



SURFACE VEHICLE STANDARD

SAE**J587 JUN2012**Issued 1918-03
Reaffirmed 2012-06

Superseding J587 SEP2003

License Plate Illumination Devices (Rear Registration Plate Illumination Devices)

RATIONALE

J587 was last published in September 2003. Since it has past the five year review date, the committee decided at the San Diego meeting to reaffirm the document at this time and then open it up as a WIP for revision at a later date.

1. Scope

This SAE Standard provides test procedures, requirements, and guidelines for vehicular license plate illumination devices.

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—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

2.1.2 ASTM PUBLICATION

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM E 179—Selection of Geometric Conditions for Measurement of Reflection and Transmission Properties of Materials

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3. **Definitions**

3.1 **A License Plate Illumination Device**

A device that illuminates the license plate on the rear of a vehicle.

4. **Lighting Identification Code**

License plate illumination devices may be identified by the code "L" 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 WARPAGE TEST ON DEVICES WITH PLASTIC COMPONENTS

5.2 **Color Test**

SAE J578 is part of this document.

5.3 **Photometry Test**

5.3.1 TEST EQUIPMENT

5.3.1.1 *Test Plate*

All luminance measurements shall be made on a rectangular test plate of clean, smooth, matte white blotting paper or an equivalent material with a diffuse white surface. The test plate shall have a total reflectance factor of $85\% \pm 5\%$ when measured in accordance with ASTM E 179 (0/t illumination/viewing geometry). The size of the test plate is shown in Figure 1 or 2, as applicable. For devices used on vehicles other than motorcycles, test stations shall be located on the face of the test plate as shown in Figure 1. For devices used on motorcycles, the test stations shall be located on the face of the test plate as shown in Figure 2.

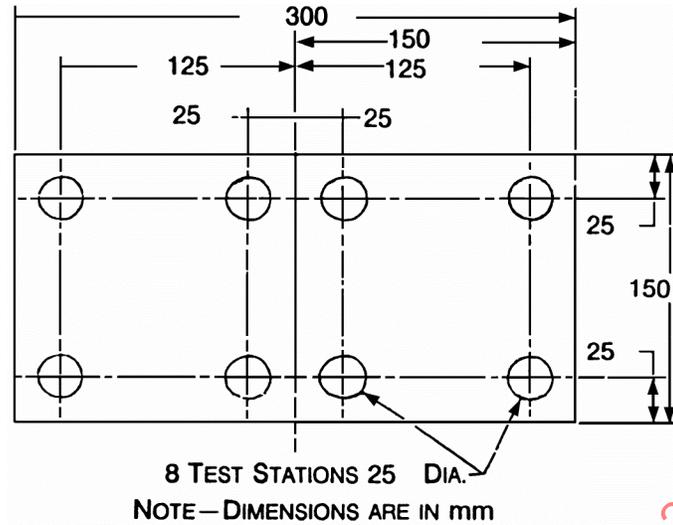


FIGURE 1—TEST PLATE FOR VEHICLES OTHER THAN MOTORCYCLES

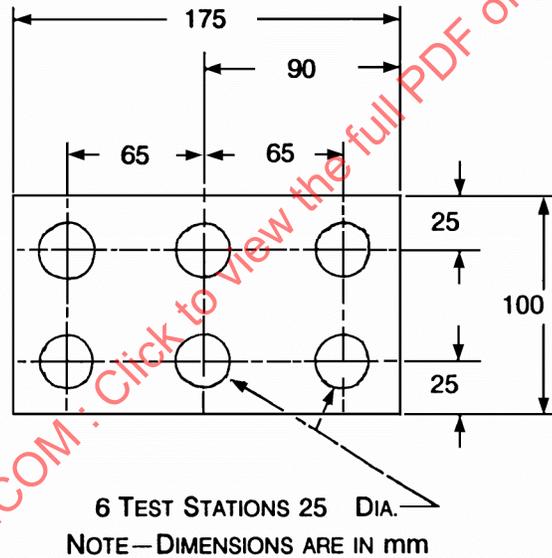


FIGURE 2—TEST PLATE FOR MOTORCYCLES

5.3.1.2 Luminance Meter

A luminance meter shall be used to measure the luminance over the entire area of each circular test station on the test plate. The meter shall be calibrated to measure luminance in cd/m^2 . Measurements shall not include any area beyond that of the test station.

5.3.2 TEST PROCEDURE

5.3.2.1 The test plate shall be mounted in the position ordinarily taken by the license plate. The face of the test plate shall be located 2 mm from the plane of the license plate holder toward the luminance meter.

5.3.2.2 Luminance measurements shall be made with the optical axis of the luminance meter perpendicular to the test plate surface within ± 5 degrees. Measurements shall be recorded at each of the circular test station areas specified in Figure 1 or Figure 2, as applicable.

5.3.2.3 Calculate and record the ratio of the maximum to the minimum luminance over all specified test points. For test plates conforming to Figure 1, the average of the two highest and the two lowest luminance values recorded at the eight test stations shall be taken as maximum and minimum, respectively. For test plates conforming to Figure 2, the highest luminance value and the average of the two lowest luminance values recorded at the six test stations shall be taken as maximum and minimum, respectively.

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 WARPAGE—SAE J575

6.2 Color

The color of the light from the license plate illumination device(s) shall be white as specified in SAE J578.

6.3 Photometry

The lamp shall be designed to conform to the following requirements:

6.3.1 The luminance at each of the test station areas on the applicable test plate shall be at least 2.0 cd/m^2 .

6.3.2 For tests based on Figure 1, the ratio of maximum to minimum luminance shall not exceed 30/1. For tests based on Figure 2, the ratio of maximum to minimum luminance shall not exceed 25/1.

- 6.3.3 If a tail or stop lamp is combined with a license plate illumination device, the combination shall also meet the requirements for these devices.

6.4 Materials Requirements

Plastic materials used in the optical parts shall meet the requirements of SAE J576. Since some license plate illumination devices are mounted in shaded or protected locations, attention is called to the section of SAE J576 which covers exposure time and conditions.

6.5 Design Requirements

- 6.5.1 License plate illumination devices for vehicles other than motorcycles shall be of such size and design as to provide illumination on all parts of a 150 x 300 mm test plate, except for a 13 mm wide border around the plate periphery. License plate illumination devices for motorcycles shall be of such size and design as to provide illumination on all parts of a 100 x 175 mm test plate.
- 6.5.2 The design shall be such that, when the plate is mounted on a vehicle as intended and the upper edge of the license plate is more than 1.2 m from the ground, the angle between the plane of the license plate and a vertical plane perpendicular to the plane of the ground on which the vehicle stands shall be ± 15 degrees. If the upper edge of the license plate is not more than 1.2 m from the ground, the plate surface bearing the license numbers shall face between 30 degrees upward and 15 degrees downward from the vertical plane.

6.6 Installation Requirements

- 6.6.1 The license plate illumination device(s) for vehicles other than motorcycles shall be mounted so as to illuminate the plate without obstruction from any designed feature unless the device(s) is designed to comply with the obstructions considered.
- 6.6.2 Except for a 13 mm wide border around its periphery, visibility of the license plate shall not be obstructed by any part of the vehicle when any point on the license plate is projected directly to the rear of the vehicle.
- 6.6.3 The license plate illumination device(s) shall be installed so that no white light is projected from the illumination device(s) directly to the rear of the vehicle.
- 6.6.4 The license plate illumination device(s) for vehicles other than motorcycles shall be mounted so as to illuminate the plate from the top or sides. Illumination from the bottom of the plate is permitted provided other illumination is also provided from the top or sides of the plate.

7. Installation Guidelines

The following apply to license plate illumination devices as used on the vehicle and shall not be considered part of the requirements.

- 7.1 The license plate holding device shall be designed and constructed to provide a substantial plane surface on which to mount the plate.