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Backup Lamp (Reversing Lamp)

1. Scope

This SAE Standard provides installation requirements, test procedures, design guidelines, and performance requirements for backup/reversing lamp.

1.1 Rationale

Sections 6.1.5.1, 6.1.5.2, and 6.1.5.3 revised to clarify and simplify performance requirements for various lamp configurations.

Table 1 redesigned to improve the layout of test points and zones. Notes 1, 2 and 3 removed as they are redundant to Section 6.1.5. Note 5 removed as it is covered under SAE J575.

2. References**2.1 Applicable Publications**

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J567—Lamp Bulb Retention System

SAE J575—Test Methods and Equipment for Lighting Devices and Components for Use on Vehicles
Less than 2032 mm in Overall Width

SAE J576—Plastic Materials for Use in Optical Parts such as Lenses and Reflectors of Motor Vehicle
Lighting Devices

SAE J578—Color Specification

SAE J759—Lighting Identification Code

SAE J1330—Photometry Laboratory Accuracy Guidelines

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3. Definitions

3.1 Backup Lamp

A lighting device used to provide illumination behind the vehicle and to provide a warning signal to pedestrians and other drivers when the vehicle is backing up (reversing) or is about to back up.

3.2 Point of Visibility

Any point on the lens surface which is within an area bounded by the intersection of the lens surface with a 25 mm diameter cylinder, the centerline of which passes through the light source center and is oriented horizontally and parallel with the longitudinal axis of the vehicle.

4. Lighting Identification Code

Backup Lamps may be identified by the code "R" in accordance with SAE J759.

5. Tests

5.1 SAE J575 is a part of this report. The following tests are applicable with modifications as indicated:

5.1.1 VIBRATION TEST

5.1.2 MOISTURE TEST

5.1.3 DUST TEST

5.1.4 CORROSION TEST

5.1.5 PHOTOMETRIC TEST

5.1.5.1 Photometric tests shall be made with the photometer at a distance of at least 3 m from the lamp. The H-V Axis shall be taken as the horizontal line through the light source and parallel with the longitudinal axis of the vehicle.

5.1.5.2 Photometric measurements shall be made with the bulb filament steadily burning.

5.1.6 WARPAGE TEST (ON DEVICES WITH PLASTIC COMPONENTS)

5.2 Color Test

SAE J578 is part of this report.

5.3 Materials Test

SAE J576 is part of this report.

6. Requirements

6.1 A device when tested in accordance with the test procedures specified in Section 5 shall meet the requirements as specified in SAE J575 unless otherwise noted.

6.1.1 VIBRATION

6.1.2 MOISTURE

6.1.3 DUST

6.1.4 CORROSION

6.1.5 PHOTOMETRY

6.1.5.1 The lamps of a two-lamp system shall be designed to conform to one of the following photometric requirements:

a. Each lamp of the pair is tested to the photometric requirements of Table 1;

OR

b. When two lamps of the same or symmetrically opposite designs are used, the photometric readings along the vertical axis and the average of the readings for the same angles left or right of the vertical axis for one lamp may be used to determine compliance with the requirements of Table 1.

OR

c. When two lamps of differing designs are used, they shall be tested individually, and the photometric values added shall meet twice the zone total candela requirements of Table 1.

6.1.5.2 When only one backup lamp is used on the vehicle, it shall be designed to conform to twice the photometric requirements of Table 1 and its footnotes.

6.1.5.3 If a backup lamp has portions of its lens which project nonwhite light, that light shall be excluded from measurement made to determine compliance with 6.1.5.1 and 6.1.5.2. The lamp or lamps shall be designed to conform to the photometric requirements of this document with white light as defined by 6.2.

6.1.6 WARPAGE

SAE J575.

TABLE 1—PHOTOMETRIC PERFORMANCE REQUIREMENTS

Minimum Candela value (cd) at each test point and test zone⁽¹⁾

	45L	30L	10L	V	10R	30R	45R
Zone Total Luminous Intensity (cd)			Zone III				
			100				
10U			10	15	10		
5U	15		20	25	20	15	
H	15	25	50	80	50	25	15
5D	15	25	50	80	50	25	15
Zone Total Luminous Intensity (cd)	Zone I	Zone II	Zone IV			Zone V	Zone VI
	45	50	360			50	45
Two lamp system	Maximum candela per lamp at H and above - 300 cd						
Single lamp system	Maximum candela at H and above - 500 cd						

1. When using zonal requirements, no test point shall be less than 60% of the test point minimum.

6.2 Color

The color of the light from a backup lamp shall be white, as specified in SAE J578. A backup lamp may project incidental red, yellow, or white light through the reflectors or lenses that are adjacent to, close to, or part of the lamp assembly. If a lamp has portions of its lens which project nonwhite light, that light shall be regarded as incidental if, when only the nonwhite light is measured at each test point specified in Table 1, the sum of such measurements does not exceed 20% of the sum of the test point measurements of the total light output (white plus nonwhite).

6.3 Material Requirements

Plastic materials used in optical parts shall meet the requirements of SAE J576.

6.4 Installation Requirements

- 6.4.1 Backup lamps shall be mounted so that the point of visibility of at least one of the lamps is visible from any eye point that is (a) 0.6 to 1.8 m above the horizontal plane on which the vehicle is standing and (b) rearward of a vertical plane perpendicular to the longitudinal axis of the vehicle, 0.9 m to the rear of the vehicle and extending 0.9 m beyond each side of the vehicle.
- 6.4.2 Visibility and photometric performance of the backup lamp within the test angles shown in Table 1 shall not be obstructed by any portion of the vehicle unless the lamp is designed to comply with all requirements when the obstruction is considered.
- 6.4.3 The backup lamp shall be lighted only when the ignition switch is energized and reverse gear is engaged.