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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 20182-2024

Replacing GB 20182-2006

External projections for the cabs of commercial vehicles

商用车驾驶室外部凸出物

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1 Scope

GB 20182-2024 is the Chinese mandatory standard on external projections for commercial vehicle cabs. Its purpose is protecting the people a truck hits: a pedestrian or cyclist struck by a cab is injured by the shape of what they strike, and a mirror bracket, a step, a bumper corner or a badge with a sharp edge or a small radius turns a survivable impact into a serious one. The standard defines the zones of the cab exterior to which the requirements apply, the minimum radii of curvature and the limits on projection for each zone, the requirements on the parts most often at issue, the bumper and its ends, the wheel arches, the steps and handholds, the mirrors and their mountings, the lamps, the door handles, the badges and trim and the air deflectors, the treatment of parts that yield or fold on impact and the test that establishes whether they do, and the measurement procedure with the sphere used to determine the accessible surface. The 2024 edition replaces GB 20182-2006 and takes effect on 1 January 2026. For a truck maker or an importer, this is a type approval requirement.

This document specifies the terms and definitions, general requirements, special requirements and test methods for external protrusions on the body ahead of the rear panel of the commercial vehicle cab. This document applies to N category vehicles. This document does not apply to accessories such as external indirect vision devices and their

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connections, antennas and luggage racks.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 15084-2022, Motor vehicles -- Devices for indirect vision -- Requirements of performance and installation

GB/T 29120, Procedure for H-point and R-point determination

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 external surface The exterior surface of the vehicle body forward of the cab rear panel. NOTE: It does not include the rear apron itself, but includes the front fenders, bumpers and front wheels etc.

3.2 cab The body of the vehicle forming the passenger compartment. NOTE: Including doors.

3.3 cab rear panel The rear part of the cab is used to connect the left and right side panels. NOTE: For vehicles where the position of the rear panel of the cab cannot be determined, if the cab is equipped with one row of seats, this document defines the horizontal vertical plane located 500 mm rearward of the R point of the driver's seat (R point is determined in accordance with GB/T 29120) as the rear panel of the cab. If the cab is equipped with more than one row of seats, this document defines the horizontal vertical plane tangent to the backrest of the last row of passenger seats adjusted to the rearmost position as the rear panel of the cab.

3.4 reference plane When the vehicle is fully loaded, the horizontal plane passing through the center of the front wheels or the horizontal plane 500 mm above the ground, whichever is lower.

3.5 floor line The geometric trajectory formed by the contact points of a cone with a vertex angle of 30° along the lowest contactable position of the outer surface of a fully loaded vehicle. NOTE 1: The cone determines its own height based on the principle of ease of operation, with the top of the cone facing upward and the axis of the cone perpendicular to the horizontal plane. NOTE 2: When determining the floor line, the exhaust pipe, wheels and functional mechanical elements mounted under the vehicle body, such as jack points, suspension devices or connections used in towing or anchoring situations, are not taken into account. The arch gaps on the wheels can be assumed to be filled to form a continuous smooth surface. When determining the floor line of the vehicle, the bumper must be taken

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into account. For a certain model, the cone contact point may be at the end of the bumper or on the body panel below the bumper. If there are two or more contact points at the same time, the bottom contact point is used to determine the floor line.

3.6 radius of curvature The radius of the arc of the circle that is closest to the part.

3.7 bumper The lower outer member at the front of the vehicle. NOTE: It includes protection of all vehicle structures and their attachments during a low-speed frontal collision.

3.8 bumper cover The non-rigid outer surface of the bumper.

3.9 front hood The powertrain hatch and/or luggage compartment lid in front of the windshield.

5.1 Decorative elements, symbols, logos of letters and numbers

5.1.1 The radius of curvature of decorative parts, symbols, letters and numbers of logos shall not be less than

2.5 mm, except for parts with a protruding support surface height of not more than 5 mm, but the directly outward edges of these parts shall be smooth.

5.1.2 For decorative parts, symbols, letters and numbers of logos that protrude more than 10 mm from the supporting surface, when a flat-end indenter with a diameter not greater than 50 mm is used to apply an external force of 100 N to the highest point of the protrusion from any direction in a plane parallel to its mounting surface, it shall be able to shrink, fall off or bend. After the decorative part is retracted, fallen off or bent, the protruding height of the remaining part shall not be greater than 10 mm. There shall be no sharp corners, sharp edges or cutting edges.

5.2 Headlamp bezels and lamp rings

5.2.1 When the headlamp is equipped with a protruding sunshade and lamp ring, the protruding height relative to the outer surface of the headlamp light distribution glass shall not be greater than 30 mm and the radius of curvature shall not be less than

2.5 mm, except for headlamps embedded in or extending outside the vehicle body, but the vehicle body shall comply with the provisions of 4.2.

5.2.2 Retractable headlamps shall comply with the requirements of

5.2.1 whether in the operating position or the retracted position.

5.3 Grille The radius of curvature of the grille shall meet the following requirements:

a) When the grille gap width is greater than 40 mm, the radius of curvature shall not be less than

b) When the width of the grille gap is not greater than 40 mm and not less than 25 mm, the

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radius of curvature shall not be less than 1 mm;

c) When the grille gap width is less than 25 mm, the radius of curvature shall not be less than

0.5 mm.

5.4 Windshield wipers and headlamp wipers

5.4.1 The shafts of windshield wipers and headlamp wipers shall be equipped with protective covers. The radius of the corners of the protective covers shall not be less than

2.5 mm. The surface area of the shaft protective covers shall not be less than 150 mm2 when measured at a distance of not more than

6.5 mm from the highest protrusion.

5.4.2 The radius of curvature of windshield and headlamp washer nozzles shall not be less than

2.5 mm. NOTE: This clause does not apply to parts with a protrusion height of less than 5 mm and rounded edges toward the outside.

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5.5 Bumper

5.5.1 The ends of the bumper shall bend toward the outer surface of the vehicle body.

5.5.2 The radius of curvature of all outwardly facing rigid surfaces of the bumper and parts mounted on the bumper shall not be less than 5 mm. The radius of curvature of the bumper cover shall not be less than

2.5 mm. NOTE: This clause does not apply to inlays on the bumper or parts installed on the bumper with a protruding height of less than 5 mm and rounded edges.

5.5.3 The towing hook and winch shall not protrude from the front surface of the bumper. However, when the winch is not in operation and is covered with a protective cover with a radius of curvature of not less than

2.5 mm, it is allowed to protrude from the front surface of the bumper.

5.5.4 Parts referred to in other clauses of this document installed on the bumper shall comply with the provisions of Chapter 5.

5.6 Doors, luggage compartments, front hoods, air vents, handles, hinges and buttons

5.6.1 Doors, trunks, front hoods, vents, handles, hinges and buttons shall comply with the following requirements:

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