



SURFACE VEHICLE RECOMMENDED PRACTICE

J392™

MAY2020

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Motorcycle and Motor Driven Cycle Electrical System Maintenance of Design Voltage

RATIONALE

This document is being revised in several places for clarification and consistency: the wording of 4.7 was changed for consistency with 4.5 and 4.6; the wording of 4.8.1 was changed for consistency with 4.6.1 and 4.7.1; and 5.1 and 5.2 were changed to specifically call out tail lamp voltage requirements.

1. SCOPE

This SAE Recommended Practice pertains to electrical systems of motorcycles both with and without batteries.

1.1 Purpose

This document provides minimum illumination voltage values for all motorcycle classifications as specified in SAE J213 describes test procedures to determine that these voltages are maintained.

2. REFERENCE

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.

SAE J213 Motorcycle Classifications

3. TEST APPARATUS

3.1 Voltmeter

0 to 20 V maximum full-scale deflection, accuracy $\pm 1/2\%$ (two voltmeters required).

3.2 Ammeter

Capable of carrying full system load current. Accuracy $\pm 3\%$ full scale.

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3.3 Means for Measuring Engine rpm

Accuracy $\pm 3\%$ full scale.

4. TEST PROCEDURE

4.1 Install fully charged original equipment or equal battery on the motorcycle (if motorcycle is battery equipped).

4.1.1 Maintain battery temperature at $27\text{ }^{\circ}\text{C} \pm 6\text{ }^{\circ}\text{C}$ ($80\text{ }^{\circ}\text{F} \pm 10\text{ }^{\circ}\text{F}$).

4.2 Connect one voltmeter between the headlamp low beam terminal and the ground; connect the other voltmeter between the tail lamp terminal and the ground.

4.3 Connect the ammeter in series with the battery.

NOTE: Disregard 4.3 for motorcycles without batteries.

4.4 Start engine and turn on headlamp(s).

4.4.1 Switch headlamp to the low beam position.

4.4.2 External fan cooling may be applied to the motorcycle engine.

4.5 Run the engine at an rpm equivalent to $50\text{ km/h} \pm 2\text{ km/h}$ (30 mph) in top gear for 10 minutes.

4.5.1 Record the lowest and highest headlamp voltage and tail lamp voltage observed during the 10 minute period.

4.6 Run the engine at an rpm equivalent to $90\text{ km/h} \pm 2\text{ km/h}$ (55 mph) in top gear for 10 minutes.

4.6.1 Record the lowest and highest headlamp voltage and taillamp voltage observed during the 10 minute period.

4.7 Run the engine at the manufacturer's suggested maximum rpm.

4.7.1 Record the highest and lowest headlamp and tail lamp voltages observed during a 5 second period.

4.8 Run the engine at manufacturer's rated idle speed for 10 minutes.

4.8.1 Record the highest and lowest headlamp and tail lamp voltages observed during the 10 minute period.

4.9 Slowly increase the engine speed until generating equipment cancels the system load, indicated by "0" reading on the ammeter.

NOTE: Disregard 4.9 for motorcycles without batteries.

4.9.1 Record the engine rpm at ammeter zero point.

5. TEST LIMITS

5.1 Limits at Operating Speeds

5.1.1 Headlamp voltages recorded in 4.5.1, 4.6.1, and 4.7.1 shall be between 90% and 120% of the rated headlamp design voltage.

5.1.2 Tail lamp voltages recorded in 4.5.1, 4.6.1, and 4.7.1 shall be between 90% and 120% of the rated tail lamp design voltage.