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

SURFACE VEHICLE STANDARD

SAE J585 | REV. DEC91

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Submitted for recognition as an American National Standard

(R) TAIL LAMPS (REAR POSITION 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 tail lamps (rear position lamps).

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 J759—Lighting Identification Code

SAE J2040—Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width

2.2 Definitions

2.2.1 TAIL LAMPS—Lamps used to designate the rear of a vehicle by a steady burning low intensity light.

2.2.2 MULTIPLE COMPARTMENT LAMP—A device which gives its indication by two or more separately lighted areas which are joined by one or more common parts such as a housing or lens.

2.2.3 MULTIPLE LAMP ARRANGEMENT—An array of two or more separated lamps on each side of the vehicle which operate together or give a signal.

3. Lighting Identification Code—Tail lamps may be identified by the code "T" in accordance with SAE J759.

4. Tests

4.1 SAE J575 is a part of this report. The following tests are applicable with the 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—In addition to the test procedures in SAE J575, the following apply:

4.1.5.1 Photometric measurements shall be made with the light source of the lamp at least 3 m from the photometer. The H-V axis shall be taken as parallel to the axis of reference of the lamp as mounted on 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:

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 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.

4.1.5.2.2 Each compartment or lamp shall be photometered separately by aligning the axis of each lamp or compartment with the photometer. 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.

4.1.6 Warpage Test for Devices with Plastic Components

4.2 Color Test—SAE J578 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 under test shall meet the photometric performance requirements contained in Table 1. The summation of the luminous intensity measurements at the specified test points in a zone shall be at least the value shown.

5.1.5.2 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements. If a multiple compartment lamp 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 in Table 1. If the distance between adjacent light sources exceeds the previous dimensions, each compartment or lamp shall comply with the photometric performance requirements for one lighted section in Table 1.

5.1.5.3 When a tail lamp is combined with the turn signal or stop lamp, the signal lamp intensity 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 turn signal or stop lamp intensity 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 axes for both the tail lamp and the turn signal or

TABLE 1—PHOTOMETRIC REQUIREMENTS[1,2,3]

Zone	Test Points (Degrees) Lighted Sections	Minimum Luminous Intensity (cd) 1	Minimum Luminous Intensity (cd) 2	Minimum Luminous Intensity (cd) 3
1	10U– 5L 5U–20L 5D–20L 10D– 5L	1.4	2.4	3.5
2	5U–10L H–10L 5D–10L	2.4	4.2	6.0
3	5U– V H–5L H– V H–5R 5D– V	9.6	16.8	24.0
4	5U–10R H–10R 5D–10R	2.4	4.2	6.0
5	10U– 5R 5U–20R 5D–20R 10D– 5R	1.4	2.4	3.5
MAXIMUM LUMINOUS INTENSITY (cd) H AND ABOVE (See Note 2)	MAXIMUM LUMINOUS INTENSITY (cd) H AND ABOVE (See Note 2)	18	20	25

[1] The measured values at each test point shall not be less than 60% of the minimum values in Table 2.
[2] The listed maximum shall not be exceeded over any area larger than that generated by an 0.5 degree radius within the solid angle defined by the test points in Table 1.
[3] Ratio requirements of 5.1.5.3 apply.

stop lamp is within the dimensions specified in 5.1.5.2, the ratio of the turn signal or 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 turn signal or stop lamp are optically combined. When the tail lamp is combined with the turn signal or stop lamp and the maximum luminous intensity of the tail lamp is located below horizontal and within an area generated by a 1.0 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.

5.1.6 WARPAGE—SAE J575.

5.1.7 COLOR—The color of the light from a tail lamp shall be red as specified in SAE J578.

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

5.3 Design Requirements

5.3.1 If a turn signal or stop lamp is optically combined with the tail lamp and a two-filament replaceable bulb is used, the bulb shall have an indexing base and the socket shall be designed so that bulbs

with non-indexing 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.

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

5.4.1 Visibility of the tail lamp shall not be obstructed by any part of the vehicle throughout the photometric test angles for the lamp 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 from 45 degrees to the left to 45 degrees to the right. Where more than one lamp or optical area is lighted on each side of the vehicle, 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, of at least 12.5 cm^2 measured at 45 degrees to the longitudinal axis of the vehicle.

6. Guidelines

6.1 Photometric Design Guidelines for tail lamps, when tested in accordance with 4.1.5 of this report, are contained in Table 2.

TABLE 2—PHOTOMETRIC DESIGN GUIDELINES[1,2]

Test Points (Degrees)	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	0.4	0.7	1.0
	20L, 20R	0.3	0.5	0.7
5U, 5D	10L, 10R	0.8	1.4	2.0
	V	1.8	3.1	4.5
	10L, 10R	0.8	1.4	2.0
H	5L, 5R	2.0	3.5	5.0
	V	2.0	3.5	5.0
MAXIMUM LUMINOUS INTENSITY (cd) H AND ABOVE (See Note 1)	MAXIMUM LUMINOUS INTENSITY (cd) H AND ABOVE (See Note 1)	18	20	25

[1] The maximum design value of a lamp intended for the rear of the vehicle should not exceed the listed design maximum over any area larger than that generated by an 0.25 degree radius within the solid angle defined by the test points in this table.
[2] Ratio requirements of 5.1.5.3 apply.

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

6.2.1 Tail lamps on the rear of the vehicle should be spaced as far apart laterally as practicable so that the signal will be clearly visible and its intent clearly understood.

6.2.2 The luminous intensity of incandescent filament bulbs will vary with applied voltage. The electrical wiring in the vehicle should be adequate to supply design voltage to the lamp filament.

6.2.3 Performance of lamps may deteriorate significantly as a result of dirt, grime, and/or snow accumulation on their 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 extremely severe environments, such as in off-highway, mining, fuel haulage or where it is expected that they will be totally immersed in water, the user should specify lamps specifically designed for such use.

7. Notes

7.1 **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 LIGHTING COORDINATING COMMITTEE AND THE SAE SIGNALLING & MARKING DEVICES STANDARDS COMMITTEE

Appendix A

A.1 As a matter of additional information, attention is called to SAE J567, Lamp Bulb Retention System, for requirements and gages used in socket design.

A.2 For vehicles over 2032 mm wide see SAE J2040.

Rationale—Not applicable.

Relationship of SAE Standard to ISO Standard—Not applicable.

Application—This SAE Standard provides test procedures, requirements, and guidelines for tail lamps (rear position lamps).

Reference Section

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

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