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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 20891-2014

**[Including 2020XG1] Limits and measurement methods for
exhaust pollutants from diesel engines of non-road mobile
machinery (CHINA III, IV)
(English Translation)**

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1 Scope

The standard specifies the limits and measurement methods for the exhaust pollutant from diesel engines of non-road mobile machinery (including marine diesel engines with a rated net power not exceeding 37kW) and the secondary diesel engines installed on road vehicles for carrying people (cargo).

This Standard is applicable to type approval and production conformity inspection of the diesel engines installed for the following (including but not limited to) non-road mobile machinery, with rated net power not exceeding 560kW and operating at non-permanent speed, e.g..

- Industrial drilling equipment;
- Engineering machinery (including loader, bulldozer, road roller, asphalt paver, truck for non-highway, excavator, etc.);
- Agricultural machinery (including large tractor, combine-harvester, etc.);
- Forestry machinery;
- Material handling machinery;
- Snow-plough equipment;
- Airport ground servicing equipment.

This Standard is applicable to type approval and production conformity inspection of the diesel engines installed for the following (including but not limited to) non-road mobile machinery, with rated net power not exceeding 560kW and operating at non-permanent speed, e.g..

- Air compressor;
- Generator unit;
- Fishery machinery (automatic aerator, pond excavator, etc.);
- Water pump.

2 Normative References

This Standard refers to the provisions of the following documents or therein. For undated references, the effective versions are applicable to this Standard.

GB 252 General Diesel Fuels

GB/T 6072 Reciprocating Internal Combustion Engines, Performance

GB/T 6379.2-2004 Accuracy (Trueness and Precision) of Measurement Methods and Results Part 2. Basic Method for the Determination of Repeatability and Reproducibility of a Standard Measurement Method

GB 17691-2005 Limits and Measurement Methods for Exhaust Pollutants from Compression Ignition and Gas Fuelled Positive Ignition Engines of Vehicles (CHINA III IV V)

GB/T 17692-1999 Measurement Methods of Net Power for Automotive Engines

HJ 509-2009 Determination of Platinum, Palladium and Rhodium Loading in the Vehicle-used Ceramic Catalytic Converters - Inductive Coupled Plasma-Optical Emission Spectrometry and Inductive Coupled Plasma-mass Spectrometry

3.1 Non-road mobile machinery

Various machinery used for non-road and mentioned in "scope", i.e..

3.2 Secondary engine

Diesel engine which is mounted for road vehicle, does not provide driving force for vehicle but provides power for vehicle-mounted special facilities.

3.3 Test cycle

The procedures that diesel engine is tested at stated speed and torque under steady-state condition or instantaneous condition (NRTC test).

3.4 Non-road transient cycle

Test cycle including 1238 conditions changing second by second as specified in Attachment BE of this Standard.

3.5 Reference speed

Actual speed value corresponding to 100% point relative speed in NRTC test as described in

Attachment BB of Standard GB 17691-2005.

3.6 Diesel engine type-approval

Approve a diesel engine type with respect to emission level of exhaust pollutants from diesel engine.

4.1 Application of type approval

The application of type approval for diesel engines of non-road mobile machinery is proposed by manufacturing enterprise or its authorized agent to the type approval institution, and the inspection content required by this Standard shall be completed.

4.1.1

The technical data related to type approval and the relevant durability test method and test result data shall be submitted according to the requirements of Appendix A and Attachment BD of this Standard.

4.2 Authorization of type approval

4.2.1

The type approval institution authorizes the type approval for diesel engine type (or family) meeting the requirements of Article 5 and Appendix G of this Standard, and issues type approval certificate specified in Appendix F.

4.3 Exemption of type approval

For diesel engines used for special purposes such as export, exhibition, rescue, emergency, matching test and replacement, application for type approval exemption can be filed to type approval competent authority. Documents need to be submitted to competent

authorities include.

model, power, manufacturing plant, purpose, emission standard phase, quantity, production date, etc.

5.1 General

The technical measures taken by the manufacturing enterprises must ensure the emission of diesel engine under normal operating conditions and within the useful life period specified in

Article 5.2.2 of this Standard meets the requirements of this Standard.

5.2.1 Test regulations and sampling system

The measurement and sampling regulations for exhaust pollutants from diesel engine shall be in accordance with those specified in Attachment BA of Appendix B, and the test cycle shall be in accordance with stable-state test cycle specified in Table B.1 or Table B.2 or Table B.3 of

Appendix B. In Phase IV, non-constant speed diesel engine not exceeding 560 kW also need to be tested in accordance with NRTC transient test cycle specified in Attachment BE. The exhaust pollutants from diesel engine shall be determined by the system described in Appendix C.

5.2.2 Useful life

Exhaust and control device of diesel engine shall be ensured to work well, and the pollutant emission shall comply with the limit value requirements specified in 5.2.3.

For the diesel engine durability running test, the durability test specified in Table 1 shall be completed in accordance with the requirements of Attachment BD; the shortest operation duration or equivalent operation duration of diesel engine exhaust durability shall not be less than

25% of the useful life specified in Table 2;

5.2.3 Limits

The brake specific emission of carbon monoxide (CO), hydrocarbon (HC), oxynitride (NO_x) and particulate matter (PM) in exhaust pollutants from diesel engines of non-road mobile machinery, multiplied by the deterioration coefficient determined according to Article BD.2.9 in Attachment BD of this Standard (for diesel engines installed with exhaust aftertreatment system), or plus the deterioration correction value determined according to Article BD.2.10 in

Attachment BD of this Standard (for diesel engines not installed with exhaust aftertreatment