QC

AUTOMOBILE INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 43.040.60

CCS T 42

QC/T 633-2022

Replacing QC/T 633-2009

The seats of passenger vehicles

客车座椅

Issued on: April 08, 2022 **Implemented on: October 01, 2022**

Issued by: Ministry of Industry and Information Technology of PRC

Table of Contents

The seats of passenger vehicles

1 Scope

This document specifies the requirements, test methods, inspection rules and signs, packaging, transportation, storage of the seats of passenger vehicles.

This document is applicable to passenger seats of categories M2 and M3 passenger vehicles.

This document does not apply to the plastic seats, which are used in Class A and Class I passenger vehicles of category M2 and M3, as well as student seats of special school buses.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB 11550 Strength requirement and test of automobile seats head restraints

GB/T 13053-2008 Bus inner dimensions

GB 13057 Strength of the seats and their anchorages of passenger vehicles

GB 13094 Safety requirements for bus construction

GB/T 13306 Plates

GB 14166 Safety-belts, restraint systems, child restraint systems and ISOFIX child restraint systems for occupants of power-driven vehicles

GB 14167 Safety-belt anchorages, ISOFIX anchorages systems and ISOFIX top tether anchorages for vehicles

GB 15083 Strength requirement and test method of automobile seats, their anchorages and any head restraints

GB 18580 Indoor decorating and refurbishing materials - Limit of formaldehyde emission of wood-based panels and finishing products

GB 18583 Indoor decorating and refurbishing materials - Limit of harmful substances of adhesives

GB/T 24551 Safety belt reminder for motor vehicles

GB/T 25750 Lockable gas spring technical specification

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

GB/T 30512 Requirements for prohibited substances on automobiles

GB/T 33276 Knitted fabrics and knitted composite fabrics for automotive interior

GB/T 33389 Woven fabrics and woven composite fabrics for automotive interior

GB 34660 Road vehicles - Requirements and test methods of electromagnetic compatibility

GB 38262 Flammability of interior materials for buses

HG/T 2006 Thermosetting powder coatings

JB/T 5943 Engineering machinery - General technical specifications for weldments

QB/T 2080 Flexible cellular polymeric materials-high-resilience polyurethane foam

QB/T 2703 Automotive upholstery leather

QB/T 4043 Polyvinyl chloride artificial leather for automotive

QB/T 4194 Polyurethane synthetic leather used for vehicle

QC/T 15 General test method for automobile plastic products

QC/T 47 Automobile seat terminology

QC/T 484 Automobile paint coating

QC/T 625 Metallic coatings and conversion coatings for automobiles

QC/T 844 Technical specification of recliner for passenger car seats

QC/T 29106 Technical specification of automobile wire harness

3 Terms and definitions

The terms and definitions as defined in GB/T 13053, GB 13094, GB 15083, GB/T 29120, QC/T 47, as well as the following terms and definitions, apply to this document.

lateral outer side of the seat cushion is parallel to the longitudinal center plane of the seat.

3.7

Angle of seat cushion

On the center plane of the seat, the angle -- between the centerline of the thigh and the horizontal line.

3.8

Height of backrest

On the center plane of the seat, along a line parallel to the torso line passing through point G, the distance -- from the top of the backrest to point G.

3.9

Width of backrest

When the seat cushion is not depressed, the width -- between the two outer sides of the backrest, at 250 mm above the horizontal plane, which is tangent to the uppermost surface of the seat cushion, on the longitudinal center plane of the seat.

3.10

Height of armrest

The vertical height -- from the highest point on the upper surface of the handrail to point R'.

3.11

Width of armrest

The minimum width of the armrest's support surface.

3.12

Angle between backrest and cushion

In the center plane of the seat, the angle -- between the torso line and the center line of the thigh.

3.13

Adjustable range of backrest angle

4.4.1 The seat adjustment device shall have a self-locking function, which can be self-locking in any use position; it shall be easy to adjust, easy to operate, reliable in locking, free from stagnation.

4.4.2 Carry out the adjustment force (moment) test of the seat adjustment device, according to the method specified in 5.3; the adjustment force (moment) shall meet the following requirements:

a) For seats with detachable headrests, the unlocking force of the headrest shall not be greater than 20 N; the operating force shall not be greater than 100 N.

b) For the seat backrest angle adjustment device, the unlocking torque of the handle-type adjusting mechanism shall not exceed 6 N · m; the unlocking torque of the knob-type adjusting mechanism shall not exceed 4 N · m; the unlocking force of the button-type adjusting mechanism shall not exceed 60 N. When adjusting the backrest angle, the adjustment torque of the backrest shall not exceed 80 N · m.

c) The locking force of the lateral adjustment mechanism of the seat assembly shall not be less than 2000 N; the unlocking force of the handle of the lateral adjustment mechanism shall not be greater than 80 N; the operating force shall not be greater than 200 N.

4.4.3 After the seat lateral adjustment fatigue performance test is carried out according to the method specified in 5.4, the operation of the slideway shall be light and flexible; the unlocking function shall be normal and effective.

4.4.4 After performing the seat back adjustment fatigue performance test according to the method specified in 5.5, the backrest's lockable gas spring shall have no oil leakage or air leakage; the backrest recliner shall not be deformed or damaged; the seat backrest shall be adjusted freely, light and flexible, without function failure.

4.4.5 For the seat back angle adjustment device with lockable gas spring structure, the lockable gas spring shall comply with the provisions of GB/T 25750. For the seat back angle adjustment device with mechanical structure, the recliner shall comply with the provisions of QC/T 844.

4.5 Seat back frame requirements

4.5.1 Carry out the gap test of the seat back frame assembly, according to the method specified in 5.6; the gap of the seat back frame assembly shall meet the requirements in Table 3.

4.5.2 Carry out the stiffness test of the seat back frame assembly, according to the method specified in 5.7; its plastic deformation after unloading shall not exceed 10 mm.

4.5.3 After the durability test of the seat back frame assembly is carried out, according to the method specified in 5.8, there shall be no cracks in the back frame assembly.

4.6 Armrest requirements

4.6.1 The rotational moment of the armrest, on the active side of the seat, shall not exceed 25 N • m.

4.6.2 Carry out the static strength test of the side armrest of the seat, according to the method specified in 5.9. The armrest shall not be broken, damaged or fall off from the seat, etc. After the load is removed, its permanent deformation shall not exceed 10 mm.

4.6.3 After the cycle test of the side armrest of the seat is carried out, according to the method specified in 5.10, the armrest shall maintain its normal use function, without breaking, peeling off of the surface covering material, or exposure of the bottom, etc.

4.7 Footrest requirements

4.7.1 Carry out the static strength test of the seat footrests, according to the method specified in 5.11. The footrests shall not be broken, damaged or fall off from the seat.

4.7.2 After the cycle test of the seat footrests is carried out, according to the method specified in 5.12, the footrests shall maintain their normal function, without breaking, damage or falling off from the seat.

5 Test method

5.1 Strength test of the seat and its vehicle fixings

The strength test of the seat and its vehicle fixings shall be carried out, in accordance with the test methods specified in GB 13057.

5.2 Position and strength test of seat belt fixation point

The position and strength test of the fixed point of seat belt installation shall be carried out, in accordance with the test method specified in GB 14167.

5.3 Performance test of seat adjustment device

Apply a uniform load of 667 N on the seat cushion. Use a dynamometer, to measure the opening force of the lateral adjustment handle of the seat assembly, the operating force of the lateral adjustment, the unlocking force (moment) of the backrest adjustment device;

of loadings is 10000; the loading frequency is 30 times/min. When a seat has more than one seating position, the force shall be applied to the backrest frame of each seat, at the same time.

5.9 Static strength test of seat side armrest

Adjust the side armrest of the seat to the design position. At a distance of 50 mm from the front edge of the seat armrest, apply the following load at the same time, for a duration of 5 s:

a) Vertical downward load: 800 N;

b) Lateral horizontal load: 200 N.

After removing the load, measure the vertical deformation of the armrest, at the loading point.

5.10 Cycle test of seat side armrest

Fix the seat side armrest assembly on the test bench. Take the closed position of the seat armrest as the starting position of the cycle test. Open the armrest, from the closed position to the working position; then close it from the working position to the closed position, which is taken as the 1 cycle. 30000 cycles shall be completed, at a frequency of (10 ~ 30) cycles/min.

5.11 Static strength test of seat footrests

Install the seat footrest assembly on the test bench. Apply a load of 1200 N, on the footrest surface, which is perpendicular to the seat footrest for 5 s. After removing the load, observe the footrest assembly for use and damage. For adjustable footrests, the highest use position shall be selected for testing.

5.12 Cycle test of seat footrest

Fix the seat footrest assembly on the test bench. Take the initial position of the footrest, as the initial position of the cycle test. Move the footrest from the initial position to the end position, then back to the initial position, which is taken as one cycle. 10000 cycles shall be completed, at a frequency of (10 ~ 30) cycles/min.

6 Inspection rules

6.1 Exit-factory inspection

6.1.1 The seat shall pass the inspection by the quality inspection department of the manufacturer AND be issued with the product certificate, before leaving the factory.

6.1.2 See Table 5, for the exit-factory inspection items.

6.2 Type inspection

6.2.1 In the following cases, the type inspection shall be carried out on the product:

a) Type identification of new products put into production or old products after transplant production;

b) After the official production, the structure, material and process have changed greatly, which may affect the performance of the product;

c) Normal production for 2 years or as agreed upon by both parties;

d) When production resumes after the product has been discontinued for one year;

e) When the quality supervision agency requests type inspection.

6.2.2 See Table 5 for type inspection items.

7 Marking, packaging, transportation, storage

7.1 Marking

Each set of seats shall have a label when leaving the factory, which shall comply with the relevant provisions of GB/T 13306. For the adjustable parts of the seat, eye-catching operation instructions shall be marked in obvious positions.

7.2 Packaging

Seat cushions and backrests of seats must have protective packaging. The moving parts shall be coated with protective grease as required.

7.3 Transportation

Seats shall be loaded and unloaded gently, during transportation, to avoid damage from bumps and protect from exposure to sun and rain.

7.4 Storage

Seats shall be stored in dry, ventilated, fireproof warehouse, where there is no corrosive gas. It shall not be under heavy pressure, to avoid deformation.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------