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

GB/T 18163-2020

Replacing GB/T 18163-2008

Specifications of amusement rides astro fighter category

自控飞机类游乐设施通用技术条件

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1 Scope

GB/T 18163-2020 is the Chinese national standard on specifications of amusement rides astro fighter 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 6 March 2020 by the Standardization Administration of China, and has been in force since 6 March 2020.

Classification: ICS 97.200.40, CCS y57. 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 Standard specifies general rules, technical requirements, inspection, testing and test requirements, accompanying documents, marks, packaging, transport and storage of amusement rides astro fighter category. This Standard is applicable to amusement rides astro fighter category.

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 755-2008, Rotating electrical machines - Rating and performance

GB/T 1184, Geometrical tolerancing - Geometrical tolerance for features without individual tolerance indications

GB/T 1804, General Tolerances - Tolerances for Linear and Angular Dimensions without Individual Tolerance Indications

GB/T 5226.1, Electrical safety of machinery - Electrical equipment of machines - Part 1: General requirements

GB 8408, Safety of amusement machines and amusement park equipment

GB/T 8923 (all parts), Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness

GB/T 9286-1998, Paints and varnishes-Cross cut test for films

GB/T 13384, General specifications for packing of mechanical and electrical product

GB/T 13912, Metallic coatings - Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods and a full set of design drawings that comply with relevant national standards.

5.1.2 When designing the structure of amusement rides astro fighter category, strength calculation and fatigue strength calculation shall be carried out. If the structure has a tendency to lose stability, the stability calculation needs to be added accordingly. If the equipment as a whole has a tendency to overturn or sideslip, calculations for preventing overturning and sideslip shall be added accordingly. If the parts have deformation requirements, the stiffness calculation needs to be added accordingly.

5.1.3 Important shafts (pin shafts) that are difficult to inspect and detect in amusement rides astro fighter category shall be designed for infinite life. When designing important shafts (pin shafts), strength calculation and fatigue strength calculation shall be carried out.

5.1.4 The calculation of partial load condition of amusement rides astro fighter category shall be, when the maximum design wind speed is 15 m/s, conducted according to the worst eccentric load conditions specified in the design.

5.7 Whole machine

5.7.1 The whole machine of amusement rides astro fighter category shall be in good appearance, without damage.

5.7.2 Among the main technical parameters, static parameters such as equipment height, turning diameter, number of cabins, and number of passengers per cabin shall meet the design requirements. The allowable deviation of dynamic parameters such as speed,

one-sided swing angle, motion amplitude, speed and design values, is -10%~5%.

5.7.3 The whole machine operation test shall include no load, partial load and full load tests. During the operation test, there shall be no abnormal vibration, shock, heat, sound and jamming. After the operation test, there shall be no abnormal wear, deformation, shedding, permanent deformation and damage to the machinery and structural parts. Electrical components shall not fall off, be damaged, or abnormally heated up. The foundation shall not have uneven settlement and cracks.

5.7.4 The stress of important structure shall meet the design requirements. When necessary, the stress test shall be carried out. The important force structure of the first amusement rides astro fighter category product after the new design and modification design shall be subjected to the stress test. The stress test results shall meet the design requirements.

5.7.5 The amusement rides astro fighter category of which the design acceleration zone is in zone 3, zone 4 and zone 5 specified in

GB 8408 shall be subjected to the acceleration test. The acceleration test value shall not exceed 5% of the design value (including impact coefficient).

6.1 Basic requirements

6.1.1 The manufacturer and installer shall formulate specific inspection plans based on relevant standards, design documents, manufacturing processes and

6.1.10 After each test, a test report that contains clear requirements, test results, and comparative assessment results with relevant standards and regulatory requirements and clear conclusions shall be prepared.

6.1.11 The manufacturer shall, according to the non-destructive testing requirements specified in the design, carry out the non-destructive testing to amusement rides astro fighter category. The results of non-destructive testing shall meet the design requirements.

6.1.12 After each inspection, an inspection report shall be prepared. The inspection report shall at least contain the following:

- a) Inspection time, site;
- b) Equipment name, number, main technical parameters;
- c) Inspection basis;
- d) Name, requirements, methods, results of inspection items and signature of inspector;
- e) Inspection conclusion;
- f) Preparation of inspection report, examination, signature of approval personnel.

6.1.13 The manufacturer shall keep product inspection reports and related records, drawings, quality certification documents and technical documents.

6.2 Machinery and structure

6.2.1 Mechanical and structural inspections shall be carried out before and after the test. The content includes at least the inspections of the foundation, steel structure, transmission device, mechanical speed limit buffer device, mechanical transmission parts, important welds, important (shaft) pins, important bolt connections.

6.2.2 The equipment startup and operation shall be stable without abnormal sound. Test under no-load, partial load and full load conditions allowed by the design. Test not less than 3 times under each condition.

6.2.3 When operating and stopping, the hydraulic and pneumatically driven rotary joints shall be flexible in rotation, reliable in sealing and convenient in maintenance. Test under no-load, partial load and full load conditions allowed by the design. Test not less than 3 times under each condition.

6.2.4 When the device starts and stops, check hydraulic and pneumatic devices which shall not have obvious shock and vibration. Test under no-load, partial mechanical and structural system shall have no visible deformation, no cracks in the connection welds, no loosening and fracture of the connection bolts. The equipment foundation shall be solid and reliable. The foundation of mobile equipment shall be level. The foundation frame shall meet the equipment's anti-skid requirements.

6.2.13 Respectively measure the inclination tolerance of the slewing bearing surface or bearing end surface and the horizontal plane, the perpendicularity tolerance of the intermediate column and the horizontal plane, the perpendicularity tolerance of the center line of the lift support arm of the passenger device to the center line of the pin shaft of the support arm root. Conduct not less than 3 measurements in different directions, which shall not be greater than 1/1000.

6.2.14 When using gear and rack drive, check the assembly. Measure the contact spots of gear meshing, which shall be in accordance with GB 50231.

6.2.15 When using belt drive, check the assembly, which shall be in accordance with GB 50231. The belt shall be properly tensioned. There shall be no obvious deviation. The guiding device shall be flexible and reliable.

6.2.16 When using pneumatic tires for transmission or as a support, check tire pressure, which shall meet the design requirements.

6.2.17 Check the installation of the motor, reducer and coupling, which shall meet the design requirements. The installation is good. The co-axiality and end gap of the two shafts of the coupling shall meet the requirements of GB 50231.