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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 24406-2024

Replacing GB 24406-2012

**Strength of student seat and their anchorages of special school
bus**

专用校车学生座椅及其车辆固定件的强度

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1 Scope

GB 24406-2024 is the Chinese national standard on strength of student seat and their anchorages of special school bus, in the field of road vehicles engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 25 June 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2025. Classification: ICS 43.040.60, CCS T26. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the requirements and test methods for the strength of student

seats and their anchorages of special school buses. This document applies to student seats on special school buses and anchorages used to install such seats. It also applies to restraining barriers installed in front of student seats on special school buses.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB 14166 Safety-belts, Restraint Systems, Child Restraint Systems and ISOFIX Child Restraint Systems for Occupants of Power-driven Vehicles

GB 24407 The Safety Technique Specifications of Special School

ISO 6487:2015 Road Vehicles - Measurement Techniques in Impact Tests - Instrumentation

3 Terms and Definitions

The terms and definitions defined in GB 24407, and the following are applicable to this document.

3.1 student seat Seat used for preschool children aged 3 years and above or students in the 9-year compulsory education stage on special school buses. NOTE: in accordance with the applicable occupants, they are divided into infant seats, primary school student seats, and primary and secondary school student seats.

3.2 adjustment system A device that can adjust the position of a seat or its components to suit the sitting posture of the occupant. intersection of the vertical line tangent to the backrest surface and the upper surface of the seat cushion. For a semi-back seat, it is the point of intersection of the extended line of the backrest surface and the upper surface of the seat cushion. [source: GB/T 13053-2008, 3.4.14, modified]

4.1 Requirements for Seats

4.1.1 General All student seats shall be installed forward-facing. Each adjustment system and displacement system provided shall be equipped with an automatic locking system. After the test, the adjustment system, displacement system and locking system of the seat are allowed to be deformed and partially broken, but the locking system shall remain in the locked state. If a head restraint is provided, then, during the tests of evaluating the performance requirements in

4.1.2 and 4.1.3, it shall not completely detach from the seat.

4.1.2 Frontal collision performance requirements

4.1.2.1 In the test of 5.1.2, the dummy shall be restrained by the seat in front of it (or restraining barrier) and satisfy the following requirements:

---For the seats (or restraining barriers) of special school buses for infants and primary school students, the forward displacement of any part of the dummy's torso and head shall not exceed the transverse vertical plane located

1.1 m in front of the G point of the seat where the dummy sits;

---For the seats (or restraining barriers) of special school buses for primary and secondary school students, the forward displacement of any part of the dummy's torso and head shall not exceed the transverse vertical plane located

1.2 m in front of the G point of the seat where the dummy sits.

4.1.2.2 In the test of 5.1.3, the dummy injury criterion determined in accordance with Appendix A and Appendix B shall satisfy the following requirements:

- a) The head injury criterion (HIC15) is less than 500;
- b) The neck injury criterion (Nij) is less than 1.0;
- c) The thoracic injury criterion (ThAC) is less than 30g (except for cumulative duration less than 3 ms) ($g =$
- d) When hybrid type III 5th percentile dummy is used for testing, the foot injury criterion (FAC) is less than

4.1.2.3 The seat belt restraining the dummy in the test of

5.1.3 shall be able to restrain the dummy on the seat without failure. After the test, the buckle unlocking force shall not exceed 60 N.

4.1.2.4 When tested in accordance with

5.1.2 and 5.1.3, the student seats (or restraining barrier) and their attachments shall satisfy the following requirements:

- a) During the test, the seats (or restraining barrier) and their attachments or fittings are not completely separated;
- b) During the test, even if one or more anchorages are partially separated or the surrounding area is permanently deformed, the seats (or restraining barrier) can still be fixed, and all locking systems remain locked;
- c) After the test, the structural parts of the seats (or restraining barrier) and their accessories shall have no fractures or sharp corners or edges that may cause human

injury. A sphere with a diameter of 165 mm on the back of the seat can contact any part with Shore A hardness greater than 50, and its curvature radius is greater than 5 mm, then, it is deemed to satisfy the requirements.

4.1.2.5 When the rear of the seat will not be hit by an unrestrained passenger (i.e. there is no forward-facing seat at the rear), the test specified in

5.1.2 may be omitted. At this time, the strength of the anchorage shall be tested in accordance with the test condition of the second row of seats in

5.1.3 and satisfy the requirements of

4.1.2.3 and 4.1.2.4. During the test, the first row of seats may not be placed. For the second row of seats, the test dummy shall be selected in accordance with the following requirements, and it is unnecessary to measure the dummy injuries:

---For the seats of special school buses for infants, the test shall be carried out using Q series 6-year-old or P series 6-year-old child dummy;

---For the seats of special school buses for primary school students and the seats of special school buses for primary and secondary school students, only the hybrid type III 5th percentile dummy is used for testing.

4.1.3 Rear collision performance requirements

4.1.3.1 When testing in accordance with 5.2, the dummy injury criterion determined in accordance with Appendix A and Appendix B shall satisfy the following requirements:

- a) Head injury criterion (HIC15) is less than 500;
- b) Neck injury criterion (Nij) is less than 1.0;
- c) Thoracic injury criterion (ThAC) is less than 30g (except for cumulative duration less than 3 ms) (g =

4.1.3.2 When tested in accordance with 5.2, the maximum rearward tilt angle change of the seat 19 C ~ 26 C.

5.1.2 Unrestrained test

5.1.2.1 Dummy 5.1.2.1.1 Based on the seat type corresponding to the rear seat, in accordance with the following requirements, use dummy1) to conduct the test:

- a) For the seats of special school buses for infants, use child dummy (P series 6-year-old or Q series 6-year-old) for testing;
- b) For the seats of special school buses for primary school students and the seats of special school buses for primary and secondary school students, use child dummy (P series 6-year-old or Q series 6-year-old) and hybrid type III 5th percentile dummy to