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

GB/T 18166-2025

Replacing GB/T 18166-2008

Specifications of amusement rides overhead railway category

架空游览车类游乐设施通用技术条件

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1 Scope

GB/T 18166-2025 is the Chinese national standard on specifications of amusement rides overhead railway category, in the field of domestic and commercial equipment, entertainment, sport. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026. Classification: ICS 97.200.40, CCS Y 57. 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 technical requirements, inspection and test requirements, accompanying documents, marks, packaging, transportation and storage for amusement rides overhead railway category (hereinafter referred to as "amusement rides overhead"). This document applies to the design, manufacture, installation, modification, repair, inspection, testing and use management of amusement rides overhead.

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/T 191, Packaging and storage marks

GB/T 985.1, Recommended joint preparation for gas welding, manual metal arc welding,

gas-shield arc welding and beam welding

GB/T 985.2, Recommended joint preparation for submerged arc welding

GB/T 5226.1, Electrical safety of machinery -- Electrical equipment of machines -- Part

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 20306 as well as the followings apply. The maximum vertical distance between the support surface of the passenger restraint and the installation base during operation; The maximum vertical distance between the support surface of the passenger restraint and the falling surface during operation [when installed on a building (structure)]. NOTE. See Annex A for the schematic diagram of the operation height.

3.8 fail-safe A mode in which after a device fails, its control system or mechanical mechanism can maintain a safe state or transfer to a safe state to avoid a larger failure or accident.

3.9 safety function A machine function whose failure would immediately result in an increased risk. [Source: GB/T 15706-2012, 3.30]

3.10 safety control system A specific control system that performs specified safety functions to control or maintain a safe state of a controlled device and achieves the required performance level through its own or other control systems and external risk reduction measures. [Source: GB/T 41118-2021, 3.1]

4.1 Basic requirements

4.1.1 The design documentation for an amusement ride overhead shall include at least the design specification, design calculations, operating and maintenance instructions and design drawings, risk assessment report, design verification test plan, nameplate, list of major load-bearing components and important welds, etc. The above information shall be retained at least until the amusement facility to which the design documents relate is scrapped.

4.1.2 The list of main load-bearing components and important welds is to be determined by methods such as Failure Mode and Effects Analysis (FMEA) or Fault Tree Analysis (FTA).

4.1.3 During the design phase of an amusement ride overhead, a risk assessment shall be conducted in accordance with GB/T 34371. Risk assessments shall also be conducted for products requiring modification or those intended to continue in use beyond their service life. This risk assessment shall consider the load-bearing structure and components, electrical control system and components, equipment operating environment, obstacles around the equipment, human factors, unexpected factors, and

4.3.1 Vehicles (cabins) shall have signs indicating the vehicle number, passenger capacity, and prohibition of overloading in prominent locations.

4.3.2 The seats shall be securely fixed to the passenger structure. The strength of the seats and their fixing structures shall be checked.

4.3.3 Non-enclosed vehicles (cabins) shall be equipped with passenger restraint devices that cannot be released by passengers themselves.

4.3.4 Horizontal push-type flying cinema rides with an operation height of 2 m or above and a risk of falling personnel shall at least meet the following requirements.

a) When only seat belts are used, the seat belts shall not be opened by the passenger on their own; the seat belts shall be able to tighten automatically; the seat belt locking shall be interlocked with the start; the seat belt locking shall be redundant; and handrails shall be provided for passengers to grasp.

b) When only passenger restraint devices other than seat belts are used, the passenger restraint device shall not be opened by the passenger; the locking position shall be adjustable; the locking shall be interlocked with the start; the locking shall be redundant; and handrails shall be provided for passengers to grasp.

c) When there is a risk of a passenger falling from the front of the seat, an effective barrier structure shall be provided in front of the passenger seat. When a crotch webbing is used to prevent a passenger from falling from the front of the seat, the webbing shall meet the load-bearing capacity and width requirements of the seat belt.

4.3.5 When operating at a height of 1 m or above and there is a risk of falling, closed cabin doors shall be equipped with two locking devices or a single locking device with a safety lock that cannot be opened by passengers from the inside. The opening force that the door can withstand in the locked state shall be no less than 1 kN.

4.3.6 When a vehicle (cockpit) uses automatic doors, the automatic doors shall have anti-pinch measures and emergency opening functions.

4.3.7 Enclosed vehicles (cabins) shall be equipped with ventilation holes and fire extinguishing devices. Window breaker hammers shall be provided. Appropriate signs shall be displayed.

4.3.8 An emergency call button shall be installed in enclosed vehicles (cabins). Triggering the button allows passengers to contact staff. Video surveillance shall be installed in cabins with 4 or more passengers. The video surveillance shall cover all passengers. Video footage shall be retained for at least 10 d.

4.4 Drive and transmission system

4.4.1 When the transmission system fails, the amusement ride overhead shall be in a safe

state.

4.4.2 During the start-up and operation of the amusement ride overhead, there shall be no noticeable slippage, and the transmission mechanism shall operate normally. During operation, the entire vehicle must not experience abnormal vibration, impact, heat generation, noise, or jamming.

4.4.3 The drive and transmission systems of bicycle overhead railway type shall at least meet the following requirements.

- a) Footrests must be securely installed and comply with the relevant provisions of QB/T 1886.
- b) For sprocket and chain drives, a chain guard must be provided, covering at least the top and sides of the chain.
- c) For vehicles with both electric and foot-operated drive modes, these shall not interfere with each other. A passenger-operable switch must be provided.

4.4.4 The drive and transmission system of an amusement ride overhead using a rack-driven system shall at least meet the following requirements.

- a) Vertical rack-and-pinion meshing drive bogies shall be equipped with a rack-and-pinion height adjustment device or structure to ensure normal rack-and-pinion meshing after wheel wear;
- b) When a rack-type vehicle is operating in the transitional phase between rack-type drive and wheel-rail friction drive at the design speed, a gear insertion device shall be installed;
- c) For vehicles with both wheel-rail friction drive and rack-rail drive, they shall have an automatic switching interlocking protection function for both rack-rail drive and wheel-rail friction drive modes.

4.4.5 The hydraulic and pneumatic systems shall be able to operate normally within the allowable operating temperature range of the amusement ride overhead.

4.4.6 The hydraulic or pneumatic system used for the operation of safety protection devices shall be equipped with a device to monitor the working status of the system to facilitate observation by operators.

4.4.7 When the pressure of the hydraulic or pneumatic system used for the operation of the safety protection device exceeds the normal operating range, the corresponding safety protection function shall be triggered.

4.4.8 The drive and transmission systems of amusement rides overhead powered by internal combustion engines shall at least meet the following requirements.

4.5 Electrical and control systems