

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

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IGNITION SWITCH

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

1. Scope

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

3. Definitions

3.1 **Ignition Switch**—Part of an electrical system by which the operator of a vehicle causes the ignition system to function. In addition to ignition circuitry, the switch may have circuits which control electrical accessories, engine starting, warning indicator lamp checking, etc.

4. Temperature Test

4.1 To insure basic function, the switch shall be manually cycled for 10 cycles at design electrical load at 24 ± 5.5 °C (75 ± 10 °F), $74 +0, -2.8$ °C ($165 +0, -5$ °F), and $-32 +2.8, -0$ °C ($-25 +5, -0$ °F) after a 1 h exposure at each of these temperatures. The switch shall be electrically and mechanically operable during each of these cycles.

4.2 This same switch shall be used for the endurance test described below.

5. Endurance Test Setup

5.1 The switch shall be set up to operate its design electrical load.

5.2 The test shall be set up to operate the switch for the prescribed number of complete cycles.

One complete cycle shall consist of sequencing through each position (with dwell in each position) and return without dwell in intermediate positions to the initial position.

The test requirements shall be so arranged as to provide the following mechanical time requirements:

Travel Time—0.1–0.5 s (time from one position to the next).

Dwell Time—1.0–2.0 s (time in each position).

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5.3 During the test the switch shall be operated at:

- 6.4 V d-c for a 6 V system
- 12.8 V d-c for a 12 V system
- 25.6 V d-c for a 24 V system

These voltages shall be measured at the input termination on the switch.

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

- a. *Output Current*—Capable of supplying the continuous current of the design electrical load.
- b. *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 voltage variations.
- c. *Ripple Voltage*—Maximum 300 mV peak to peak.

6. Endurance Requirements

- 6.1** The switch shall be capable of satisfactory operating for 25,000 complete cycles at a temperature of $24 \pm 5.5^{\circ}\text{C}$ ($75 \pm 10^{\circ}\text{F}$).
- 6.2** When the switch has a position which operates accessories only, the switch shall be cycled to that position during 25% of the endurance cycles.
- 6.3** The voltage drop from the input terminal(s) to the corresponding output terminal(s) shall be measured before and after the endurance test and shall not exceed 0.30 V (the average of three consecutive readings) at 10.0 A except in circuits such as warning indicator lamp checking and/or grounding type circuits which do not exceed 1 A load. In these circuits, the voltage drop shall not exceed 0.50 V (the average of three consecutive readings) at 1.0 A. If wiring is an integral part of the switch, the voltage drop measurement shall be made including 3 in. of wire on each side of the switch; otherwise, measurement shall be made at switch terminals.

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