SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE STANDARD

Submitted for recognition as an American National Standard

SAE J586 | REV. SEP95

Issued 1927-02
Revised 1995-09

Superseding J586 DEC89

(R) STOP LAMPS FOR USE ON MOTOR VEHICLES LESS THAN 2032 mm IN OVERALL WIDTH

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 Documents—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—Tests for Motor Vehicle Lighting Devices and Components
SAE J576—Plastic Materials for Use in Optical Parts Such as Lenses and Reflectors of Motor Vehicle Lighting Devices
SAE J578—Color Specification
SAE J579—Lighting Code Identification
SAE J1050—Describing and Measuring the Driver's Field of View

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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J222—Parking Lamps (Front Position Lamps)
SAE J585—Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width
SAE J586 FEB84—Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width
SAE J588 NOV84—Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width
SAE J592—Clearance, Side Marker, and Identification Lamps
SAE J594—Reflex Reflectors
SAE J1395 MAY85—Front and Rear Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width
SAE J1398—Stop Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width
SAE J1957—Central High Mounted Stop Lamp Standard for Use on 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, Sidemarker, and Identification Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width

2.2.2 NHTSA PUBLICATION—Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

FMVSS108 56 FR 64733 - 64737

3. Definitions

3.1 Stop Lamps—Lamps giving a steady light to the rear of a vehicle to indicate the intention of the operator of a vehicle to stop or diminish speed by braking.

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 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 Photometric measurements shall be made with the light source of the signal lamp at least 3 m from the photometer. The H-V axis shall be taken as parallel to the longitudinal axis of the vehicle.

5.1.5.2 Photometric measurements shall be made with the bulb filament steadily burning. Photometric measurements of multiple compartment lamps or multiple lamp arrangements shall be made by either of the following methods by aligning the axis of each lamp or compartment with the photometer:

5.1.5.2.1 All compartments or lamps shall be photometered together provided that a line from the light source of each compartment or 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 compartments or lamps are photometered together, the H-V axis shall intersect the midpoint between their light sources.

5.1.5.2.2 Each compartment or lamp shall be photometered separately. The photometric measurement for the entire multiple compartment lamp or multiple lamp arrangement shall be determined by adding the photometric outputs from each individual lamp or component at corresponding test points.

5.1.6 WARPAGE TEST FOR DEVICES WITH PLASTIC COMPONENTS

5.2 Color Test—SAE J578 is a part of this document.

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:

6.1.1 VIBRATION—SAE J575

6.1.2 MOISTURE—SAE J575

6.1.3 DUST—SAE J575

6.1.4 CORROSION—SAE J575

6.1.5 PHOTOMETRY—SAE J575

6.1.5.1 The lamp shall meet the photometric performance requirements contained in Table 1 and its footnotes. The summation of the luminous intensity measurements at the specified test points in a zone shall be at least the value shown.

TABLE 1—PHOTOMETRIC REQUIREMENTS[3]

Zone	Test Points[1] (deg)	Minimum Luminous Intensity (cd) Lighted Sections[4] 1	Minimum Luminous Intensity (cd) Lighted Sections[4] 2	Minimum Luminous Intensity (cd) Lighted Sections[4] 3
1	10U-5L 5U-20L 5D-20L 10D-5L	50	60	70
2	5U-10L H-10L 5D-10L	100	115	135
3	5U-V H-5L H-V H-5R 5D-V	380	445	520
4	5U-10R H-10R 5D-10R	100	115	135
5	10U-5R 5U-20R 5D-20R 10D-5R	50	60	70
Maximum Luminous Intensity (cd)[2]		300	360	420

[1] The measured values at each test point shall not be less than 60% of the minimum value in Table 2.

[2] 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 in Table 1.

[3] Ratio requirements of 6.1.5.3 apply.

[4] A multiple device signaling unit gives its indication by two or more separately lighted sections which may be separate lamps, or areas that are joined by common parts. The photometric values are to apply when all sections that provide the same signal are considered as a unit except when the dimensions between optical centers exceed those given in 6.1.5.2. For a separate lamp arrangement, where lamps are interchangeable, each lamp shall be of approximately the same performance.

6.1.5.2 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a stop lamp. If a multiple compartment or multiple lamps are used and the distance between adjacent light sources does not exceed 560 mm for two compartments or lamp arrangements and does not exceed 410 mm for three compartments or lamp arrangements, then the combination of the compartments or lamps must be used to meet the photometric requirements for the corresponding number of lighted sections (Table 1). If the distance between adjacent light sources exceeds the dimensions, each compartment or lamp shall comply with the photometric requirements for one lighted section (Table 1).

6.1.5.3 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 multiple compartment or multiple lamp arrangement is used and the distance between optical axis for both the tail lamp and stop lamp is within the dimensions specified in 6.1.5.2, the ratio of the stop lamp to the tail lamp shall be computed with all the compartments or lamps lighted. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in 6.1.5.2, the ratio shall be computed for only those compartments or 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—SAE J575

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

6.2 Materials Requirements—Plastic materials used in the optical parts shall meet the requirements of SAE J576.

6.3 Design Requirements

6.3.1 If a stop signal 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.

6.3.2 The functional lighted lens area of a single compartment lamp shall be at least 37.5 cm^2.

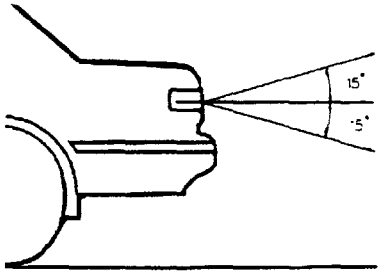
6.3.3 If a multiple compartment lamp or multiple lamps are used to meet the photometric requirements, the functional lighted lens area of each compartment or lamp shall be at least 22 cm^2 provided the combined area is at least 37.5 cm^2.

6.4 Installation Requirements—Stop lamps shall meet the following requirements as installed on the vehicle:

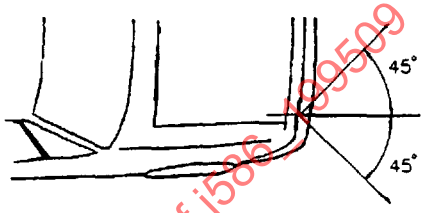
6.4.1 Each stop lamp shall be designed to comply with all photometric requirements of Table 1 with all vehicular obstructions considered.

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

a. Each lamp must provide a minimum of 13 cm^2 of unobstructed projected area when the light emitting surface area of the lens, excluding reflex reflector area, is projected parallel to a horizontal plane in any direction from 45 degrees outboard to 45 degrees inboard of the vehicle longitudinal axis, and parallel to a longitudinal, vertical plane in any direction from 15 degrees above to 15 degrees below* the horizontal (see Figure 1).



Vertical Angles



Horizontal Angles**

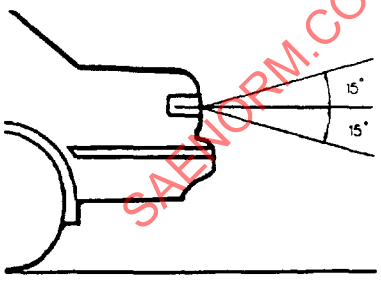
* The downward angle may be reduced to 5 degrees if the lower lighted edge of the lamp is less than 750 mm above the ground.
** Left side shown; right side symmetrically opposite.

FIGURE 1—TAIL LAMP VISIBILITY REQUIREMENTS—UNOBSTRUCTED PROJECTED AREA

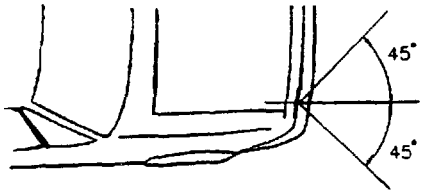
or

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

15 degrees above horizontal, 45 degrees inwards and outwards
15 degrees below horizontal*, 45 degrees inwards and outwards



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 2—TAIL LAMP VISIBILITY REQUIREMENTS—LUMINOUS INTENSITY

7. Guidelines

7.1 Photometric design guidelines for stop lamps, when tested in accordance with 5.1.5 of this document, are contained in Table 2 and its footnotes.

TABLE 2—PHOTOMETRIC DESIGN GUIDELINES

	Test Points (degrees)	Minimum Luminous Intensity (cd) Lighted Sections 1	Minimum Luminous Intensity (cd) Lighted Sections 2	Minimum Luminous Intensity (cd) Lighted Sections 3
10U, 10D	5L, 5R	16	19	22
	20L, 20R	10	12	15
5U, 5D	10L, 10R	30	35	40
	V	70	82	95
	10L, 10R	40	47	55
H	5L, 5R	80	95	110
	V	80	95	110
Maximum Luminous Intensity[1] (cd)		300	360	420

[1] The maximum design value of a stop lamp should not exceed the listed design maximum over any area larger than that generated by 0.25 degree radius within the solid angle defined by the test points in Table 2.

7.2 Installation Guidelines—The following apply to stop lamps as used on the vehicle and shall not be considered part of the requirements:

7.2.1 Stop lamps on the rear of the vehicle should be spaced as far apart laterally as practicable, so that the signal will be clearly visible.

7.2.2 The luminous intensity of incandescent filament bulbs will vary with applied voltage. The electrical power system of the vehicle should, under normal running conditions, provide design voltage to the lamp as closely as practical bearing in mind the inherent variability of such systems.

7.2.3 Performance of lamps may deteriorate significantly as a result of dirt, grime, and/or snow accumulation on the optical surfaces. Installation of lamps on vehicles should be considered to minimize the effect of these factors.

7.2.4 Where it is expected that lamps must perform in severe environments, for example, be totally immersed in water periodically, the user should specify lamps designed for such use.

8. Additional Information—As a matter of additional information, attention is called to SAE J567 for requirements and gages to be used in socket design.

9. Notes

9.1 **Marginal Indicia**—The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

PREPARED BY THE SAE SIGNALING AND MARKING DEVICES STANDARDS COMMITTEE
AND THE SAE LIGHTING COORDINATING COMMITTEE