

Specification for

Motor vehicle lighting and signalling equipment —

Part 4a: Sealed beam headlamps

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- British Electrical and Allied Manufacturers' Association
- British Glass Industry Research Association
- British Railways Board*
- Electric Lamp Industry Council*
- Electric Light Fittings Association*
- Electricity Council, the Generating Board and the Area Boards in England and Wales*
- Gas Council
- Glass Manufacturers' Federation
- Illuminating Engineering Society*
- Independent Lamp Manufacturers' Export Group*
- Institution of Electrical Engineers*
- Institution of Gas Engineers
- Institution of Municipal Engineers
- London Transport Board*
- Medical Research Council
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- Ministry of Transport*
- National Physical Laboratory (Ministry of Technology)*
- Post Office*
- Royal Institute of British Architects
- Society of British Gas Industries
- Society of Glass Technology*

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this standard.

- British Cycle & Motor Cycle Industries Association Ltd.
- Electrical Contractors Association (Incorporated)
- Greater London Council
- Municipal Passenger Transport Association (Incorporated)
- Public Transport Association (Incorporated)
- Society of Motor Manufacturers & Traders Ltd.

This British Standard, having been approved by the Illumination Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 27 April 1966

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The following BSI references relate to the work on this standard:
Committee references LGE/6, LGG/6/3
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Foreword

This British Standard has been prepared under the authority of the Illumination Industry Standards Committee after consultation with the Automobile Industry Standards Committee, and it is based upon data-sheets SMMT 74:1960 and SMMT 77:1962 of the Society of Motor Manufacturers and Traders Ltd.

This standard forms Part 4 of BS AU 40; other parts are:

- *Part 1: Side, rear, parking and stop lamps, and direction indicators;*
- *Part 2: Reflex reflectors for vehicles, including cycles;*
- *Part 3: Headlamps with prefocused filament lamps (in course of preparation);*
- *Part 5: Rotating beacons (in course of preparation).*

It will be seen that compliance with this specification is checked by the testing of samples from batches of units. The statistical basis for the sampling system is explained in Appendix A to the standard.

All materials and components used in the construction of these units are required to comply with relevant British Standards.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This standard specifies requirements for 12 volt sealed beam headlamp units for use on vehicles, and tests for photometric properties, visual aim, current, life and resistance to thermal shock.

NOTE In general, the inch dimensions given in this specification are the standard.

Where dimensions are given in both systems, the first figure is the standard and the second is an approximate conversion. For accurate conversions reference should be made to BS 350, "Conversion factors and tables".

2 Definitions

For the purposes of this specification the following definitions apply:

2.1

mechanically aimable sealed beam units

a sealed unit having three pads on the face of the lens, pre-aimed during manufacture to form an aiming plane

NOTE The unit is pre-aimed during manufacture to form an aiming plane normal to the vehicle axis when the beam is correctly aimed.

2.2

main (driving or upper) beam

a beam of light intended primarily for distant illumination of the road, when no other vehicle is approaching

2.3

dipped (meeting or lower) beam

a beam of light intended for illumination of the road ahead of the vehicle when meeting other road users

2.4

7-inch sealed beam unit

a unit 7 inches in diameter having two filaments, one providing a main beam and the other a dipped beam

2.5

5¾-inch sealed beam unit

a unit 5¾ inches in diameter. Type 1 has a single filament which contributes to the main beam and Type 2 has two filaments, one of which contributes to the main beam and the other provides the dipped beam

2.6

7-inch two-headlamp system

two similar 7 inch sealed beam units used together on a vehicle

2.7

four-headlamp system

four units used together on a vehicle and lit to provide the main beam, two units only being lit to provide the dipped beam

NOTE Two systems are employed at present. The first uses four 5¾ inch units, two being Type 1 and two Type 2 and the second system is a mixed one using two 7 inch units and two 5¾ inch (Type 1) units.

2.8

batch

all the lamps of one type put forward at one time for acceptance

3 Marking

The lamp shall be legibly and durably marked with the following information:

- a) Nominal voltage.
- b) Nominal wattage.
- c) Trade mark.
- d) Where appropriate, a mark indicating the rule-of-the-road.
- e) With the number of this British Standard, i.e. BS AU 40.

NOTE The mark BS AU 40 on or in relation to the product is a claim by the manufacturer that it complies with the requirements of the standard.

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Section 2. Tests

4 Sampling and testing procedure

The units for testing shall be selected so as to ensure proper representation of the batch, as follows:

a) *Method of sampling.*

i) *A batch of 1 000 units or less.*

A. *A batch packed in 10 or less containers.* Units shall be selected from each container.

B. *A batch packed in more than 10 containers.* Units shall be selected from at least one half of the total number of containers, with a minimum of 10.

ii) *A batch of more than 1 000 units.*

Lamps shall be selected as far as possible from one third of the number of containers, with a maximum of 10.

b) *Tests.*

i) *For single filament units.*

15 shall be selected from the batch, 10 units shall be tested in accordance with Clauses 3, 5, 7 and 10. The remaining 5 units shall be tested in accordance with Clauses 6, 8, and 9.

ii) *For double filament units.*

25 shall be selected from the batch, 10 of these shall be tested in accordance with Clauses 3, 5 and 7. 20 of these, including the 10 referred to above, shall be tested in accordance with Clause 10, 10 being tested on the main beam filament and 10 on the dipped beam filament. The remaining 5 units shall be tested in accordance with Clauses 6, 8 and 9.

5 Dimensions

The units shall comply with the dimensions given in Figure 1, Figure 2 or Figure 3 as appropriate.

6 Thermal shock

The higher-wattage filament shall be operated for five minutes in the normal-operating position of the unit at 14 volts. The unit shall then be quickly immersed, lens first, in water at 15 °C until cool. After this test there shall be neither evidence of moisture in the unit nor sign of failure in the glass.

7 Current limits

The units shall be aged at the life-test voltage given in Table 1 to Table 7 as appropriate for at least 30 minutes. The current passed shall then be measured with the specified voltage applied to the terminals of the unit.

8 Photometric requirements and test

Following the ageing prescribed in Clause 7 the photometric test voltage (given in the appropriate table) shall then be applied to the terminals of the unit.

The units shall be mounted in such a way that the aiming plane is perpendicular to a line through the photo-cell and centre of the unit. This specifies the H—V point (see Note 2 below).

The light intensities from a unit mounted as detailed above, when measured at 60 ft (18.3 m) from the unit face shall comply with the values given in the appropriate table.

NOTE 1 A tolerance of $\pm \frac{1}{4}^\circ$ is permissible for any test point.

NOTE 2 In locating the test points, the line formed by the intersection of a vertical plane through the lamp axis with the test screen is designated as V. The line formed by the intersection of a horizontal plane through the unit centre and the test screen is designated as H. The point at the intersection of these two lines is designated as H—V. The other points on the screen are designated by similar symbols to indicate the number of degrees of arc above or below H and the number of degrees of arc to the left or right of V for an observer facing the screen, for example, 4D—3L is a point 4 degrees below H and 3 degrees to the left of V, and 1U—V is a point 1 degree above H in the median vertical plane.

9 Visual aim

When the unit is mounted as in Clause 8, it shall be possible for the high intensity zone of the main beam of 7 inch and 5¾ inch Type 1 units to be set by three experienced observers to within maximum vertical and horizontal deviations of ± 0.2 and ± 0.4 degrees respectively at a distance of 25 ft (7.6 m).

10 Life

When mounted in the position of normal use the units shall be tested on an a.c. supply at the life test voltage given in the appropriate table, at a nominal frequency of 50 c/s.

The momentary fluctuations of the test voltage during the test shall not exceed ± 1 per cent and there shall be no sensible departure of the average value throughout the test from the specified value.

Lamps shall be switched off twice daily for periods of not less than 15 minutes, such periods not being considered as part of the life of the lamp.

Lamps which are accidentally broken before the completion of the test shall, when necessary, be replaced to ensure that the required number of lamps complete the test. Any such broken lamps shall be neglected in calculating the results.

The test shall be considered to have terminated when the requirements of the tables have been satisfied.