

LENS MARKING GUIDELINES

VERSION 2.0

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Developed by:

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Lens Marking Guidelines

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1. Foreword

1.1. Scope and Purpose

The purpose of these guidelines is to serve as a reference for placing temporary and permanent markings, such as ink markings and semi-visible engravings, on the surface of a spectacle lens. These guidelines are intended to maximize the accuracy of automatic and manual positioning, processing, and verification in lens production environments. Additionally, these guidelines are intended to provide a consistent set of recommendations for placing markings onto progressive and single vision lenses in order to maximize efficiency for laboratory personnel and eyecare professionals. It is recognized that alternative marking geometries may accomplish satisfactory results. As such, these guidelines serve as recommendations only.

1.2. Normative references

The following normative references contain additional terms and guidelines that are applicable to this document. Wherever possible, the terms and guidelines presented in this document have been written in accordance with these references:

Standard for Device Communications, Vision Council

Lens Description Standard, Vision Council

ANSI Z80.1, For Ophthalmic Optics — *Prescription Ophthalmic Lenses — Recommendations*, American National Standards Institute

ISO 10322-1, Ophthalmic Optics — *Semi-finished spectacle lens blanks: Specifications for single-vision and multifocal lens blanks*, International Standards Organization

ISO 10322-2, Ophthalmic Optics — *Semi-finished spectacle lens blanks: Specifications for progressive power lens blanks*, International Standards Organization

ISO 8980-1, Ophthalmic Optics — *Uncut finished spectacle lenses: Specifications for single-vision and multifocal lenses*, International Standards Organization

ISO 8980-2, Ophthalmic Optics — *Uncut finished spectacle lenses: Specifications for progressive power lenses*, International Standards Organization

2. Definitions

2.1. Glossary of terms and definitions

Throughout this document, the following terms, definitions, and abbreviations shall apply. Wherever possible, these definitions are consistent with ANSI and ISO definitions.

- 2.1.1. EXCLUSION ZONE (abbr. EZ): An area on the lens surface in which no permanent lens markings that could impair the visual function of the lens should appear.
- 2.1.2. FITTING CROSS (abbr. FC): That point on a lens as specified by the manufacturer to be used as a reference point for positioning the lens in front of a patient's eye.
- 2.1.3. FUNCTIONAL MARK AREA (abbr. FMA): An area on the lens surface in which only "functional" temporary lens markings that are utilized for positioning, layout, or power verification should be applied.
- 2.1.4. LENS(ES)
 - 2.1.4.1. PROGRESSIVE: A lens designed to provide correction for more than one viewing distance in which the power changes continuously rather than discretely.
 - 2.1.4.2. SINGLE VISION: A lens designed to provide correction for a single viewing distance.
- 2.1.5. MARKINGS
 - 2.1.5.1. TEMPORARY: Removable markings on the lens that are typically non-permanent ink markings and removed prior to wear. These markings are often utilized to position the lens during layout blocking and to verify the power and position of the lens during inspection and dispensing.
 - 2.1.5.2. PERMANENT: Irremovable markings on the lens that are typically engraved markings and either located on an unusable area of the lens blank or only minimally visible to observers. These markings are often utilized to identify the brand and addition power of the lens, if applicable, and to provide reference points for reapplying temporary markings.
- 2.1.6. REFERENCE POINT
 - 2.1.6.1. DISTANCE (abbr. DRP): That point on a lens as specified by the manufacturer at which the distance sphere power, cylinder power, and axis shall be measured.
 - 2.1.6.2. LAYOUT (abbr. LRP): That point on a lens as specified by the manufacturer that is used as a reference point for positioning the lens in front of the wearer's eye. For progressive addition lenses, the LRP is coincident with the fitting cross (FC). For conventional multifocals, the LRP is coincident with the location of the segment. For single vision lenses, the LRP is the geometric center (GC) of the lens blank, unless otherwise specified (e.g., decentered single vision aspheric lenses).
 - 2.1.6.3. NEAR (abbr. NRP): That point on a multifocal or progressive lens as specified by the manufacturer at which the addition power is measured.
 - 2.1.6.4. PRISM (abbr. PRP): That point on a lens as specified by the manufacturer at which the prism value of the finished lens is to be measured. For progressive lenses, the prism reference point is located at the midpoint between the semi-visible alignment reference markings (or "engravings"), separated by a distance of 34 mm, along a horizontal axis bisecting those two markings. For non-aspheric single vision and multifocal lenses, the prism reference point and distance reference point are assumed to be coincident.

3. Recommendations for Temporary Lens Markings

3.1. Progressive Lenses

Temporary markings for progressive lenses should adhere to the following guidelines when possible (Figure 1):

- 3.1.1. The lines in all temporary markings should be uniform in thickness and 0.1 to 0.4 mm in width.
- 3.1.2. The lines in all temporary markings should be opaque.
- 3.1.3. The design of the temporary markings should satisfy the following criteria:
 - 3.1.3.1. Markings should not interfere visually with the permanent alignment markings.
 - 3.1.3.2. Markings should be no closer than 2 mm to any permanent markings (engravings).
 - 3.1.3.3. If a fitting marking is used, it should be a cross or inverted “T” with a width of no less than 4.0 mm. A separate fitting marking should not be used, however, if the location of the fitting point coincides with the location of the PRP.
 - 3.1.3.4. The PRP marking should be a dot with a diameter of no less than 0.1 mm and no greater than 0.4 mm. Clearance around the PRP marking should be maximized.
 - 3.1.3.5. The addition power verification area surrounding the NRP should be indicated by a circular marking with a diameter of no less than 8.0 mm.
 - 3.1.3.6. The distance power verification area surrounding the DRP should be indicated by a circular mark 10 to 15 mm in diameter, which does not come closer than 3 mm to the fitting cross. This may necessitate a gap in the circle.
- 3.1.4. If present, the 180° axis line should be a solid line, not dotted or dashed. This line shall be interrupted at, and no closer than 2 mm to, the permanent alignment markings, if present, and no closer than 4 mm to the PRP marking. This line should extend as far out as practical.
- 3.1.5. The Functional Mark Area (FMA) is defined as a cross-shaped zone centered on the PRP, with legs 16 mm wide. The FMA should not contain any markings other than those previously defined. In addition, a minimum of 2 mm clearance should be maintained from any of the functional temporary markings. The outer 5 mm of the lens is exempt from this requirement.
- 3.1.6. An “R” or “L” marking indicating whether the lens is used for the right eye or left eye is desirable.
- 3.1.7. When applicable, a minimum quantity of ink should be utilized to minimize lens cleaning difficulty.

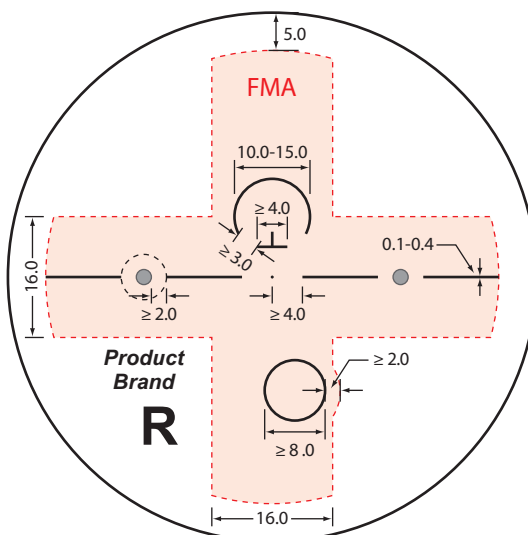
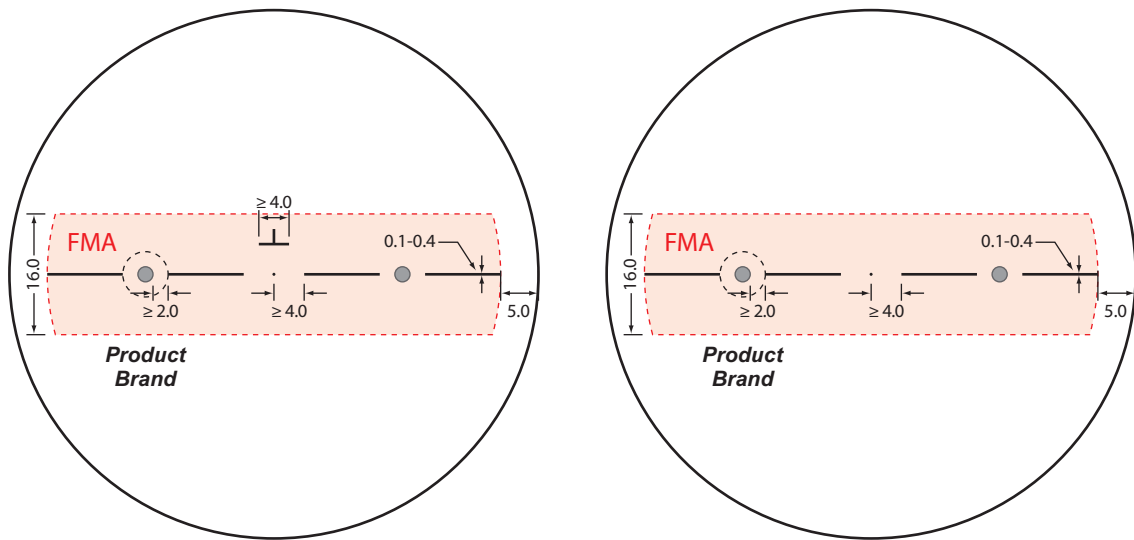


Figure 1 Recommended placement and geometry of temporary markings for progressive lenses

3.1. Single Vision Lenses

Temporary markings for single vision lenses should adhere to the following guidelines when possible (Figure 2):

- 3.1.1. The lines in all temporary markings should be uniform in thickness and 0.1 to 0.4 mm in width.
- 3.1.2. The lines in all temporary markings should be opaque.
- 3.1.3. The design of the temporary markings should satisfy the following criteria:
 - 3.1.3.1. Markings should not interfere visually with the permanent alignment markings.
 - 3.1.3.2. Markings should be no closer than 2 mm to any permanent markings (engravings).
 - 3.1.3.3. If a fitting marking is used, it should be a cross or inverted “T” with a width of no less than 4.0 mm. A separate fitting marking should not be used, however, if the location of the fitting point coincides with the location of the PRP.
 - 3.1.3.4. The PRP marking should be a dot with a diameter of no less than 0.1 mm and no greater than 0.4 mm. Clearance around the PRP marking should be maximized.
- 3.1.4. If present, the 180° axis line should be a solid line, not dotted or dashed. This line shall be interrupted at, and no closer than 2 mm to, the permanent alignment markings, if present, and no closer than 4 mm to the PRP marking. This line should extend as far out as practical.
- 3.1.5. The Functional Mark Area (FMA) is defined as a horizontal, rectangular-shaped zone centered on the PRP, with a height of 16 mm. The FMA should not contain any markings other than those previously defined. In addition, a minimum of 2 mm clearance should be maintained from any of the functional temporary markings. The outer 5 mm of the lens is exempt from this requirement.
- 3.1.6. When applicable, a minimum quantity of ink should be utilized to minimize lens cleaning difficulty.



Separate Fitting Point and PRP Locations

Single Fitting Point and PRP Location

Figure 2 Recommended placement and geometry of temporary markings for single vision lenses

4. Recommendations for Permanent Lens Markings

4.1. Progressive Lenses

Permanent markings for progressive lenses should adhere to the following guidelines when possible in accordance with the ANSI Z80.1 and ISO 8980-2 standards (Figure 3):

- 4.1.1. Two alignment reference markings comprising two marks with their centers separated by a distance of $34 \text{ mm} \pm 0.5 \text{ mm}$, equidistant to a vertical plane through the PRP and located vertically at the height of the PRP, should appear on the lens.
- 4.1.2. An indication of the add power of the lens, in diopters, should appear directly below the temporal alignment reference marking.
- 4.1.3. An indication of the manufacturer, supplier, tradename, or trademark should appear on the lens, either as a recognizable alignment reference marking or as a separate marking directly below the nasal alignment reference marking.
- 4.1.4. The Exclusion Zone is defined as a 30 mm, circular zone centered on the PRP. No permanent markings that could impair the visual function of the lens should appear within this 30-mm Exclusion Zone in accordance with cosmetic inspection guidelines.

4.2. Single Vision Lenses

Permanent markings for single vision lenses should adhere to the following guidelines when possible:

- 4.2.1. If alignment reference markings are present, two alignment reference markings with their centers separated by distance of $34 \text{ mm} \pm 0.5 \text{ mm}$, equidistant to a vertical plane through the PRP and located vertically at the height of the PRP, should appear on the lens.
- 4.2.2. The Exclusion Zone is defined as a 30 mm circular zone centered on the PRP. No permanent markings that could impair the visual function of the lens should appear within this 30-mm Exclusion Zone in accordance with cosmetic inspection guidelines.

4.3. Compensated Prescriptions

If the fabricated prescription differs from the specified prescription due to a power compensation, it is recommended that a carat (^) symbol be placed below the temporal alignment reference marking, if present. For progressive lenses, this symbol should appear to the temporal side of the add power marking.

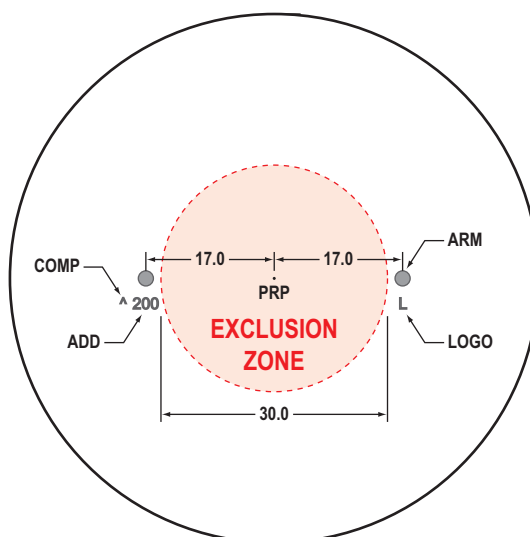


Figure 3 Recommended placement of permanent markings for progressive lenses