



# National Standard for the People's Republic of China

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In replacement of GB11566• 1995

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## Passenger Vehicle — External Projections

(Draft for Approval)

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## Introduction

All technical contents in this standard are mandatory.

This standard replaces GB11566-1995 “External projections of a car”.

This amendment of the technical contents in this standard has adopted relevant articles from the ECE R26 Regulation (03 Series, 2007) “The uniform regulations on vehicle certification regarding external projections” (French Edition). Appendix A has listed the correlation on the chapter and section numbering between this standard and the ECE R26 Regulation.

The following amendments have been made in this standard according to the actual situations in China when adopting the ECE R26 Regulation :

- According to people’s average height in China, “2 m” has been changed to “1.8 m” in 4.1 • 5.17.1 in this standard;
- Guideline references have been added;
- The following chapters and appendices in the ECE R26 have been removed: Chapter 3 “certification application”, Chapter 4 “certification”, Chapter 7 “the amendments and extension of certification of the car models”, Chapter 8 “production conformity”, Chapter 9 “penalty on production inconformity”, Chapter 10 “stop production”, Chapter 11 “names and addresses of the certifying departments and government departments”, Chapter 12 “transitional terms”, Appendix 1 “notification”, Appendix 2 “layout sample of the certification logo”, Appendix 4 “notification”.

For ease of use, the following editorial amendments have been made to ECE R26 Regulation:

- “cm” has been changed to “mm”, “daN” has been changed to “N”;
- “this regulation” has been changed to “this standard”;
- For the figure in Appendix B, the figure description in GB11566-1995 has been adopted;
- Reference Appendix A has been added.

The main differences between this standard and GB11566-1995 are as follows:

- Title has been changed: “car” changed to “passenger car”;
- Application scope: “car” changed to “M1 vehicles” (1 in this edition);
- Vehicle model, radius value of round angle, size of project, definition of antenna have been added (3.1,3.4,3.7,3.9 in this edition);
- Technical requirements for bumpers have been amended (5.5.2 in this edition);
- The margin range for metal plates has been adjusted (5.8 in this edition);
- The height and technical requirements for antenna base projection have been amended (5.17.4 in this edition);
- The technical requirements for antennas with a base that is difficult to identify (5.17.4.1 and 5.17.4.2 in this edition);
- Reference Appendix A has been added (Appendix A in this edition); Appendix A is for reference. Appendix B is for guidance.

Regarding the transitional requirements in 5.5.2 • 5.17.4.1 • 5.17.4.2:

- a) For newly certified models, this standard will be effective from 01/01/2011;

b) For models in production, this standard will be effective from 01/01/2012.

This standard is brought forward by the National Development and Reform Commission.

This standard is administered by the National Automotive Standardization Technical Committee.

Drafted by: Shen Long Automotive Ltd., Dong Feng Automotive, National Centre for Quality Supervision & Inspection of Automotives (Xiang Fan), Zheng Zhou Nissan.

Drafted by: WANG Yan, HOU Chuihua, HUANG Xiaomei, WANG Yumin.

This standard replaces the following:

GB11566-1989, GB11566-1995.

## Passenger Vehicle — External Projections

### 1. Scope

This standard specifies the general requirements, special requirements and inspection methods of external projections for M1 vehicles in GB/T 15089 -2001.

This standard is applicable to external projections of M1 vehicles.

This standard is applicable to both stationary and mobile vehicles, but not applicable to wing mirrors or towing devices.

### 2. Reference Guidelines

By being quoted in this standard, the terms in the following documents become standard terms. Any quoted documents with dates, and all subsequent amendments (not including the contents of corrigenda) or the revised edition, are not applicable to this standard. However, relevant parties who reach an agreement according to the standard are encouraged to research into whether the latest versions of these documents should be used. For documents without a quoted date, the latest version applies to this standard.

GB/T 15089-2001 Classification of motor vehicles and trailers. (eqv ECE R.E.3 edition 1)

### 3. Terminology and Definition

The following terminologies and definitions are applicable to this standard.

#### 3.1

Vehicle type

Vehicles that do not differ in major aspects such as external surface forms or materials.

#### 3.2

External surface

The visible surface of vehicle covers including engine hood, boot lid, doors, roof, lighting and signalling devices and visible ribs.

#### 3.3

Floor line

The line is defined as follows:

Select a 30° half-angle cone (at a convenient height, keep the cone tip upwards with the cone axis perpendicular to the floor). Go along and keep in contact with the lowest point of the exterior of a laden vehicle, the resulting track is the floor line. When deciding the floor line, the supporting point of the jack, exhaust or wheels are not taken into consideration. The vaulted gaps in the wheel can be ignored as if it is a continuous smooth surface. When deciding the floor lines on the side, bumpers should be taken into consideration. For certain models, the cone contact point can be at the ends of the bumpers or the body panels under the bumpers. If there are two or more contact points, the lowest point should be used when deciding the floor line.

### 3.4

Radius of curvature

Radius of the curve closest to a circle.

### 3.5

Laden vehicle

Vehicle laden with maximum load capacity. If the vehicle is equipped with liquid air, liquid or air spring suspension, or autostabilizer (load variable), it should be loaded as in the least favourable condition under manufacture's specified normal driving conditions.

### 3.6

Extreme outer edge

For the sides, this refers to the two planes which are parallel to the vehicle's Y plane and tangent to the outer edges on the sides. For the front and back, it refers to the planes which are parallel to the vehicle's X plane and tangent to the outer edges on the front and back. The following projections are ignored when considering the vehicle's extreme outer edges:

- the area where the tyres touch the ground and tyre valves ;
- anti-skid devices fitted on the tyres ;
- exterior mirrors;
- side indicators, side lights, headlights, rear lights and park lights;
- parts fitted on the front and rear bumpers, towing devices and exhausts .

### 3.7

The dimension of the projection

The dimension of the projection of the part fitted on the body panel. It should be measured as described in Appendix B.2.

### 3.8

The nominal line of a panel

As described in Appendix B.2.2, use a ball (diameter = 100mm) to measure the body panel. The nominal line is the link between the two ball centres while the ball is at the start and end positions.

### 3.9

Aerial

The device to transmit and/or receive electromagnetic signal.

## 4. General Requirements

4.1 This standard is not applicable to parts whose outer surface is at the following locations when the vehicle is laden, with doors, windows and all apertures closed:

- parts 1.8 m higher than the ground;
- parts lower than the floor line;
- parts not contactable by the ball (diameter = 100 mm), in operation or static.

4.2 There should not be any sharp parts on the body exterior, nor any projections that can increase the risk of scratching, bruising or causing injury during a collision due to its shape, dimension, orientation or hardness, etc.

4.3 There should not be any projected parts that may come into contact with pedestrians, cyclists or motorcyclists.

4.4 The fillet radius of the projection should be no less than 2.5mm. This does not include parts with a projection of less than 1.5mm, or with a projection of greater than 1.5mm but less than 5mm and which has a round and smooth surface.

4.5 When the hardness of the material of the projected parts does not exceed Shore (A) 60 HA, the fillet radius can be less than 2.5mm. The parts should be fitted on the vehicle before measuring the hardness when Shore (A) hardness measurement cannot be used, comparative measurement can be used instead.

4.6 All specifications in 4.1 to 4.5 are applicable unless specified otherwise in chapter 5.

## 5. Special requirements

### 5.1 Trim

5.1.1 Any trim with a projection of over 10mm should be able to retract back into its bearing surface, come off or bend when 100N force is applied to its highest point from any direction. This is not applicable to trims fitted to the radiator grill where they only need to meet the general requirements in chapter 4.

When applying 100N force, a flat-ended indenter with a diameter of no greater than 50mm should be used. Otherwise, use equivalent. After the trim retracts, comes off or bends, the remaining projection height should be no greater than 10mm. These projections should always meet the requirements of 4.2. If the trim is fitted on a base panel, then the base panel is considered to be part of the trim, not the bearing surface.

5.1.2 The protective trim or protective parts on the body exterior are not restricted by 5.1.1, but should be fitted to the vehicle firmly.

## 5.2 Headlights

5.2.1 Projected hood and rim are allowed for headlights. However, the projected headlight lamps should not exceed 30mm and the fillet radius should be no less than 2.5mm. If the headlights are fitted behind an added transparent surface, the projection should be measured from the transparent surface. Projection height should be measured as specified in Appendix B.3.

5.2.2 Retractable headlights should meet the requirements in 5.2.1. whether in the operating position or retracted.

5.2.3 5.2.1 requirements are not applicable to headlights set in the body panel or projected from the body panel. However, the body panel should meet the requirements in 5.9.

## 5.3 Grille and gap

5.3.1 4.4 requirements are not applicable to situations where the gap between the fixed components or movable components (including ventilation duct parts and radiator cover) is less than 40mm and there're functional requirements for the gap. When the gap is between 25mm ~ 40mm, the fillet radius should be no less than 1mm. When the gap is no more than 25mm, the fillet radius of the outer edge should be no less than 0.5mm. The gap between two adjacent components should be measured as per Appendix B.4.

5.3.2 The joint on the front and side of each component for the grille and gap should be round and smooth.

## 5.4 Windscreen wiper

5.4.1 The pivot of the windscreen wiper should have a protective cover. The fillet radius should meet the requirements in 4.4. Its bottom area should be no less than 150mm<sup>2</sup>. If the cover is round, when measuring at a distance no more than 6.5mm from the tip of the projection, there should be a projection shallow of minimum 150mm<sup>2</sup>. The rear wipers and the front headlight wipers should also meet these requirements.

5.4.2 The wiper blade and its bearing unit are not restricted by the specifications in 4.4. However, there should be no sharp edge or blade on them.

## 5.5 Bumper

5.5.1 The two ends of the bumper should bend towards the vehicle body to reduce the risk of scraping. If the bumpers are set in or are integral to the body of the vehicle, or if the sides of the bumpers bend inward and are not contactable by a ball (diameter = 100mm) and the gap between the ends of the bumpers and the vehicle body is no greater than 20mm, it is considered to be meeting all the requirements.

5.5.2 If the vehicle contour line overlaps with the vertical projection of the front and rear bumper curves, or if the projection is within 20mm inside contour line, or within 15° tangent of the vehicle contour line, (see Figure 1), the fillet radius should be no less than 5mm. Otherwise, the fillet radius should be no less than 2.5mm.



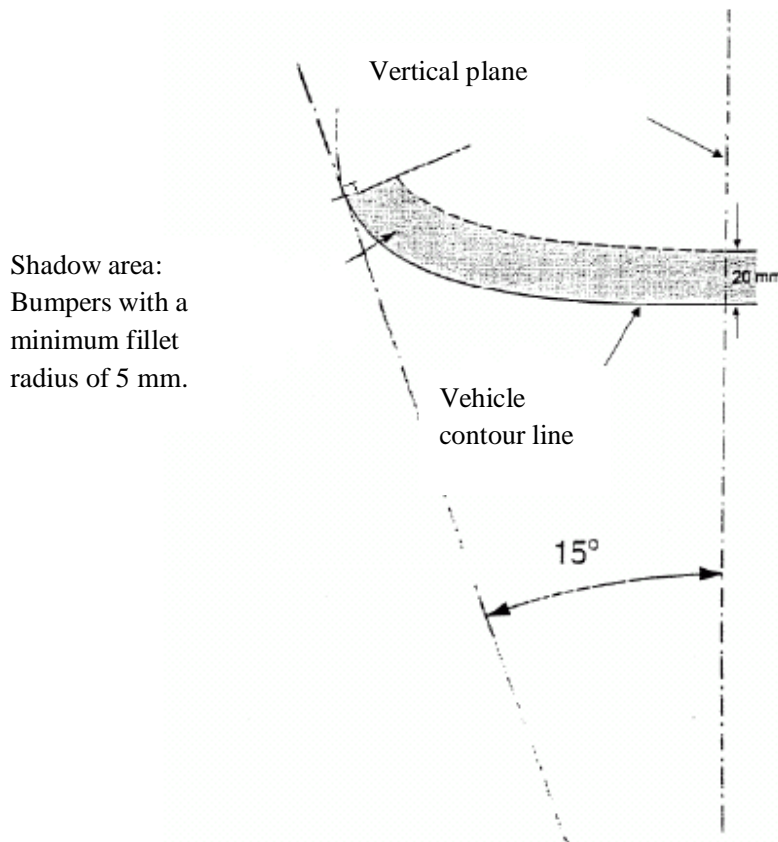


Figure 1

5.5.3 5.5.2 requirements are not suitable for parts or inset parts on the bumpers with a projection height of less than 5mm, especially for the joint corner and nozzle of the headlight washer. The projected corners of these parts should be round and smooth, parts with a projection height less than 1.5mm excepted.

5.6 The handle, hinge and button of the door, boot lid and engine hood; oil tank lid and all other lids or covers

5.6.1 The projected height of the door, boot lid handle should be no more than 40 mm. For others, it should be no more than 30 mm.

5.6.2 If the side door handle can be turned, then it should meet one of the following requirements:

5.6.2.1 If the side door handle can be turned parallel to the door surface, the free end of the handle should be towards the rear and bend towards the door panel. The handle should also be set in a protective cover or set in a slot.

5.6.2.2 For a handle that is not in parallel to the door surface and can be turned outwards towards any direction, when in a closed position, the free end of the handle should be towards the rear or downwards. The handle should also be set in a protective cover or set in a slot.

Handles that do not meet the above requirements, but meet the following requirements can also be accepted:

- a) The handle has an independent return mechanism;
- b) If the return mechanism is damaged, the projection of the handle should be no more than 15mm;

c) When in an open position, it should meet the requirements in 4.4;

d) The surface of the handle should be no less than 150mm<sup>2</sup>, when measured from the tip of the projection at a distance of no more than 6.5mm.

#### 5.7 Wheel, wheel nut, wheel hub cover and wheel cap

5.7.1 The outer surface of wheel, wheel nut, wheel hub cover and wheel cap are not restricted by 4.4.

5.7.2 There should not be any sharp projections on any wheel, wheel nut, wheel hub cover or wheel cap that protrude past the wheel rim outer surface. Wing nuts cannot be used.

5.7.3 When driving in a straight line, no wheel part (except for tyres) should surpass the vertical projection of the outer surface of the vehicle body. If this is unavoidable due to functional purpose (e.g. wheel cap), the projection should be no more than 30mm. The fillet radius of the projection should be no less than 30 mm.

#### 5.8 The edges of the metal panels

Metal panels such as the gutter channel and sliding door rail should be flanged or fitted with protective components that meet the requirements of this standard.

Non-protected edges should be flanged 180°, or flanged towards the vehicle body surface, so that it is not contactable by a ball with a diameter of 100mm.

The metal panels of the rear edge of the engine hood and the front edge of the boot lid do not need to meet the requirements of 4.4.

#### 5.9 Vehicle body panels

The fillet radius of the vehicle body panel ribs can be less than 2.5mm, but should be no less than 1/10 of the projection height measured according to Appendix B.1.

#### 5.10 Side air and rain deflector

The fillet radius of the vehicle side deflector's outer edge should be no less than 1mm.

#### 5.11 Jack support and exhaust

The projection of the jack support and exhaust should not surpass the floor line by more than 10mm. If the end of the exhaust is round with a minimum fillet radius of 2.5 mm, then the exhaust can projection can exceed the floor line by 10mm.

#### 5.12 Air flap

Air flaps at all locations should meet the requirements in 4.2, 4.3, 4.4.

#### 5.13 Top

5.13.1 For a top with a sun-roof, only its closed position is considered.

5.13.2 For convertibles, it should be inspected with both roof raised and lowered.

5.13.2.1 When the roof is lowered, objects should not be inspected as if the roof is up.

5.13.2.2 When the roof is lowered, if there is a cover supplied as standard, the cover should be taken into consideration.

#### 5.14 Windows

For windows that move outwards from the vehicle, it should meet the following requirements in all positions:

- There should be no exposed edge towards the front;
- No parts of the window should project from the outer edge of the vehicle.

#### 5.15 Number Plate

When the number plate is fitted as per manufacture's recommendation, use a ball (diameter = 100mm) to contact. It should meet the requirements in 4.4.

#### 5.16 Roof rack and ski attachment

5.16.1 When roof rack and ski attachment are fitted on the vehicle, they should be firmly fitted on at least one side and be able to bear both longitudinal and lateral force. The force applied should be no less than maximum value of manufacturer's specifications. The load should not be applied only on one point.

5.16.2 When roof rack and ski attachment are fitted on the vehicle, use a ball (diameter = 165mm) to contact. The fillet radius of the contact surface should be no less than 2.5mm, excluding those meeting the requirements in 5.3.

5.16.3 For fixing parts mentioned in 5.16.2 (e.g. screws that can be tightened or loosened without using a tool), the projection height should be no more than 40mm. The projection height is measured using a ball (diameter = 165mm) as per instructions in Appendix B.2.2.

#### 5.17 Aerial

5.17.1 When the aerial is fitted on the vehicle at any one location specified by manufacturer, if the height of the aerial (top to ground) is less than 1.8m, it should be located 100mm inside of the outer edge of the vehicle.

5.17.2 In addition, the tip of the aerial should not project outside of the outer edge of the vehicle.

5.17.3 The fillet radius of the aerial mast may be less than 2.5mm, but the aerial top should be fitted with a cap, the fillet radius of which should be no less than 2.5mm.

5.17.4 When measuring as per Appendix B.2, the projection of the aerial base should be no more than 40mm.

5.17.4.1 When the aerial base cannot be identified, on the most projected part of the aerial, use a flat-end head (diameter no more than 50mm) to apply a maximum 500N horizontal force. The following should be met:

- a) The aerial bends towards the support and projection height should be no more than 40mm, or
- b) The aerial breaks and the remaining part should not be sharp or likely to pose danger. Use a ball (diameter = 100mm) to contact, the projection height should be no more than 40mm.

5.17.4.2 5.17.4 and 5.17.4.1 requirements are not applicable to aerials located behind the horizontal-vertical planes that pass the "R" of the driver.

If the aerials are located behind the horizontal-vertical planes, then the aerial including the base should be measured as per Appendix B.2, provided the projection height does not exceed 70mm.

If the aerials are located behind the horizontal-vertical planes, and the projection height exceeds 70mm, 5.17.4.1 is still applicable. The projection height limit is 70mm not 40mm.

### 5.18 Installation instructions

The approved roof rack, ski attachment and aerials (as a separate part) should come with installation instructions. Otherwise, they cannot be sold.

The installation instructions should contain adequate data reference, so that the approved parts can meet the requirements in chapter 4 and 5 after installed on the vehicle. For retractable aerials, its usage location should be pointed out.

## Appendix A (Guideline Appendix) The correlation of the chapter numbering in this standard and ECE R26

Table A.1 lists the correlation of the chapter numbering in this standard and ECE R26

Table A.1 The correlation of the chapter numbering in this standard and ECE R26

Chapter numbering in this standard	Correlated chapter numbering of international standard	Chapter numbering in this standard	Correlated chapter numbering of international standard
1	1	5.8	6.8
1	1.1	5.9	6.9
1	1.2	5.10	6.10
2	—	5.11	6.11
3	2	5.12	6.12
3.1	2.2	5.13	6.13
3.2	2.3	5.14	6.14
3.3	2.4	5.15	6.15
3.4	2.5	5.16	6.16
3.5	2.6	5.17	6.17
3.6	2.7	5.18	6.18
3.7	2.8	—	7
3.8	2.9	—	8
3.9	2.10	—	9
—	3	—	10
—	4	—	11
4	5	—	12
4.1	5.1	—	Appendix 1
4.2	5.2	—	Appendix 2
4.3	5.3	Appendix A	—
4.4	5.4	Appendix B	Appendix 3
4.5	5.5	Appendix B.1	Appendix 3 • 1
4.6	5.6	Appendix B.1.1	Appendix 3 • 1.1,1.2
5	6	Appendix B.1.2	Appendix 3 • 1.3
5.1	6.1	Appendix B.1.3	Appendix 3 • 1.4
5.2	6.2	Appendix B.2	Appendix 3 • 2
5.3	6.3	Appendix B.2.1	Appendix 3 • 2.1
5.4	6.4	Appendix B.2.2	Appendix 3 • 2.2

5.5	6.5	Appendix B.3	Appendix 3 • 3
5.6	6.6	Appendix B.4	Appendix 3 • 4
5.7	6.7	—	Appendix 4

## Appendix B (Guideline Appendix) Projection and gap measurement

### method

B.1 Measurement methods for projected and folded parts on body panels

B.1.1 When the measured section has only one stiffening rib (see Figure B.1):

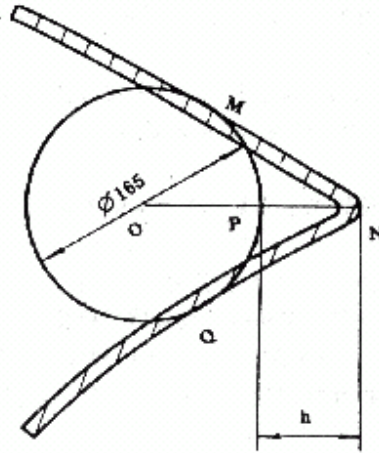


Figure B.1

- The installation fundamental circle (diameter = 165mm) is tangent with tested section of the vehicle body at point M and Q;
- Link the projection tip N with the centre of the circle O, meeting with the circle at point P;
- The distance between P & N is the projection height (h) of the tested part.

B.1.2 If the tested section has two projections (see Figure B.2):

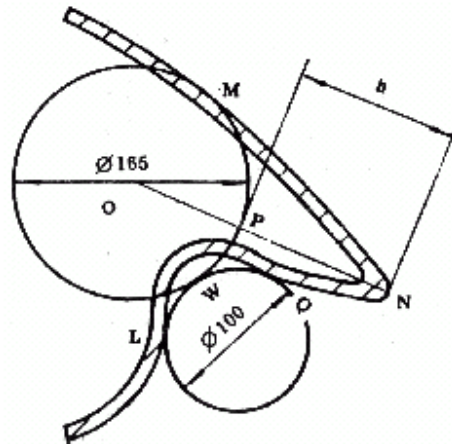


Figure B.2

a) The circle (diameter = 100mm) is tangent with tested section of the vehicle body at point Q and L (see Figure B.2);

b) Substitute the original curve QL with the curve QWL of the 100mm -diameter circle;

c) Calculate the projection height as per Appendix B.1.1.

B.1.3 Manufacturer should provide the section plan of the tested part to determine the projection height.

B.2. Measurement of the projection size of the parts fitted on the vehicle body surface

B.2.1 The projection size of a part fitted on a projected surface can be measured directly.

B.2.2 If a part is fitted on a non-projected surface (see Figure B.3), roll a ball (diameter = 100mm) along the tested surface and acquire the 3 centres of the ball  $O_1$ ,  $O_2$  and  $O_3$ . Link  $O_1$  and  $O_3$  to get the nominal line ( $O_1O_3$ ). The perpendicular line between  $O_2$  (furthest ball centre from  $O_1O_3$ ) and the tested surface meets the nominal line ( $O_1O_3$ ) at Q. The distance between  $O_2$  and Q is the projection height (h) of the test object .

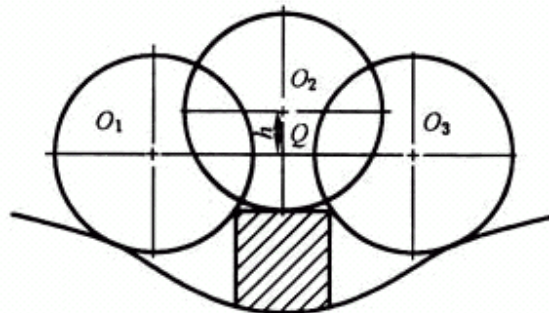


Figure B.3

### B.3 Measurement of the projection size of the headlight hood and bezel

Use a ball (diameter = 100mm) to measure (see Figure B.4). The ball (diameter = 100mm) meets the headlight screen at point L and meets the headlight hood at point Q at the same time. The distance (h) between the two vertical projections L and Q is the projection height.

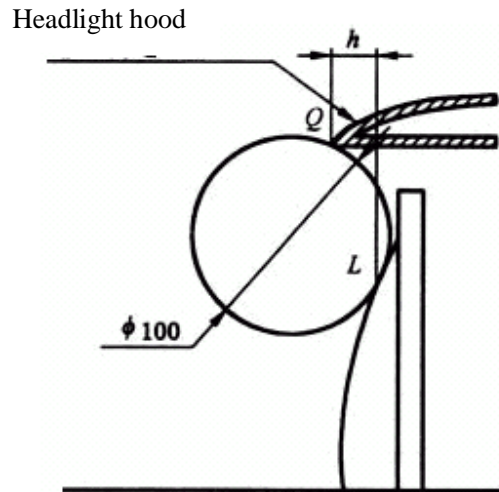


Figure B.4

### B.4 Measurement of the gap between the grilles

The gap between the grilles is measured by the two contact points of the ball (see Figure B.5 and B6). Use a ball (diameter = 100mm) to contact two adjacent components of the grilles. The two contact points are L and Q. The distance (h) between L and Q is the gap.

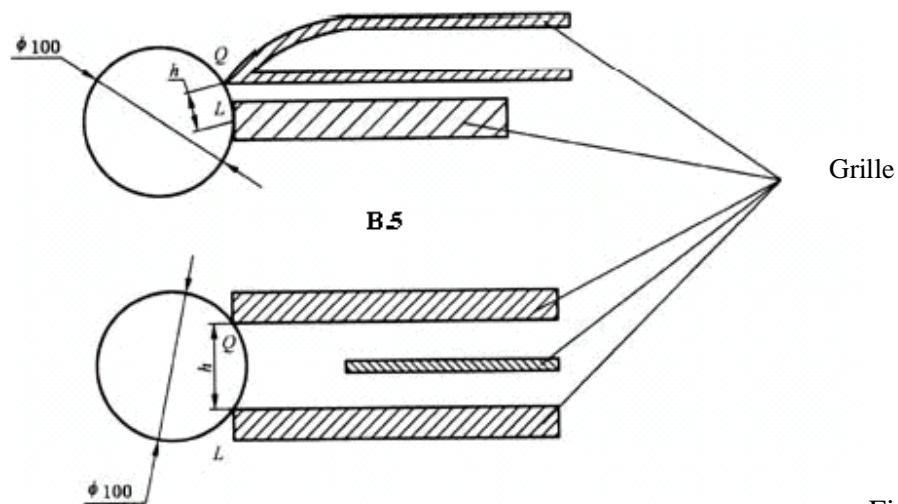


Figure B.6