CANCELLED

Service Performance Requirements for Warning Lamp Alternating Flashers – SAE J1104 OCT83

SAE Recommended Practice
Last Revised October 1983

THIS IS A PREPRINT WHICH IS SUBJECT TO REVISIONS AND CORRECTIONS. THE FINAL VERSION WILL APPEAR IN THE 1985 EDITION OF THE SAE HANDBOOK.

SAE The Engineering Resource For Advancing Mobility®

PREPRINT

SERVICE PERFORMANCE REQUIREMENTS FOR WARNING LAMP ALTERNATING FLASHERS—SAE J1104 OCT83

SAE Recommended Practice

Report of the Lighting Committee, approved October 1974, last revised October 1983.

1. Scope—This recommended practice covers service performance tests, test procedures and requirements applicable to warning lamp alternating flashers. It is intended to supplement the engineering design standard SAE J1054 to cover service performance requirements of warning lamp alternating flashers.

2. Test Conditions

2.1 Performance Test—Flashers shall be performance tested at the specified design load and in the mounting position (if necessary), as specified by the flasher manufacturer.

2.2 Durability Test—Flashers shall be durability tested at the design load specified by the flasher manufacturer.

2.3 Test Circuitry and Equipment Requirements—As a matter of information, attention is called to test equipment, procedures and circuitry as specified in SAE J823, Flasher Test Equipment.

3. Definitions

3.1 Lot—The term "lot" or "batch" shall mean inspection lot, that is, a collection of flashers from which a sample is to be drawn and tested to determine conformance with the acceptability criteria. Each lot shall consist of flashers of a single type manufactured at essentially the same time. Each flasher shall be coded externally to represent the period of manufacture by at least month and year.

3.2 Sample and Sample Size—A sample shall consist of individual flashers drawn from a lot, the individual flashers being selected at random without regard to their quality. The number of flashers in the sample is the sample size.

3.3 Flasher Characteristic—Value of a particular parameter of flasher operation, for example, Flash Rate, Percent Current "On" Time, Starting Time, Voltage Drop.

3.4 Engineering Design Standard—Flasher characteristics as specified in SAE J1054.

3.5 Zone—A prescribed range or set of values of a flasher characteristic other than that of the Engineering Design Standard.

3.6 Zone Designation—Each zone shall be designated by the capital letters A, B, C in the order of increasing deviation of the zone from SAE J1054.

ϕ **3.7 Zone A**—The range of values of a flasher characteristic that does not alter materially the flasher performance.

ϕ **3.8 Zone B**—The range of values of a flasher characteristic that still provides adequate performance.

3.9 Zone C—The range of values of a flasher characteristic that does not provide adequate performance.

3.10 Chance Occurrence—An unusual event.

3.11 Flasher Classification—Each flasher with characteristics outside of the requirements of SAE J1054 shall be classified by the zone designation of the flasher characteristic that has the zone designation furthest from the requirement of SAE J1054. Flashers with all characteristics falling within the requirements of SAE J1054 shall not be assigned a zone designation.

3.12 Average Laboratory Life—The average number of test hours a sample of flashers remains within SAE J1054 Engineering Design Standard or Zones A and B. The average shall be based on the sample size tested.

4. Performance Testing

4.1 Select a random group of 32 flashers from the lot. Randomly select a sample of ten flashers from the group. Submit each of the ten units to all of the tests of paragraphs 4.2, 4.3 and 4.4 below.

4.2 Starting Time—Starting time is defined as the interval between the instant power is applied to the input terminal and the instant of transfer to the second output terminal. Under the unique condition where both load terminals are energized at the instant power is applied to the flasher, then the interval shall be measured to the instant when the first load terminal de-energized is re-energized.

The test shall be made in an ambient temperature of 75 ± 10°F (24 ± 5.5°C) at the manufacturer's specified design load and with 12.8 V at the bulbs. Starting time shall be based on a single start. The measured Starting Times shall be classified by Zones in accordance with Table 1.

TABLE 1—STARTING TIME (TIME IN SECONDS)

Warning Signal Lamp Load	SAE J1054	Zone A	Zone B	Zone C
Specified Design Load	1.5 max	2.2 max	3.0 max	>3.0

4.3 Voltage Drop—The lowest voltage drop during the "On" period, when operated at the manufacturer's design load with 12.8 V at the bulbs in an ambient temperature of 75 ± 10°F (24 ± 5.5°C) shall be measured between the input and each load terminal. The voltage drop shall be measured after the flasher has been operating for five consecutive cycles, and shall be an average of at least three consecutive cycles, and shall be classified by zones in accordance with Table 2.

TABLE 2—VOLTAGE DROP

Warning Signal Lamp Load	SAE J1054 V	Zone C V
Specified Design Load	0.8 max	>0.8

4.4 Flash Rate and Percent Current "On" Time—The flash rate and percent current "on" time shall be measured after the flasher has been operating for five consecutive cycles, and shall be an average of at least three consecutive cycles over a combination of bulb voltages and ambient temperatures as follows:

(a) 12.8 V and 75 ± 10°F (24 ± 5.5°C)
(b) 12.0 V and 0 ± 5°F (−17 ± 3°C)
(c) 15.0 V and 0 ± 5°F (−17 ± 3°C)
(d) 11.0 V and 125 ± 5°F (50 ± 3°C)
(e) 14.0 V and 125 ± 5°F (50 ± 3°C)

Measured flash rates and percent current "on" times at each load terminal shall be classified by Zones in accordance with Fig. 1. Where a measured value lies on a classification boundary line, the classification nearest to SAE J1054 shall be assigned.

5. Performance Tests Quality Criteria

5.1 Zero flashers in Zone C and conformance to the Zone A and B requirements of Table 3 shall indicate acceptable quality. If so, submit the sample to Durability Test in accordance with paragraph 6.

TABLE 3—ACCEPTANCE CRITERIA

	Acceptance Criteria[a]		
	Max Qty Flashers in Zone A	Max Qty Flashers in Zone B	Max Qty Flashers in Z ne C
For Performance Testing[b]	3 less Zone B	1	0
For Durability Testing[c]	0 in Zone C in 25 h or Minimum Average Laboratory Life of 60 h.		

[a] Each flasher in the sample shall be classified only by its largest deviation from SAE J1054.
[b] See paragraph 5.
[c] See paragraph 6 and 7.

5.2 Two flashers in Zone C shall indicate unacceptable quality. Testing shall be terminated at this point. In the event one flasher is in Zone C, and the requirements of Table 3 for Zones A and B have been met, the following procedure shall be used to determine whether the Zone

The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.