SAE International™ SURFACE VEHICLE STANDARD

SAE J914 REV. JUL2003

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Superseding J914 JAN1995

Side Turn Signal Lamps for Vehicles Less Than 12 m in Length

1. ***Scope***—This SAE Standard provides installation requirements, test procedures, design guidelines, and performance requirements for side turn signal lamps for vehicles less than 12 m in length.

2. ***References***

2.1 Applicable Publications—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—Test Methods and Equipment for Lighting Devices and Components for Use on Vehicles Less Than 2032 mm in Overall Width
SAE J576—Plastic Materials for Use in Optical Parts Such as Lenses and Reflectors of Motor Vehicle Lighting Devices
SAE J578—Color Specification
SAE J588—Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width
SAE J759—Lighting Identification Code

2.2 Related Publication—The following publication is provided for information purposes only and is not a required part of this specification.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1889—L.E.D. Lighting Devices
SAE J2039—Side Turn Signal Lamps for Large Vehicles
SAE J2139—Test for Signal and Marking Devices Used on Vehicles 2032 mm or More in overall Width

3. ***Definition***

3.1 Side Turn Signal Lamp—A lighting device normally mounted on the side of a vehicle at or near the front, and used as part of the turn signal system to indicate a change in direction by means of a flashing warning signal on the side toward which the vehicle operator intends to turn or maneuver.

NOTE—Side turn signals, when used, are supplemental to, and should not be confused with turn signals described in SAE J588, which, in some cases, may be mounted on the side of the vehicle.

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3.2 Mounting Height—Is the vertical distance above the road surface measured to the center of the item on the vehicle at curb weight.

4. Lighting Identification Code—Side Turn Signal Lamps for use on vehicles less than 12 m in length may be identified by the code "E2" in accordance with SAE J759.

5. Tests

5.1 SAE J575 is a part of this document. The following tests are applicable with modifications as indicated:

5.1.1 VIBRATION TEST

5.1.2 MOISTURE TEST

5.1.3 DUST TEST

5.1.4 CORROSION TEST

5.1.5 PHOTOMETRIC TEST

5.1.5.1 Photometric tests shall be made with the photometer at a distance of at least 3 m from the lamp. The H-V axis shall be taken as the horizontal line through the light source and normal to the longitudinal axis of the vehicle.

5.1.5.2 Photometric measurements shall be made with the bulb filament steadily burning.

5.1.6 WARPAGE TEST ON DEVICES WITH PLASTIC COMPONENTS

5.2 Color Test—SAE J578 is part of this document.

6. Requirements

6.1 Performance Requirements—A device when tested in accordance with the test procedures specified in Section 5 shall meet the following requirements:

6.1.1 VIBRATION—SAE J575

6.1.2 MOISTURE—SAE J575

6.1.3 DUST—SAE J575

6.1.4 CORROSION—SAE J575

6.1.5 PHOTOMETRY—SAE J575

6.1.5.1 The lamp shall be designed to conform to the zone total photometric requirements of Table 1 and its footnotes. The summation of the luminous intensity measurements at the test points in a zone shall be at least the value shown.

6.1.6 WARPAGE—SAE J575

6.1.7 COLOR—The color of the light from a side turn signal lamp shall be yellow, as specified in SAE J578.

TABLE 1—PHOTOMETRIC REQUIREMENTS

Zone	Test Points (degrees)[1]		Minimum Luminous Intensity (cd)[2]	Zone Total Luminous Intensity (cd)[3]
I	15U		0.6	
	5U	30L	0.6	3.0
	H		0.6	
	5D		0.6	
	15D		0.6	
II	15U		0.6	
	5U	70L	0.6	3.0
	H		0.6	
	5D		0.6	
	15D		0.6	
Maximum Luminous Intensity (cd) at any Test Point			200	

1. Angles shown are for lamps mounted on left-hand side of vehicle. For lamps mounted on right-hand side, substitute right-hand angles.
2. The measured values at each individual test point shall not be less than 60% of the required minimum value shown for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the Zone Total Luminous Intensity shown.

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

6.3 Installation Requirements

6.3.1 Visibility and photometric performance of the side turn signal lamp within the test angles shown in Table 1 shall not be obstructed by any portion of the vehicle unless the lamp is designed to comply with all requirements when the obstruction is considered.

6.3.2 Side turn signal lamps shall flash simultaneously or alternately with the required front turn signal lamps.

7. Guidelines

7.1 Installation Guidelines—The following guidelines apply to the side turn signal lamps as used on the vehicle and shall not be considered to be part of the requirements.

7.1.1 Side turn signal lamps should be located as close to the front of the vehicle as practicable, and at a height of no more than 1650 mm and no less than 500 mm.

7.1.2 The electrical wiring in the vehicle should be adequate to supply design voltage to the lamp filament.

7.1.3 Installation of lamps on vehicles should be such that the effect of dirt, grime, and/or snow accumulation on optical surfaces is minimized.

7.1.4 Where it is expected that lamps must perform in extremely severe environments, such as off-highway, mining or 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.

8. Notes

8.1 Marginal Indicia—The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE THE SAE SIGNALING AND MARKING DEVICES STANDARDS COMMITTEE

APPENDIX A

A.1 As a matter of information, attention is called to SAE J567 for requirements and gauges to be used in socket design.

Rationale—The changes are as follows:

Simplistic diagrams of both right adjacent lane and left adjacent lane to the vehicle equipped with the side turn signals are presented. The dimensions are approximate but are based on available vehicles.

The sketch of the plan view shows the vehicles centered in 12 feet wide lanes (3658 mm or 144 inches). The cross-hatched areas are the boundaries of the photometric pattern.

In the right adjacent lane the following driver will detect the photometrically required signal at a distance of 6922 mm (272.5 in or 23 ft) away from the side turn signal or 6502 mm (256 in or 21 ft) in the direction of travel. NOTE—The signal will be detected earlier but the intensity may be unreliable since it is not defined. At this position it is truly an auxiliary or supplemental signal since the driver is still in view of the rear turn signal of the leading vehicle.

The right adjacent lane elevation view shows that, at the 70 degree angle, a line drawn from the 1650 mm height at 10 degrees down crosses the line drawn from the original 1220 mm mounting height at 5 degrees down. At any distance beyond this intersection the higher mounted signal can be seen at a LOWER eye level. Since the driver's position is at approximately 272 in away from the signal and the intersection occurs at 190 inches the driver (of the following vehicle) could easily detect the signal from the higher mounted turn signal.

As the following vehicle overtakes the lead vehicle the driver's eye line and the point of intersection converge at approximately the 63 degree angle. Beyond this point the following driver's eye will no longer be within the controlled photometric zone (although he/she may still see the signal). As the following vehicle proceeds through the photometric controlled zone the driver's eye location line intersects the 30 degree photometric line at 108 inches from the side turn signal. At this location the 5 degree downward line in 38.5 inches above the pavement and the 10 degree downward line is 46 inches above the pavement.

Therefore, neither mounting height catches the eye line of the 5th percentile driver in a sports car.

To make the new mounting height, 1650 mm, equivalent in performance to the previous mounting height, 1220 mm, the downward angle must be at least 13.8 degrees.

The photometric downward angle has been changed to 15 degrees from 10 degrees.

Since the existing standard does not meet this objective (the eye of the 5th percentile driver) and since these side turn signals are auxiliary devices (not required by FMVSS) which increase the conspicuity of the vehicle, a case can be made that vehicles equipped with these are safer than vehicles without them.

Similarly, the left adjacent lane is analogous to the right, but more conservative because the driver's eye is farther away.

The left adjacent lane elevation view shows that, at the 70 degree angle, a line drawn from the 1650 mm mounting height at a 10 degree down angle crosses a line drawn from the original 1220 mm mounting height at 5 degree down. At any distance beyond this intersection the higher mounted turn sign can be seen at a LOWER eye height. Since the driver's position is at 337 inches away from the signal and the intersection occurs at 190 inches the driver could easily detect the signal from the higher mounted turn signal.

NOTE—This analysis naturally ignores the obstruction caused by the vehicle structures since they are infinitely variable. It relies upon the OE's designer and stylists teams to incorporate best practices for vision.