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SAE J186 NOV82

Supplemental High Mounted Stop and Rear Turn Signal Lamps for Use on Vehicles Less Than 2032 mm in Overall Width

SAE Recommended Practice
Revised November 1982

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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

HIGHWAY VEHICLE PRACTICE

an American National Standard

SAE J186

Issued July 1970
Revised November 1982

Superseding J186 SEP77

ØSUPPLEMENTAL HIGH MOUNTED STOP AND REAR TURN SIGNAL LAMPS FOR USE ON VEHICLES LESS THAN 2032 MM IN OVERALL WIDTH

1. SCOPE:

This technical report provides design parameters, performance requirements, and general installation recommendations for supplemental high-mounted stop and/or rear turn-signal lamps, intended to supplement stop and/or rear turn-signal lamps described in SAE J586 SEP77 and SAE J588 NOV78, for use on vehicles less than 2032 mm in overall width. It is intended that a separate technical report will be prepared for motor vehicles 2032 mm or more in overall width.

2. DEFINITIONS:

2.1 Supplemental high-mounted stop and rear turn-signal lamps are additional lamps that are mounted high and possibly forward of the rear mounted tail, stop, and turn-signal lamps. The supplemental stop and/or turn signals may be provided by separate lamps or both functions may be combined in and provided by a single lamp.

2.2 Supplemental high-mounted stop lamps are additional lamps of a stop-lamp system giving a brake-actuated steady warning light to the rear of the vehicle and are intended to provide a signal to both the operator of the next following vehicle as well as through intervening vehicles to the operators of other following vehicles.

2.3 Supplemental high-mounted rear turn-signal lamps are additional lamps of a turn-signal system which indicate a change in direction by giving a flashing warning signal on the side toward which the vehicle operator intends to turn and are intended to provide a signal to both the operator of the next following vehicle as well as through intervening vehicles to the operators of other following vehicles.

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3. TEST PROCEDURES:

3.1 The following test procedures of SAE J575 JUN80 are part of this technical report:

Section 2.1--Lighting Devices
Section 2.2--Bulbs and Section 4.6--Photometry (below)
Section 2.3--Test Fixture
Section 3 --Laboratory Facilities
Section 4.1--Vibration Test
Section 4.2--Moisture Test
Section 4.3--Dust Test
Section 4.4--Corrosion Test
Section 4.5--Color Test
Section 4.6--Photometry, and

(a) Photometric tests shall be made with the photometer a distance of at least 3 m from the light source. The lamp axis shall be taken as the horizontal line through the light source and parallel to what would be the longitudinal axis of the vehicle if the lamp were mounted in its normal position on the vehicle.

(b) Photometric requirements are based on laboratories using accurate rated bulbs operated at their design mean spherical luminous intensity (mscd). Sealed units and sealed lamps shall be seasoned and then operated at the rated design voltage of the light source or as specified by the lamp manufacturer. Seasoning shall be for 1% of their design life or 10 h maximum. Lamps designed to operate on the vehicle through a resistor or equivalent, or with a resistor contained within the lamp, shall be photometered with the rated design voltage of the light source applied across the combination of resistance and light source. Lamps designed for use on 6 V, 12 V, and 24 V systems shall be tested with 12 V bulbs.

Section 4.8--Warpage Test on Devices with Plastic Components. Cycle times for stop and turn signals in Table 1 of SAE J575 JUN80 shall be employed respectively for supplemental high-mounted stop lamps and supplemental high-mounted rear turn-signal lamps respectively.

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4. DIMENSIONAL REQUIREMENT:

The effective projected luminous area measured on a plane at right angles to the lamp axis shall not be less than 29 cm^2.

5. GENERAL REQUIREMENTS:

5.1 Recommended photometric design parameters for supplemental high-mounted stop and rear turn-signal lamps, when tested in accordance with 3.1 of this technical report, are contained in Table 1.

TABLE 1 - Photometric Design Parameters

Minimum Photometric Design Parameters			
Test Points (Degrees)		Red (cd)	Yellow (cd)
10U	10L	5	8
	V	10	16
	10R	5	8
5U and 5D	10L	10	16
	5L	15	24
	V	15	24
	5D	15	24
	10R	10	16
H	10L	10	16
	5L	15	24
	V	15	24
	5R	15	24
	10R	10	16
Maximum Photometric Design Parameters[a]		60	120

[a] The listed maximum design value shall not be exceeded over an area larger than that generated by a 1/4 deg radius within a solid cone from 10L to 10R and from 10U to 5D.

5.2 Other performance requirements are contained in Section 6 and Table 2.

TABLE 2 - Photometric Performance Requirements[a,b,c]

Minimum Photometric Zonal Performance Requirements			
		Total for Zone (cd)	
Zone (See Fig. 1)	Test Points (Degrees)	Supplemental High Mounted Stop and Red Rear Turn Signal	Supplemental High Mounted Yellow Rear Turn Signal
1	5U-V H-5L H-V H-5R 5D-V	67	108
2	5R-5U 10R-5U H-10R 10R-5D 5R-5D	54	86
3	5L-5U 10L-5U H-10L 10L-5D 5L-5D	54	86
4	10L-10U 10U-V 10R-10U	18	29
Maximum Photometric Performance Requirement (cd)		75	145

[a] An adjustment in lamp orientation from design position may be made in determining conformance to Table 2, provided such adjustment does not exceed 3 deg. All zones shall comply after final re-aim.

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

[c] The maximum value shall not be exceeded over an area larger than that generated by a 1/4 deg radius within a solid cone from 10L to 10R and from 10U to 5D.

5.3 Other photometric performance requirements are contained in Section 6.

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5.4 No function other than red reflex reflectors shall be combined in the supplemental high-mounted stop and/or rear turn-signal lamps.

5.5 Color: The light from supplemental high-mounted stop lamps shall be red, and from supplemental high-mounted rear turn-signal lamps shall be red or yellow, and shall conform to SAE J578 SEP78.

5.6 Lighting Identification Code: May be U in accordance with SAE J759 JAN75.

5.7 Plastic Material: Any plastic materials used in optical parts shall conform to the requirements set forth in SAE J576 JUN81.

6. PERFORMANCE REQUIREMENTS:

6.1 Lighting Devices: The performance requirements apply to new, unused, and undamaged lamps fabricated from production tools and assembled by production processes.

6.2 Bulbs: Shall be in accordance with 3.1 of this technical report.

6.3 Vibration: Upon completion of the test, the sample device shall be examined. Any device showing rotation, displacement, cracking, or rupture of parts (except bulb and sealed beam unit internal components) which would result in failure of any other tests contained in 3.1 of this technical report shall constitute a failure. Cracking or rupture of parts of the device affecting its mounting shall constitute a failure.

6.4 Moisture: Moisture accumulation in excess of 2 mL shall constitute failure.

6.5 Dust: The unit shall be considered to have met the requirements of this test if no dust is found on the interior surfaces, or if the maximum candlepower output is within 10% as compared with the condition after the unit is cleaned inside and out. Sealed-beam units shall be exempt from the dust test.

6.6 Corrosion: Immediately after the device has been subjected to the corrosion test, there shall be no evidence of corrosion which would result in failure of any other tests contained in 3.1 of this technical report.

6.7 Photometry: The lamp under test, when tested in accordance with 3.1 of this technical report, shall meet the minimum zonal and the maximum allowable photometric performance requirements contained in Table 2 -- Photometric Performance Requirements.

6.7.1 For the lamp to conform to the photometric zonal performance requirements, the summation of the candela measurements at the specific test points in a zone shall meet the value specified for that zone in Table 2 and footnotes.

6.8 Warpage: There shall be no evidence of warpage which would result in failure of any test contained in 3.1 of this technical report.

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7. GENERAL INSTALLATION RECOMMENDATIONS:

The following recommendations apply to supplemental high-mounted stop and/or supplemental high-mounted rear turn-signal lamps as used on the vehicle. The recommendations shall not be considered part of the test provisions, requirements, and procedures contained in this technical report.

7.1 Visibility of the signal shall not be obstructed by any part of the vehicle from 10U to 5D and from 10L to 10R unless the lamp conforms with all requirements when the obstruction is considered.

7.2 Supplemental high-mounted turn signals shall flash simultaneously (not alternately) with the required turn signals.

8. REFERENCES:

As a matter of additional information, not to be considered part of this technical report, attention is called to SAE J567 DEC70 for requirements and gauges to be used in the bulb retention system (socket) design.

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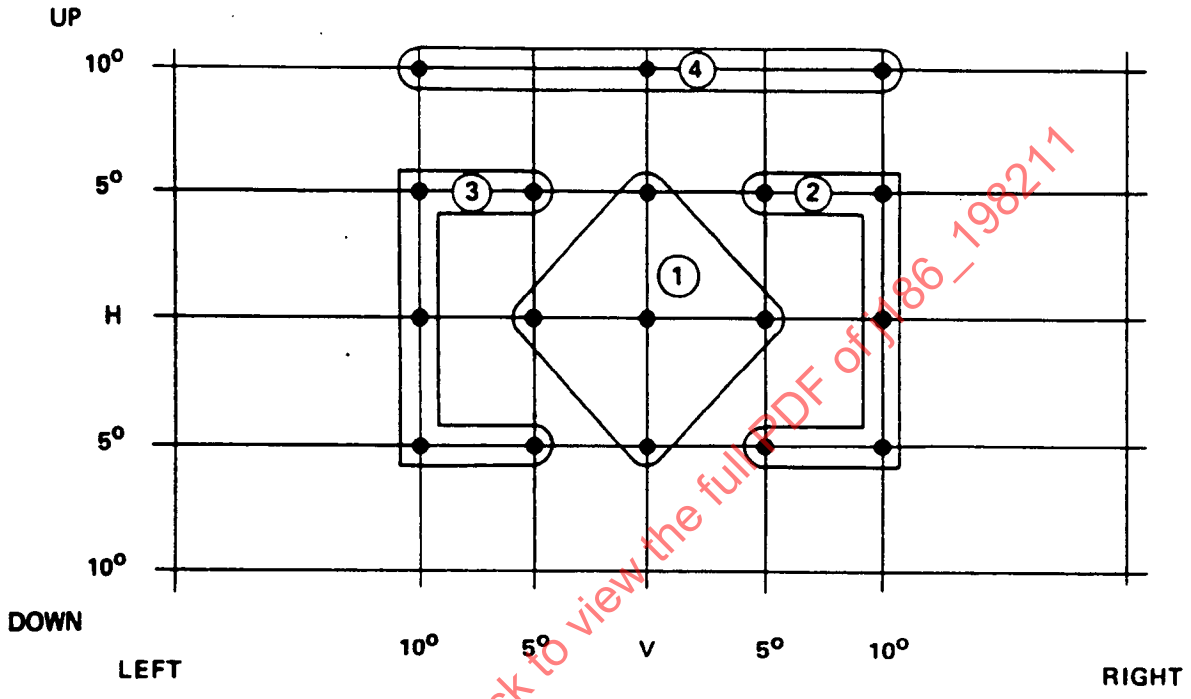

FIGURE 1 - Zonal Groupings for Supplemental High-Mounted Stop and Rear Turn-Signal Lamps

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RATIONALE:

One purpose for the revision of this technical report is to change format in accordance with SAE J1159 AUG79 and to add performance requirements. Test procedures and performance requirements have also been separated in compliance with SAE TBR&R Section 6.5.1. All values have been metricized. A second purpose is to restrict lamps covered by this technical report for use only on vehicles less than 2032 mm in overall width for which it was originally intended (See "Title" and Scope below). An appropriate technical report for vehicles 2032 mm or more in overall width is to be developed separately. The "Ø's" refer to those in the technical report proper.

Ø TITLE: See "SCOPE" below.

Ø Section 1. -- SCOPE (and TITLE) -- Revised to restrict lamps covered by this technical report for use only for vehicles having overall widths less than 2032 mm (for example, passenger cars) and to include performance requirements. Prior SAE J186 (SEP77) has been and is a recommended practice only for design and was never intended to be a practice for "performance" requirements.

Further, the original design values in prior SAE J186 (SEP77) were intended, and correctly so, only for use on passenger vehicles and the like.

They were never intended also to be uniformly applicable to large and heavy-duty vehicles (such as trucks, tractors, trailers MPPV's, buses and the like). These latter vehicles should have greater effective projected luminous intensities for proper conspicuity and may require different light distribution requirements as well. Requirements for such larger vehicles (2032 mm or greater in overall width), and appropriate for them, will require separate treatment which is to be developed.

Ø Section 2: DEFINITIONS -- Editorially revised for greater clarity and now includes provision for the "next following vehicle" as well as prior "through intervening vehicles".

Ø Section 3: TEST PROCEDURES -- Updated to reference latest SAE Technical Reports and establishes "test cycle times" for the "Warpage Test for Device With Plastic Components" (Section 4.8.1).

Ø Section 4: DIMENSIONAL REQUIREMENT -- Establishes a minimum effective projected luminous area.

Ø Sections 5.1 and 5.2: PHOTOMETRIC VALUES -- Separates design parameters from performance requirements, which latter are specified in Section 6.

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