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Performance Requirements and Bench Test Methods of Hydraulic Brake System Plastic Reservoir Assembly

液压制动系统塑料储液罐性能要求及台架试验方法

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Attachment:

Number, Name and Initial Implementation Date of the 42 Automobile Industry Standards

S/N	Standard No.	Standard Name	Replaced Standard No.	Implementation Date
355	QC/T 253-2013	Preparation Methods for Engine Model used in Motorcycles and Mopeds	QC/T 253-1998	2014-03-01
356	QC/T 682-2013	Seats Used in Motorcycles and Mopeds	QC/T 682-2002	2014-03-01
357	QC/T 229-2013	Technical Conditions for Rotor Pump of Motorcycles and Mopeds	QC/T 229-1997	2014-03-01
358	QC/T 952-2013	Disc Wheels for Passenger Car — Dimensional of Attachment on Hub		2014-03-01
359	QC/T 953-2013	Commercial Road Vehicles – Flat Attachment Wheel Fixing Nuts		2014-03-01
360	QC/T 954-2013	Commercial Vehicles – Flat Attachment Fixing Nuts – Test Methods		2014-03-01
361	QC/T 258-2013	Test Methods for the Intensity of Vehicle Wheels and Screw Base	QC/T 258-1998	2014-03-01
362	QC/T 199-2013	Vehicle Wheels - Balance Weight	QC/T 199-1995	2014-03-01
363	QC/T 326-2013	Numbering Rules for Automobile Standardized Parts	QC/T 326-1999	2014-03-01
364	QC/T 955-2013	Auto Leveling Device of Special Purpose Vehicle		2014-03-01
365	QC/T 956-2013	Transport Vehicle for Dry-mixed Mortar		2014-03-01
366	QC/T 957-2013	Cleaning Sweeper Truck		2014-03-01
367	QC/T 29104-2013	Method for Coding the Level of Contamination by Solid Particles of Special Purpose Vehicle Hydraulic System	QC/T 29104-1992	2014-03-01
368	QC/T 29105.3-2013	Sampling Methods of Testing Particulate Contamination of Hydraulic Oil of Special Purpose Vehicle Hydraulic System	QC/T 29105.3-1992	2014-03-01
369	QC/T 718-2013	Truck Mounted Concrete Pump	QC/T 718-2004	2014-03-01
370	QC/T 439-2013	Swept-body Dump Truck	QC/T 439-1999 QC/T 440-1999	2014-03-01
371	QC/T 935-2013	Kitchen Garbage Vehicle		2014-03-01
372	QC/T 939-2013	Technical Qualifications of Front Discharge Truck		2014-03-01
373	QC/T 457-2013	Ambulance	QC/T 457-2002	2014-03-01
374	QC/T 936-2013	Detachable Container Garbage Collector		2014-03-01
375	QC/T 937-2013	Guardrail Repair Car		2014-03-01
376	QC/T 940-2013	Exhibition Vehicle		2014-03-01
377	QC/T 958-2013	Performance Requirements and Bench Test Methods of Automobile Vacuum Pump		2014-03-01
378	QC/T 592-2013	Performance Requirements and	QC/T 592-1999	2014-03-01

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Performance Requirements and Bench Test Methods of Hydraulic Brake System Plastic Reservoir Assembly

1 Scope

This Standard specifies the terms and definitions, performance requirements and bench test methods of plastic reservoir for automotive hydraulic brake system.

This Standard is applicable to plastic reservoir for automotive hydraulic brake system; plastic reservoir of automotive clutch master cylinders may be implemented by reference.

2 Normative Reference

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) are applicable to this document.

GB 11121 Gasoline Engine Oils

GB 11122 Diesel Engine Oils

GB 17930 Gasoline for Motor Vehicles

GB 18351 Ethanol Gasoline for Motor Vehicles

3 Terms and Definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1 Maximum level

The highest position allowed to fill brake fluid during use of the reservoir; see Figure 1.

4.1.5.1 Total capacity. Measure according to 5.1.5.1 of this Standard; and the total capacity of the reservoir shall meet the requirements of the product technical document.

4.1.5.2 Partition capacity. Measure according to 5.1.5.3 of this Standard; and the partition capacity of any cavity of liquid storage chamber shall meet the design requirements.

4.1.6 Strength of the installation part. This Standard shall test the reservoir directly installed on the brake master cylinder according to 5.1.6 of this Standard. The reservoir and the connection part with the master cylinder shall not be broken, cracked or deformed; and shall be able to return to the original position after unloading.

4.1.7 Heat resistance. According to 5.1.7 of this Standard, the reservoir shall be free of cracks, softening and deformation affecting functions. During the entire test, there shall be no brake fluid overflowing from the reservoir. The brake fluid level of the reservoir shall be clearly visible; the fluid level indicator shall meet the requirements of 4.2.1 and 4.2.2 of this Standard. For reservoir cover with screw-tightened structure, the residual locking torque shall be no less than 50% of the initial tightening torque. Other structures shall be in accordance with the provisions of the product technical documents.

4.1.8 Cold resistance. Test according to 5.1.8 of this Standard; and the reservoir shall be free of cracks and deformations that affect functions. The brake liquid level of the reservoir shall be clearly visible; the liquid level indicator shall meet the requirements of 4.2.1 and 4.2.2 of this Standard. For reservoir cover with screw-tightened structure, the residual locking torque shall be no less than 50% of the initial tightening torque. Other structures shall be in accordance with the provisions of the product technical documents.

4.1.9 Temperature shock performance. Test according to 5.1.9 of this Standard; the reservoir shall be free of cracks, softening and deformation that affects functions. During the entire test, it should not have brake fluid overflow from the reservoir. The brake liquid level of the reservoir shall be clearly visible; the liquid level indicator shall meet the requirements of 4.2.1 and 4.2.2 of this Standard. For reservoir cover with screw-tightened structure, the residual locking torque shall be no less than 50% of the initial tightening torque. Other structures shall be in accordance with the provisions of the product technical documents.

4.1.10 Vibration durability. Test according to 5.1.10 of this Standard. The reservoir shall be free of cracks or damage; all parts shall be intact and work normally. During the entire test, it should not have brake fluid overflow from the reservoir. The static workability of the liquid level indicator shall meet the requirements of 4.2.1 of this Standard. For reservoir cover with screw-tightened structure, the residual locking torque shall be no less than 50% of the initial tightening torque. Other structures shall be in accordance with the provisions of the product technical documents.

5.1.1.1 Block all liquid outlets of the reservoir.

5.1.1.2 Connect the brake fluid filling port of the reservoir to the vacuum source; and after the absolute pressure of the system reaches (250±50) Pa; cut off the vacuum source.

5.1.1.3 Measure and record the pressure rise value in the reservoir within 20s.

5.1.2 Pressure resistance.

5.1.2.1 Block all liquid outlets of the reservoir.

5.1.2.2 Apply (500±20) kPa air pressure to the reservoir from the brake fluid filling port of the reservoir; and stabilize the pressure for 1min.

5.1.2.3 Check and record the leakage and damage of the reservoir.

5.1.3 Water resistance of the reservoir cover.

5.1.3.1 Seal all the liquid outlets of the dry reservoir.

5.1.3.2 Put the reservoir cover according to the provisions of the product technical documents.

5.1.3.3 Install the reservoir on the test fixture according to the actual vehicle installation angle.

5.1.3.4 From the two directions of top and side of the reservoir cover, spray water at a flow rate of no less than 3800mL/min for 5min.

5.1.3.5 After the test, wipe the water on the outer surface of the reservoir with a dry cloth; open the reservoir cover; observe and record whether there is water seeping into the reservoir.

5.1.4 The air permeability of the reservoir cover.

5.1.4.1 Seal the liquid outlet of the reservoir by a plug, and then fix it on the test device according to the actual vehicle installation state.

5.1.4.2 Fill the brake fluid to 5mm above the maximum level; put the reservoir cover according to the provisions of the product technical documents.

5.1.4.3 Open any liquid outlet, observe and record the flow of brake fluid.

5.1.5 Capacity of the reservoir.

5.1.5.1 Total capacity.

5.1.9 Temperature shock performance

5.1.9.1 The sample status and installation status are the same as 5.1.5.1 a) of this Standard; and the amount of added liquid is the same as 5.1.7.2.

5.1.9.2 Place the test device equipped with the sample in the test chamber at (- 40 ± 2)°C; take it out after keeping it warm for 3h and place it at room temperature for 1h; then place it at (100 ± 2)°C to keep it warm in the test chamber for 3h; then take it out and place it at room temperature for 1h. This is regarded as 1 cycle, and a total of 10 cycles are performed.

5.1.9.3 During the test, regularly check whether the brake fluid overflows from the reservoir.

5.1.9.4 After the test, check and record whether the reservoir has cracks, softening and deformation affecting the function, as well as the visibility of the reservoir body. Check the performance of the liquid level indicator in accordance with 5.2.1 and 5.2.2 of this Standard. For the reservoir cover with screw-tightening structure, measure the residual tightening torque of the reservoir cover at room temperature; other structures shall be implemented according to the provisions of the product technical document.

5.1.10 Vibration durability.

5.1.10.1 Fix the reservoir on the vibration test device according to the actual vehicle state; and fill the brake fluid to the maximum level.

5.1.10.2 Use a tightening torque of (3 ± 0.3) N • cm (or as specified in the product technical document) to put the reservoir cover.

5.1.10.3 Vibrate in the up and down directions for 4 h at a vibration frequency of 10 Hz and an acceleration of 14.7 m/s^2.

5.1.10.4 During the test, regularly check whether the brake fluid overflows from the reservoir.

5.1.10.5 After the test, check and record whether the reservoir has cracks or deformation that affects the function. Check the static workability of the liquid level indicator according to 5.2.1 of this Standard. For the reservoir cover with screw-tightening structure, measure the residual tightening torque of the reservoir cover at room temperature; other structures shall be implemented according to the provisions of the product technical document.

5.1.11 Corrosion resistance.

Wipe the surface of the reservoir with a dry cloth; and apply the following liquids to the surface of different reservoir samples (apply 2 or 3 times), and check the

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