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Headlamp cleaner

汽车用前照灯清洗器

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Headlamp cleaner

1 Scope

This Standard specifies the technical requirements, test methods and inspection rules, etc. for headlamp cleaners related to vehicles.

This Standard applies to headlamp cleaners used in vehicles of categories M and N.

2 Normative references

The following documents contain provisions which, through reference in this Standard, constitute provisions of this Standard. For the dated references, their subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest editions of these documents are applicable. For undated reference documents, the latest editions apply to this Standard.

GB 4599 Motor vehicle headlamps equipped with filament lamps

GB 4785 Prescription for installation of the external lighting and light-signalling devices for motor vehicles and their trailers

GB 21259 Headlamps equipped with gas-discharge light sources for motor vehicle

3 Terms and definitions

The terms and definitions established by GB 4599 and GB 4785 and the following ones apply to this Standard.

3.1

Headlamp cleaner

The device which can clean all or part of the light-transmitting surface of the headlamp.

3.2

It refers to the percentage of the illuminance value measured at the measuring point after cleaning relative to the measured value on the cleaning lamp.

3.7

Cleaning period

The time required to complete the requirements specified in Clause 5 of this Standard, including the time for any pretreatment.

4 General technical requirements

4.1 The headlamp cleaner designed and manufactured shall be able to clean the light-emitting surface of the allocated lower-beam and the selected high-beam of the headlamps specified in GB 4599, GB 4785, and GB 21259. The cleaning effect shall at least meet the requirements specified in Clause 5 of this Standard.

4.2 The headlamp cleaner shall be further designed so that:

4.2.1 If the headlamp cleaner is installed, part of which is located above the light-emitting surface of the headlamp, the headlamp submitted for the test and the headlamp combined or hybrid luminaire shall be measured for light distribution according to the test points listed in the corresponding standards. It is allowed that the light distribution value measured on the light-emitting surface is reduced due to the obstruction of the cleaner; but compared with the value measured before the installation of the cleaner, the decrease value must not exceed 5%. And the measured light distribution value must not be lower than the minimum value specified in the corresponding standard.

4.2.2 When the headlamp is type-tested, when the headlamp and the headlamp cleaner components described in 4.2.1 of this Standard form a complete assembly, then 4.2.1 of this Standard is not applicable.

4.2.3 When the cleaner is working, except in the stationary position, the cover of the mechanical parts on the lens must not be greater than:

4.2.3.1 20% of the lower-beam emitting surface;

4.2.3.2 10% of the light-emitting surface of the high-beam lamp which is not hybrid with the lower-beam lamp.

4.2.4 The cleaner shall be able to work in the range of $-10^{\circ}\text{C}\sim+35^{\circ}\text{C}$; and, can work normally in the speed range of 0 km/h~130 km/h (or at the maximum speed of the vehicle; the maximum speed shall be lower than 130 km/h).

4.4.2 If the cleaner is equipped with a fluid container, the fluid container can be combined with the fluid container of the front and rear windows. The following requirements shall be met at the same time:

4.4.2.1 The capacity of the fluid shall be large enough, with a capacity of at least class 50, capable of cleaning headlamps at least 50 times; or a capacity of class 25, capable of cleaning headlamps at least 25 times. If the container not only transports the fluid to the headlamp cleaner, but also transports the fluid to the front window cleaner, and/or to the rear window cleaner, the total capacity of the container shall be increased by 1 L.

4.4.2.2 It shall be able to easily detect the level of the cleaning fluid and to easily open for filling.

4.4.3 The cleaner and any component of the cleaner shall not hinder the adjustment of the headlamp and the replacement of the bulb. If necessary, simple tools shall be used to remove the cleaner and detachable components. The operation of the cleaner or its components shall not affect the functions of all currently installed lighting and signalling devices, except when they are being cleaned. When the cleaner is in normal use, dirt cannot accumulate on the light-transmitting surface of other lighting devices or signalling devices.

4.4.4 The control of the cleaning device shall be operable at the driver's seat and can be combined with the control of other cleaning devices.

In addition, in the occasions where the cleaning device is required to be installed and the cleaning device is not equipped with any automatic starting device, when the headlamp has been lit, and the windshield wiper has started to work, the cleaning device must clean at least once.

5 Test methods

5.1 The cleaning efficiency of the headlamp cleaner shall be tested in accordance with the requirements of Appendix A of this Standard. After each cleaning cycle, measure the cleaning efficiency of each point on the screen as specified in Figure 1; at least reach 70% of the lower-beam lamp and optional high-beam lamp.

required samples:

6.3.3.1 A drawing with the details of the loading, including the details of the installation between the headlamps, nozzles and/or related components of the cleaner; the cleaning principle used; and the light-emitting surface part of the headlamp related to the cleaner, which is indicated on the appropriate position of the drawing;

6.3.3.2 The headlamp type related to the cleaner (if only a part of the lens is cleaned), or the diameter and radius of curvature of the lens (if the lens is cleaned uniformly);

6.3.3.3 List of the parts that make up the headlamp cleaner and related drawings (such as water pumps, nozzles, valves and motors);

6.3.3.4 A brief technical description, which states the length of the cleaning period, the fluid consumed during the cleaning period, and the minimum capacity of the container provided;

6.3.3.5 A complete sample equipped with the relevant headlamp described in 6.3.1. The installation method can be on a suitable test rack or on a vehicle waiting for type test. The installation method shall ensure that the cleaner and headlamp can work normally;

6.3.3.6 A single and complete headlamp cleaning device;

6.3.3.7 Installation instructions for use in the type test of headlamp cleaner;

6.3.3.8 Technical documents and additional samples required for type test.

6.3.4 It shall comply with the provisions of Clause 4 of this Standard.

6.3.5 It shall perform the performance test according to Clause 5 of this Standard and meet the requirements.

6.4 Production conformity inspection

From the batch products of vehicle or headlamp cleaner that have passed the type test, a vehicle or headlamp cleaner shall be randomly selected for testing. It shall meet the requirements of Clause 5.

A.3 Photometric measurement of clean headlamp

The light-transmitting surface of the headlamp shall be clean. The headlamp cleaner shall be in a static position. The photometric measurement shall be carried out in accordance with the corresponding standards and the measurement requirements of A.4 of this Standard. At this time, the illuminance measurement shall be measured at the test points specified in Clause 5 of this Standard.

A.4 Evaluation of cleaning efficiency

A.4.1 After the headlamp is lit for 10 min, use the above-mentioned spray gun to spray the test mixture evenly on the entire light-transmitting surface of the headlamp. Then let the mixture be dry by lighting the lamp or applying hot air. If necessary, repeat the procedure, until the illuminance value of all measuring points drops below 20% of the value specified in A.3. The illuminance at one of these several measuring points shall be at least between 15% and 20%.

A.4.1.1 The value used during the cleaning period of the test and the value of the fluid consumption during this period are specified by the manufacturer. The measurement of fluid consumption takes the average over several cleaning periods specified by the manufacturer.

A.4.1.2 After the headlamp is cooled, within 2 h after the test mixture is dried, the headlamp is turned on. According to the cleaning period specified by the manufacturer, operate the headlamp cleaner. The cleaning period shall not exceed 10 s.

A.4.2 If cleaning fluid is used for cleaning, the conductivity of distilled water used in the test shall not exceed 1 mS/m.

A.4.3 If the designed cleaner is manually-operated, within the time limit specified in A.4.1.2 above, a maximum of 5 cleaning operations shall be carried out.

A.4.4 For cleaners that do not use electricity, the operating conditions during the test shall be specified according to the manufacturer's requirements.

A.4.5 After the cleaning work is completed, the headlamp may be dried. Then according to the requirements of A.3 above, measure the illuminance of each measuring point again. The measured value shall meet the requirements specified in Clause 5 of this Standard.

A.4.6 If the measurement result does not meet the requirements of A.4.5 above, when the headlamp cleaner runs with cleaning fluid, the spray of the fluid may be adjusted to obtain better results.

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