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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2348

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Electric Windshield Washer Switch—Trucks, Buses, and Multipurpose Vehicles

1. ***Scope—***This SAE Recommended Practice establishes for trucks, buses, and multipurpose passenger vehicles with GVW of 4500 kg (10 000 lb) or greater:

a. Minimum performance requirements for the switch for activating electric or electro-pneumatic windshield washer systems.
b. Uniform test procedures that include those tests that can be conducted on uniform test equipment by commercially available laboratory facilities.

The test procedures and minimum performance requirements, outlined in this document, are based on currently available engineering data.

It is the intent that all portions of the document will be periodically reviewed and revised as additional data regarding windshield washing system performance is developed.

2. ***References***

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

SAE J2349—Electric Windshield Wiper Switch—Trucks, Buses, and Multipurpose Vehicles

2.2 **Related Publications—**The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J198—Windshield Wiper System—Trucks, Buses, and Multipurpose Vehicles
SAE J234—Electric Windshield Washer Switch—Passenger Car
SAE J258—Circuit Breakers
SAE J553—Circuit Breakers
SAE J1944—Windshield Washer Systems—Trucks, Buses, and Multipurpose Vehicles

2.2.2 ISO PUBLICATION—Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002.

ISO 3469—Windscreen Washing System—Test Method

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3. Definition

3.1 **Electric Windshield Washer Switch—** That part of an electric or electro-pneumatic windshield washer system by which the operator of a vehicle causes the windshield washers to function.

4. Temperature Test

4.1 To insure basic function, the switch shall be manually cycled for 10 cycles at design electrical load at 24 °C ± 5.5 °C (75 °F ± 10 °F); 74, +0, –2.8 °C (165, +0, –5 °C); 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 tests described in Section 5.

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 completed 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 equipment shall be so arranged as to provide the following mechanical time requirements:

a. Travel Time—0.1 to 0.5 s (time from one position to the next)
b. Dwell Time—1.0 to 2.0 s (time in each position)

5.3 During the test, the switch shall be operated at 12.8 V dc for a 12 V system, or 25.6 V dc 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 specification:

a. Output Current—Capable of supplying the continuous current of the design electrical load.
b. Regulation:
    1. 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.
    2. 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 satisfactorily operating for 10 000 complete cycles at a temperature of 24 °C ± 5.5°C (75 °F ± 10 °F).

6.2 The average 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 design load. If wiring is an integral part of the switch, the voltage drop measurement shall be made including 76 mm (3 in) of wire on each side of the switch; otherwise, measurement shall be made at switch terminals.

7. ***Combination Windshield Wiper and Washer Switch—***The same combination switch shall be used for the test of each function. If the washer and wiper functions are mechanically coordinated, the functions shall be tested simultaneously. The washer switch shall meet the requirements of this document. The wiper switch shall meet the requirements of SAE J2349.

PREPARED BY THE SAE TRUCK AND BUS WINDSHIELD CLEANING AND CLIMATE CONTROL SUBCOMMITTEE OF THE SAE TRUCK AND BUS BODY AND OCCUPANT ENVIRONMENT COMMITTEE