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400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J2108

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DOOR COURTESY SWITCH

1. Scope—This SAE Recommended Practice defines the test conditions, procedures, and performance requirements for 6, 12, and 24 V Door Courtesy Switches which are intended for use in motor vehicles.

2. References

2.1 Applicable Documents—There are no referenced publications specified herein.

2.2 Definitions—The courtesy lamp switch is a door or door latch actuated device which controls the electrical operation of the courtesy lamp, ignition key alarm, and other related components.

2.3 Types

2.3.1 GROUNDED AND NON-GROUNDED—Grounded switches provide an electrical path to vehicle ground through their mounting attachment. Non-grounded switches have their electrical conductors insulated from vehicle ground.

2.3.2 SINGLE TERMINAL—Characterized by one wiring connection to the vehicle.

2.3.3 MULTI-TERMINAL—Any other terminal/connector configuration, other than single terminal.

2.3.4 SPECIAL—Switch types, which by their design, construction, and function, require separate definition.

2.4 Cycle—One cycle shall consist of allowing the actuation portion of the switch to move or be moved throughout its travel and to return to its initial position.

3. Test Requirements

3.1 Test Equipment and Instrumentation

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

3.1.1.1 *Output Current*—Capable of supplying the continuous and inrush currents of the design load (reference 3.2.1.1).

3.1.1.2 *Regulation*—Dynamic: The output voltage at the supply shall not deviate more than 1.0 V from zero to maximum load (including inrush 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 inrush current), and means shall be provided to compensate for static input line variations.

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3.1.1.3 *Ripple Voltage*—Maximum 300 mV peak-to-peak.

3.1.2 VOLTMETER—0 to 30 maximum full scale deflection, accuracy ± 1/2%. (Note: a digital meter having at least a 3 1/2 digit readout with an accuracy of ± 1% plus 1 digit is recommended for millivolt readings.)

3.1.3 AMMETER—Capable of carrying full system load current, accuracy ± 3%.

3.2 Test Procedures—Environmental conditions have been selected for this document to help assure satisfactory operation under general customer use conditions. It is essential to duplicate the 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 defined 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 courtesy lamp circuit may be four 1156 bulbs.

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

3.2.2 TEMPERATURE TEST PROCEDURE

3.2.2.1 The switch shall be exposed for 1 h without electrical load to each of the following temperatures: 25 °C ± 5, 74 °C +0, −3, −32 °C +3, −0. The switch shall be 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 °C ± 5.

3.2.3.2 The switch shall be operated for a minimum of 50 000 cycles. The speed and the incident angle of actuation shall be representative of the point of application ("A" pillar, "B" pillar) in the vehicle. The test equipment shall be designed to provide this timing: Travel Time: 0.1 to 1.0 s (time to travel from one extreme position to the other). Dwell Time: 2.0 to 5.0 s (time spent stationary at an extreme position). Make and Break Rate Range:

"A" Pillar application: 30 to 300 mm/s.

"B" Pillar application: 0.3 to 3.0 m/s.

3.2.3.3 At the conclusion of the endurance testing, the switch shall be operated for 1 h in each of its positions with the design load connected.

3.2.4 VOLTAGE DROP TEST PROCEDURE

3.2.4.1 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. Three consecutive readings shall be taken and the average recorded. If wiring is an integral part of the switch, the voltage drop measurement shall be made by including 75 mm ± 6 of wire on each side of the switch. Otherwise, the measurement shall be made at the switch terminals.

4. Performance Requirements

4.1 During and after each of the cycles described in 3.2.2 and 3.2.3, the switch shall operate without hesitation mechanically, e.g., not more than 1.0 s, and shall be within its electrical design specifications.

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4.2 The voltage drop shall not exceed 0.3 V when measured as in 3.2.4, either before or after the tests described in 3.2.3.

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