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

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an American National Standard

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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

HIGHWAY VEHICLE STANDARD

an American National Standard

SAE J586

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Ø STOP LAMPS FOR USE ON MOTOR VEHICLES LESS THAN 2032 MM IN OVERALL WIDTH

1. SCOPE:

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

2. DEFINITIONS:

2.1 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.

3. 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, Lighting Identification Code.

4. TESTS:

4.1 SAE J575, Tests for Motor Vehicle Lighting Devices and Components is a part of this report. The following tests are applicable with modifications as indicated.

4.1.1 Vibration Test

4.1.2 Moisture Test

4.1.3 Dust Test

4.1.4 Corrosion Test

4.1.5 Photometry Test

4.1.5.1 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.

4.1.5.2 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:

4.1.5.2.1 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 deg 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.

4.1.5.2.2 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 of corresponding test points.

4.1.6 Warpage Test for Devices with Plastic Components:

4.2 Color Test: SAE J578, Color Specification for Electric Signal Lighting Devices is a part of this report.

5. REQUIREMENTS:

5.1 Performance Requirements: A device, when tested in accordance with the test procedures specified in Section 4, shall meet the following requirements:

5.1.1 Vibration: SAE J575

5.1.2 Moisture: SAE J575

5.1.3 Dust: SAE J575

5.1.4 Corrosion: SAE J575

5.1.5 Photometry: SAE J575

5.1.5.1 The lamp shall meet the photometric performance requirements contained in Table 1, Photometric Requirements 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[c]

Zone	Test Points[a] (deg)	Minimum Luminous Intensity (candela)		
		Lighted Sections[d]		
		1	2	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 (candela)[b]		300	360	420

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

[b]The listed maximum shall not be exceeded over any area larger than that generated by a 0.5 deg radius within the solid angle defined by the test points in Table 1.

[c]Ratio requirements of 5.1.5.3 apply.

[d]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 which provide the same signal are considered as a unit except when the dimensions between optical centers exceed those given in 5.1.5.2. For a separate lamp arrangement, where lamps are interchangeable, each lamp shall be of approximately the same performance.

5.1.5.2 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, Photometric Requirements). If the distance between adjacent light sources exceeds the above dimensions, each compartment or lamp shall comply with the photometric requirements for one lighted section (Table 1).

5.1.5.3 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 5.1.5.2, 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 5.1.5.2, 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 deg 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.

5.1.6 Warpage: SAE J575

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

5.2 Materials Requirements: Plastic materials used in the optical parts shall meet the requirements of SAE J576, Plastic Materials for Use in Optical Parts Such as Lenses and Reflectors of Motor Vehicle Lighting Devices.

5.3 Design Requirements:

5.3.1 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 re-inserted into lamp housings in random positions, unless the lamp will perform its intended function with random light source orientation.

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

5.3.3 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.

5.4 Installation Requirements: The stop lamp shall meet the following requirements as installed on the vehicle:

5.4.1 Visibility of the signal shall not be obstructed by any part of the vehicle throughout the photometric test angles for the lamps unless the lamp is designed to comply with all photometric and visibility requirements with these obstructions considered. Signals from lamps on both sides of the vehicle shall be visible through a horizontal angle of 45 deg to the left and to 45 deg to the right. Where more than one lamp or optical area is lighted on each side of the car, only one such area on each side need comply. To be considered visible, the lamp must provide an unobstructed view of the outer lens surface, excluding reflex reflectors, of at least 12.5 cm^2 measured at 45 deg to the longitudinal axis of the vehicle.

5.4.2 When a stop signal is optically combined with the turn signal, the circuit shall be such that the stop signal cannot be turned on if the signal is flashing.

6. GUIDELINES:

6.1 Photometric design guidelines for stop lamps, when tested in accordance with 4.1.5 of this report, are contained in Table 2, Photometric Design Guidelines and its footnotes.

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

6.2.1 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.

6.2.2 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.

6.2.3 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.

6.2.4 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.

TABLE 2 – Photometric Design Guidelines

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

[a]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 deg radius within the solid angle defined by the test points in Table 2.

APPENDIX

As a matter of additional information, attention is called to SAE J567, Lamp Bulb Retention System for requirements and gages used in socket design.