

# HJ

**National Standard for Environmental Protection  
of the People's Republic of China**

**中华人民共和国国家环境保护标准**

HJ 437-2008

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**Technical specification for on-board diagnostic (OBD)  
system of compression ignition and gas fuelled  
positive ignition engines of vehicles**

**车用压燃式、气体燃料点燃式发动机与汽车车载诊断 (OBD)  
系统技术要求**

**Issued on June, 24, 2008**

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**Issued by the Ministry of Environmental Protection of the People's  
Republic of China**

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## Foreword

This standard is formulated to implement *the Environment Protection Law of the People's Republic of China* and *the Law of the Prevention and Control of Atmospheric Pollution of the People's Republic of China*, to prevent and control the pollution of motor vehicles' emission to the environment, and to improve the environmental air quality.

This standard specifies the technical specification and test method for on-board diagnostic (OBD) system of vehicles with compression ignition engines and their such engines as well as vehicles with natural gas (NG) or liquid petroleum gas (LPG) fuelled positive ignition engines and their such engines. This standard supplements GB 17691, *Limits and measurement methods for exhaust pollutants from compression ignition and gas fuelled positive ignition engines of vehicles (III, IV, V)* with respect to the on-board diagnosis (OBD) system.

For the purpose of this standard, modification of technical contents adopts 2005/55/EEC, Directive of the European Union (EU) on the laws of the Member States relating to the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines for use in vehicles, and the emission of gaseous pollutants from positive-ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles as well as its revised directives 2005/78/EC and 2006/51/EC with respect to on-board diagnosis (OBD) system.

For the purpose of this standard, the Annexes A, B, C, and D are normative.

This standard is issued for the first time.

This standard was organized for formulation by the Department of Scientific and Technical Standard of the Ministry of Environmental Protection of the People's Republic of China.

The chief drafting organizations include China Automotive Technology & Research Center, Chinese Research Academy of Environmental Sciences, and Jinan Vehicle Testing Center

This standard was approved on June 24, 2008 by the Ministry of Environmental Protection of the People's Republic of China.

This standard shall be effective as of July 1 2008.

This standard shall be interpreted by the Ministry of Environmental Protection of the People's Republic of China

# **Technical specification for on-board diagnostic (OBD) system of compression ignition and gas fuelled positive ignition engines of vehicles**

## **1 Scope**

This standard specifies the technical specification and test method for on-board diagnostic (OBD) system of vehicles with compression ignition engines and their such engines as well as vehicles with natural gas (NG) or liquid petroleum gas (LPG) fuelled positive ignition engines and their such engines.

This standard applies to the type approval and uniformity inspection for the OBD system of the compression ignition (including gas fuelled positive ignition) engines of M2, M3, N1, N2 and N3 motor vehicles which are designed by a speed greater than 25 km/h and M1 motor vehicles which are designed with total weight greater than 3500 kg and of such vehicles.

For N1 and N2 vehicles fitted with compression ignition (including gas fuelled positive ignition) engines, if the OBD system type approval has been made in accordance with GB 18352.3-2005, *Limits and measurement methods for emissions from light-duty vehicles (III, IV)*, the type approval specified in this standard may be omitted for their engines.

## **2 Normative references**

The following standards contain provisions which, through reference in this standard, constitute provisions of this standard, the effective edition of the normative document referred to apply.

GB 17691 Limits and measurement methods for exhaust pollutants from compression ignition and gas fuelled positive ignition engines of vehicles (III, IV, V)

GB 18352.3-2005 Limits and measurement methods for emissions from light-duty vehicles (III, IV)

HJ 438-2008, Durability of emission control systems of compression ignition and gas fuelled positive ignition engines of vehicles

ISO 2575 Road vehicles -- symbols for controls, indicators and tell-tales

ISO 15031-3 Road vehicles -- Communication between vehicle and external equipment for emissions-related diagnostics -- Part 3: Diagnostic connector and related electrical circuits, specification and use

ISO 15031-4 Road vehicles -- Communication between vehicle and external equipment for emissions-related diagnostics -- Part 4: External test equipment

ISO 15031-5 Road vehicles -- Communication between vehicle and external equipment for emissions-related diagnostics -- Part 5: Emissions-related diagnostic services

ISO DIS 15031-6:2004 Road vehicles — Communication between vehicle and external test equipment for emissions-related diagnostics — Part 6: Diagnostic trouble code definitions

ISO 15765-4 Road vehicles — Diagnostics on Controller Area Networks (CAN) — Part 4: Requirements for emissions-related systems

SAE J1939 Recommended Practice for a Serial Control and Communications Vehicle Network

SAE J1939-13 Off-Board Diagnostic Connector

SAE J1939-73 Application Layer - Diagnostics

SAE J2012 Diagnostic Trouble Code Definitions (idt ISO DIS 15031-6)

### **3 Terms and definitions**

For the purposes of this national standard, the terms and definitions given in GB 17691 and HJ 438-2008, *Durability of emission control systems of compression ignition and gas fuelled positive ignition engines of vehicles* and the following apply.

#### **3.1 defeat strategy**

Any of the below mentioned strategy is considered as the defeat strategy:

a kind of auxiliary emission control strategy (AECS) which enables that, under reasonable and normal operating conditions, a vehicle has an emission control efficacy lower than that under the basic emission control strategy (BECS) ; or

a kind of basic emission control strategy (BECS) which may differentiate the type - approval test condition from the other operating conditions. When the engine or the vehicle operates under the operating condition other than the type - approval test condition, the emission control efficacy is lower than the type approval level; or

The OBD system may differentiate the type - approval test condition from the other operating conditions. When the engine or the vehicle operates under the operating condition other than the type - approval test condition, it provides the monitoring level lower than that of type approval (in a timely and accurate way) .

### **3.2 deNO<sub>x</sub> system**

an exhaust aftertreatment system designed for decrease in nitrogen oxides (NO<sub>x</sub>) . For example, NO<sub>x</sub> catalyst of positive and passive lean-burn engines, adsorptive NO<sub>x</sub> catalyst, and selective catalytic reduction (SCR) system.

### **3.3 combined deNO<sub>x</sub>-particulate filter**

an exhaust aftertreatment system designed for decrease in both nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) .

### **3.4 exhaust aftertreatment system**

a (three-way or oxidation) catalytic converter, PM catcher, deNO<sub>x</sub> system, combined deNO<sub>x</sub>-particulate filter or any other device which may decrease gaseous pollutants and is installed in the engine exhaust system, but not including exhaust gas recirculation (EGR) system.

### **3.5 emission control system**

meaning the exhaust aftertreatment system, engine electronic control unit (EECU) , emission-related components which is installed in the engine exhaust device and provides the input signals or receives the output signals for the engine electronic control unit, and the communication interface (hardware or software, if appropriate) between the EECU and the other power assemblies or the vehicle emission control

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