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OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 43.160

T 57

QC/T 1118-2019

Technical requirements for swap body of the van

厢式汽车交换箱技术条件

Issued on: November 11, 2019 **Implemented on: April 01, 2020**

Issued by: Ministry of Industry and Information Technology of PRC

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Technical requirements for swap body of the van

1 Scope

This standard specifies the terms and definitions, technical requirements, test methods, inspection rules, signs, transportation of swap body of the van.

This standard applies to the design, manufacture, inspection of swap body with closed structures.

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 1589 Limits of dimensions, axle load and masses for motor vehicles, trailers and combination vehicles

GB 7258 Technical specifications for safety of power-driven vehicles operating on roads

GB 23254 Retro-reflective markings for trucks and trailers

JT/T 1195 Intermodal swap body markings

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Swap body

It is a standardized cargo box, which is equipped with foldable outriggers that can be separated from special transport vehicles, can be independently placed on the ground with the outriggers as the support.

3.2

Fork pocket

A pocket which runs laterally through the bottom of swap body, at the specified part of the swap body, to facilitate the deep insertion of forklift's fork into the bottom of the swap body.

3.3

Grappler pocket

Specially designed pocket on the lower side beam of the swap body, for lifting and carrying the swap body with grappler arms.

4 Technical requirements

4.1 General

4.1.1 The swap body shall have a certain strength. After the vertical strength and longitudinal strength tests, there shall be no deformation affecting the use.

4.1.2 The corner fittings of the swap body shall have a certain strength. There shall be no deformation affecting the use, after the bottom hanging test.

4.1.3 The grappler pocket of the swap body shall have a certain strength. There shall be no deformation affecting the use, after the grappler pocket test.

4.1.4 The fork pocket of the swap body shall have a certain strength. There shall be no deformation affecting the use, after the fork pocket test.

4.1.5 After the strength test of the front and rear walls, side walls and bottom plate of the swap body, the residual deformation shall not be greater than 12 mm, meanwhile its function shall not be affected.

4.1.6 The outriggers of the swap body shall be stable and reliable. After the stability test of the outriggers, there shall be no deformation affecting the use.

4.1.7 The swap body shall have good rain-proof sealing performance. After the rain-proof sealing performance test, there shall be no leakage in the swap body.

4.1.8 The swap body shall be equipped with reflective marks, which shall comply with the provisions of GB 23254. The plastic reflective marks of the reflector shall comply with the provisions of GB 7258.

4.2 Dimensions and ratings

4.2.1 The external dimensions of the swap body shall match the vehicle which transports the swap body. The external dimensions of the matched vehicle shall comply with the provisions of GB 1589.

Evenly load the swap body to l.5m_{max} (the maximum total mass of the swap body). Place it on 4 horizontal backing plates. The size and position of the backing plates are the same as the fixed position of the swap body, so that the swap body can bend freely. Keep for 5 minutes. After unloading, there shall be no permanent deformation or abnormality that is unsuitable for use; meanwhile it shall meet the dimensional requirements for its operating, fixing, swap.

5.2 Longitudinal strength test

Evenly load the swap body to m_{max} (the maximum total mass of the swap body). One end is firmly fixed, through the lower hole of the corner fitting. Apply a force of 2m_{max} horizontally on the other end of the swap body. Firstly apply the pressure AND then the tension, each lasting for 5 minutes. After unloading there shall be no permanent deformation or abnormality rendering it unsuitable for use; meanwhile it shall meet the dimensional requirements for its operating, fixing, swap.

5.3 Bottom hanging test

5.3.1 Evenly load the swap body to l.5m_{max} (the maximum total mass of the swap body). Slowly lift the swap body, via the lifting hole at the bottom of the side, using a lifting force at 45° to the horizontal. The hoisting sling shall not generate pressure on the swap plate. The distance -- between the line of action of the lifting force and the outer swap plate -- shall not be greater than 38 mm.

5.3.2 The swap body shall stay for 5 minutes after lifting. After unloading, there shall be no permanent deformation or abnormality, that makes it unsuitable for use. It shall meet the dimensional requirements for its operation, fixing, swap.

5.4 Grappler pocket test

Evenly load the swap body to 1.25m_{max} (maximum total mass of the swap body). Use 4 grapples or similar hooks, to lift the swap body on the grappler pocket. Each support surface shall be 30 mm x 260 mm. Find the center and stay safe. Stay for 5 minutes after lifting. After unloading, there shall be no permanent deformation or abnormality, that makes it unsuitable for use; meanwhile it shall meet the dimensional requirements for its operation, fixing, swap.

5.5 Fork pocket test

Evenly load the box to l.6m_{max} (the maximum total mass of the swap body). Use two fork arms, which have a width of 200 mm, to extend 1828 ± 3 mm from the center of the fork pocket. Then lift the swap body. Stay for 5 minutes. After unloading, there shall be no permanent deformation or abnormality rendering it unsuitable for use; meanwhile it shall meet the dimensional requirements for its operation, fixing, swap.

5.6 Front and rear wall strength test

The inner surfaces of the front and rear walls of the swap body shall be subjected to an equal and evenly distributed load of $0.4m'_{max}$ (maximum load capacity) for 5 minutes. It allows each wall to bend freely. After unloading, the front and rear walls of the swap body are not allowed to have residual deformation greater than 12 mm; its function will not be affected.

5.7 Side wall strength test

The inner surface of the side wall of the swap body shall be subjected to an equal and evenly distributed load of $0.3m'_{max}$ (maximum load capacity) for 5 minutes, to allow each wall to bend freely. After unloading, the side wall of the swap body is not allowed to have residual deformation greater than 12 mm, meanwhile its function will not be affected.

5.8 Floor strength test

5.8.1 Use a test vehicle equipped with rubber tires for this test. The total mass of the test vehicle is 4400 kg. The axle load of each axle is 2200 kg. The nominal tire width of the test vehicle is 180 mm; the wheelbase is 760 mm. The wheels shall have a certain strength, to ensure that the contact area between each wheel and the bottom plate of the swap body is not greater than 14200 mm^2 during the test.

5.8.2 During the test, the 4 lower corners of the swap body shall be fixed. The test vehicle shall pass through the entire bottom plate of the swap body; it shall stay at the weakest part of the bottom plate for 5 minutes. After unloading, there shall be no permanent deformation or abnormality that is unsuitable for use; meanwhile it shall meet the dimensional requirements for its operation, fixing, swap.

5.9 Stability of outriggers of the swap body

5.9.1 Load the swap body evenly to $1.25m_{max}$ (the maximum total mass of the swap body). Put it on the outriggers at the same height. The friction coefficient of the test ground shall be 0.01 ~ 0.l. As shown in Figure 9, test by applying a force of 25 kN in the longitudinal direction, at the center of the front or rear beam. Then test again, by applying a force of 25 kN in the opposite direction. There shall be no permanent deformation or abnormality in the legs that make them unsuitable for use. It shall meet the dimensional requirements for its operation, fixation, swap.

5.9.2 Apply a lateral force of 22.5 kN, at a point between 0 and 40 mm, directly above the intersection of the centerline of the upper surface of the lateral support of the outrigger and the side surface of the swap body, for testing. The outrigger shall not have permanent deformation or abnormality, which makes it unsuitable for use; meanwhile it shall meet the dimensional requirements for its operation, fixing, swap.

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