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**Performance Requirements and Bench Test  
Methods of Automatic Transmission Oil Pump**

自动变速器油泵性能要求及台架试验方法

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## Ministry of Industry and information Technology of PRC.

### Announcement

#### Year 2016 No.3

It is hereby announced that the Ministry of Industry and Information Technology approved 643 industry standards (standard numbers, names, major contents and starting date of implementation can refer to Annex) including the *Piston Vacuum Pump*; thereof, there are 214 mechanical industry standards, 7 automotive industry standards, 1 aviation industry standard, 59 light industry standards, 110 chemical industry standards, 21 metallurgical industry standards, 6 building material industry standards, 20 petrochemical industry standards, 6 civil explosion industry standards, 132 electronic industry standards, and 67 communication industry standards.

The above mechanical industry standards are published by Mechanical Industry Press; automotive industry standards are published by Science and Technology Literature Press; engineering construction standards in chemical industry are published by China Planning Press; aviation industry standard is organized to publish by China Aero-Polytechnology Establishment; light industry standards are published by China Light Industry Press; chemical industry standards are published by Chemical Industry Press; metallurgical industry standards are published by Metallurgical Industry Press; building material industry standards are published by Building Material Industry Press; petrochemical industry standards are published by China Petrochemical Press; civil explosion industry standards are organized to publish by Nuclear Research Institute of Standardization of China Ordnance Industry; electronic industry standards are organized to publish by China Electronics Standardization Institute of Ministry of Industry and Information Technology; communication industry standards are published by People's Posts and Telecommunications Press.

Annex: standard numbers, names, starting dates of implementation of 7 automotive industry standards

**Ministry of Industry and Information Technology of PRC.**

January 15, 2016

**Annex:**

**Standard Numbers, Names, Starting Dates  
of Implementation for 7 Automotive Industry Standards**

<b>SN</b>	<b>Standard Numbers</b>	<b>Standard Names</b>	<b>Replaced Standard Numbers</b>	<b>Starting Date of Implementation</b>
215	QC/T 1025-2016	Performance Requirements and Bench Test Methods of Automatic Transmission Oil Pump		July 1, 2016
216	QC/T 1026-2016	Performance and Determination of PVC Slush Skin of Automotive Instrument Panel		July 1, 2016
217	QC/T 1027-2016	Technical Requirements for Film Mounted Motor Vehicle Glass		July 1, 2016
218	QC/T 1028-2016	Performance Requirements and Test Methods of Vehicle Vacuum Check Valve		July 1, 2016
219	QC/T 1029-2016	Polypropylene (PP) Cellular Board Production Vehicles		July 1, 2016
220	QC/T 1030-2016	Bus Push-Out Emergency Window		July 1, 2016
221	QC/T 678-2016	Pneumatic Driving Pump of Passenger Door of Bus	QC/T 678-2001	July 1, 2016

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# Performance Requirements and Bench Test Methods of Automatic Transmission Oil Pump

## 1 Scope

This Standard specifies the terms and definitions, performance requirements and bench test methods of automatic transmission oil pump for vehicles.

This Standard is applicable to the oil pump providing hydraulic pressure and lubrication to the automatic transmission for the passenger cars; excluding the electric-controlled oil pump.

## 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) are applicable to this Standard.

ISO 16232 Road Vehicles – Cleanliness of Components of Fluid Circuits

## 3 Terms and Definitions

The following terms and definitions are applicable to this Standard.

### 3.1 Automatic transmission oil pump

The oil supply device that provides the hydraulic oil with certain pressure and flow rate to the fluid torque converter, double clutch, hydraulic control system and oil cooling system of the automatic transmission; and ensures to meet the requirements of lubrication for the friction pairs of the planetary gear mechanism.

### 3.2 Minimum performance test

The performance requirement point with minimum required liquid amount, when the transmission uses different shifter positions.

### 3.3 Flow ( $Q$ )

At a given pressure, speed and temperature, the outputted liquid volume from the pump outlet within the unit time, in L/min.

### **3.4 Pressure ( $P$ )**

The pressure on the pump outlet, in kPa.

### **3.5 Theoretical displacement**

The liquid volume outputted when the rotor rotates a circle.

### **3.6 Actual displacement**

The liquid volume actually outputted when the rotor rotates a circle.

### **3.7 Safety relief pressure ( $P_k$ )**

The minimum pressure from the oil pump outputted pressure that can open the safety valve, in kPa.

### **3.8 High speed fill limit**

Under the fixed pressure and temperature conditions, the actual oil pump speed where the pump output flow begins to deviate from the theoretical flow; in rpm.

### **3.9 Contamination**

The remaining weight on the surfaces of all parts that contact with the fluid, and pass through the fixed and specified filter film.

### **3.10 Idle condition**

It indicates the engine is in the no-load running state; namely, the clutch is in the joint position, and transmission is in the neutral position.

## **4 Performance Requirements**

**4.1** Under the working condition of minimum performance test, the flow of automatic transmission oil pump shall not exceed the requirements of minimum performance test. Meanwhile, under the idle working condition, the volumetric efficiency of minimum performance test shall be greater than or equal to 70%. Under the working condition of high-and-medium speed and high pressure, the volumetric efficiency of the minimum performance test shall be greater than or equal to 58%.

**4.2** After the automatic transmission oil pump performing the pump initial performance test as per Sub-clause 6.1.2, the percentage of difference between the maximum and minimum torques measured before and after the test taking the initial

**6.2.4** During the oil pump reliability test, the oil plants are allowed to supplement, but the oil pump is not allowed to be replaced.

**6.2.5** During the oil pump reliability test, adjusting and repairing the test sample are not allowed; during the test, if the test is terminated due to the failure of the oil pump, the oil pump shall be regarded as disqualified.

**6.2.6** After completing the oil pump reliability test time, perform the performance test as per the requirements in the performance test report; compared with pre-test phase, the reducing performance index shall be less than or equal to 10%; and the flow shall be no less than the requirements for minimum flow of oil pump.

### **6.3** Contamination test

**6.3.1** The contamination test shall be performed as per the method stipulated in ISO 16232.

**6.3.2** In view of the inconsistency of transmission oil products, and the compatibility of cleaning medium with the transmission oil, the manufacture recommended cleaning medium shall be preferred to use.

**6.3.3** The cleaning area mainly indicates the internal surface of the transmission that may contact with the transmission oil; while the exposed external surface has no requirements for contamination test. In addition, the threaded hole doesn't require the contamination test; when cleaning, it is recommended to clean the threaded holes plugged by screw.

**6.3.4** The filter screen specification shall meet the requirements of transmission manufacturer; at least 2 different specification filter screens must be installed onto the manufacturer's contamination test equipment.

————— **END** —————