be taken as if projected onto the base of the rectangular box which is regarded as being tangential to the plane of the lens shape at its boxed centre. This plane is close to that formed by the upper and lower tangents to the *lens shape*. For frame measurements, the aperture is taken to be the size of the hypothetical lens that fits the frame. Measurements to the apex of the groove or equivalent can give slightly different values.

Note 3 to entry: Since the tangent common to the right and left *lens shapes* is regarded as being horizontal, the lines at right angles to it, e.g. the two sides of the box either side of the *lens shape*, are called "vertical". While the frame is worn, the horizontal lines will remain horizontal if the head is held erect, but the vertical lines will frequently not be vertical but, although in a vertical plane, will have their lower ends tipped in towards the cheeks (see the *as-worn pantoscopic angle* in ISO 13666).

1) This clause contains the three most important dimensions for spectacle frames, horizontal boxed lens size, distance between lenses and overall length of side. Tolerances on these are specified in ISO 12870.

3.1.2
boxed centre
C
intersection of the *horizontal centreline* (3.2.1) and *vertical centreline* (3.2.2) of the rectangular box that circumscribes the *lens shape* (3.2.10)

Note 1 to entry: See Figure 1.

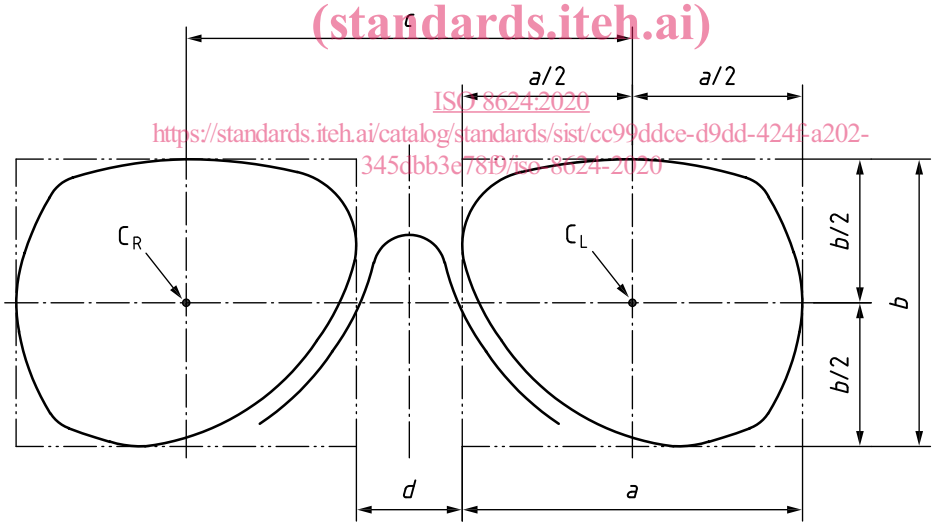
3.1.3
horizontal boxed lens size
horizontal lens size
a
distance between the two vertical sides of the rectangular box that circumscribes the *lens shape* (3.2.10)

Note 1 to entry: For spectacle frames having a significant *face form angle*, the *horizontal boxed lens size* shall be measured in the respective *plane of the lens shape*.

Note 2 to entry: See Figure 1.

3.1.4
vertical boxed lens size
vertical lens size
b
distance between the two horizontal sides of the rectangular box that circumscribes the *lens shape* (3.2.10)

Note 1 to entry: See Figure 1.



Key

C_R, C_L	right, left boxed centre
a	horizontal boxed lens size
b	vertical boxed lens size
c	boxed centre distance
d	distance between lenses

Figure 1 — Measurements related to spectacle frames — Spectacle fronts

3.1.5
boxed centre distance
c
horizontal distance between the *boxed centres* (3.1.2)

Note 1 to entry: See Figure 1.

Note 2 to entry: For spectacle frames having a significant *face form angle*, the *boxed centre distance* shall be measured between the *vertical centrelines* passing through the groove of the frame aperture. See Figure 4.

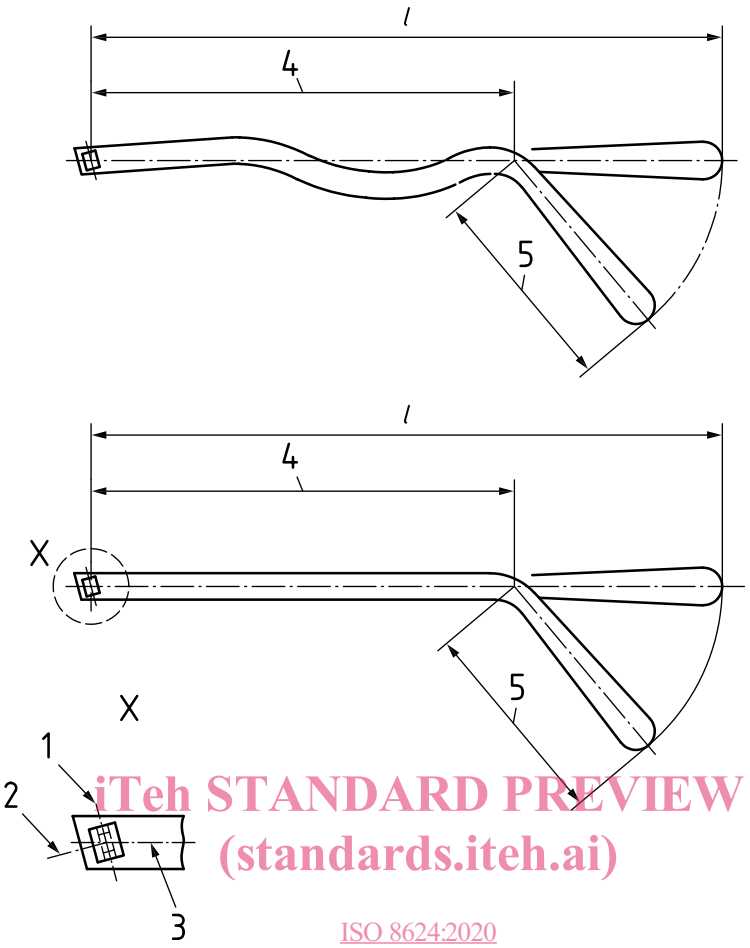
3.1.6
distance between lenses
d
horizontal distance between the nasal vertical sides of the rectangular boxes that circumscribe the right and left *lens shapes* (3.2.10)

Note 1 to entry: See Figure 1.

3.1.7
overall length of side
l
length from the intersection of the dowel screw's axis with the median plane of the joint to the end of the side and parallel to the centreline of it, the drop having been straightened

Note 1 to entry: See Figure 2.

Note 2 to entry: For sides without a joint, the side should be held open at $(90\ ^{0}_{-5})°$ to the front or to that part of the side (the lug) that is intended to be attached to the front, and the length measurement is from the end of the side to the back surface of the lug less 10 mm. See Figure 3.

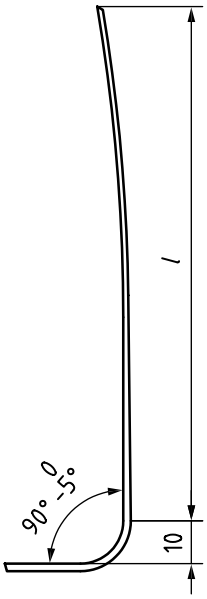


Key

1 axis of joint or dowel screw axis
2 median plane of joint
3 centreline of side
4 length to bend (see 3.2.7)
5 length of drop (see 3.2.8)
l overall length of side (*l* = dimensions 4 + 5)
X detail of the measurement position at the intersection of the three lines at the joint

Figure 2 — Measurements related to spectacle frames — Spectacle sides

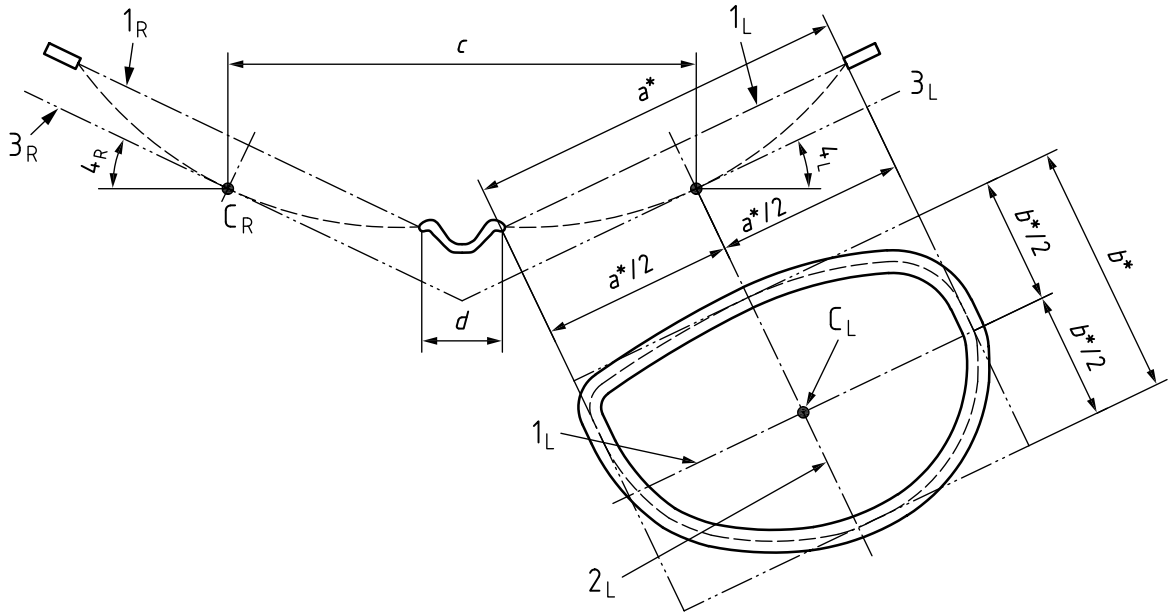
Dimension in millimetres



Key

l overall length of side

Figure 3 — Measurement of overall length of side for sides without a joint



Key

C_R, C_L	right, left boxed centre
a^*	horizontal boxed lens size
b^*	vertical boxed lens size
c	boxed centre distance
d	distance between lenses
1_R, 1_L	right, left horizontal centreline
2_L	left vertical centreline
3_R, 3_L	right, left plane of the lens shape
4_R, 4_L	right, left face form angle

NOTE In this Figure, a^* and b^* are the size measured to the apex of the groove.

Figure 4 — Measurement of boxed centre distance in frame having significant face form angle
(the dashed lines represent the apex of the groove in the spectacle frame)

3.2 Complementary terms of the boxed lens system

3.2.1
horizontal centreline
horizontal straight line located at an equal distance from the two horizontal tangents of the *boxed lens system* (3.1.1)

Note 1 to entry: The *horizontal centreline* is based on the apex of the groove or equivalent.

Note 2 to entry: For rimless and semi-rimless frames, the centre of the edge of an afocal lens mounted in the frame is to be regarded as equivalent.

Note 3 to entry: See Figures 4, 5 and 6.

3.2.2
vertical centreline
vertical straight line located at an equal distance from the vertical sides of the rectangular box that circumscribes the *lens shape* (3.2.10)

Note 1 to entry: The *vertical centreline* is based on the apex of the groove or equivalent.

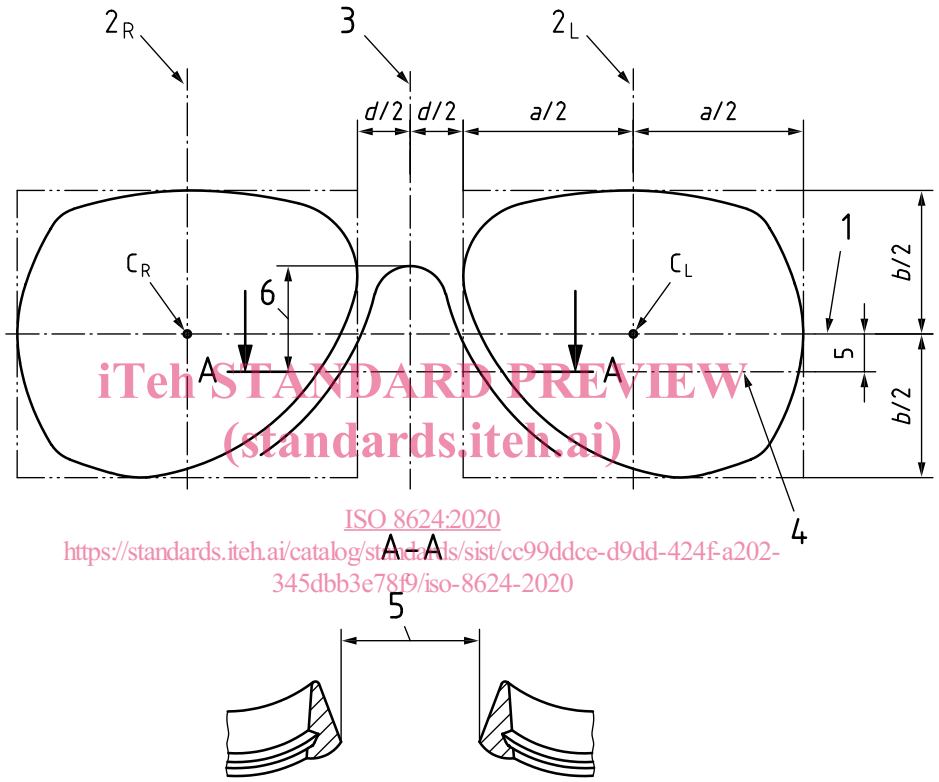
Note 2 to entry: For rimless and semi-rimless frames, the centre of the edge of an afocal lens mounted in the frame is to be regarded as equivalent.

Note 3 to entry: See Figures 4 and 5.

3.2.3
vertical axis of symmetry
vertical symmetry axis
vertical straight line located at an equal distance from the nasal vertical sides of the rectangular boxes that circumscribe the right and left *lens shapes* (3.2.10)

Note 1 to entry: See Figure 5.

Dimension in millimetres



Key

C_R, C_L	right, left boxed centre
a	horizontal boxed lens size
b	vertical boxed lens size
d	distance between lenses
1	horizontal centreline
2_R, 2_L	right, left vertical centreline
3	vertical axis of symmetry
4	bridge width line
5	bridge width
6	bridge height

Figure 5 — Complementary terms relating to fronts