SAE International™

SURFACE VEHICLE STANDARD

SAE J2261 JAN2010

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Superseding J2261 JAN2002

(R) Stop Lamps and Front- and Rear-Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width

RATIONALE

This document has been changed according to the following statements:

2.1.1 Move SAE J1889 to 2.2.1 – Related Publications
2.1.1 Delete SAE J1050 Describing and Measuring the Driver's Field of View
2.2.1 Changed SAE J590 to SAE J1690 and Title to Flashers
2.2.2 Added "Federal Motor Carrier Safety Administration DOT 49CFR Subtitle B Chapter III Part 393"
2.2.2 Deleted "Federal Highway Administration 49CFR Part 393 Subpart B"
2.2.3 and 2.2.4 Added addresses for TTMA and TMC
3.1 Effective Projected Luminous Lens Area - Replace definition with the two part definition used in FMVSS 571.108
3.2 Added Light Emitting Surface
3.3 Delete current definition "Stop Lamp - "A lamp giving a steady light to the rear of a vehicle to indicate the intention of the operator of the vehicle to stop or diminish speed by application of the service brakes."
3.3 Add "Stop Signal Function - A steady light to the rear of a vehicle to indicate the intentional deceleration or the stopping of a vehicle."
3.4 Added "Stop Lamp - A device providing the stop signal function."
3.5 Added Turn Signal Function
3.6 Added new definition for Turn Signal Lamp
4.1 Changed a), b) and 4.2 to 4.1.1, 4.1.2 and 4.1.3 respectively and reworded for clarity and consistency
4.1.1 and 4.1.2 Added "from the lighted edge of a headlamp as measured from the optical center of the turn signal" in accordance with SAE J759
5.1.5.2 Remove "taken"
5.1.5.3 Delete Reference to Multiple Lamps
5.1.5.3 Added "steady burning mode"
5.1.5.4 Added "flashing mode" and provisions to measure lamps in the flashing mode based on ECE R6
5.1.3.5.1 Delete section because of reference to multiple lamps
5.1.5.3.2 Delete section because of reference to multiple lamps
6.1.5 Photometry - Removed multiple lamp reference paragraph
6.1.5 Photometry - Replace Table 1 - Photometric requirements with new style SAE Photometry Figures 5, 6 and 7
6.1.5.1 Add "front", "the stop or turn signal"
6.1.5.1 Remove "major function"
6.1.5.2 (Previously 6.1.5.3) Remove "permit the manufacturer to"
6.1.5.4 Delete section as it pertains to DRL's not Stop or Turn Signals
6.1.5.5 Delete section as it pertains to DRL's not Stop or Turn Signals
6.5.1 Remove "so that the signal will be clearly visible"
6.5.3.1 Change unobstructed projected area angle of visibility from 20 degrees inboard to 45 degrees. Change drawing from 20 to 45 degrees (to agree with FMVSS 571.108 Fig. 19 Visibility of Installed Lighting Devices (Lens Area Measurement Method)

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http://www.sae.org/technical/standards/j2261_201001

6.5.7.2 Remove section and reference specification for illuminated indicator
6.5.7.3 Remove section and reference specification for illuminated indicator
6.5.7.4 Remove section and reference to SAE J1050
7.1.5 Change to - “The wiring design for the stop lamp circuit should have adequate capacity and sufficient wire gauge to support the lamps and anti-lock braking systems (ABS).”

1. SCOPE

This SAE Standard provides test procedures, requirements, and guidelines for stop lamps and turn signal lamps intended for use on vehicles 2032 mm or more in overall width. Stop lamps and front- and rear-turn signal lamps conforming to the requirements of this document may be used on vehicles less than 2032 mm in overall width.

2. REFERENCES

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org

SAE J576 Plastic Material or Materials for Use in Optical Parts Such as Lenses and Reflex Reflectors of Motor Vehicle Lighting Devices

SAE J578 Color Specification

SAE J759 Lighting Identification Code

SAE J2139 Test for Signal and Marking Devices Used on Vehicles 2032 mm or More in Overall Width

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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J387 Terminology—Motor Vehicle Lighting

SAE J567 Lamp Bulb Retention System

SAE J586 Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width

SAE J588 Turn Signal Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width

SAE J1690 Flashers

SAE J1889 L.E.D. Signal and Marking Lighting Devices

SAE Technical Paper 830566 ”Motor Vehicle Conspicuity,” R.L. Henderson, K. Ziedman, W.J. Burger, and K.E. Cavey, National Highway Traffic Safety Administration

2.2.2 FMVSS Publications

Available from the Superintendent of Documents, U. S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

Federal Motor Vehicle Safety Standard DOT 49CFR Subtitle B Chapter V Part 571.108

Federal Motor Carrier Safety Administration DOT 49CFR Subtitle B Chapter III Part 393

2.2.3 Truck Trailer Manufacturers Association Publication

Available from Truck Trailer Manufacturers Association, 1020 Princess St., Alexandria, VA 22314-2247, Tel: 703-549-3010, www.ttmanet.org.

Truck Trailer Manufacturers Association RP-9

2.2.4 The Technology and Maintenance Council Publication

Available from the Technology and Maintenance Council, American Trucking Associations, 950 North Glebe Road, Suite 210, Arlington, VA 22203-4181, Tel: 703-838-1763, www.truckline.com.

The Maintenance Council RP-702

3. DEFINITIONS

3.1 Effective Projected Luminous Lens Area

Effective projected luminous lens area means the area of the orthogonal projection of the effective light-emitting surface of a lamp on a plane perpendicular to a defined direction relative to the axis of reference. Unless otherwise specified, the direction is coincident with the axis of reference.

3.2 Effective Light-Emitting Surface

Effective light-emitting surface means that portion of a lamp that directs light to the photometric test pattern, and does not include transparent lenses, mounting holes bosses, reflex reflector area, beads or rims that may glow or produce small areas of increased intensity as a result of uncontrolled light from an area of 1/2 degree radius around a test point.

That area of the light emitting surface projected on a plane at right angles to the axis of a lamp, excluding reflex reflectors (but including congruent reflexes), which is not obstructed by opaque objects such as mounting screws, mounting rings, bezels, trim, or similar ornamental feature areas. Areas of optical or other configurations, for example, molded-optical rings or markings, shall be considered part of the total effective projected luminous lens area. The axis of the lamp corresponds to the H-V axis used for photometric requirements.

3.3 Stop Signal Function

A steady light to the rear of a vehicle to indicate the intentional deceleration or the stopping of a vehicle.

3.4 Stop Lamp

A device providing the stop signal function.

3.5 Turn Signal Function

The signaling element of a turn signal system which indicates intent to change vehicle direction by giving a flashing light on the side toward which the turn or lane change will be made. See SAE J1690 for flash rate and percent on time.

3.6 Turn Signal Lamp

A device providing the turn signal function.

4. LIGHTING IDENTIFICATION CODE

4.1 Turn signal lamps for use on vehicles 2032 mm or more in overall width may be identified by the code:

4.1.1 "I6" for a rear-mounted turn signal lamp and for a front-turn signal lamp mounted 100 mm or more from the lighted edge of a lower beam headlamp, as measured from the optical center of the turn signal, in accordance with SAE J759.

4.1.2 "I7" for a front-mounted turn signal lamp mounted less than 100 mm from the lighted edge of a lower beam headlamp, as measured from the optical center of the turn signal, in accordance with SAE J759.

4.1.3 "S2" for Stop lamps for use on vehicles 2032 mm or more in overall width, in accordance with SAE J759.

5. TESTS

5.1 SAE J2139 is a part of this document. The following tests are applicable with modification as indicated.

5.1.1 Vibration

5.1.2 Moisture

5.1.3 Dust

5.1.4 Corrosion

5.1.5 Photometry

5.1.5.1 Photometric measurements shall be made with the light source at least 3 m from the photometer.

5.1.5.2 The H-V axis of the device shall be parallel to the longitudinal axis of the vehicle when the device is mounted in its design position.

5.1.5.3 Photometric Measurement Steady Burning Mode

Shall be made with the light source steady burning.

5.1.5.4 Photometric Measurement Flashing Mode

When measuring LED devices, or the need to take precautions to avoid overheating, the lamps may be measured in the flashing mode.

5.1.5.4.1 In the case of LED devices this must be achieved with a switching frequency of 1.5 Hz ± 0.5 Hz with a pulse width greater than 0.3 seconds, measured at 95% peak light intensity.

5.1.5.4.2 In the case of replaceable filament lamps, they shall be operated at reference luminous flux during on time. In all other cases the voltage required shall be switched with a rise time and fall time less than 0.01 seconds; no overshoot is allowed. In the case of measurements taken in the flashing mode the reported luminous intensity shall be the maximum intensity.

5.1.6 Warpage Test on Devices with Plastic Components

5.2 Color

SAE J578 is a part of this document.

5.3 Plastic Materials

SAE J576 is a part of this document.

6. REQUIREMENTS

6.1 Performance Requirements

The device when tested in accordance with the test procedures of this document shall meet the requirements of SAE J2139 or as indicated.

6.1.1 Vibration

6.1.2 Moisture

6.1.3 Dust

6.1.4 Corrosion

6.1.5 Photometry

The lamp shall be designed to conform to the zone total photometric requirements of Figure 5, 6 or 7 and its respective footnotes. The summation of the luminous intensity measurements at the test points in a zone shall be at least the value shown

6.1.5.1 When a tail lamp, or clearance lamp is combined with the stop or turn signal lamp, or a parking lamp is combined with a front turn signal lamp, the stop or turn signal lamp's intensity shall be not less than three times the luminous intensity of the tail lamp, clearance lamp, or a parking lamp at any test point, except that at H-V, H-5L, H-5R, and 5U-V of the stop or turn signal lamp's intensity shall be not less than five times the luminous intensity of the tail lamp, clearance lamp, or parking lamp.

When a tail lamp or a clearance lamp is combined with a stop or turn signal lamp and the maximum intensity of the tail lamp or clearance lamp is located below the horizontal and is within an area generated by a 1.0 degree radius around the test point, the ratio for the test point may be computed using the lowest value of the tail lamp or clearance lamp's luminous intensity within the generated area.

6.1.5.2 Rear signals from a forward mounted double-faced turn signal lamp need only meet the performance requirements contained in Figure 6 or 7 from directly to the rear to the left for a left-hand lamp, and from directly to the rear to the right for a right-hand lamp. The intent is to provide glare protection for the driver.

6.1.5.3 When a front-turn signal lamp is mounted less than 100 mm from the low beam headlamp as measured from the closest lighted edge of the low beam headlamp (or any additional lamp used to supplement or used in lieu of the low beam, such as a daytime running lamp, auxiliary low beam or fog lamp) to the optical center of the turn signal lamp, the turn signal lamps luminous intensity shall not be less than 2.5 times the values specified in Figure 5 for a front-turn signal lamp.

6.1.6 Warpage

6.2 Color

The color of the light from the front-turn signal lamp shall be yellow and the color from the rear-turn signal lamp may be red or yellow as specified in SAE J578. The color of the light from the stop lamp shall be red as specified in SAE J578.

6.3 Plastic Materials

The plastic materials used in the optical parts shall meet the requirements of SAE J576.

6.4 Design Requirements

6.4.1 If a stop lamp or a turn signal lamp is combined with a tail lamp or a clearance lamp (or a parking lamp is combined with a front turn signal lamp), and a replaceable multiple light source is used, the light source retention system shall be designed with an indexing feature so that the light source is properly indexed. Removable light source retention systems shall have an indexing feature so that they cannot be reinserted into the lamp housing in a random position, unless the lamp will perform its intended function with random light source orientation.

6.4.2 The effective projected luminous lighted area of a lamp shall be at least 75 cm^2.

6.5 Installation Requirements

The stop or turn signal lamp shall meet the following requirements as installed on the vehicle.

6.5.1 The stop or turn signal lamps, facing rearward for the rear lamp and the turn signal lamp facing forward for the front lamp, shall be rigidly mounted on the permanent structure of the vehicle, at the same height, and spaced as far apart laterally as practicable.

6.5.2 Each stop lamp and front and rear-turn signal lamp shall be designed to comply with all photometric requirements of Figure 5, 6 or 7 and its respective footnotes with all vehicular obstructions considered.

6.5.3 Each front and rear turn signal lamp shall be designed to comply with one of the following visibility requirements.

6.5.3.1 The lamp must provide a minimum of 13 cm^2 of unobstructed projected area when the light emitting surface 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 (see 6.5.5) the horizontal (see Figure 1):

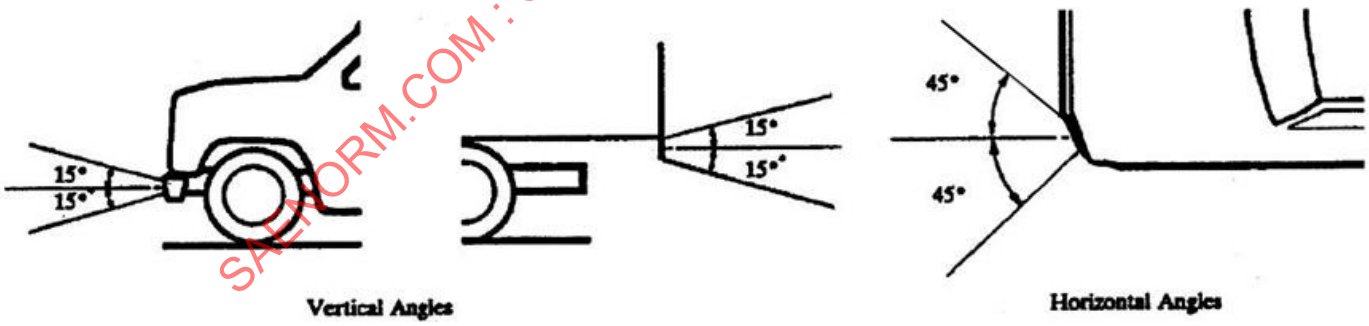

FIGURE 1 - LEFT SIDE SHOWN RIGHT SIDE SYMMETRICAL

6.5.3.2 The lamp must provide a luminous intensity not less than 0.3 candela throughout the photometric pattern defined by the corner points specified as follows and as shown in Figure 2:

a. Driver side front lamp and passenger side rear lamp: 15U-80L, 15U-45R, 15D-80L, 15D-45R.

b. Passenger side front lamp and driver's side rear lamp: 15U-45L, 15U-80R, 15D-45L, 15D-80R.

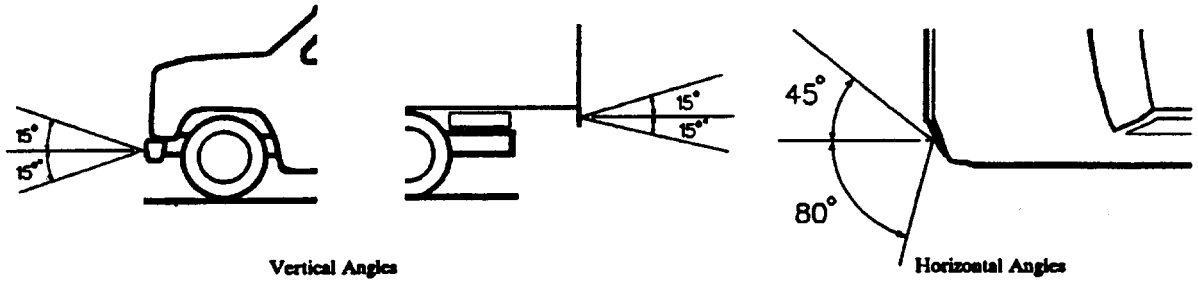

FIGURE 2 - LEFT SIDE SHOWN RIGHT SIDE SYMMETRICAL

6.5.4 Each stop lamp shall be designed to comply with one of the following visibility requirements.

6.5.4.1 The 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 (see 6.5.5) the horizontal (see Figure 3):

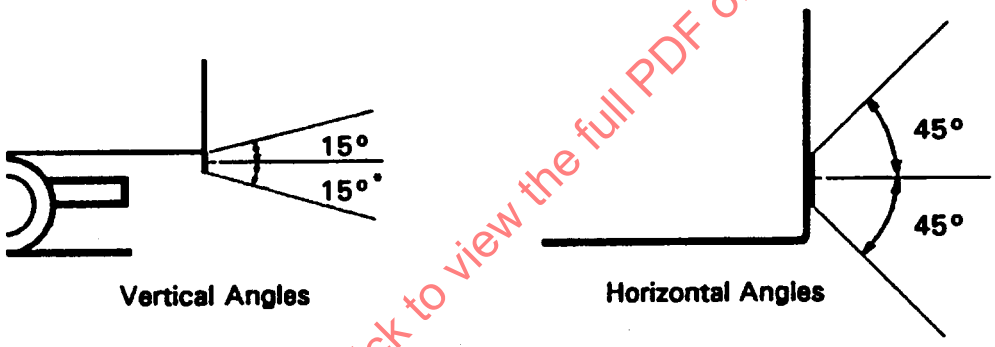

FIGURE 3 - LEFT SIDE SHOWN RIGHT SIDE SYMMETRICAL

6.5.4.2 The lamp must provide a luminous intensity not less than 0.3 candela throughout the photometric pattern defined by the corner points 15U-45L, 15U-45R, 15D-45L, 15D-45R. See Figure 4.

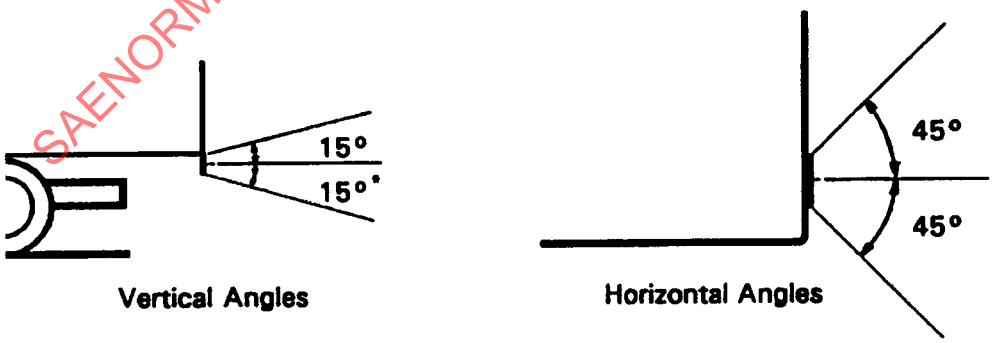

FIGURE 4 - LEFT SIDE SHOWN RIGHT SIDE SYMMETRICAL

6.5.5 The downward angle (see 6.5.3.1, 6.5.3.2, 6.5.4.1, and 6.5.4.2) may be reduced to 5 degrees if the lower lighted edge of the lamp is less than 750 mm above the ground.

6.5.6 Where more than one stop lamp or front or rear-turn signal lamp or optical area is lighted on each side of the vehicle, only one such area need comply.

6.5.7 Turn Signal Pilot Indicator

6.5.7.1 If one right and one left turn signal lamp are not readily visible to the driver, there shall be an illuminated indicator provided to give a clear and unmistakable indication that the turn signal system is activated. The illuminated indicator shall consist of one or more lights flashing at the same frequency as the turn signal lamps.

7. GUIDELINES

7.1 Installation Guidelines

7.1.1 The following guidelines apply to stop and turn signal lamps as used on the vehicle and shall not be considered part of the requirements.

7.1.2 Performance of lamps may deteriorate significantly as a result of dirt, grime, snow, and ice accumulation on the optical surfaces. Installation of the device on the vehicle should be considered to minimize the effects of these factors.

7.1.3 Where it is expected that the device must perform in extremely severe environments, or where it is expected to be totally immersed in water, the user should specify devices specifically designed for such use.

7.1.4 The luminous intensity of the light source may vary with applied voltage. The electrical wiring in the vehicle should be designed to supply adequate voltage to the lamp.

7.1.5 The wiring design for the stop lamp circuit should have adequate capacity and sufficient wire gauge to support the lamps and anti-lock braking systems (ABS).

8. NOTES

8.1 Marginal Indicia

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY THE SAE HEAVY-DUTY LIGHTING STANDARDS COMMITTEE