

(R) MECHANICAL STOP LAMP SWITCH

Foreword—This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. Scope—The mechanical stop lamp switch is an operator activated mechanical device intended primarily to control the functioning of the stop lamp and high mounted stop lamp circuits. Secondly, the device may control the functioning of various accessories, such as disengaging cruise control, with operator actuation of brake pedal.

1.1 Purpose—This standard defines the test conditions, procedures, and performance specifications for 6-, 12-, and 24-V manually actuated mechanical stop lamp switches.

2. References—There are no referenced publications specified herein.

3. Test Requirements

3.1 Test Equipment and Instrumentation

3.1.1 POWER SUPPLY—The power supply shall comply with the following specifications:

- a. **Output Current**—Capable of supplying the continuous and in-rush currents of the design load (reference paragraph 3.2.1.1).
- b. **Regulation:**

Dynamic—The output voltage at the supply shall not deviate more than 1.0 V from zero to maximum load (including in-rush current) and should recover 63% of its maximum excursion within 100 ms.

Static—The output voltage at the supply shall not deviate more than 2% with changes in static load from zero to maximum (not including in-rush current), and means shall be provided to compensate for static input line voltage variations.
- c. **Ripple Voltage**—Maximum 300 mV peak-to-peak.

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3.1.2 VOLTMETER—0 – 30 V maximum full scale deflection, accuracy $\pm 1/2\%$.

NOTE—A digital meter having at least 3-1/2 digit readout with an accuracy of $\pm 1\%$ plus one digit is recommended for millivolt readings.)

3.1.3 AMMETER—Capable of carrying full system load current, accuracy $\pm 3\%$.

3.2 Test Procedures—Environmental conditions have been selected for this standard to help assure satisfactory operation under general customer use conditions. It is essential to duplicate specific environmental conditions under which the device is expected to function.

3.2.1 ELECTRICAL LOADS

3.2.1.1 The design load applied to the switch is the electrical load specified by the number and type of bulbs (or other electrical load devices) to be operated by each circuit of the switch. For example, the design load for the stop lamp circuit may be two #1157 (high current filament) and high mounted stop lamp circuit may be two #922 bulbs.

The switch shall be operated at 6.4 ± 0.2 V DC for a 6 V system, 12.8 ± 0.2 V DC for a 12 V system, or 25.6 ± 0.2 V DC for a 24 V system. These voltages shall be open circuit voltage measured at the input termination on the switch.

3.2.2 TEMPERATURE TEST PROCEDURES

3.2.2.1 The switch shall be exposed for 1 h without electrical load to each of the following temperatures: 25 ± 5 °C; $74 + 0$ °C, -3 °C; $-32 + 3$ °C, -0 °C. The switch shall be manually cycled at each temperature for ten cycles at design load.

3.2.2.2 The same switch shall be used for the endurance test described in 3.2.3.

3.2.3 ENDURANCE TEST PROCEDURE

3.2.3.1 The switch shall be electrically connected to operate its design load (both primary and secondary circuit function design electrical loads) at a temperature of 25 ± 5 °C.

3.2.3.2 The switch shall be operated for a minimum of 300 000 cycles. One complete cycle shall consist of energizing and de-energizing the design load (with a dwell in each position).

The test equipment shall be arranged to provide the following switch operating time requirements:

Travel Time: 0.1–0.5 s (time from one position to next)
Dwell Time: 1.0–2.0 s (time in each position)
Make and Break Rate: 10–15 mm/s

NOTE—(300 000 cycles represents 82 cycles of switch operation every day for approximately 10 years, or 3 cycles for each 1.0 mile driven 100 000 miles.)

3.2.4 VOLTAGE DROP TEST PROCEDURE

3.2.4.1 The voltage drop from the input terminal(s) to the corresponding output terminal(s) shall be measured at design load before and after the completion of the endurance test and shall be the average of three consecutive readings. If wiring is an integral part of the switch, the voltage drop measurement shall be made including 75 ± 6 mm of wire on each side of the switch terminals.