SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2068

CAN-CELLED JUL1999

Issued 1990-01
Cancelled 1999-07

Superseding J2068 DEC1994

Combination Turn Signal Hazard Warning Signal Flashers

1. ***Scope***—This SAE Recommended Practice defines the test conditions, procedures, and minimum design requirements for nominal 6, 12, and 24 V flashers used for both turn signal and hazard warning signaling.

2. ***References***

2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

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

SAE J590—Turn Signal Flashers
SAE J759—Lighting Identification Code
SAE J823—Flasher Test
SAE J945—Vehicular Hazard Warning Signal Flasher

3. ***Definition***—This flasher is a device installed in a vehicle lighting system, which has the primary functions of causing the turn signal lamps to flash when the turn signal switch is actuated and the hazard warning signal lamps to flash when the hazard warning switch is activated.

4. ***Flasher Identification Code***—Flashers conforming to this document may be identified by the code SAE J590/J945 in accordance with SAE J759.

5. ***Tests***

5.1 **Test Equipment**—The standard test equipment and circuitry for performing flasher tests shall conform with the specifications in SAE J823.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-8512 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS http://www.sae.org

5.2 Test Procedures—All of the following tests shall be performed at 12.8 V (or 6.4 V or 25.6 V) at the bulbs and at ambient temperature of 24 °C ± 5 °C.

5.2.1 START TIME—The start time of a normally closed type flasher is the time to open the circuit after the voltage is applied, provided the closed circuit remains closed for a minimum of 0.10 s. If the closed circuit opens in less than 0.10 s, the flasher shall be considered a normally open type flasher for this test. The start time of a normally open type flasher is the time to complete one cycle (close the circuit and then open the circuit) after the voltage is applied. The test shall be made with the minimum and maximum ampere design loads for both the turn and hazard warning signal functions. The start time shall be measured and recorded for three starts, each of which is separated by a cooling interval of at least 5 min.

5.2.1.1 Turn Signal Test—For a fixed-load flasher, the test shall be made with the specific ampere design load connected. For a variable-load flasher, the test shall be made with both the minimum and maximum ampere design load connected.

5.2.1.2 Hazard Warning Test—The test shall be made with both the minimum and maximum ampere design load.

5.2.2 VOLTAGE DROP—The lowest voltage drop across the flasher shall be measured between the input and the load terminals at the flasher and during the "on" period. The voltage drop shall be measured and recorded during any three cycles after the flasher has been operating for a minimum of five consecutive cycles but less than twenty cycles. The test shall be made in an ambient temperature of 24 °C ± 5 °C.

5.2.2.1 Turn Signal Test—For a fixed-load flasher, the voltage drop is measured with the specific ampere design load connected. For a variable-load flasher, the voltage drop shall be measured with the maximum ampere design load connected.

5.2.2.2 Hazard Warning Test—The voltage drop shall be measured with the maximum ampere design load connected.

5.2.3 FLASH RATE AND PERCENT CURRENT ON TIME—The flash rate and percent current on time shall be measured and recorded after the flasher has completed five consecutive cycles and shall be an average of at least three consecutive cycles at each of the specified bulb voltage and ambient temperature conditions.

The flashers shall be temperature stabilized at the ambient temperature before each test.

5.2.3.1 Turn Signal Tests

a. 12.8 V (or 6.4 or 25.6 V) and 24 °C ± 5 °C
b. 12.0 V (or 6.0 or 24.0 V) and −17 °C ± 3 °C
c. 15.0 V (or 7.5 or 30.0 V) and −17 °C ± 3 °C
d. 11.0 V (or 5.5 or 22.0 V) and 50 °C ± 3 °C
e. 14.0 V (or 7.0 or 28.0 V) and 50 °C ± 3 °C

For a fixed-load flasher, the test shall be made with the specific ampere design load connected. For a variable-load flasher, the test shall be made with both the minimum and maximum ampere design load.

5.2.3.2 Hazard Warning Tests

a. 12.8 V (or 6.4 or 25.6 V) and 24 °C ± 5 °C
b. 11.0 V (or 5.5 or 22.0 V) and −17 °C ± 3 °C
c. 13.0 V (or 6.5 or 26.0 V) and −17 °C ± 3 °C
d. 11.0 V (or 5.5 or 22.0 V) and 50 °C ± 3 °C
e. 13.0 V (or 6.5 or 26.0 V) and 50 °C ± 3 °C

The test shall be made with both the minimum and maximum ampere design load.

5.2.4 EXTREME TEMPERATURE—The flasher shall be subjected to ambient temperatures of 63 °C ± 3 °C and –32 °C ± 3 °C until stabilized. The start time and flash rate shall be measured and recorded at each extreme temperature. The flash rate measurement must be completed within the first minute of energization. Otherwise the procedure shall be as specified in 5.2.1.1 and 5.2.3.1(a) for turn signal and 5.2.1.2 and 5.2.3.2(a) for hazard warning.

5.2.5 DURABILITY—The durability test shall be conducted under the following conditions:

5.2.5.1 Turn Signal Test Conditions

a. 24 °C ± 5 °C ambient temperature
b. 14.0 V (7.0 or 28.0 V) applied to the input terminals of the test circuit
c. Specific ampere design load for fixed-load flashers and maximum specified ampere design load for variable-load flashers

5.2.5.2 Hazard Warning Test Conditions

a. 24 °C ± 5 °C ambient temperature
b. 13.0 V (6.5 or 26 V) applied to the input terminals of the test circuit
c. Maximum specified ampere design load

5.2.5.3 Test Cycle

a. 50 h of intermittent flashing (15 s on, 15 s off) per 5.2.5.1
b. 8 continuous hours per 5.2.5.2
c. 50 h of intermittent flashing (15 s on, 15 s off) per 5.2.5.1
d. 8 continuous hours per 5.2.5.2
e. 50 continuous hours per 5.2.5.1
f. 20 continuous hours per 5.2.5.2

6. Performance Requirements

6.1 Start Time—The average and maximum of the three start time measurements (5.2.1, 5.2.1.1, 5.2.1.2) for the flasher shall not exceed the values shown in Table 1.

TABLE 1—START TIME, SECONDS

Flasher Type	Average Time	Maximum Time
Normally Closed	1.3	2.0
Normally Open	1.5	2.0

6.2 Voltage Drop—The average of the three voltage drop measurements (5.2.2) for the flasher shall not exceed 0.5 V. No single measurement shall exceed 0.8 V.

6.3 Flash Rate and Percent Current on Time—The average flash rate and percent current on time shall fall within 60 to 120 flashes/min and 30 to 75% on under all conditions of 5.2.3.

6.4 Extreme Temperature—At the extreme temperature conditions, start time shall not exceed 3 s and flash rate shall be 50 to 130 flashes/min.

6.5 Durability—The flasher shall conform to 6.1, 6.2, and 6.3 (under test conditions 5.2.3.1(a) and 5.2.3.2(a) only) at the start and conclusion of the test.

7. *Guidelines*

7.1 Turn signal secondary functions may include the visible pilot indication (required by SAE J588), an audible signal to indicate flasher operation, and indication of turn signal lamp outage.

7.2 Hazard warning secondary functions may include the visible pilot indicator required in hazard warning signal systems and an audible signal to indicate flasher operation. When included, the pilot function must operate under all hazard warning test conditions.

PREPARED BY THE SAE ELECTROMECHANICAL DEVICES TASK FORCE OF THE
SAE CIRCUIT PROTECTION AND SWITCH DEVICES STANDARDS COMMITTEE