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Replacing GB 15085-1994 and GB 11565-1989

Motor vehicles - Windscreen wiper and washer systems

- Performance requirements and test methods

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Foreword

Chapters 4 and 5 of this Standard are mandatory, while others are recommended.

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB 15085-1994 *Motor vehicles - Windshield wipers and washer systems - Performance requirements and test methods* and GB 11565-1989 *Passenger cars - Windshield wipers - Wiped areas*. This Standard is mainly based on GB 15085-1994, and integrates the contents of GB 11565-1989. Compared with GB 11565-1989, the major technical changes, except the editorial modification, are as follows:

The major differences between this Standard and GB 15085-1994:

— ADD the “180° forward field of vision of the drivers” (SEE Chapter 1).

— ADD the definitions of the following nouns: “windscreen-wiper system”, “sweep cycle”, “transparent area of a windscreen” and “windscreen-washer system” (SEE Sections 3.6, 3.7, 3.8 and 3.13).

— ADD the content of “Determination of areas A and B” (SEE Section 4.1.2).

— ADD the content of Section 4.1.9. MAKE modification and supplement to Section 4.1.3.

— ADD the Annex A (informative).

The major differences between this Standard and GB 11565-1989:

— DELETE the “Major instruments and equipment” (SEE Section 5.1 of GB 11565-1989).

— MODIFY the expressions in the “Field measuring methods” (SEE Sections 3.6, 3.7, 3.8 and 3.13). For the contents that are same as the previous contents in this Standard, directly QUOTE the standard’s clause numbers. MODIFY the content of Section 5.4.4. MODIFY the “… Under the circumstance that the wind cannot directly blow to the windscreen, evenly SPRAY a thin layer of dry medical talcum powder on the outer surface of the windscreen.” to “… Evenly COAT the outer surface of the windscreen with a layer of test mixture specified in Annex B. WAIT for drying.” [SEE Sections 5.3.3 a) and 5.3.3 c) as well as Sections 5.4.1, 5.4.2 and 5.4.4 of the 1989 edition].

Motor vehicles - Windscreen wiper and washer systems - Performance requirements and test methods

1 Scope

This Standard specifies the terms and definitions, performance requirements and test methods for the windscreen wiper and washer systems of motor vehicles, including the method for measuring the sweep field of the windscreen wiper.

This Standard is applicable to the 180° forward field of vision of the drivers of vehicles in Category M_1.

2 Normative references

The following documents are essential to the application of this document. For dated references, only the editions with the dates indicated are applicable to this document. For undated references, only the latest editions (including all the amendments) are applicable to this document.

GB 11555-2009 *Motor vehicles - Windshield demisting and defrosting systems - Performance requirements and test methods*

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Wiper blade

It is equipped with the wiping component used for sweeping the outer surface of the windscreen.

3.2 Sweep field

It refers to the area that can be swept by the wiper blade within the specific range of the outer surface of the windscreen.

3.3 Actual sweep field

It refers to the position specified by the motor vehicle manufacturer, where the wash fluid is jetted to on the outer surface of the windscreen.

3.13 Windscreen-washer system

It refers to the device storing and jetting fluid onto the outer surface of the windscreen, and the control system necessary for starting and stopping the device.

4 Performance requirements

4.1 Performance requirements of the windscreen-wiper system

4.1.1 Each vehicle shall be equipped with at least one automatic windscreen-wiper system. The automatic windscreen-wiper system refers to a system which is able to function without any action by the driver other than that needed for starting and stopping the windscreen wiper when the vehicle's engine is running.

4.1.2 The sweep field of the windscreen wiper shall at least cover 98% of area A and 80% of area B determined according to the relevant provisions of Chapter 4 in GB 11555-2009.

4.1.3 The windscreen wiper shall have at least two sweep frequencies:

a) one of not less than 45 cycles/min;

b) one of not less than 10 and not greater than 55 cycles/min; and

c) the difference between the highest and at least one of the lower sweep frequencies shall not be less than 15 cycles/min.

4.1.4 The sweep frequencies referred to in Section 4.1.3 shall be achieved as set out in Sections 5.1.1 to 5.1.3 and 5.1.5.

4.1.5 Intermittent operation windscreen-wiper system may be used for the purposes of complying with the requirements of Section 4.1.3, provided that one of the frequencies complies with the requirements of Section 4.1.3 a), and that one of the other frequencies obtained when the main frequency is interrupted is not less than 10 cycles/min.

4.1.6 When the windscreen-wiper system is stopped by the use of the windscreen-wiper control system, the wiper blades shall automatically return to their initial positions.

4.2.4 The capacity of the reservoir containing the wash fluid shall not be less than 1L.

5 Test methods

5.1 Windscreen-wiper system

5.1.1 Unless otherwise specified, the tests described shall be carried out under the following conditions:

a) The ambient temperature shall not be less than 10°C or greater than 40°C;

b) The windscreen shall be kept constantly wet;

c) The battery voltage shall not be less than the rated voltage without exceeding it by more than 2V;

d) The engine shall be running at 30% of the speed at which it develops maximum power;

e) The dipped-beam headlamps shall be switched on;

f) The heating system (or cooling system), ventilation system, defrosting and demisting systems (if fitted) shall be operating at maximum load.

5.1.2 Compressed air operated or vacuum operated windscreen-wiper system shall be able to function continuously at the prescribed sweep frequencies whatever the engine speed or engine load.

5.1.3 The sweep frequencies of the windscreen-wiper system shall comply with the requirements of Section 4.1.3 after a preliminary operating time of 20min on a wet surface.

5.1.4 The requirements of Section 4.1.7 shall be satisfied when the wiper arms are restrained in their vertical positions for a period of 15s with the windscreen-wiper control system set at the maximum sweep frequency.

5.1.5 USE methanol, ethyl alcohol or equivalent degreasing agent to thoroughly remove the oil stains and pollutants on the outer surface of the windscreen. After drying, USE a solution of ammonia of not less than 3% and not greater than 10% to clean the outer surface of the windscreen. The surface shall be allowed to dry again, and shall then be wiped with a dry cotton cloth.

5.1.6 A coating of the test mixture specified in Annex B shall be applied uniformly to the outer surface of the windscreen and allowed to dry.

5.2.3.1 The windscreen-washer system shall be filled with water, and placed in an ambient temperature of -18°C ± 3°C for a minimum of 4h, until the water in the washer system is all frozen. The windscreen-washer system shall then be placed in an ambient temperature of 20°C ± 2°C until the ice in the system has completely thawed (but in any case no longer than 4h). This freeze/thaw cycle shall be repeated six times. CONDUCT the strength test to the windscreen-washer system according to the methods described in Section 5.2.1.

5.2.3.2 The windscreen-washer system shall be filled and fully primed with the mixture (low-temperature windscreen-washer fluid consisting of a 50% solution of methanol, or alternatively isopropyl alcohol, in water of a hardness of not greater than 205g/t), so as to exhaust air. The windscreen-washer system shall be placed in an ambient temperature of -18°C ± 3°C for a minimum of 4h. CONDUCT the strength test to the windscreen-washer system according to the methods described in Section 5.2.1.

5.2.4 High-temperature exposure test

5.2.4.1 The windscreen-washer system shall be filled with water to exhaust air, and placed in an ambient temperature of 80°C ± 3°C for a minimum of 8h, and then in an ambient temperature of 20°C ± 2°C. When the system temperature has stabilized, CONDUCT the strength test to the windscreen-washer system according to the methods described in Section 5.2.1.

5.2.4.2 If part of the windscreen-washer system is situated in the engine compartment, the system shall be filled with water to fully exhaust air, and placed in an ambient temperature of 80°C ± 3°C for a minimum of 8h. CONDUCT the strength test to the windscreen-washer system according to the methods described in Section 5.2.1.

5.2.4.3 If no part of the windscreen-washer system is situated in the engine compartment, the system shall be filled with water to fully exhaust air, and placed in an ambient temperature of 60°C ± 3°C for a minimum of 8h. CONDUCT the strength test to the windscreen-washer system according to the methods described in Section 5.2.1.

5.2.5 Washer system capability test

5.2.5.1 The windscreen-washer system shall be filled with water. With the vehicle stationary and no significant wind effect, the washer nozzle or nozzles (if adjustable) shall be pointed towards the target position on the outer surface of the windscreen. If the system is powered by an electric pump, the requirements of Sections 5.1.1 c), d), e) and f) shall apply.

outer surface of the windscreen. The wiper is operating at maximum frequency. MARK the actual sweep field.

c) DRAW the expanded view of the design sweep field, areas A and B as required by Section 5.3.1 c) into one and the same large transparent plastic plate.

d) DRAW the expanded actual field measured on the rack into the large transparent plastic plate described in Section 5.3.2 c). CALCULATE the percentage of area of the actual sweep field in the areas A and B. This percentage shall conform to the provisions of Section 4.1.2.

5.3.3 Actual measurement

The measuring procedures are as follows:

a) The measurement shall conform to the provisions of Sections 5.1.1 a), d), e) and f).

b) DETERMINE the areas A and B on the outer surface of the windscreen according to the provisions of Section 4.1.2.

c) REMOVE the oil stains and pollutants on the outer surface of the windscreen according to the provisions of Sections 5.1.5 and 5.1.6.

d) ENABLE the wiper. SWEEP for 5 to 10 operating cycles at maximum frequency. SHUT down the wiper afterwards. DRAW the contour diagram of the actual sweep field on the outer surface of the windscreen.

e) CALCULATE the percentage of area of the actual sweep field in the areas A and B. This percentage shall conform to the provisions of Section 4.1.2.

5.3.4 Measurement selection

The manufacturer can select one of the measurements specified in Sections 5.3.1, 5.3.2 and 5.3.3 for measuring the sweep field of the windscreen wiper.

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