Service Performance Requirements for Vehicular Hazard Warning Flashers–SAE J1056 OCT83

SAE Recommended Practice
Last Revised October 1983

CANCELLED

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

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PREPRINT

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SERVICE PERFORMANCE REQUIREMENTS FOR VEHICULAR HAZARD WARNING FLASHERS—SAE J1056 OCT83

SAE Recommended Practice

Report of the Lighting Committee, approved September 1973, last revised October 1983

1. Scope—This recommended practice covers service performance tests, test procedures and requirements applicable to vehicular hazard warning signal flashers. It is intended to supplement engineering design standard SAE J945 to cover service performance requirements of vehicular hazard warning signal flashers.

2. Test Conditions

2.1 Performance Test—Flashers shall be performance tested at minimum design load corresponding to two signal lamp bulbs and at maximum 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 maximum design load as specified by the flasher manufacturer.

2.3 Test Circuitry and Equipment Requirements—See SAE J823. The standard test circuit is shown therein.

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 J945.

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 J945.

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 flasher performance.

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

3.10 Chance Occurrence—An unusual event.

3.11 Flasher Classification—Each flasher with characteristics outside of the requirements of SAE J945 shall be classified by the zone designation ϕ of the flasher characteristic that has the zone designation furthest from the requirement of SAE J945.

Flashers with all characteristics falling within the requirements of SAE J945 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 J945 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 10 flashers from the group. Submit each of the 10 units to all of the tests of paragraphs 4.2, 4.3, and 4.4.

4.2 Starting Time—The starting time of a normally closed type flasher is the time to open (turn off) after the voltage is applied. The starting time of a normally open type flasher is the time to complete the cycle (close the contacts and then open the contacts) after voltage is applied. The test shall be made in an ambient temperature of 75 ± 10°F (24 ± 5.5°C) and the power source for the test circuit adjusted as specified in SAE J823. The test shall be made with the minimum and maximum design load connected. Starting time shall be based on a single start. The measured starting times shall be classified by zones in accordance with Table 1.

4.3 Voltage Drop—The test shall be made in an ambient temperature of 75 ± 10°F (24 ± 5.5°C) in the standard test circuit, with maximum design load connected and the power source for the test circuit adjusted as specified in SAE J823. The lowest voltage drop across the flasher during the "on" period shall be measured between the input and the load terminals after the flasher has been operating for five consecutive cycles, and shall be an average of at least three consecutive cycles. Measured voltage drops shall be classified by zones in accordance with Table 2.

TABLE 1—STARTING TIME, s

Type	Vehicular Hazard Warning Signal Design Load	SAE J945	Zone A	Zone B	Zone C
Normally closed or normally open	Rated minimum and rated maximum	1.5 max	2.2 max	3.0 max	> 3.0

4.4 Flash Rate and Percent Current "On" Time—The flash rate and percent current "on" time shall be tested with the minimum design load connected and with the maximum design load connected. 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. The flashers shall be tested over combinations of bulb voltages and ambient temperatures tabulated.

(a) 12.8 V (or 6.4 V) and 75 ± 10°F (24 ± 5.5°C)
(b) 11.0 V (or 5.5 V) and 0 ± 5°F (−17 ± 3°C)
(c) 13.0 V (or 6.5 V) and 0 ± 5°F (−17 ± 3°C)
(d) 11.0 V (or 5.5 V) and 125 ± 5°F (50 ± 3°C)
(e) 13.0 V (or 6.5 V) and 125 ± 5°F (50 ± 3°C)

Measured flash rates and percent current "on" times shall be classified by zones in accordance with Fig. 1. For normally closed type flashers, the shaded portion of SAE J945 polygon shall be included in zone A. Where a measured value lies on a classification boundary line, the classification nearest to SAE J945 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 the durability test in accordance with Section 6.

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 C result was a chance occurrence. Take another random sample of 10 flashers from the remaining group of 22 flashers and perform the tests in paragraphs 4.2, 4.3, and 4.4. One or more additional flashers in zone C shall indicate unacceptable quality. Testing shall be terminated at this point. Zero additional units in zone C and conformance to the requirements of Table 3 for zones A and B shall mean that the first flasher in zone C was a chance occurrence. Discard the first sample of 10. Submit

TABLE 2—VOLTAGE DROP, V

Vehicular Hazard Warning Signal Design Load	SAE J945	Zone A	Zone B	Zone C
Rated maximum	0.45 max	0.6 max	0.8 max	> 0.8

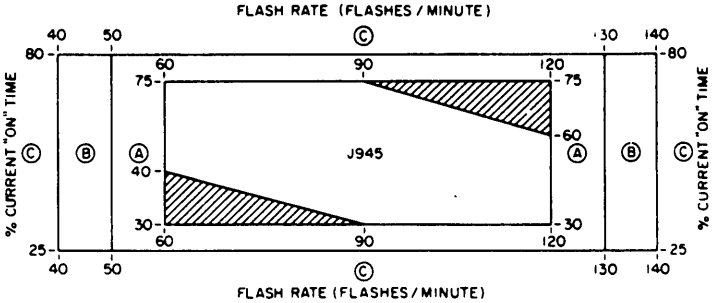

FIG. 1—FLASH RATE (FLASHES PER MINUTE) AND PERCENT CURRENT "ON" TIME CLASSIFICATIONS BY ZONES