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LAND SEA AIR SPACE

TECHNICAL REPORT J565b

SEMIAUTOMATIC HEADLAMP BEAM SWITCHING DEVICES — SAE J565b

SAE Recommended Practice

Report of Lighting Committee approved August 1954 and last revised February 1969.

1. Definition—A semiautomatic headlamp beam switching device is one which provides either automatic or manual control of beam switching at the option of the driver. When the control is automatic, the headlamps switch from the upper beam to the lower beam when illuminated by the headlamps on an approaching car and switch back to the upper beam when the road ahead is dark. When the control is manual, the driver may obtain either beam manually regardless of the condition of lights ahead of the vehicle.

2. Operation Instructions—A set of operating instructions shall be included to permit a driver to operate the device correctly. Items to be covered are:

2.1 How to turn the automatic control on and off.

2.2 How to adjust sensitivity. A sensitivity control shall be provided for the driver.

2.3 Any other specific instructions applicable to the particular device.

3. The following sections from SAE J575 are a part of this recommended practice:

3.1 Section B—Samples for Test

3.2 Section D—Laboratory Facilities

4. Test Requirements—The device shall be adjusted for sensitivity in accordance with the manufacturer's instructions.

4.1 Aim—The device shall be mounted and operated in the laboratory in the same environment as that encountered on the vehicle, that is, tinted glass, grille work, etc.

4.2 Sensitivity—The device shall switch to the lower beam in accordance with the "dim" limits shown in Table 1. The device shall switch back to the upper beam within the limits shown in the "hold" column. The sensitivity test should be made at 13 V input to the device. This voltage will be used for all tests unless otherwise specified.

TABLE 1—OPERATING LIMITS
(Candlepower at 100 Ft)

Test Position, deg	Dim Candlepower	Hold Candlepower
H—V	15—Adjust	1.5 min to 3.75 max
H—2L	25 max	1.5 min
H—4L	40 max	1.5 min
H—6L	75 max	1.5 min
H—2R	25 max	1.5 min
H—5R	150 max to 40 min	1.5 min
1D—V	30 max	1.5 min
1U—V	30 max	1.5 min

To provide more complete information on sensitivity throughout the required vertical and horizontal angles, a set of constant footcandle curves shall be made at "dim" sensitivities of 17, 25, and 100 cp at 100 ft. The curves shall be examined to determine that there are no sensitivity voids within the test angles shown in Table 1.

4.3 Voltage Regulation—With the device adjusted for sensitivity in accordance with paragraphs 4.1 and 4.2, the H-V "dim" sensitivity shall be between 8 and 25 cp at 11 and 15 V input to the device.

4.4 Manual Override of Automatic Control—The device shall include a means convenient to the driver for switching to the opposite beam from the one provided.

With the device set up as in paragraphs 4.1 and 4.2, the test light shall be turned on to cause the device to be on lower beam. The manufacturer's instructions shall be followed to cause the device to override the test light and switch to upper beam.

In a similar manner, the test light shall be turned off to cause the device to be on upper beam. Again, the manufacturer's instructions shall be followed to cause the device to switch to the lower beam.

4.5 Warmup Test—If the warmup time of the device exceeds 10 sec, it should maintain the headlamps on lower beam during warmup. The device shall be adjusted in accordance with paragraphs 4.1 and 4.2 and then checked for warmup with the test light at 25 cp to determine compliance.

4.6 Fail-Safe Test—A failure of the automatic control portion of the device shall not result in the loss of manual operation of both upper and lower beams.

4.7 Temperature Test—The device shall be exposed for 1 hr in a temperature corresponding to that at the device mounting location. For a device mounted in the passenger compartment or the engine compartment, this temperature is 210 F; mounted elsewhere, the temperature shall be 150 F. After the high temperature exposure, the H-V "dim" sensitivity shall be between 8 and 25 cp over the temperature range of −30 F to +100 F.

4.8 Dust Test—The device shall be adjusted in accordance with paragraphs 4.1 and 4.2 and then subjected to the dust test, Section G of SAE J575. After the photo-unit lens is wiped clean, the H-V "dim" sensitivity shall be between 8 and 25 cp.

4.9 Corrosion Test—The device shall be adjusted in accordance with paragraphs 4.1 and 4.2 and then all components which are located outside the driver compartment of the vehicle shall be subjected to corrosion testing in accordance with Section H of SAE J575 with the device not operating. (Water should not be allowed to collect on any connector socket.) After the test, the H-V "dim" sensitivity shall be between 8 and 25 cp.

4.10 Vibration Test—The device shall be adjusted in accordance with paragraphs 4.1 and 4.2 and then shall be subjected to vibrations of 5 g constant acceleration as follows:

(a) The device shall be mounted in proper vehicle position and vibrated for 0.5 hr in each of three directions: vertical, horizontal and parallel to the vehicle axis, and horizontal and normal to the vehicle axis.

(b) The vibration frequency shall be varied from 30 to 200 and back to 30 cycles per second over a period of approximately 1 minute.

(c) The device shall be operating during vibration test.

At the conclusion of the test, the H-V "dim" sensitivity shall be between 8 and 25 cp and the mechanical aim of the photounit shall not change more than 0.25 deg.

4.11 Sunlight Test—The device shall be exposed for 1 hr in bright noonday sunlight (5000 ft-minimum illumination with a clear sky) with the photounit aimed as it would be on a car and facing an unobstructed portion of the horizon in the direction of the sun. After being rested for 1 hr in normal room light at room temperature, the H-V "dim" sensitivity shall be between 8 and 25 cp.

4.12 Durability Test—The device shall be adjusted in accordance with paragraphs 4.1 and 4.2 and then subjected to the following cycle test:

(a) The photounit shall be actuated by a 60 cp light at 100 ft (or equivalent) which is cycled on and off 4 times per minute.

(b) The device shall be operated at 13 V input for 90 minutes on and 30 minutes off for 200 hr operating time.

After resting for 2 hr at room temperature in a lighted area of 50-150 ft-c, the H-V "dim" sensitivity shall be between 8 and 25 cp.