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Photometric Characteristics of Motorcycle Headlamps

Equipped with Filament Light Sources

摩托车白炽丝光源前照灯配光性能

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Photometric Characteristics of Motorcycle Headlamps Equipped with Filament Light Sources

1 Scope

This standard specifies technical requirements, test methods and inspection rules, etc. of motorcycle headlamps equipped with filament light sources (hereinafter referred to as headlamp).

This standard is applicable to various types of headlamps used for categories L3, L4 and L5 motorcycles (excluding mopeds).

2 Normative References

The provisions of the following standard, through reference in this standard, constitute the provisions of this standard. At the time of publication, the editions indicated are valid. As all the standards will be revised, each party using this standard shall discuss the feasibility of using the latest edition of the following standards.

GB 4599-1994	Photometric Characteristics of Headlamps for Motor Vehicles
GB/T 3978-1994	Standard Illuminants and Illuminating-viewing Conditions
GB 15766.1-1995	Lamps for Road Vehicles - Dimensional Electrical and Luminous Requirements
IEC Publication 61-2	Lamp Head and Lamp Holder and Control Gauge of Their Interchange and Stability
GB 4785-1998	Prescription for Installation of the External Lighting and Light Signaling Devices for Motor Vehicles and their Trailers

3 Definition

Definitions adopted in this standard are the same as those in GB 4599.

4 Technical Requirements

4.1 General Requirements

4.1.1 Design and manufacturing of headlamp shall guarantee that the headlamp is in accordance with the operating requirements and photometric performance in 4.3 of this standard, under normal application condition, even with vibration.

4.1.2 For bulb installation of semi-closed headlamp (with replaceable bulb), it shall guarantee that the bulb can be installed in right position, even in the dark, that is to say, the fixing clip can exactly enter into locating slot (tolerance-fitting is appropriate), and it can be obviously crooked-tilted when the bulb is in wrong position.

4.1.3 Light of headlamp shall be white, and its chromaticity characteristic shall meet the requirements of GB 4785.

Standard illuminant A light source (color temperature is 2856 K) in accordance with GB/T 3978 shall be adopted to inspect chromaticity coordinate. For closed headlamp (with non-replaceable bulb), its chromaticity coordinate shall be measured under the test voltage.

4.2 Closed headlamp, bulb and its lamp holder

4.2.1 Nominal voltage of closed headlamp is 6 V or 12 V, its photoelectric parameters such as power shall be determined by the manufacturer and user.

4.2.2 Bulb used for semi-closed headlamp is: S1, S2 or HS1 in accordance with GB 15766.1.

4.2.3 Lamp holder used for semi-closed headlamp shall meet the requirements of IEC Publication 61-2:

Bulb used	Lamp holder	Data sheet No. of IEC Publication 61-2
S1	BA20d	7005-12-5
S2	BA20d	7005-12-5
HS1	PX43t-38	7005-34-1

4.3 Photometric requirements

4.3.1 Photometric performance of headlamp shall be such that low beam has sufficient lighting without glare, while high beam has good lighting.

4.3.2 Photometric performance shall be determined on photometric plumb screen over HV point 25 m from the reference center of headlamp; specific arrangement of the screen is shown in Appendix A (Normative) or Appendix B (Normative).

4.3.3 Low beam

4.3.3.1 For closed headlamp using S1 and S2 bulb or similar bulb;

5.2.2 Photometric test for semi-closed headlamp shall be conducted under the luminous flux specified in Table 5 with standard bulbs.

5.3 Before photometric test, closed headlamp or bulb shall be ignited so that its optical property is stable.

5.4 Collimation before photometric test

5.4.1 For closed headlamp using S1 and S2 bulbs or similar bulbs, collimation shall be carried out at least 10 m in front of the lamp with datum of high and low beam:

- a) Horizontal direction: align the brightest area of high beam with V-V line in accordance with a) in 4.3.4.1;
- b) Vertical direction: horizontal cut-off line of low beam is placed 25 cm below H-H line (on screen 25 m in front of the lamp).

5.4.2 For closed headlamp using HS1 bulb or similar bulb, collimation is carried out with low beam as datum:

- a) Horizontal direction: corner of cut-off line of low beam shall be placed on V-V line; if the corner is unclear, it is subject to illumination of 75 R and 50R;
- b) Vertical direction: horizontal part of cut-off line of low beam shall be placed 25 cm below H-H line;
- c) During collimation, part of the photometric lens is allowed to be covered in order to make cut-off line clearly;
- d) Collimation is judged within the range of 5° of V-V line by visual observation;
- e) After adjustment above, if low beam or high beam still fails to meet the requirements, then it is allowed that cut-off line may be adjusted leftwards or rightwards not greater than 1° (44 cm) in the horizontal direction, and cut-off line is adjusted upward not exceeding H-H line.

6 Inspection Rules

Photometric test of semi-closed headlamp shall be carried out with standard bulb; standard bulb is allowed to be replaced in case of disagreement.

Note: standard bulb shall be confirmed by special testing organization designated by relevant national competent authorities, accompanied with testing report within validity period.

Bulb used for semi-closed headlamp shall be certified product; it shall be verified by special testing organization designated by relevant national competent authorities, before the certification is adopted in China.

6.1 Judgment of different types of headlamp

Headlamps with the following major differences are regarded as different types:

- a) Product name and trademark;
- b) Characteristic of optical system;
- c) Additional accessories which can change optical effect by reflection, refraction or absorption;
- d) Bulb type used: S1, S2 or HS1;
- e) Photometric lens and materials of protective layer of its external surface;
- f) Structure and filament forms for closed headlamp;
- g) For headlamps using HS 1 bulb, if it is suitable for right driving, left driving or both.

6.2 Type inspection of headlamp

6.2.1 Different types of headlamp are judged according to the requirements of 6.1.

6.2.2 Those who apply for certification of the products shall provide:

- a) Characteristic diagram sufficient to identify the type of headlamp is in triplicate, including detailed characteristic structure diagram of photometric lens;
- b) Two samples of headlamp (semi-closed headlamp shall also include bulb).

6.2.3 Each sample shall meet the requirements of 4.1 and 4.2 of this standard.

6.2.4 The tests are conducted according to the test methods of Chapter 5 in this standard, and each sample shall meet the requirements of 4.3 in this standard.

6.3 Consistency inspection of headlamp

6.3.1 Samples are randomly taken in batch products qualified in type inspection in

order to judge consistency of the products.

6.3.2 Randomly taken samples shall meet the requirements of 4.1 and 4.2 in this standard.

6.3.3 The tests are conducted according to the test methods of Chapter 5 in this standard, and randomly taken samples shall meet the following requirements;

6.3.3.1 For closed headlamps using S1 and S2 bulbs or similar ones, it can be widened by not greater than 20% according to those specified in Table 1 and Table 3, in which, it is widened by 0.3 lx in Area III, to 0.75 $E_{\max}$ on HV point of high beam.

6.3.3.2 For closed headlamps using HS1 bulb or similar ones, it can be widened according to those specified in Table 2 and Table 4, there are 2 modes for option as follows:

- a) Low beam is widened by 20% according to those specified in Table 2, in which, 0.2 lx for B 50L, 0.3 lx in Area III; high beam is widened by 20% according to those specified in Table 4, it is widened to 0.75 $E_{\max}$ on HV point, or;
- b) Effective test area of B 50L, 75 R, 50R, 25 L and 25 R of low beam is expanded to a circle with radius of 15 cm; the height in Area IV is reduced from 37.5 cm to 22.5 cm with width unchanged; illumination limit for B 50L may be widened by 0.1 lx according to those specified in Table 2, that for HV is widened by 0.2 lx, the other illumination limits are still in accordance with the original requirements; high beam is in accordance with clause a).

6.3.4 One sample is randomly taken in accordance with 6.3.2. Photometric measurement shall meet the corresponding requirements of 6.3.3; if it fails to meet the requirements, another five samples are randomly taken, at least four samples fully comply with corresponding requirements of 4.3; otherwise, the consistency inspection of the product is deemed as unqualified.

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