



SURFACE VEHICLE RECOMMENDED PRACTICE

J277™

SEP2019

Issued	1971-12
Reaffirmed	2004-11
Revised	2019-09

Superseding J277 JUL2014

Maintenance of Design Voltage - Snowmobile Electrical Systems

RATIONALE

This update was to improve terminology in Section 7 for the phrase “soaking the snowmobile for 2 hours,” adjust Table 1 to fit engine rpm titles, and add electrical requirements from SSCC/11.

FOREWORD

This SAE Recommended Practice is intended as a guide toward standard practice, but may be subject to frequent change to keep pace with experience and technical advances. Hence, its use where flexibility of revision is impractical is not recommended.

1. SCOPE

This SAE Recommended Practice provides test methods and requirements for maintenance of design voltage in snowmobile electrical systems. It pertains to both battery-equipped and battery-less systems.

2. REFERENCES

There are no referenced publications specified herein.

3. SAMPLES FOR TEST

Samples submitted for laboratory test shall be representative of the systems as regularly manufactured and marketed. Each sample shall include not only the electrical system, but also accessory equipment necessary to operate it in the normal manner.

4. TEST APPARATUS

4.1 Voltmeter

Alternating current (AC) or direct current (DC), as required, capable of $\pm 2\%$ accuracy of the measured reading. For AC measurements, either a true rms voltmeter is required, or the AC and DC components of the AC waveform must be measured separately and added algebraically as follows in Equation 1:

$$V_{\text{true rms}} = \text{square root}(V_{\text{dc}}^2 + V_{\text{ac}}^2) \quad (\text{Eq. 1})$$

For AC measurements, the voltmeter must have a minimum crest factor of three.

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 © 2019 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
http://www.sae.org

SAE WEB ADDRESS:

**SAE values your input. To provide feedback on this
Technical Report, please visit
http://standards.sae.org/J277_201909**

4.2 Ammeter

DC, capable of $\pm 2\%$ accuracy of the measured reading.

4.3 Tachometer

Means of measuring engine rpm within $\pm 3\%$.

5. TEST PROCEDURE

5.1 Preliminary Instruction

5.1.1 If snowmobile is battery equipped, install a fully charged original equipment battery.

5.1.2 If snowmobile is battery equipped, install the ammeter in series with the battery such that it indicates negative current for discharge and positive current for charge conditions. Do not install the ammeter in series with the electric starter motor.

5.1.3 Voltmeter Installation

5.1.3.1 Install the voltmeter(s) across the lamp terminals. For the purpose of this document, the terminal voltages are designated as follows:

a. V1: Headlamp low-beam terminals.

b. V2: Headlamp high-beam terminals.

c. V3: Tail lamp terminals.

d. V4: Stop lamp terminals.

5.1.3.2 Take the required voltage readings simultaneously. If this is not possible, record the average of three consecutive readings that are within 1 V of each other.

5.1.4 Engine rpm

5.1.4.1 Do not use a tachometer operating from the alternator signal unless it is standard equipment in the system being tested, or it affects the system's output voltage less than 0.5%.

5.1.5 System Operation

Verify proper operation of all lamps, switches, and associated equipment both before and after the test is completed.

5.1.6 Optional Accessories Definition

Optional accessories are all electrical loads that come standard with the vehicle that can be switched off and can usually be turned on for more than 1 minute, including, but not limited to, the front and rear heated grips, heated lever, heated seat, and cooling fan.

Headlamp, tail lamp, stop lamp, and manufacturer's separately sold accessories are excluded. All other factory installed loads that are presently connected to the vehicle are not considered as accessory and must be connected at all times.

5.1.7 Data Sheet

Prepare data sheet to record the voltage measurements indicated in Table 1 and the rpm recorded in 5.2.2.2.