# QC

AUTOMOTIVE INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

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# QC/T 1012-2015

# Technical Requirements and Determination for Motor Vehicles – Hydraulic Power Steering System Cleanliness

汽车液压助力转向系统清洁度技术要求及测定方法



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# Announcement of Ministry of Industry and Information Technology of the People's Republic of China

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Ministry of Industry and Information Technology approved 543 industry standards such as the “Calcium carbide furnace” (standard number, name, main content and the date of implementation are as shown in Appendix 1), including 48 mechanical industry standards, 16 automotive industry standards, 15 aviation industry standards, 13 pharmaceutical industry standards, 58 light industry standards, 86 textile industry standards, 68 chemical industry standards, 16 metallurgical industry standards, 50 building materials industry standards, 21 petrochemical industry standards, 2 nonferrous metals industry standards, 3 nuclear industry standards, AND 147 communications industry standards, which are all announced hereby.

Appendix: Number, name, and date of implementation of 16 automotive industry standards.

Ministry of Industry and Information Technology of the
People’s Republic of China

July 14, 2015

## Appendix:

### Number, name, and date of implementation of 16 automotive industry standards

| No. | Standard number | Standard name | Number of standard replaced | Date of implementation |
|---|---|---|---|---|
| 49 | QC/T 1002-2015 | Test method of durability in CH-DY for motorcycles and mopeds | | January 01, 2016 |
| 50 | QC/T 1003-2015 | Determination of precious metal in metal support catalytic converter for motorcycles | | January 01, 2016 |
| 51 | QC/T 1004-2015 | Performance requirements and bench test methods of automobile electric vacuum pump | | January 01, 2016 |
| 52 | QC/T 200-2015 | Performance requirements and bench test methods of reservoir for air brake equipment of automobile and trailer | QC/T 200-1995 | January 01, 2016 |
| 53 | QC/T 35-2015 | Automobile and trailer – Specifications and bench test methods of pressure control equipment | QC/T 35-1992, QC/T 36-1992 | January 01, 2016 |
| 54 | QC/T 37-2015 | Automobile and trailer – Specifications and test methods of bench for pressure regulator and protector | QC/T 37-1992, QC/T 38-1992 | January 01, 2016 |
| 55 | QC/T 77-2015 | Specifications and bench test methods of automobile hydraulic brake wheel cylinder | QC/T 77-1993 | January 01, 2016 |
| 56 | QC/T 1005-2015 | Specifications and bench test methods of automobile antilock braking system electromagnetic-hydraulic modulator | | January 01, 2016 |
| 57 | QC/T 1006-2015 | Specifications and bench test methods of automobile antilock braking system solenoid modulator for pneumatic | | January 01, 2016 |
| 58 | QC/T 1007-2015 | Evaluating filtration performance of fuel filters for automobiles – Method of particle counting | | January 01, 2016 |
| 59 | QC/T 1008-2015 | Specifications of tank ventilation filters | | January 01, 2016 |
| 60 | QC/T 1009-2015 | Specifications of passenger car automatic transmission filters | | January 01, 2016 |
| 61 | QC/T 1010-2015 | Specifications and bench test methods of clutch hydraulic pressure boosting system booster | | January 01, 2016 |
| 62 | QC/T 1011-2015 | Technical requirements and | | January 01, |

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# Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009 *Directives for Standardization – Part 1: Structure and Drafting of Standards*.

This Standard was proposed and under the jurisdiction of National Technical Committee for Standardization of Automotive (SAC/TC 114).

Drafting organizations of this Standard: Jiangmen Xingjiang Steering Gear Co., Ltd., Trw Fawer Commercial Steering (Chuangchun) Co., Ltd., Guangzhou Mechanical Engineering Research Institute, Hubei Henglong Group, and Nanjing Donghua Automotive Steering Co., Ltd.

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# Technical Requirements and Determination for Motor Vehicles – Hydraulic Power Steering System Cleanliness

## 1 Scope

This Standard specifies the technical requirements and determination for cleanliness of automotive hydraulic power steering system (hereinafter referred to as system) components.

This Standard is applicable to the automotive hydraulic power steering system components including automotive hydraulic power steering gear, steering oil pump, steering oil tank, steering power cylinder, steering oil tube, and joint.

## 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 document.

GB/T 3730.1 Motor Vehicles and Trailers – Types – Terms and Definitions

GB/T 5179 Motor Vehicles – Steering System – Terms and Definitions

GB/T 6003.1 Test Sieves of Metal Wire Cloth

GB/T 14039 Hydraulic Fluid Power – Fluids - Method for Coding the Level of Contamination by Solid Particles

GB/T 17446 Fluid Power Systems and Components – Vocabulary

GB/T 20461-2006 Rubber Hoses and Hose Assemblies for Automobile Power – Steering Systems – Specification

QC/T 299.1-2014 Automobile Hydraulic Steering Power Pump – Part 1: Technical Requirements

QC/T 301-2014 Technical Requirements and Test Methods for Motor Vehicles Power Cylinder

The impurity content of joints shall be no greater than 5mg.

# 6 Test Method

## 6.1 Preparation

**6.1.1** Make the pre-test preparation for the people, things and environment as per the provisions of QC/T 573.

**6.1.2** After the final inspection of the product, normal exit-factory state shall be subject to.

**6.1.3** The cleaning solution for cleaning shall be filtered as per the requirements of QC/T 573.

**6.1.4** The operation shall be maintained consistent during the cleaning process, so that the results have higher repeatability and producibility.

## 6.2 Appearance cleaning

**6.2.1** Before cleaning, all holes and tube joints shall be blocked.

**6.2.2** Use clean cleaning solution to clean the product from the appearance.

**6.2.3** The turbid liquid produced during the cleaning process shall not participate in the evaluation of cleanliness.

## 6.3 Internal cleaning of the non-disassembled components

**6.3.1** Inner-cavity, and sealed product components

**6.3.2** The test products are automotive hydraulic power steering gear, steering oil pump, steering power cylinder; use clean inlet tube to fill the product internal part with clean cleaning solution from the container; under no-load condition, rotate by hand, circulate for 10 times; collect the turbid liquid into clean container; wash with certain amount of clean cleaning solution, shake the assembly, then collect the turbid liquid together with that generated after the grinding.

**6.3.3** The test products are steering oil tank, steering oil tube, joints; use clean inlet tube to fill the 2/3 volume of product internal part with clean cleaning solution from the container; then shake for 10 times in the front and back, left and right, up and down directions; wash the products; collect the turbid liquid into the clean container; repeat the operation for once; then collect the turbid liquid generated during the two operations.

**6.3.4** Use the clean oil return tube to return the turbid liquid to the container and

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