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

**GB/T 25024-2019**

Replacing GB/T 25024-2010

**Bogies for rolling stock - Bogies for railway wagons**

机车车辆转向架 货车转向架

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### 1 Scope

China's national standard for railway wagon bogies. It specifies the requirements, the test methods and the inspection rules for the bogies of freight rolling stock. A bogie is the pivoting truck carrying the wheelsets under a vehicle, and for a freight wagon it is a harder engineering problem than the sophistication of the design suggests. It must guide the wheelsets so the vehicle runs stably at speed and steers through curves without excessive flange wear - two requirements that oppose each other, since the stiffness that gives stability resists the steering. It must carry a load that changes by a factor of four or five

between empty and loaded, which means a suspension that is right for one condition is wrong for the other, and an empty freight wagon is far more prone to derailment than a loaded one for exactly that reason. It must be cheap, because a railway owns tens of thousands of them, and it must run for years between overhauls with minimal attention. And it carries the brake. What the standard therefore specifies is the structural design and the strength of the frame and bolster against the fatigue loads of service rather than static load alone, the suspension characteristics and the friction damping that controls it, the wheelset and axlebox arrangement, the brake rigging and its geometry, the clearances and the wear limits, and the dimensional requirements that make bogies interchangeable across a fleet. The tests cover the static and fatigue strength of the frame and the running behaviour, since a bogie that passes a static test can still be unstable on track. Issued on 10 May 2019 and in force since 1 December 2019, it replaces GB/T 25024-2010.

This Standard stipulates the terms, definitions, main structure, basic requirements, technical requirements, inspection methods, inspection rules, marking, transportation and storage of bogie for standard gauge railway wagon. This Standard is applicable to bogie for newly built standard gauge railway wagon, whose highest running speed is less than, or equals to 120 km/h.

## 2 Normative References

The following documents are indispensable to the application of this document. 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 146.1 Rolling Stock Gauge for Standard Gauge Railways

GB/T 699 Quality Carbon Structural Steels

GB/T 700 Carbon Structural Steels

GB/T 714 Structural Steel for Bridge

GB/T 1184-1996 Geometrical Tolerancing - Geometrical Tolerance for Features without Individual Tolerance Indications GB/T 1222 Spring Steels

GB/T 1591 High Strength Low Alloy Structural Steels

GB/T 1804-2000 General Tolerances - Tolerances for Linear and Angular Dimensions without Individual Tolerance Indications

GB/T 3077 Alloy Structure Steels

GB/T 3278 Hot-rolled Carbon Tool Steel Sheets and Plates

GB/T 3280 Cold Rolled Stainless Steel Plate, Sheet and Strip

GB/T 3672.1-2002 Rubber - Tolerances of Products - Part 1: Dimensional Tolerances TB/T 1979 Atmospheric Corrosion Resisting Steel for Railway Rolling Stock TB/T 2211 Steel Helical Spring of Suspension Mechanism for Rolling Stock TB/T 2235 Rolling Bearing in the Railway Passenger Car and Wagon TB/T 2403 Brake Shoes for Freight Rolling Stock of Railways TB/T 2429 Technical Condition of Foundation Brake Gear Used in Railway Truck Bogie TB/T 2813 Friction Damper Wedge for Freight Car TB/T 2817 Technical Specification of Wrought Steel Solid Wheel for Railway Freight Car TB/T 2843 General Technical Requirement for Rolling Stock Rubber to Metal Parts TB/T 2911 General Technical Specification of Riveting Process for Railway Vehicle TB/T 2942 General Technical Specifications of Steel Castings for Rolling Stock TB/T 2944 Carbon Steel Forgings for Railway TB/T 2945 Technical Specification for LZ

50 Steel Shaft and Steel Billet for Railway Vehicle TB/T 3012 Specification of Cast Steel Bolster and Side Frame for Railway Freight Car TB/T 3014 Alloy Steel Forgings for Railway TB/T 3225 Cross Bar Composition for Railway Freight Car TB/T 3267 Adapter on Railway Freight Car TB/T 3269 Elastic Side Bearings for Railway Freight Wagons TB/T 3270 Center Wear Plate of Railway Freight Wagons

### 3 Terms and Definitions

What is defined in GB/T 4549.2-2004, and the following terms and definitions are applicable to this document.

3.1 Frame-brace Bogie Frame-brace bogie refers to three-piece cast steel bogie, which implements elastic Frame bogie refers to a running gear, which generally sets up components like wheelsets axle box device, suspension damping device and foundation brake gear; adopts bogie frame as the installation foundation of various components; bears vehicle body and loading weight; rotates in relative to the vehicle body. NOTE: definition

2.17 in GB/T 4549.2-2004 is modified.

3.10 Bogie Frame Bogie frame refers to a basic bearing structure, which is between the primary and secondary suspension device, and implements the transmission of force from vehicle body to wheel and axle. NOTE: definition

3.1 in GB/T 4549.2-2004 is modified.

### 4 Main Structure

4.1 Frame-brace Bogie Frame-brace bogie belongs to three-piece cast steel bogie. It is mainly constituted of adapter, elastic positioning member, wheel and axle, side frame, central spring suspension device, swing bolster, basic braking device, frame-brace device and elastic side bearing, etc. In accordance with difference in the location of frame-brace device and swing bolster, frame-brace bogie can be divided into lower frame-brace bogie and central frame-brace bogie.

4.2 Swing Bogie Swing bogie belongs to three-piece cast steel bogie. It is mainly constituted of adapter, pedestal rocker seat (primary elastic swing device), wheel and axle, side frame, central spring suspension device, swing bolster, spring plank, rocker seat, rocker seat bearing, foundation brake gear and elastic side bearing, etc.

4.3 Sub-frame Radial Bogie Sub-frame radial bogie refers to three-piece self-guided radial bogie. It is mainly constituted of wheel and axle, side frame, central spring suspension device, swing bolster, foundation brake gear, primary rubber-metal pad, wheelsets radial device and elastic side bearing, etc.

4.4 Frame Bogie Frame bogie is a bogie, with the frame of an integral structure, which is brought together through rigid connection. It is mainly constituted of bogie frame, wheelsets axle box (axle box suspension device), foundation brake gear, traction device and elastic side bearing, etc. Generally speaking, bogie frame is integrally welded through steel plates.

g) The clearance of the inner and outer ring round spring in the radial direction should not be less than

2.5 mm; the minimum shall not be less than

h) In terms of bogie which has a damping device, spring's deflection margin coefficient shall be more than, or equals to 0.7. In terms of bogie which does not have a damping device, spring's deflection margin coefficient shall be more than, or equals to 0.9.

## 6.1 Material Requirements

6.1.1 Quality carbon structural steels shall comply with the stipulations in GB/T 699.

6.1.2 Carbon structural steels shall comply with the stipulations in GB/T 700.

6.1.3 Alloy structural steels shall comply with the stipulations in GB/T 3077 and relevant standards.

6.1.4 Low-alloy high-strength structural steels shall comply with the stipulations in GB/T 1591.

6.1.5 Structural steel for bridge shall comply with the stipulations in GB/T 714.

6.1.6 Atmospheric corrosion resisting steel shall comply with the stipulations in TB/T 1979.

6.1.7 Spring steels shall comply with the stipulations in GB/T 1222 and TB/T 2211.

6.1.8 Cold rolled stainless steel plate shall comply with the stipulations in GB/T 3280.

6.1.9 Carbon tool steel plate shall comply with the stipulations in GB/T 3278.

6.1.10 Seamless steel tubes for structural purposes shall comply with the stipulations in GB/T 8162.

6.1.11 Carbon steel castings for general engineering purpose shall comply with the