



# SURFACE VEHICLE STANDARD

J2087™

SEP2015

Issued 1991-08  
Revised 2015-09

Superseding J2087 DEC2014

## Daytime Running Light

### RATIONALE

6.1.1 changed 5.7 to 5.1

6.1.2 changed 5.7 to 5.1

6.1.3.b) added the missing "s" to shall = shall

7.3.2 section 7.3.2 imbedded in 7.3.1 deleted 7.3.2 and added "and, the" and changed "D to d"

### TABLE OF CONTENTS

1.	SCOPE.....	2
2.	REFERENCES.....	2
2.1	Applicable Documents .....	2
2.2	Related Publications .....	3
3.	DEFINITIONS .....	3
4.	LIGHTING IDENTIFICATION CODE, MARKINGS AND NOTICES .....	4
5.	TESTS.....	4
5.1	Photometry .....	4
5.2	Vibration Test .....	4
5.3	Warpage Test on Devices with Plastic Components .....	4
5.4	Color Test.....	4
5.5	Moisture Test .....	4
5.6	Dust Test.....	4
5.7	Corrosion Test.....	4
6.	REQUIREMENTS.....	4
6.1	Photometry .....	4
6.2	Vibration .....	5
6.3	Warpage.....	5
6.4	Color.....	5
6.5	Moisture.....	5
6.6	Dust .....	5
6.7	Corrosion.....	5
6.8	Materials Requirements .....	8

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2015 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)  
Tel: +1 724-776-4970 (outside USA)  
Fax: 724-776-0790  
Email: CustomerService@sae.org

SAE WEB ADDRESS:

<http://www.sae.org>

SAE values your input. To provide feedback  
on this Technical Report, please visit  
[http://www.sae.org/technical/standards/J2087\\_201509](http://www.sae.org/technical/standards/J2087_201509)

6.9	System Requirements.....	8
7.	GUIDELINES .....	9
7.1	Telltale.....	9
7.2	Operation.....	9
7.3	Installation .....	10
8.	NOTES.....	10
8.1	Revision Indicator.....	10
Figure 1	Photometric requirements for dedicated lamp providing drlf (with projected luminous lens area of 200 cm <sup>2</sup> or less) Minimum Luminous Intensity (cd) .....	6
Figure 2	Photometric requirements for dedicated lamp providing drlf (with projected luminous lens area greater than 200 cm <sup>2</sup> ) Minimum Luminous Intensity (cd) .....	7
Figure 3	Photometric requirements for \ turn signal lamp or front position lamp providing DRLF Minimum Luminous Intensity (cd) .....	8

## 1. SCOPE

This SAE Standard provides test procedures, requirements, and guidelines for a daytime running light (DRL) function.

## 2. REFERENCES

### 2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, 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 +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

SAE J387 Terminology – Motor Vehicle Lighting

SAE J567 Lamp Source 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 Material or Materials for Use in Optical Parts Such as Lenses and Reflex 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

SAE J1050 Describing and Measuring the Driver's Field of View

SAE J2560 Forward Lighting Halogen Bulb Performance Requirements for Motor Vehicles

## 2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

### 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 +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

SAE Lighting Committee DRL Test Reports, 1974–1989, nine separate reports

### 2.2.2 CIE Publications

Available from Commission Internationale de L'éclairage, CIE Central Bureau, Kegelgasse 27, A-1030 Wien Austria, Tel: +43-1-714-31-87-0, [www.cie.co.at](http://www.cie.co.at), see also: national organizations of CIE in the case of the USA: United States National Committee of the CIE, c/o Ronald B. Gibbons, Virginia Tech Transportation Institute, 3500 Transportation Research Place, Blacksburg, VA 24061, U.S.A., e-mail: [gibbons@vtti.vt.edu](mailto:gibbons@vtti.vt.edu), <http://www.cie-usnc.org>

CIE TC4.13 Report Automobile Daytime Running Lights (DRL), Third Draft, July 1990

### 2.2.3 UMTRI Publications

Available abstracts, <http://www.umich.edu/~industry/complete.html>

### 2.2.4 United Nations UNECE Publications

Available from United Nations Economic Commission for Europe, Palais des Nations, CH-1211, Geneva 10, Switzerland, Tel: +41-0-22-917-12-34, <http://www.unece.org/trans/main/wp29/wp29regs.html>.

UNECE Regulation No. 48 Uniform Provisions Concerning the Approval of Vehicles with Regard to the Installation of Lighting and Light-Signalling Devices

UNECE Regulation No. 87 Uniform Provisions Concerning the Approval of Daytime Running Lamps for Power-Driven Vehicles

### 2.2.5 CMVSS Publications

Available from Transport Canada, Motor Vehicle Safety, P.O. Box 8880, Ottawa Post Terminal, Ottawa, Ontario, K1G.3J2 or at [www.tc.gc.ca](http://www.tc.gc.ca).

Canada Motor Vehicle Safety Standard (CMVSS) 108 Lighting Systems and Retro Reflective Devices

### 2.2.6 FMVSS Publications

Available from the Superintendent of Documents, U.S. Government Printing Office, 732 North Capitol Street, NW, Washington, DC 20401 <http://www.gpo.gov/fdsys>

CFR Title 49 Part 571.108; Lamps, Reflective Devices and Associated Equipment (FMVSS 108)

### 2.2.7 China Publications

GB 23255-2009 Photometric Characteristics of Daytime Running Lamps for Motor Vehicles

## 3. DEFINITIONS

### 3.1 DAYTIME RUNNING LAMP (DRL)

A lamp providing the daytime running light function.

### 3.2 DAYTIME RUNNING LIGHT FUNCTION (DRLF)

Steady operating light function that is used to improve conspicuity of a vehicle from the front when the regular headlamps are not required for driving. DRL function can be achieved with low or high beam headlamps, turn signal lamps as well as dedicated lamps.

### 3.3 DAYTIME RUNNING LIGHT FUNCTION TELLTALE

An indicator that provides a visual signal to advise the driver that only the lamps providing DRLF are operating.

## 4. LIGHTING IDENTIFICATION CODE, MARKINGS AND NOTICES

Lamps providing DRLF meeting the performance requirements of Section 6 of this document may be identified by the code DRL in accordance with SAE J759.

## 5. TESTS

SAE J575 is a part of this document. The following tests, from that document, are applicable with the modifications as indicated.

### 5.1 Photometry

In addition to the test procedures stated in SAE J575, the following applies: Photometric measurements shall be made with the photometer located at least 3 m from the point where the optical axis intersects the outer surface of the DRL lens. This does not apply to DRLF provided by headlamps or dedicated lamps.

### 5.2 Vibration Test

### 5.3 Warpage Test on Devices with Plastic Components

The light source operation for this test shall be steady burning.

### 5.4 Color Test

White or Yellow as specified in SAE J578

### 5.5 Moisture Test

### 5.6 Dust Test

### 5.7 Corrosion Test

## 6. REQUIREMENTS

### Performance Requirements

A DRL, when tested in accordance with the test procedures specified in Section 5, shall meet the following requirements:

### 6.1 Photometry

Shall meet requirements as tested per SAE J575 to the following lamp function types:

#### 6.1.1 Dedicated DRL

The device under test shall be designed to conform to the light intensity distribution (candela) values shown in Figure 1 or Figure 2, Photometric Requirements for Dedicated Lamp Providing DRLF, when tested in accordance with 5.1.

### 6.1.2 DRLF provided by a Turn Signal or Optically Combined with a Front Position Lamp

The device under test shall be designed to operate at 2.5 times light intensity distribution (candela) values of the base front turn signal, or shall be designed to conform to the light intensity distribution (candela) values as shown in Figure 3 when tested in accordance with 5.1.

### 6.1.3 Headlamp Beam Providing the DRLF

A headlamp providing daytime running light function shall have:

- a. In the case of low beam headlamps that are designed to conform to SAE J1383, the luminous intensity from the lamp shall be equal to or greater than 40% but less than 100% of its designed photometric intensity values when tested at 1.5D-2R in accordance with SAE J575 or
- b. In the case of high beam headlamps that are designed to conform to SAE J1383 the luminous intensity shall be greater than 2000 cd but less than 7000 cd at the H-V test point when tested in accordance with SAE J575.

### 6.1.4 DRL Function Location With Respect to Other Lamps

If a DRL is located such that its lighted edge is within 100 mm of the optical center of a front turn signal lamp, or within 40mm of a lighted edge of the front turn signal lamp, it must be extinguished or its luminous intensity reduced to a maximum of 250 cd or less at the H-V axis of the DRL during the turn signal operation. The only exception is when the turn signal is already a 2.5 times turn signal.

## 6.2 Vibration

SAE J575.

## 6.3 Warpage

SAE J575.

## 6.4 Color

SAE J578. The color of the light from a DRL shall be white or yellow as specified in SAE J578.

## 6.5 Moisture

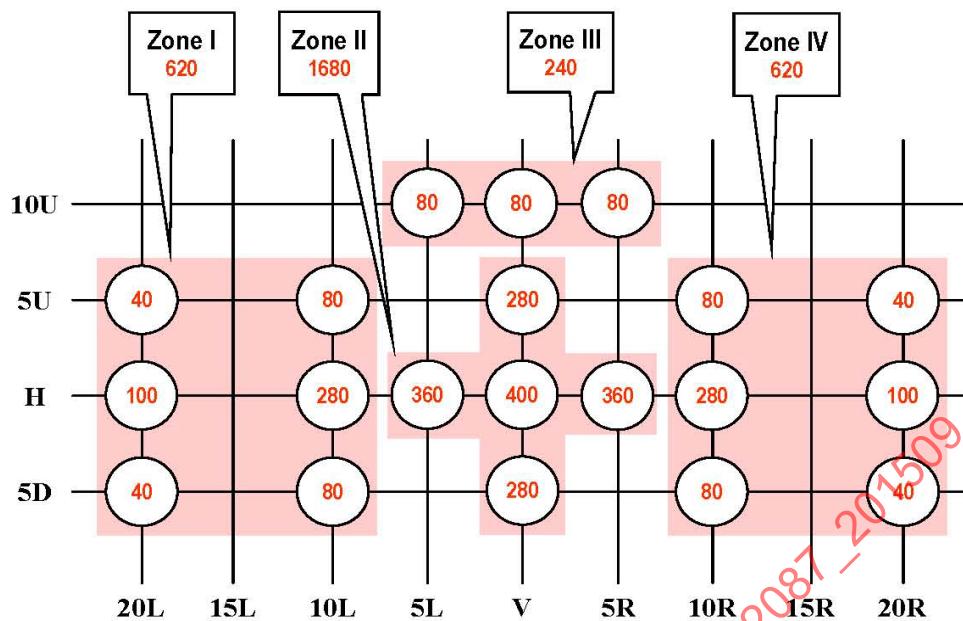
SAE J575.

## 6.6 Dust

SAE J575.

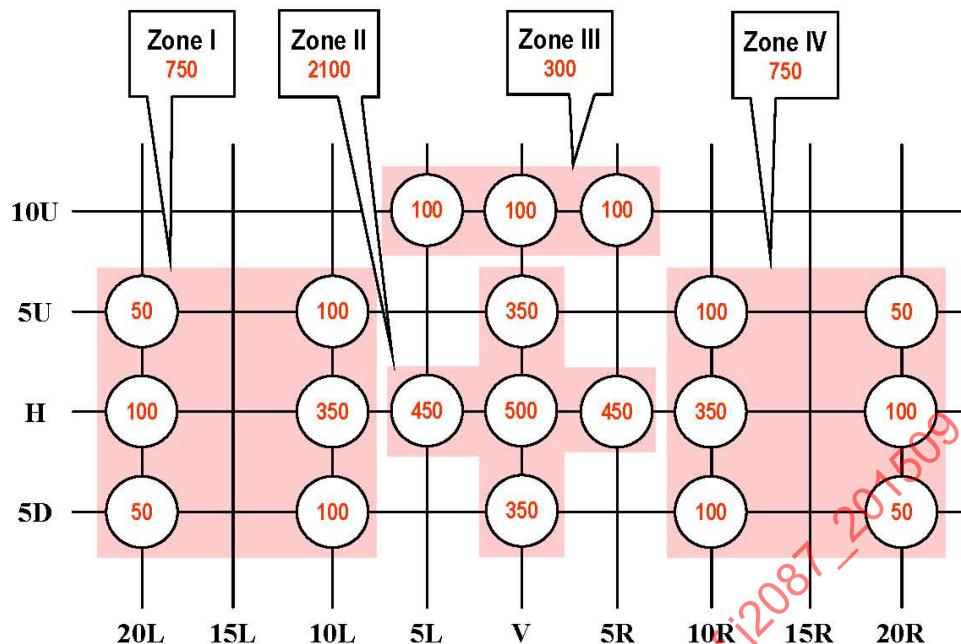
## 6.7 Corrosion

SAE J575.



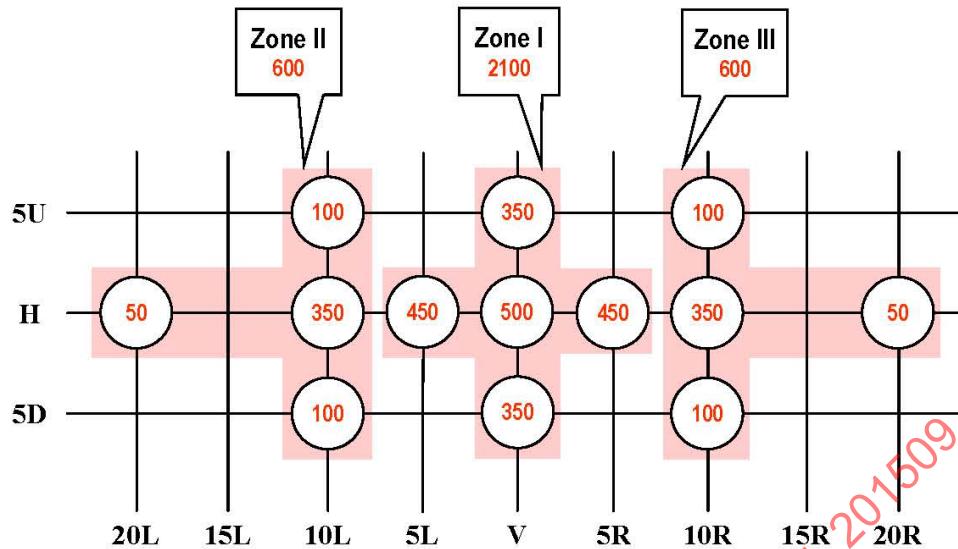
1. The maximum luminous intensity shall be 2500 cd within the photometric pattern.
2. The measured value at each test point shall not be less than 60% of the required minimum value shown for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the zone total shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum cd shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.

**Figure 1 – Photometric requirements for dedicated lamp providing DRLF (with projected luminous lens area of 200 cm<sup>2</sup> or less)**  
**Minimum Luminous Intensity (cd)**



1. The maximum luminous intensity shall be 2500 cd within the photometric pattern.
2. The Measured value at each 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 shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum cd shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.

**Figure 2 – Photometric requirements for dedicated lamp providing DRLF  
(with projected luminous lens area greater than 200 cm<sup>2</sup>  
minimum luminous intensity (cd)**



1. The maximum luminous intensity shall be 2500 cd within the photometric pattern.
2. The Measured value at each 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 shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum cd shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.

**Figure 3 – Photometric requirements for DRLF provided by turn signal lamp or optically combined with front position lamp minimum luminous intensity (cd)**

## 6.8 Materials Requirements

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

## 6.9 System Requirements

### 6.9.1 Location on Vehicle Requirement

Lamps providing the DRLF shall be located

- a. on the front;
- b. at the same mounting height, and symmetrically placed laterally relative to the centerline of the vehicle;
- c. not higher than 864 mm above the road surface, in the case of an high beam headlamp whose reduced luminous intensity is 3000 or more candela at any location in the beam.

### 6.9.2 Area Requirements

The dedicated DRL shall have a minimum unobstructed effective projected luminous lens area of 25 cm<sup>2</sup>.