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NATIONAL ENVIRONMENTAL PROTECTION STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

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Emissions Control Technical Requirements of Non-Road
Diesel Mobile Machinery
非道路柴油移动机械污染物排放控制技术要求

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Emissions Control Technical Requirements of Non-Road Diesel Mobile Machinery

1 SCOPE

This standard specifies the technical requirements for controlling exhaust emissions from the stage IV non-road diesel mobile machinery (hereinafter referred to as machine) and its installed diesel engines and from the secondary engines to be installed in the vehicles operating on roads intended for carrying passengers (goods).

This standard is applicable to the type test, conformity of production (CoP) check, emission compliance check, in-service conformity (ISC) check, and durability requirements for the following machinery and its installed diesel engines operated under intermittent speed, including but not limited to:

- Construction machinery, including excavating machinery, earth moving machinery, hoisting machinery, forklift trucks, compact machinery, road construction and road maintenance machinery, concrete machinery, driving machinery, piling machinery, aerial work machinery, and rock drilling machinery, etc.;
- Agricultural machinery, including tractors and combine harvesters, etc.;
- Forestry machinery;
- Ground support equipment in airports;
- Material handling machinery;
- Snow-plough machinery;
- Industrial drilling equipment.

This standard is applicable to the type test, CoP check, emission compliance check, ISC check, and durability requirements for the following machinery and its installed diesel engines operated under constant speed, including but not limited to:

- Air compressors;
- Generator sets;
- Fishery machinery, including aerators and pond excavators, etc.;
- Water pumps.

This standard is also applicable to the tri-wheel vehicles and their diesel engines installed and the vessels with a rated net power less than 37KW and their diesel engines installed.

2 NORMATIVE REFERENCES

This standard refers to the following normative documents or the provisions contained therein. For undated references, the latest editions of the normative document (including any amendments) apply.

| | |
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| GB 7258 | Safety specifications for power-driven vehicles operating on roads |
| GB 17691-2005 | Limits and measurement methods for exhaust pollutants from compression ignition and gas fueled positive ignition engines of vehicles (III, IV, V) |
| GB 17691-2018 | Limits and measurement methods for emissions from diesel fueled heavy-duty vehicles (CHINA VI) |
| GB 20891-2014 | Limits and measurement methods for exhaust pollutants from diesel engines of non-road mobile machinery (CHINA III, IV) |
| GB 29518-2013 | Diesel engines NOx reduction agent - Aqueous urea solution (AUS 32) |
| GB 36886-2018 | Limits and measurement methods for exhaust smoke from non-road mobile machinery equipped with diesel engine |
| GB/T 1147.1 | Small and medium power internal combustion engines - Part 1: General requirements |
| GB/T 25606 | Earth-moving machinery - Product identification numbering system |
| HJ 437-2008 | Technical specification for on-board diagnostic (OBD) system of compression ignition and gas fueled positive ignition engines of vehicles |
| ISO 13400 | Road vehicles - Diagnostic communication over Internet Protocol (DoIP) |
| ISO 15031 | Road vehicles - Communication between vehicle and external equipment for emissions-related diagnostics |
| ISO 15765-4 | Road vehicles - Diagnostic communication over Controller Area Network (DoCAN) - Part 4: Requirements for emissions-related systems |

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|---------------|---|
| ISO 27145 | Road vehicles - Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD) communication requirements |
| SAE J1939 | Commercial vehicle control system local area network (CAN bus) communication protocol |
| SAE J1939-73 | Application Layer - Diagnostics |
| ASTM E 29-06B | Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications |

3 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in GB 20891-2014 and the following apply.

3.1

排放控制策略 emission control strategy

an element or a set of design elements incorporated into the overall design of an engine system or machine and used for controlling exhaust emissions, including one base emission control strategy (BECS) and one set of auxiliary emission control strategies (AECS)

3.2

基础排放控制策略 base emission control strategy (BECS)

an emission control strategy that is active throughout the range of speed and load over which the engine operates, unless an AECS is activated, e.g., engine timing map, EGR map, SCR catalyst reagent dosing map, etc.

3.3

辅助排放控制策略 auxiliary emission control strategy (AECS)

an emission control strategy that is activated and temporarily replaces or modifies a BECS for one or more specific purposes under specific ambient and/or operating conditions, e.g., vehicle speed, engine speed, gear position, intake temperature or pressure, etc.

3.4

失效策略 defeat strategy

an emission strategy that does not meet the performance requirements for a BECS or AECS as specified in this standard

3.5

反应剂 reagent

a medium that is stored on-board the machine in a tank and provided to the exhaust after-treatment system upon request of the emission control system

3.6

降氮氧化物系统 deNOx system

an exhaust after-treatment system designed to reduce emissions of oxides of nitrogen (NOx), e.g., passive and active lean-burn engine NOx catalysts, NOx adsorbers and selective catalytic reduction (SCR) systems

3.7

组合式降氮氧化物—颗粒物系统 combined deNOx-particulate filter

an exhaust after-treatment system designed to reduce emissions of NOx and particulate matter (PM)

3.8

排气后处理系统 exhaust aftertreatment system

a catalyst [oxidation (DOC), 3-way or any other gas catalyst], particulate after-treatment system, deNOx system, combined deNOx-particulate filter, or any other emission reducing device, that is installed downstream of the engine

3.9

粒子数量 particle number (PN)

the total number of particles with a diameter greater than 23nm present in the diluted exhaust gas from which the volatile materials have been removed, according to the test method described in Appendix BB

3.10

排放控制系统 emission control system

a system of the elements of design or emission strategies developed or calibrated for the purpose of



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