

Tail Lamps (Rear Position Lamps)

—SAE J585e

SAE Standard
Completely revised September 1977

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Report of Lighting Division approved March 1918 and completely revised by Lighting Committee September 1977.
Rationale statement available.

1. Scope—This engineering design standard provides design parameters and general requirements for tail lamps (rear position lamps). It is intended for use in conjunction with the Service Performance Specification, SAE J256.

2. Definitions

2.1 Tail Lamps—Lamps used to designate the rear of a vehicle by a steady burning, low intensity light.

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.

2.3 Multiple Lamp Arrangement—An array of two or more separated lamps on each side of the vehicle which operate together to give a signal.

3. Laboratory Requirements

3.1 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a tail lamp. If a multiple compartment or multiple lamps are used and the distance between the optical axes (filament centers) does not exceed 22 in (560 mm) for two compartment or lamp arrangements, and does not exceed 16 in (410 mm) for three compartment 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 optical axes exceeds the above dimensions, each compartment or lamp shall comply with the photometric requirements for one lighted section (Table 1).

For vehicles of 80 in (2032 mm) or more in overall width, a maximum of two lamps and/or compartments per side may be mounted closer together than 22 in (560 mm) providing that each compartment and/or lamp meets the single compartment photometric requirements listed in Table 1. Each lamp and/or compartment utilized in this manner shall meet the one lighted section value for all functions for which it is designed.

3.2 The following sections from SAE J575 are a part of this standard:

- 3.2.1 Section 2—Samples for Test
- 3.2.2 Section 2.2—Bulbs
- 3.2.3 Section 2.3—Test Fixture
- 3.2.4 Section 3—Laboratory Facilities
- 3.2.5 Section 4.1—Vibration Test
- 3.2.6 Section 4.2—Moisture Test
- 3.2.7 Section 4.3—Dust Test
- 3.2.8 Section 4.4—Corrosion Test
- 3.2.9 Section 4.6—Photometry
- 3.2.10 Section 4.8—Warpage Test

3.3 Plastic Materials—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

3.4 Color Test—The color of the light from a tail lamp shall be red. (See SAE J578.)

3.5 If the tail lamp is optically combined with another lamp such as a stop lamp or turn signal and a two filament bulb is used, the bulb shall have an indexing base and the socket shall be designed so that bulbs with nonindexing bases cannot be used.

3.6 Photometric Requirements

3.6.1 All beam candlepower measurements shall be made with the incandescent filament(s) of the signal lamp(s) at least 10 ft (3 m) from the photometric screen. The H-V axis shall be taken as parallel to the longitudinal axis of the vehicle. When compartments or lamps are photometered together, the H-V axis shall intersect the midpoint between the optical centers (filament).

3.6.2 Beam candlepower measurements of multiple compartment lamp or multiple lamp arrangements shall be made by either of the following methods:

TABLE 1—MINIMUM DESIGN CANDLEPOWER REQUIREMENTS

Test Points, deg		Lighted Sections		
		1	2	3
10U and 10D	10L	0.3	0.5	0.7
	V	0.5	1.0	1.5
	10R	0.3	0.5	0.7
5U and 5D	20L	0.3	0.5	0.7
	10L	0.8	1.3	2.0
	5L	1.3	2.0	3.0
	V	1.8	3.0	4.5
	5R	1.3	2.0	3.0
	10R and 20R	0.8 and 0.3	1.3 and 0.5	2.0 and 0.7
H	20L	0.4	0.7	1.0
	10L	0.8	1.3	2.0
	5L	2.0	3.5	5.0
	V	2.0	3.5	5.0
	5R	2.0	3.5	5.0
	10R and 20R	0.8 and 0.4	1.3 and 0.7	2.0 and 1.0
	Maximum at H or above (See also note 5)	18	20	25

NOTES:

1. Specifications are based on laboratories using accurate, rated bulbs during testing.
2. Lamps designed for use in both 6V and 12V systems shall be tested with 12V bulbs. Lamps designed to operate on the vehicle through a resistor or equivalent shall be photometered with the listed design voltage of the design source applied across the combination of resistance and filament.
3. A multiple device tail lamp 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 tail signal are considered as a unit except when the dimensions between optical centers exceed those given in paragraph 3.1. For a separate lamp arrangement, where lamps are interchangeable, each lamp should be of approximately the same performance.
4. When a tail lamp is combined with the turn signal lamp or stop lamp, the signal lamp or stop lamp shall not be less than three times the candlepower of the tail lamp at any test point; except that at H-V, H-5L, H-5R, and 5U-V, the signal lamp or stop lamp shall not be less than five times the candlepower 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 stop lamp functions is within the dimensions specified in paragraph 3.1, the ratios of the signal lamps or stop lamps 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 paragraph 3.1, 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 lamp or stop lamp, and the maximum candlepower 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 candlepower within the generated area.
5. A tail lamp shall not exceed the maximum candlepower at night over any area larger than that generated by a 1/4 deg radius, within a solid cone angle from 20L to 20R and from H to 10U.

The ϕ symbol 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.