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# Ophthalmic optics — Spectacle frames — Measuring system and terminology

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

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## Foreword

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ISO 8624 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*.

This third edition cancels and replaces the second edition (ISO 8624:2002), which has been technically revised.

# Ophthalmic optics — Spectacle frames — Measuring system and terminology

## 1 Scope

This International Standard specifies a measuring system for spectacle frames and related terminology. It is applicable to fronts which are intended to be symmetrical.

## 2 Terms, definitions and symbols

For the purposes of this document, the following terms, definitions and symbols apply. For complementary terms and definitions, see Annex A.

**2.1**
**boxed centre**
**C**
intersection of the **horizontal centreline** (A.1) and **vertical centreline** (A.2) of the rectangular box which circumscribes the **lens shape** (A.10)

See Figure 1.

**2.2**
**horizontal boxed lens size**
**horizontal lens size**
*a*
distance between the vertical sides of the rectangular box which circumscribes the **lens shape** (A.10)

See Figure 1.

NOTE For spectacle frames having a significant **face form angle** (A.13), the horizontal boxed lens size shall be measured in the “plane” of the individual lens shape.

**2.3**
**vertical boxed lens size**
**vertical lens size**
*b*
distance between the horizontal sides of the rectangular box which circumscribes the **lens shape** (A.10)

See Figure 1.

**2.4**
**boxed centre distance**
**distance between centres**
*c*
distance between the **boxed centres** (2.1)

See Figure 1.

NOTE For spectacle frames having a significant **face form angle** (A.13), the boxed centre distance shall be measured between the **boxed centres** (2.1) marked on the back surfaces of lenses of appropriate base curve fitted to the frame. See Figure 4.

**2.5**
**distance between lenses**
*d*
horizontal distance between the nasal vertical sides of the rectangular boxes which circumscribe the right and left **lens shapes** (A.10)

See Figure 1.

NOTE Former users of the obsolete datum system should note that this is the datum measurement “minimum between lenses”.

**2.6**
**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

See Figure 2.

NOTE 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 that is intended to be attached to the front, and the length measurement is from the end of the side to the front less 10 mm. See Figure 3.

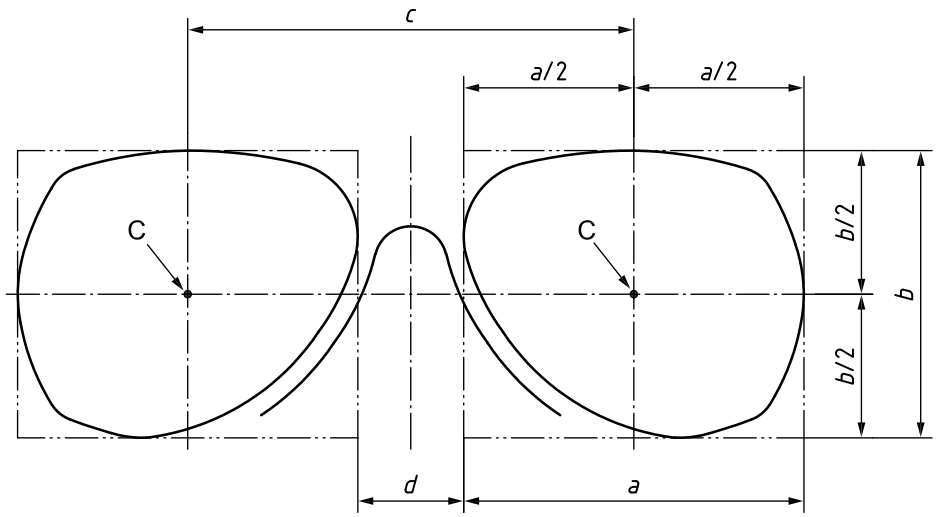
## 3 Measuring system

The measuring system for spectacle frames shall be in accordance with Figures 1 to 4, as defined in Clause 2.

If codes are used in spectacle frame documentation, the symbols given for the terms defined in Clause 2 shall be employed.

The measuring system comprises several horizontal and vertical dimensions and reference points. The knowledge of these is necessary for the manufacturing, ordering and adjustment of spectacle frames as well as for the exact mounting of spectacle lenses into spectacle frames.

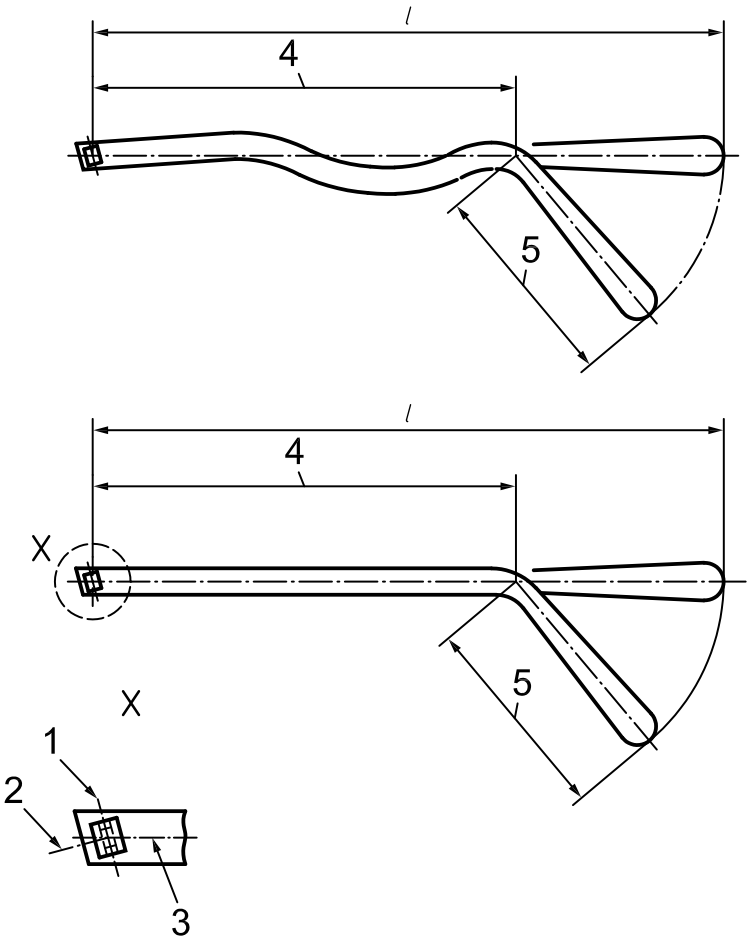
The measuring system is based on the boxed lens (boxing) system, which uses a rectangle tangential to the lens shape as the basis for the determination of the dimensions of the spectacle front. The upper tangent is common to both lens shapes and shall be regarded as horizontal, except in the case of spectacle frames having a significant face form angle, for which the line touching the uppermost edges of the right and left lens shapes shall be regarded as horizontal.




**Key**

C boxed centre
*a* horizontal lens size
*b* vertical lens size
*c* boxed centre distance
*d* distance between lenses

**Figure 1 — Measurements related to spectacle frames — Spectacle fronts**

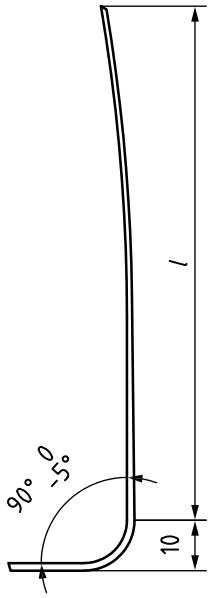



**Key**

1 axis of hinge or dowel screw axis
2 median plane of joint
3 centreline of side
4 length to bend (see Annex A)
5 length of drop (see Annex A)
*l* overall length of side

**Figure 2 — Measurements related to spectacle frames — Spectacle sides**

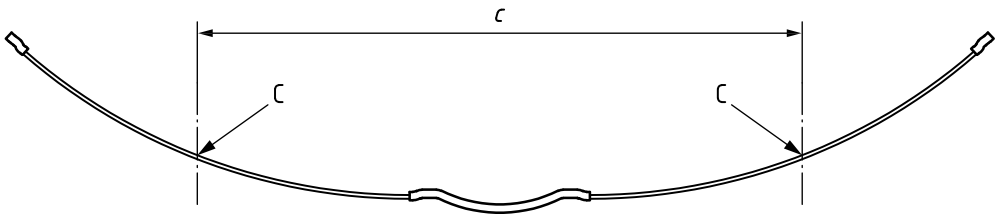
Dimensions in millimetres




**Key**

$l$ overall length of side

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




**Key**

C boxed centre

$c$ boxed centre distance

**Figure 4 — Measurement of boxed centre distance in frame having significant face form angle**

# Annex A
(informative)

# Complementary terms and definitions

Although the terms defined in this annex are not an integral part of the boxed lens system, they are frequently used in relation to lens shape or spectacle frames.

**A.1**
**horizontal centreline**
line located at an equal distance from the two horizontal tangents of the boxed lens (boxing) system

See Figures A.1 and A.2.

**A.2**
**vertical centreline**
line located at an equal distance from the vertical sides of the rectangular box which circumscribes the **lens shape** (A.10)

See Figure A.1.

**A.3**
**vertical symmetry axis**
line located at equal distance from the nasal vertical sides of the rectangular boxes which circumscribe the right and left spectacle **lens shapes** (A.10)

See Figure A.1.

**A.4**
**bridge width line**
reference line for bridge measurements positioned 5 mm below the **horizontal centreline** (A.1)

See Figures A.1 and A.2.

**A.5**
**bridge width**
minimum distance between the rims measured along the **bridge width line** (A.4)

See Figures A.1 and A.2.

NOTE For spectacle frames with adjustable pads, bridge width applies to the rims, *not* the pads; for rimless spectacles, it applies to the minimum distance between the nasal edges of the spectacle lenses measured along the bridge width line.

**A.6**
**bridge height**
distance from the **bridge width line** (A.4) to the lower edge of the bridge, measured along the **vertical symmetry axis** (A.3)

See Figure A.1.

**A.7**
**length to bend**
length from the intersection of the dowel axis with the median plane of the joint to the intersection point of the axis of the tip and side, measured along the axis of the side

See Figure 2.

**A.8**
**length of drop**
length from the intersection point of the axes of the side and tip to the end of the side

See Figure 2.

**A.9**
**effective diameter**
diameter of the smallest circular uncut lens that can be glazed to the **lens shape** (A.10) with its geometrical centre positioned at the **boxed centre** (2.1)

See Figure A.3.

NOTE This includes an allowance for edging.

**A.10**
**lens shape**
outline of the lens periphery with the nasal side and the horizontal indicated

NOTE "Lens shape" refers to the shape of hypothetical spectacle lenses with:

— for a spectacle lens having a bevelled edge, the outermost edge of the spectacle lens, the lens having a bevel which includes a symmetrical angle of 120° and a bevel width greater than the width of the groove in the front;

— for a spectacle lens having a flat or grooved edge, the outermost edge of the spectacle lens.

**A.11**
**plane of the spectacle front**
plane containing the vertical centrelines of the right and left boxed lens shapes

NOTE This may be an approximation if the two centrelines are not parallel to each other.

**A.12**
**plane of the lens shape**
plane tangential to the front surface of a plano or demonstration or dummy lens at its **boxed centre** (2.1), when mounted in the frame

NOTE A demonstration lens or dummy lens is the plano lens mounted in the frame by the manufacturer for display purposes.

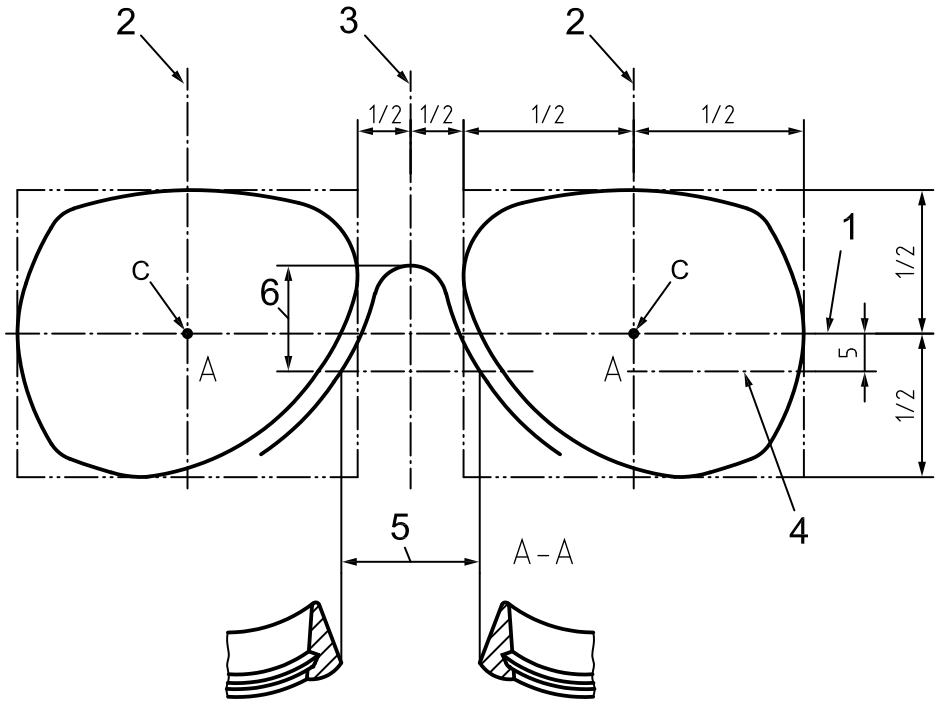
**A.13**
**face form angle**
angle between the plane of the spectacle front and the plane of the right lens shape, or of the left lens shape

See Figure A.4.

NOTE 1 The right or left face form angle is regarded as positive if the temporal side of the right or left lens plane is closer to the head than the **plane of the spectacle front** (A.11).

NOTE 2 The face form angles are often measured and specified as the average of the right ($\alpha_R$) and left ($\alpha_L$) angles, but the frame may be adjusted for a specific wearer so that they differ, and the angles should then be specified as $\alpha_R$ and $\alpha_L$.

Dimensions in millimetres

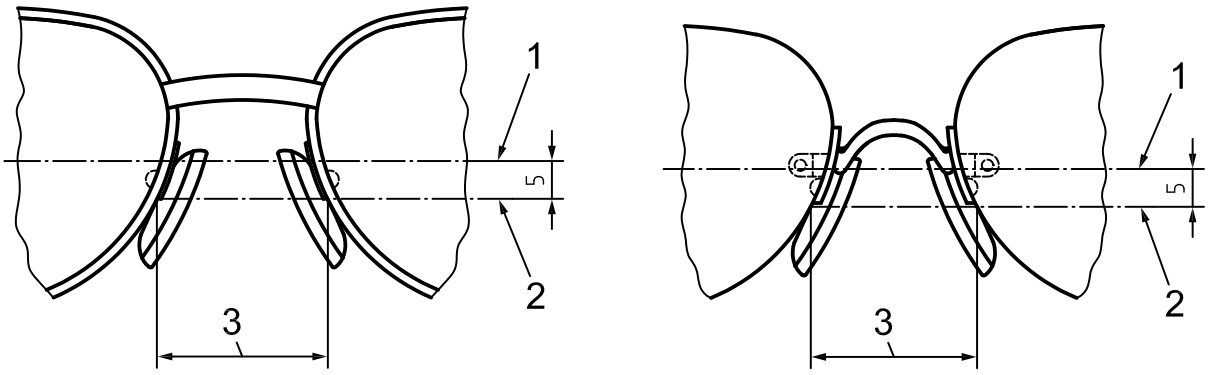



**Key**

1 horizontal centreline
2 vertical centreline
3 vertical symmetry axis
4 bridge width line
5 bridge width
6 bridge height
C boxed centre

**Figure A.1 — Complementary terms relating to fronts**

Dimensions in millimetres

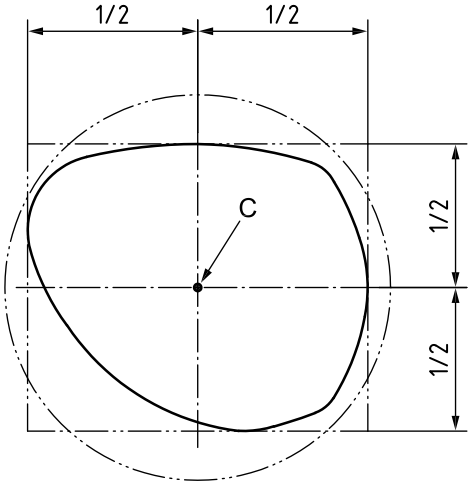



**a) Spectacle frames with metal pad bridges** **b) Rimless spectacle frames**

**Key**

1 horizontal centreline
2 bridge width line
3 bridge width

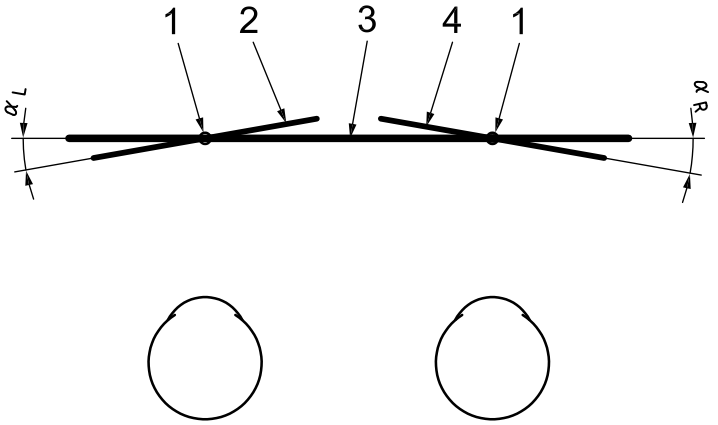
**Figure A.2 — Measurement of bridge width**




**Key**

C boxed centre

**Figure A.3 — Circle showing outline of lens having effective diameter**




**Key**

1 point of intersection of plane of spectacle front with vertical centreline of lens shape

2 left lens shape

3 plane of the spectacle front

4 right lens shape

$\alpha_R$ right face form angle

$\alpha_L$ left face form angle

**Figure A.4 — Face form angle — Schematic representation of plane of spectacle front and lens shapes (as seen from above)**

# Bibliography

[1] ISO 4007, *Personal protective equipment — Eye and face protection — Vocabulary*

[2] ISO 7998, *Ophthalmic optics — Spectacle frames — Lists of equivalent terms and vocabulary*

[3] ISO 13666, *Ophthalmic optics — Spectacle lenses — Vocabulary*

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