

Stop Lamps for Use on Motor Vehicles
Less than 2032 mm in Overall Width

RATIONALE

The changes incorporated in this revision, update this standard to harmonize the definitions with the definitions in other SAE documents.

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1. SCOPE

This SAE Standard provides test procedures, requirements, and guidelines for stop lamps intended for use on vehicles of less than 2032 mm in overall width.

2. REFERENCES

2.1 Applicable Publications

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

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

| | |
|-----------|---|
| SAE J567 | Lamp Bulb Retention System |
| SAE J575 | Tests Methods and Equipment for Lighting Devices and Components for Use on Vehicles Less than 2032 mm in Overall Width |
| SAE J576 | Plastic Material or Materials for Use in Optical Parts Such as Lenses and Reflex Reflectors of Motor Vehicle Lighting Devices |
| SAE J578 | Color Specification |
| SAE J759 | Lighting Identification Code |
| SAE J1319 | Fog Tail Lamp (Rear Fog Light) Systems |
| SAE J1889 | L.E.D. Signal and Marking Lighting Devices |

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

| | |
|-----------|---|
| SAE J222 | Parking Lamps (Front Position Lamps) |
| SAE J387 | Terminology—Motor Vehicle Lighting |
| SAE J585 | Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less than 2032 mm in Overall Width |
| SAE J588 | Turn Signal Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width |
| SAE J592 | Sidemarkers Lamps for Use on Road Vehicles Less than 2032 mm in Overall Width |
| SAE J594 | Reflex Reflectors |
| SAE J1050 | Describing and Measuring the Driver's Field of View |
| SAE J1957 | Center High Mounted Stop Lamp Standard for Vehicles Less than 2032 mm Overall Width |
| SAE J2040 | Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width |
| SAE J2042 | Clearance, Sidemarkers, and Identification Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width |
| SAE J2261 | Stop Lamps and Front- and Rear-Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width |

2.2.2 Federal Publications

Available from the Superintendent of Documents, U.S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

CFR Title 49 Part 571.108 Lamps, Reflective Devices and Associated Equipment (FMVSS 108)
<http://www.gpoaccess.gov/cfr/index/html>.

2.2.3 European Community/United Nations Publication

Available from United Nations Economic Commission for Europe, Palais des Nations, CH-1211, Geneva 10, Switzerland, Tel: +41-0-22-917-12-34, <http://www.unece.org/trans/main/wp29/wp29regs.html>.

ECE Regulation No. 7 Uniform Provisions Concerning the Approval of Front and Rear Position (side) Lamps, Stop-Lamps and End-Outline Marker Lamps for Motor Vehicles (except Motorcycles) and their Trailers

3. DEFINITIONS

3.1 Stop Signal Function

A steady light to the rear of a vehicle to indicate the intentional deceleration or the stopping of a vehicle.

3.2 Stop Lamp

A device providing the stop signal function.

3.3 SAE J387 is a part of this document.

4. LIGHTING IDENTIFICATION CODE

Stop lamps for use on vehicles less than 2032 mm in overall width may be identified by the code "S" in accordance with SAE J759.

5. TESTS

5.1 Test Methods, etc.

SAE J575 is a part of this document. 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 Photometry Test

5.1.5.1 Test distance shall be at least 3 m or at least 10 times the maximum linear extent of the effective projected luminous area of the stop lamp, whichever is greater. The H-V axis shall be taken as parallel to the axis of reference of the lamp as mounted on the vehicle.

5.1.5.2 The photometric requirements specified in Figures 3, 4 and 5 shall be applied based on the Effective Projected Luminous Area depicted in Table 1.

TABLE 1 - EFFECTIVE PROJECTED LUMINOUS AREAS

| Effective Projected Luminous Area | Size |
|-----------------------------------|------|
| Less than 225 cm ² | 1 |
| 225 to 450 cm ² | 2 |
| Greater than 450 cm ² | 3 |

5.1.5.3 Photometric measurements of multiple lamp arrangements shall be made by one of the following methods:

5.1.5.3.1 If a multiple lamp arrangement is used to obtain the stop function, all lamps shall be photometered together provided that a line from the optical axis of each lamp to the center of the photometer sensing device does not make an angle of more than 0.6 degree with the photometer H-V axis. When lamps are photometered together, the H-V axis shall intersect the midpoint between their optical axes.

5.1.5.3.2 Each lamp shall be photometered separately by aligning the axis of each lamp with the photometer. The photometric measurement for the multiple lamp arrangement shall be determined by adding the photometric outputs from each individual lamp at corresponding test points.

5.1.5.4 SAE J1889 is a part of this document.

5.1.6 Warpage Test for Devices with Plastic Components

5.2 Color Test

SAE J578 is a part of this document.

5.3 Material Test

Plastic materials used in the optical parts shall be tested according to SAE J576.

6. REQUIREMENTS

6.1 Performance Requirements

A device when tested in accordance with the test procedures specified in Section 5, shall meet the following requirements per SAE J575: LED lamps shall also meet the requirements of J1889 and this section when tested to the procedures of J1889 and Section 5.

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 lamp (size 1, 2 or 3) shall be designed to conform to the zone total photometric requirements of the corresponding Figures 3, 4 or 5 and their footnotes. The summation of the luminous intensity measurements at the test points in a zone shall be at least the value shown.

6.1.5.2 A size 2 or size 3 lamp may be used to meet the photometric requirements of a stop lamp. The lamp must meet the photometric requirements of Figures 4 or 5 for the corresponding size.

6.1.5.3 If multiple lamps are used and the distance between optical axes does not exceed 560 mm for two lamp arrangements and does not exceed 410 mm for three lamp arrangements, then the combination of lamps must be used to meet the photometric requirements for the corresponding size of lamp (2 lamps meet size 2; 3 lamps meet size 3, figures 4 and 5 respectively). If the distance between adjacent optical axes exceeds the previous dimensions, each lamp shall comply with the photometric requirements for size 1 in Figure 3.

6.1.5.4 When a tail lamp is combined with the stop lamp, the stop lamp shall not be less than three times the luminous intensity of the tail lamp at any test point; except that at H-V, H-5L, H-5R, and 5U-V, the stop lamp shall not be less than five times the luminous intensity of the tail lamp. If a size 2, size 3 or multiple lamp arrangement is used and the distance between optical axes for both the tail lamp and stop lamp is within the dimensions specified in 6.1.5.3, the ratio of the stop lamp to the tail lamp shall be computed with the entire lamp or all the lamps lighted. If a multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in 6.1.5.3, the ratio shall be computed for only those lamps where the tail lamp and stop lamp are optically combined. When the tail lamp is combined with the stop lamp, and the maximum luminous intensity of the tail lamp is located below horizontal and within an area generated by a 0.5 degree radius around a test point, the ratio for the test point may be computed using the lowest value of the tail lamp luminous intensity within the generated area.

6.1.6 Warpage

6.2 Color

The color of light from the stop lamps shall be red as specified in SAE J578.

6.3 Materials Requirements

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

6.4 Design Requirements

6.4.1 If a stop lamp is optically combined with the tail lamp and a two-filament bulb used, the bulb shall have an indexing base and the socket shall be designed so that bulbs with nonindexing bases cannot be used. Removable sockets shall have an indexing feature so that they cannot be reinserted into lamp housings in random positions, unless the lamp will perform its intended function with random light source orientation.

6.4.2 The effective projected luminous lens area of a stop lamp shall be at least 50.0 cm².

6.4.3 If multiple lamps are used to meet the photometric requirements, the effective projected luminous lens area of each lamp shall be at least 22 cm².

6.4.4 SAE J 1889 contains the requirements for L.E.D. lamps.

6.5 Design Guidelines

SAE J567 contains the requirements for sockets and gages for bulb retention.

6.6 Installation Requirements

Stop lamps shall meet the following requirements as installed on the vehicle:

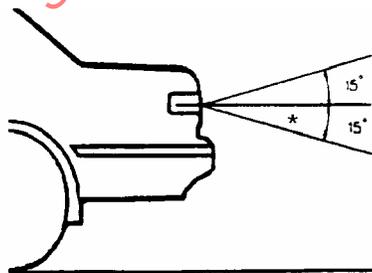
6.6.1 Each stop lamp arrangement shall be designed to comply with all photometric requirements of Figures 3, 4 or 5 with all vehicular obstructions considered.

6.6.2 Each stop lamp arrangement shall be designed to comply with one of the following visibility requirements:

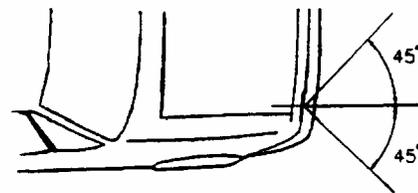
a. Each lamp arrangement must provide a minimum of 13 cm² of unobstructed effective projected luminous lens area, excluding reflex reflector area, in any direction throughout the pattern defined by the specified corner points as follows and shown in Figure 1:

15° above the horizontal, 45° inboard and 45° outboard

15°* below the horizontal, 45° inboard and 45° outboard



Vertical Angles



Horizontal Angles**

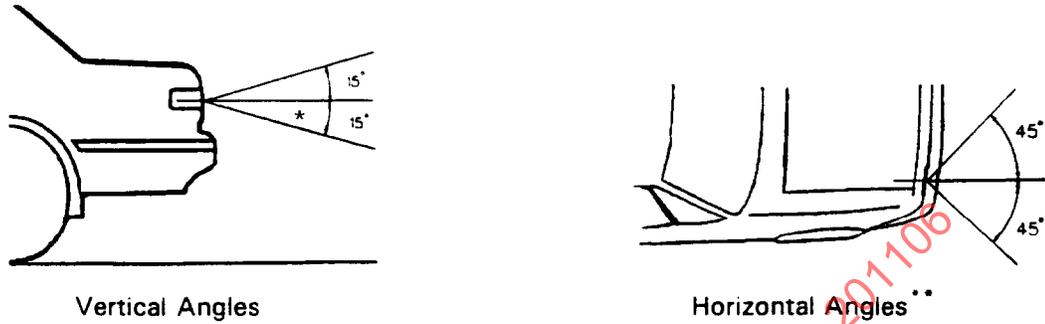
* The downward angle may be reduced to 5 degrees if the lower lighted edge of the lamp is less than 750 mm above the ground.

** Left side shown; right side symmetrically opposite.

FIGURE 1 - STOP LAMP VISIBILITY REQUIREMENTS - UNOBSTRUCTED PROJECTED AREA

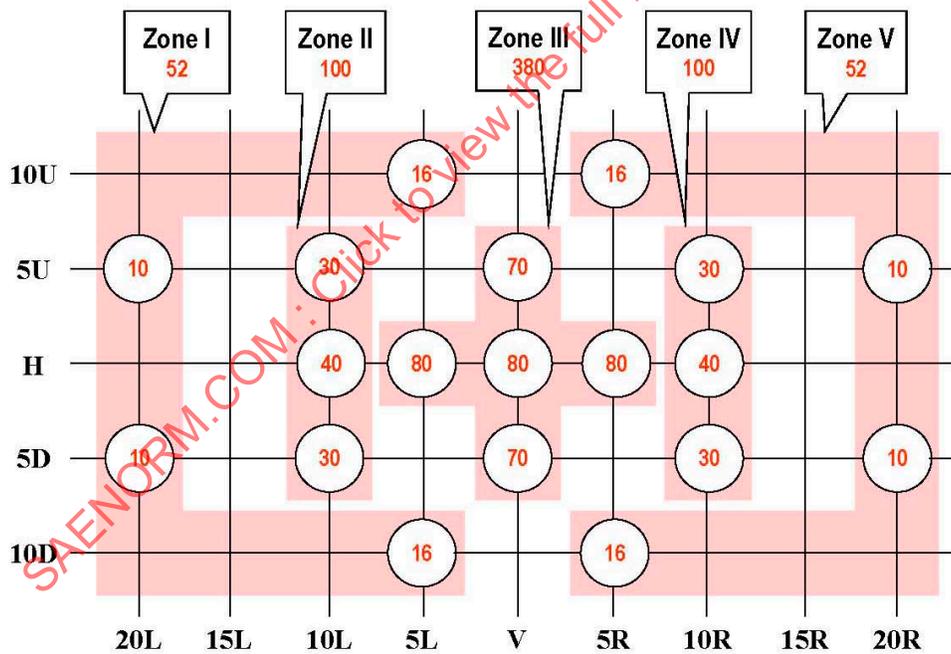
b. Each lamp must provide a luminous intensity not less than 0.3 cd throughout the photometric pattern defined by the corner points specified as follows and shown in Figure 2:

15 degrees above horizontal, 45 degrees inboard and outboard
 15 degrees below horizontal*, 45 degrees inboard and outboard



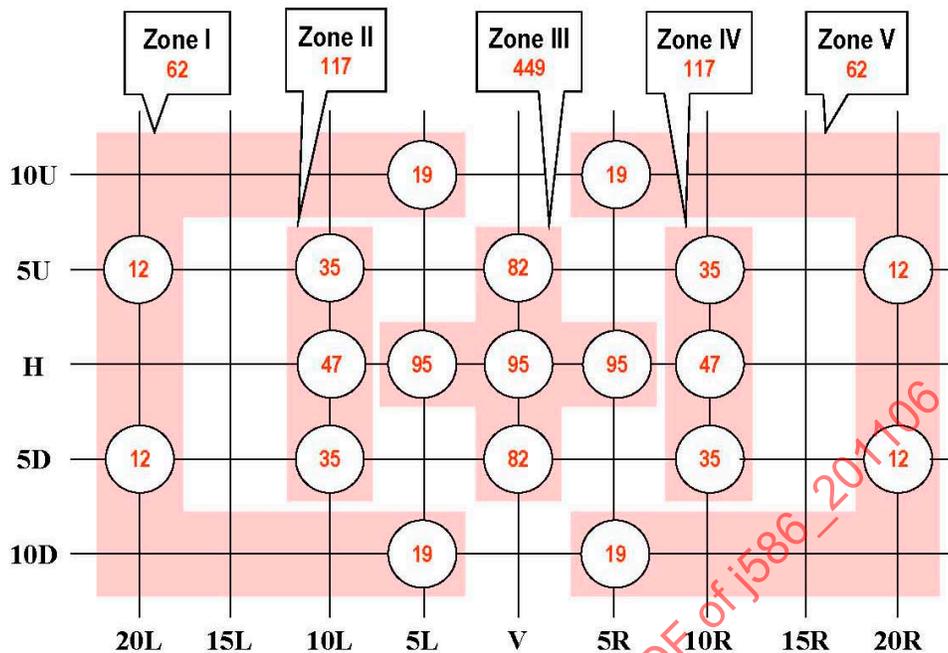
* The downward angle may be reduced to 5 degrees if the lower lighted edge of the lamp is less than 750 mm above the ground.
 ** Left side shown; right side symmetrically opposite.

FIGURE 2 - STOP LAMP VISIBILITY REQUIREMENTS - LUMINOUS INTENSITY



1. The maximum luminous intensity is 300 cd within the photometric pattern shown.
2. The Measured value at each test point shall not be less than 60% of the required minimum value shown for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the Zone total shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.
5. Ratio requirements of 6.1.5.4
6. Multiple lamps requirements of 6.1.5 and its sub paragraphs apply.
7. Where stop lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5° down may be met at 5° down rather than the required downward angle.

FIGURE 3 - PHOTOMETRIC REQUIREMENTS
 Minimum Luminous Intensity (cd) Size 1 (less than 225 cm²)



1. The maximum luminous intensity is 360 cd within the photometric pattern shown.
2. The Measured value at each test point shall not be less than 60% of the required minimum value shown for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the Zone total shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.
5. Ratio requirements of 6.1.5.4
6. Multiple lamps requirements of 6.1.5 and its sub paragraphs apply.
7. Where stop lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5° down may be met at 5° down rather than the required downward angle.

FIGURE 4 - PHOTOMETRIC REQUIREMENTS
Minimum Luminous Intensity (cd) Size 2 (225 to 450 cm²)