

Tests for Snowmobile Switching Devices and Components —SAE J68 OCT79

SAE Recommended Practice
Approved October 1979

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Society of Automotive Engineers, Inc.
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TESTS FOR SNOWMOBILE SWITCHING DEVICES AND COMPONENTS—SAE J68 OCT79

SAE Recommended Practice

Report of the Snowmobile Committee, approved October 1979.

1. **Scope**—This recommended practice covers standardized basic tests, test methods, and requirements applicable to electromechanical switching devices which may be used on snowmobiles as defined in SAE J33a, Definitions for Snowmobiles, or latest revision.

2. Definitions

2.1 A headlamp beam switch is a driver controlled device used to select the high or low beam headlamp circuit.

2.2 A headlamp switch is a driver controlled device used to activate headlights, taillights, and certain marking lights.

2.3 A stop lamp switch is a device used to energize the stop lamp circuit with the operator actuation of the brake.

2.4 An accessory switch is a driver controlled device used to activate accessories (i.e., hand warmers, etc.).

2.5 An ignition system switch is a device(s) used to interrupt engine ignition such as: emergency shut-off switch, key switch, or speed control assurance device.

2.6 A starter motor switch is a driver controlled device used to activate engine starter motor.

3. Reference Standards

3.1 The following sections from SAE J575g, Tests for Motor Vehicle Lighting Devices and Components, are a part of this recommended practice:

3.1.1 Paragraph 2.1—Samples for Tests.

3.1.2 Paragraph 2.2—Lamp Bulbs.

3.1.3 Paragraph 2.3—Test Fixture.

3.1.4 Section 3—Laboratory Facilities.

3.1.5 Paragraph 4.1—Vibration Tests.

3.1.6 Paragraph 4.4—Corrosion Test.

Note: To expedite testing, separate switching device samples may be used for the vibration and corrosion test.

4. High Temperature Test

4.1 Determine effect of high temperature on the basic function of the switching device.

4.1.1 The switching device shall be exposed to a temperature of $49 \pm 3^\circ\text{C}$ ($120 \pm 5^\circ\text{F}$) for a minimum of 2 h, however, if the switching device is exposed to a higher temperature in service, then the device shall be tested at this higher temperature. (Refer to paragraph 4.1.1.1.)

4.1.1.1 To determine the maximum temperature to which the switching device is exposed, the snowmobile shall be operated for a minimum of 30 min under load, immediately followed by the fade and recovery test of paragraph 6.5 of SAE J45 at a temperature of at least 10°C (50°F) and use this temperature to conduct paragraph 4.1.1. If a minimum ambient of 10°C (50°F) cannot be obtained, subtract the available ambient temperature from 10°C (50°F) and add this difference to the maximum temperature to which the switching device is exposed.

4.1.2 After conditioning per paragraph 4.1.1, the switching device, while still at $49 \pm 3^\circ\text{C}$ ($120 \pm 5^\circ\text{F}$) or the higher service temperature, shall be manually cycled for 10 cycles per sequence requirements of Table 1. The switching device shall be electrically and mechanically operable during and after each cycle.

4.1.3 The same switching device shall be used for the Low Temperature and Humidity Test, Section 5.

5. Low Temperature and Humidity Test

5.1 Determine effect of low temperature and high relative humidity on

the basic function of the switching device.

5.1.1 The switching device shall be exposed to a temperature of $-40 \pm 3^\circ\text{C}$ ($-40 \pm 5^\circ\text{F}$) for a minimum of 2 h and then within no more than 2 min be exposed to a minimum relative humidity of 60% at a temperature of $21 \pm 6^\circ\text{C}$ ($70 \pm 10^\circ\text{F}$) for 30 ± 10 min, after which the switching device shall be exposed again to a temperature of $-40 \pm 3^\circ\text{C}$ ($-40 \pm 5^\circ\text{F}$) for $2 \text{ h} \pm 30$ min.

5.1.2 After conditioning per paragraph 5.1.1, the switching device, while still at $-40 \pm 3^\circ\text{C}$ ($-40 \pm 5^\circ\text{F}$), shall be manually cycled for 10 cycles per sequence requirements of Table 1. The switching device shall be electrically and mechanically operable during and after each cycle.

5.1.3 The same switching device shall be used for the Endurance Test, Section 6.

6. Endurance Test and Requirements

6.1 Determine effect of cycling on the basic function of the switching device.

6.1.1 The switch shall be operated at no less than the rated electrical load of the circuit it is switching (i.e., headlamp, stop lamp, ignition system, etc.). The test shall be run with DC except systems designed to operate on AC only, which may be tested with AC.

6.1.1.1 The power supply shall not generate any adverse transients not present in the snowmobile and shall comply with the following specifications:

a) Output Current—Capable of supplying output and inrush current as required in paragraph 6.1.1.

b) Regulator—DC supplies.

Dynamic—The output voltage shall not deviate more than 1.0 V from zero to maximum load (including inrush current). DC supplies should recover 63% of its maximum excursion within 5 ms.

Static—The output voltage shall not deviate more than 2% with changes in static load (not including inrush current and means shall be provided to compensate for static line voltage variations.

Ripple Voltage—(DC supplies only.)

Maximum 300 MV peak to peak.

6.1.2 The switch shall be subjected to an endurance test as specified in Table 1, at a temperature of $21 \pm 6^\circ\text{C}$ ($70 \pm 10^\circ\text{F}$) and at a rate not exceeding 30 cycles/min. Travel time: 0.1–0.5 s maximum. (Time from one position to the next position.) Dwell time: 0.4 s minimum (in each position). The switch shall be electrically and mechanically operable during and after this test.

6.1.3 The voltage drop from the input to output terminals of the switching device shall be measured before and after the completion of the endurance test. This voltage drop shall not exceed 2% of the applied voltage at the rated electrical load of the circuit as in paragraph 6.1.1. If the wiring is an integral part of the switching device, the voltage drop measurement is to be made including 76 mm (3 in) of wire on each side of the switch terminals.