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**RAILWAY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

TB/T 1900-2016

**Air reservoir of railway vehicle
(English Translation)**

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1 Scope

This standard specifies the composition and classification, technical requirements, inspection methods, inspection rules, marking, packaging, transportation and storage of air reservoir of railway vehicles.

This standard applies to welded air reservoirs for EMUs, passenger trains, freight trains with a working pressure less than or equal to 1 MPa and a product of pressure and volume greater than 5 MPa·L (hereinafter referred to as air reservoirs).

2 Normative references

The following documents are essential to the application of this document. 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 150.2-2011 Pressure vessels - Part 2: Materials

GB 150.3-2011 Pressure vessels - Part 3: Design

GB/T 1184 Geometrical tolerancing - Geometrical tolerance for features without individual tolerance indications (GB/T 1184-1996, eqv ISO 2768-2:1989)

GB/T 1804 General tolerances - Tolerances for linear and angular dimensions without individual tolerance indications (GB/T 1804-2000, eqv ISO 2768-1:1989)

GB/T 4956-2003 Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method (ISO 2179:1982, IDT)

GB/T 6417.1-2005 Classification and explanation of imperfections in fusion welded joints (ISO 6520-1:1998, IDT)

GB/T 6807-2001 Specifications for phosphating treatment of iron and steel parts before painting

GB/T 7306.2 Pipe threads with 55 degree thread angle where pressure-tight joints are made on the threads - Part 2: Taper internal and external threads (GB/T 7306.2-2000, eqv ISO 7-1:1994)

GB/T 7307 Pipe threads with 55-degree thread angle where pressure-tight joints are not made on the threads (GB/T 7307-2001, eqv ISO 228-1:1994)

ISO 15614-2 Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 2: Arc welding of aluminium and its alloys

ISO 17636-1:2013 Non-destructive testing of welds - Radiographic testing - Part 1:

X-and gamma-ray techniques with film

ISO 17636-2:2013 Non-destructive testing of welds - Radiographic testing - Part 2:

X-and gamma-ray techniques with digital detectors

3 Composition and classification

The air reservoir is generally composed of a head, a cylinder, a drain seat, a pipe seat or a flange through welding.

According to the structural form, the air reservoir can be divided into a single-chamber air reservoir and a multi-chamber air reservoir; according to the interface form, it can be divided into a threaded interface type and a flange interface type.

4.1 Basic requirements

4.1.1

The air reservoir shall comply with the product drawings approved according to the procedure and the provisions of this standard.

4.1.2

The operating environment temperature of the EMU air reservoir is -25 °C ~ 60 °C; the operating environment temperature of the passenger train air reservoir is -40 °C ~ 60 °C; the operating environment temperature of the freight train air reservoir is -50 °C ~ 70 °C, meanwhile it shall be able to adapt to the use requirements of the thawing warehouse at 110 °C for 3 h. Special use environments can be determined by negotiation between the supplier and the buyer.

4.1.3

The maximum working pressure of the EMU air reservoir is 1000 kPa. The maximum working pressure of the passenger train and freight train air reservoir is 600 kPa.

4.1.4

The air reservoir shall have good air tightness. After the water pressure test and air tightness test, the air reservoir shall not have permanent deformation, cracks or leakage.

4.1.5

The overall strength of the air reservoir shall be able to withstand its own weight and the vibration and impact caused by the operation of the train. The vibration and impact performance of the air reservoir installed on the train shall meet the requirements of Class 1B of GB/T 21563-2008. The vibration and impact performance requirements c) Butt weld connection with folded edge of head d) Butt weld connection with bottom lock of head

Note:

e - Thickness of head plate;

e1 - Thickness of cylinder plate.

Figure 2 -- Connection structure form between head and cylinder

4.3.5 The thickness of the head and cylinder of the air reservoir shall comply with the minimum thickness, which is calculated by the calculation method specified in GB

150.3-2011 or relevant standards.

4.3.6 The openings on the cylinder and head shall be as far away from the weld as possible; the openings shall not pass through the weld.

4.3.7 The threads of the air reservoir's pipe seat and drain seat interface shall comply with the requirements of GB/T 7307 or GB/T 7306.2.

4.3.8 The distance between any two adjacent weld edges shall be greater than 6 times the thickness of the air reservoir body plate. Special cases shall be determined by negotiation between the supplier and the buyer.

4.3.9 The wall thickness of the steel air reservoir's pipe seat and drain seat shall not be less than 1.5 times the steel plate welded to it; the wall thickness of the aluminum air reservoir's pipe seat and drain seat shall not be less than 2 times the plate welded to it.

4.3.10 The steel air reservoir pipe seat for passenger trains and EMUs shall adopt the external and internal welding methods shown in Figure 3a); the weld size g shall be greater than or equal to 0.7 times the wall thickness e of the head. When the outer diameter d of the pipe seat is less than or equal to 65 mm, the external welding method shown in Figure 3b) may also be adopted, but the weld size g shall be greater than or equal to 1.5 times the wall thickness e of the head. The external and internal welding methods shown in Figure 3c) should be used for the aluminum air reservoir's pipe seat.

When the external welding method shown in Figure 3d) is used, the weld shall be a full penetration weld; when the external and internal fillet welds of the pipe seat shown in

Figure 3e) are used, the weld shall be a partial penetration weld; the weld leg size g shall be greater than or equal to 3 mm and less than or equal to the head wall thickness e . The welding method of the flange pipe seat of the air reservoir for freight train is shown in Figure 3f); the weld size g shall be greater than or equal to the head wall thickness e . The welding method of other structural pipe seats shall be determined by negotiation between the supplier and the buyer.

not have defects such as bumps, burrs, scratches.

4.4.6 There shall be no longitudinal wrinkles on the straight edge of the head.