

**(R) HAZARD WARNING SIGNAL SWITCH**

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

1. **Scope**—This standard defines the test conditions, procedures and performance specifications for 6, 12 and 24-V manually actuated hazard warning signal switch.

2. **References**

2.1 **Applicable Publication**—The following publication forms a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J589b—Turn Signal Switch

3. **Definitions**

3.1 **Hazard Warning Switch**—An operator actuated device whose function is to cause at least one turn signal lamp on the left and right of the front, and left and right of the rear of the vehicle to flash simultaneously to indicate to the approaching driver the presence of a vehicular hazard.

3.2 **Combination Turn Signal and Hazard Warning Signal**

3.2.1 A combination switch is defined as a hazard warning switch combined in the same housing as the turn signal switch.

3.2.2 The operating motion of the hazard warning signal switch function shall differ from the actuating motion of the turn signal function.

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## 4. Test Requirements

### 4.1 Test Equipment and Instrumentation

4.1.1 POWER SUPPLY—The power supply shall not generate any adverse transients not present in motor vehicles, and shall comply with the following specifications:

- a. Output Current—The power supply shall be capable of supplying the continuous current of the design electrical load and the in-rush current, as required by the bulb load complement.
- b. Output Regulation:

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

Static—The static 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—The ripple output voltage shall be a maximum of 300 mV peak-to-peak.

4.1.2 VOLTMETER—A voltmeter with a 0-30 V maximum full scale deflection and  $\pm 1/2\%$  accuracy should be used.

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

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

4.2 Test Procedures—It is essential to duplicate specific environmental conditions under which the device is expected to function.

#### 4.2.1 ELECTRICAL LOADS

4.2.1.1 The design load applied to the switch is the electrical load specified by the quantity and type of bulbs (or other electrical load devices) to be operated by each circuit of the hazard warning signal switch.

4.2.1.2 The switch shall be operated with the maximum design bulb load stated by the switch manufacturer with the flasher not included in the circuit unless the flasher is an integral part of the assembly.

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

#### 4.2.2 TEMPERATURE TEST PROCEDURE

4.2.2.1 The switch shall be manually cycled after a 1-h exposure with no electrical load at each of these temperatures: 25 °C  $\pm$  5 °C; 74 +0, -3 °C; -32 +3, -0 °C. The switch shall be manually cycled at each temperature for 10 cycles at the designed loads.

4.2.2.2 The same hazard warning signal switch shall be used for the described endurance test described in 4.2.3.