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

SURFACE VEHICLE STANDARD

SAE J590

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Supersedes: J590 APR93

Turn Signal Flashers

Foreword—The development of this SAE Standard was based on the premise that it described the requirements for all turn signal flashers regardless of the electrical load. Since this document was first introduced, the predominant load for passenger car use has been two lamp bulbs, one at the front and one at the rear of the vehicle and the vehicles have used fixed load flashers. The load for trucks can vary from two to as many as ten depending on the vehicle. Trucks with trailers generally use variable load flashers. Passenger cars with trailers should use a variable load flasher. Federal Motor Vehicle Safety Standard 108 requires vehicles to be equipped to indicate the loss of one or more turn signal lamps except when a variable load flasher is required.

1. ***Scope***—This SAE Standard defines the test conditions, procedures, and minimum design requirements for nominal 6, 12, and 24 V turn signal flashers.

2. ***References***

2.1 **Applicable Publications**—The following publications form 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 PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J588—Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width
SAE J759—Lighting Identification Code
SAE J823—Flasher Test

3. ***Definition***

3.1 **Flasher**—The flasher is a device installed in a vehicle lighting system which has the primary function of causing the turn signal lamps to flash when the turn signal switch is actuated. Secondary functions may include the visible pilot indication for the turn signal system (required by SAE J588) an audible signal to indicate when the flasher is operating, and an indication of turn signal lamp outage.

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

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5. Tests

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

5.2 Test Procedures—All of the following tests shall be performed at 12.8 V (or 6.4 V and or 25.6 V) at the bulbs unless otherwise specified.

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 then open the circuit) after voltage is applied. 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. The test shall be made in an ambient temperature of 24 °C ± 5 °C. 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.

5.2.2 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 five consecutive cycles. For fixed-load flashers, the voltage drop is measured with the specific ampere design load connected. For variable load flashers, the voltage drop shall be measured with the maximum ampere design load connected. The test shall be made in an ambient temperature of 24 °C ± 5 °C.

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 following bulb voltages and ambient temperature conditions.

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

The flashers shall be temperature stabilized before each 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.

5.2.4 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 paragraphs 5.2.1 and 5.2.3a.

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

a. 24 °C ± 5 °C ambient temperature
b. 14.0 V (7.0 V 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
d. 100 h of intermittent flashing (15 s on, 15 s off) followed by 50 h of continuous flashing