SAE International™ SURFACE VEHICLE STANDARD

SAE J584 REV. JAN2003

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Motorcycle Headlamps

1. ***Scope—***This SAE Standard provides design parameter and general requirements for motorcycle headlamps.

2. ***References***

2.1 **Applicable Publications—**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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J107—Operator Controls and Displays on Motorcycles
SAE J213—Motorcycle Classification
SAE J565—Semiautomatic Headlamp Beam Switching Devices
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 J1383—Performance Requirements for Motor Vehicle Headlamps

3. ***Definitions***

3.1 A Motorcycle Headlamp is a major lighting device used to provide general illumination ahead of the vehicle.

4. ***Laboratory Requirements***

4.1 The following sections from SAE J575 are a part of this document:

4.1.1 SECTION 3.1—VIBRATION TEST

4.1.2 SECTION 3.2—MOISTURE TEST

4.1.3 SECTION 3.3—DUST EXPOSURE TEST

4.1.4 SECTION 3.4—CORROSION TEST

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4.1.5 SECTION 3.5—WARPAGE TEST ON DEVICES WITH PLASTIC COMPONENTS

4.1.6 SECTION 3.6—PHOTOMETRY TEST

4.2 Plastic Materials—Any plastic material used in optical parts shall comply with the requirements set forth in SAE J576.

4.3 Color Test—Color of the light from a motorcycle headlamp shall be white, as defined in SAE J578.

4.4 Aiming Adjustment Tests

4.4.1 A minimum aiming adjustment of 4 degrees in each direction from the vertical and horizontal planes shall be provided.

4.4.2 Headlamps with independent vertical and horizontal aiming adjusting mechanisms:

4.4.2.1 The headlamp unit mounting shall be provided with independent vertical and horizontal aiming adjustments. The adjustment mechanisms shall be designed so that neither the vertical nor horizontal aim will deviate more than 100 mm (4 in) from the horizontal or vertical planes, respectively, at a distance of 7.6m (25 ft) through an angle of ±4 degrees.

4.4.2.2 When adjusting screws are employed, they shall be equipped with self-locking devices which operate satisfactorily for a minimum of 10 adjustments on each screw, over a length of screw thread of ±3 mm (±1/8in).

4.4.3 Headlamps with ball and socket or equivalent adjustment means need not conform with 3.4.2.

4.5 Inward Force Test—The mechanism, including the aiming adjusters, shall be designed to prevent the unit from receding permanently by more than 2.5 mm (0.1 in) into the lamp body or housing when an inward force of 222 N (50 lbf) is exerted at the geometric center of the outer surface of the lens.

4.6 Clarity of Hot Spot Definition—The geometric center of the high-intensity zone of the upper beam of the multiple beam headlamps shall be deemed sufficiently defined for the purpose of service aiming if it can be set by three experienced observers on a vertical screen at 7.6 m (25 ft) within a maximum vertical deviation of ±0.3degrees and within a maximum horizontal deviation of ±0.4 degrees. The aim for each observer shall be taken as the average of at least three observations.

4.7 Beam Aim During Photometric Test

4.7.1 The upper beam of a multiple beam headlamp shall be aimed photoelectrically so that the center of the zone of highest intensity falls 0.4 degrees vertically below the lamp axis and is centered laterally. 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 established by balancing the photometric values at 3degrees left and 3 degrees right.

4.7.2 The beam of a single beam, SAE J213 Classification A + L (moped) lamp shall be aimed photoelectrically so that the center of the zone at highest intensity falls 1.5 degrees vertically below the lamp axis and is centered laterally. 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 established by balancing the photometric values at 3degrees left and 3 degrees right.

4.8 Photometric Design Requirements

4.8.1 TEST PROCEDURES—Photometric tests shall be made with photometer at a distance of at least 18.3 m (60 ft) from the unit. The bulb or unit shall be operated at 6.4 V for a 6 V system and 12.8 V for a 12 V system during the test.

4.8.2 DESIGN INTENSITY REQUIREMENTS—The beam or beams from the unit shall be designed to conform to the intensity specifications in Tables 1, 2, or 3. A tolerance of ±0.25 degree in location may be allowed for any test point.

TABLE 1—HEADLAMP CANDELA INTENSITY REQUIREMENT (cd)
CLASS C, D, AND H MOTORCYCLE

Test Points (Degrees)	Min cd	Max cd
Upper Beam		
2U-V	1000	
1U-3L and 3R	2000	
H-V	12 500	
1/2D-V	20 000	
1/2D-3L and 3R	10 000	
1/2D-6L and 6R	3300	
1/2D-9L and 9R	1500	
1/2D-12L and 12R	800	
1D-V	17 500	
2D-V	5000	
3D-V	2500	
3D-9L and 9R	1500	
3D-12L and 12R	300	
4D-V	1500	7500
Anywhere		75 000
Lower Beam		
1-1/2U-1R to R		1400
1U-1-1/2L to L		700
1/2U-1-1/2L to L		1000
1/2U-1R to 3R		2700
1-1/2D-9L and 9R	700	
2D-V	7000	
2D-3L and 3R	4000	
2D-6L and 6R	1500	
2D-12L and 12R	700	
3D-6L and 6R	800	
4D-V	2000	
4D-4R		12 500

TABLE 2—HEADLAMP CANDELA INTENSITY REQUIREMENT (cd) CLASS B, C, AND L MOTORCYCLE

Test Points (Degrees)	Class B C + H Min cd	Class B C + H Max cd	Class A, B, E + L Min cd	Class A, B, E + L Max cd
Upper Beam			1000	
1U-3L and 3R	2000		5000	
H-V	10 000		7500	
1/2D-V	20 000		3000	
1/2D-3L and 3R	5000		800	
1/2D-6L and 6R	2000		5000	
1D-V	15 000		3000	
2D-V	5000		1000	
3D-V	2500		500	
3D-6L and 6R	800			
4D-V		7500		7500
Anywhere		75 000		75 000
Lower Beam				
1-1/2U-1R to R		1400		1400
1U-1-1/2L to L		700		700
1/2U-1-1/2L to L		1000		1000
1/2U-1R to 3R		2700		2700
2D-V	5000		4000	
2D-3L and 3R	3000		3000	
2D-6L and 6R	1500		1500	
3D-6L and 6R	800		800	
4D-V	2000		2000	
4D-4R		12 500		12 500

TABLE 3—HEADLAMP CANDELA INTENSITY REQUIREMENT (cd) CLASS C AND E MOTORCYCLE

Test Points (Degrees)	Min cd	Max cd
Single Beam		
1-1/2U-1R to 3R		1400
1U-1-1/2L to L		700
1/2U-1-1/2L to L		1000
1/2U-1R to 3R		2700
2D-V	4000	
2D-3L and 3R	3000	
2D-6L and 6R	1500	
4D-V	1000	
4D-4R		12 500