



# SURFACE VEHICLE STANDARD

**J280™****DEC2023**

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## Snowmobile Headlamps

### RATIONALE

To allow the use of headlamp aimed using the low beam cutoff (VOM) in 4.1.1, 6.2.1, and 6.3. This aiming method is in harmonization with SAE J584 Motorcycle Headlamps and is based on SAE J1383, SAE J583, and the UN symmetrical beam headlamp regulation.

#### 1. SCOPE

This SAE Standard provides test methods, performance requirements, installation requirements, and guidelines for snowmobile headlamps.

#### 2. REFERENCES

##### 2.1 Applicable Documents

The following publication forms a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision 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 J33   | Snowmobile Definitions and Nomenclature - General                                                                              |
| SAE J387  | Terminology - Motor Vehicle Lighting                                                                                           |
| SAE J567  | Light Source Retention System                                                                                                  |
| SAE J575  | Test Methods and Equipment for Lighting Devices for Use on Vehicles Less than 2032 mm in Overall Width                         |
| SAE J576  | Plastic Materials or Materials for Use in Optical Parts Such as Lenses and Reflex Reflectors of Motor Vehicle Lighting Devices |
| SAE J578  | Chromaticity Requirements for Ground Vehicle Lamps and Lighting Equipment                                                      |
| SAE J2650 | Performance Requirements for Road Illumination Devices Using Light Emitting Diode (LED) Sources                                |

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Documents

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### 3. DEFINITIONS

SNOWMOBILE HEADLAMP(S): Lighting device(s) providing a low (passing) beam lamp and a high (driving) beam functions designed and intended to provide illumination forward of a snowmobile.

Note: Headlamp(s) intended for visual/optical aim using the low beam pattern shall be marked "VOM."

SNOWMOBILE: As defined by SAE J33.

#### 3.1 Motor Vehicle Lighting Terminologies

The terminologies contained in SAE J387 apply to this standard.

### 4. TESTS

Test voltage application shall be per the test voltage of SAE J575. If multiple headlamps are used to meet this document, the combination of lamps, as mounted on the snowmobile, shall meet the requirements when treated as one lamp. Unless otherwise indicated, all drain holes, breathing devices, or other openings or vents of headlamp units under test shall be in their normal operating condition.

Unless otherwise specified, light sources used in the tests shall be representative of light sources in regular production.

#### 4.1 SAE J575 Test Methods

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

If LED light sources are present in the lamp, the test methods and procedures of SAE J2650 may additionally be applied in whole or in part.

##### 4.1.1 Photometry Test

Note: Either the low beam or high beam aiming procedure shall be used for the photometry test.

##### 4.1.1.1 For headlamp(s) designed to be aimed using the low beam cutoff (VOM):

##### 4.1.1.1.1 Gradient Measurement Procedure

Determine the V-V line by centering laterally the high beam zone of highest intensity. The center of the zone of highest intensity shall be established by the intersection of a horizontal plane passing through the point of maximum intensity, and the vertical plane (V-V line) established by balancing the photometric values at 6 degrees left and 6 degrees right. Conduct a vertical scan of the lamp low beam pattern along the V-V line over a sufficient vertical distance to locate the maximum gradient and determine the shape of the gradient curve. The gradient  $G_{log}$  should be calculated using the mathematical expression:  $G_{log} = \log_{10} I(\alpha) - \log_{10} I(\alpha+0.1)$ , where  $I$  is the measured candela value and  $\alpha$  is the vertical angular position in degrees.

##### 4.1.1.1.2 Gradient Position in Beam Pattern

The lamp aim shall be adjusted until the vertical angular position at which the maximum gradient measured along the V-V line is located at the H-H line.

##### 4.1.1.2 For headlamp(s) designed to be aimed using the high beam:

Aim the lamp using the high (driving) beam as described in 5.1.1.2.1.