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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 8190.9-2017

Reciprocating internal combustion engines -- Exhaust emission measurement -- Part 9: Test cycles and test procedures for test-bed measurement of exhaust gas smoke emissions from compression ignition engines operating under transient conditions

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Foreword

GB/T 8190 "Reciprocating internal combustion engine emission measurement" is divided into 11 parts.

--- Part 1. Test bench measurement of gas and particulate emissions;

--- Part 2. Field measurements of gas and particulate emissions;

--- Part 3. Definition and measurement of exhaust smoke at steady-state conditions;

--- Part 4. Test cycles for different uses of the engine;

--- Part 5. Test fuel;

--- Part 6. Measurement results and test reports;

--- Part 7. Determination of the engine family;

--- Part 8. Determination of the engine group;

--- Part 9. Compression ignition engine transient conditions exhaust smoke test bench test cycle and test procedures;

--- Part 10. Compression ignition engine transient conditions exhaust smoke field measurement test cycle and test procedures;

--- Part 11. Tester measurements of transient emissions of gases and particulate emissions from non-road mobile machinery engines.

This section GB/T 8190 Part 9.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 8190.9-2010 "Reciprocating internal combustion engine emission measurement Part 9. Compression-ignition engine transient conditions row

Gas smoke test bench test cycle and test procedures. " The main technical changes

compared with GB/T 8190.9-2010 are as follows.

--- Modify the normative references (see Chapter 2,.2010 version Chapter 2);

--- Modify the requirements of the test conditions (see 5.1.1 and 5.1.2,2010 version 5.1.1 and 5.1.2);

--- Modify the accuracy of measuring equipment (see 7.3.2.3 and 8.2.2, see the.2010 version 7.3.2.3 and 8.2.2);

--- Modify the environmental requirements (see 10.3.1,2010 version 10.3.1);

--- Re-arrangement of the smoke measurement program (see Chapter 11,.2010 Edition Chapter 11);

--- Modify the layout of the figure;

--- Modified non-road variable speed operation of the engine test cycle (see Appendix A,.2010 edition Appendix A).

This section uses the translation method identical with ISO 8178-9.2012 "Reciprocating internal combustion engine emission measurement Part 9. Compression ignition

Machine transient operating conditions exhaust smoke test rig test cycle and test procedures. "

The documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

--- Reciprocating internal combustion engine driven alternator GB/T 2820.1-2009 - Part 1 - uses, quotas and performance

(ISO 8528-1.2005, IDT)

--- GB/T 8190.5-2011 Reciprocating internal combustion engine emission measurement Part 5. Test fuel (ISO 8178-5.2008,

IDT)

--- GB/T 8190.6-2006 Reciprocating internal combustion engine emission measurement Part 6. Measurement results and test reports (ISO 8178-

6.2000, IDT)

Reciprocating internal combustion engines - Emission measurement - Part 7. Determination of family of engines (ISO 8178-7..2003);

1996, IDT)

Reciprocating internal combustion engines - Emission measurement - Part 8. Determination of the engine train set - ISO 8178-8-2003.

1996, IDT)

This part is proposed by China Machinery Industry Federation.

This part of the National Internal Combustion Engine Standardization Technical Committee (SAC/TC177) centralized.

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Introduction

There are many different smoke measurement protocols in the world today. Some smoke measurement procedures are designed for test bench testing to certify

Or type approval; others are designed for field trials for monitoring and maintenance testing. Different smoke measurement procedures co-exist to meet each

Requirements of regulatory agencies and industrial sectors. Two typical methods of smoke measurement are filter paper smoke meter and extinction smoke meter method.

This part of GB/T 8190 incorporates the main technical characteristics of the existing smoke measurement procedures to the greatest extent possible. GB/T 8190 of the first 4

Section provides for a number of test cycles to determine the emissions of non-road-use engine gases and particles. GB/T 8190 Part 4 of the test

The cycle is designed for the different working characteristics of all types of non-road machinery. Again, different smoke test cycles are available for different types

Off-road engines and machinery. In GB/T 8190.4, allows the use of different steady-state conditions to characterize and control the non-road use of the engine

Gas and particulate emissions. In order to properly characterize and control the smoke emissions of engines of various uses, a transient test cycle is required.

GB/T 8190 This section is used for compression ignition engine smoke measurement. This section applies to speed or load or both at any time

Interchangeable engine operating under transient conditions. It should be noted that the maintenance of a typical natural aspirated engine row under transient conditions

Gas smoke is usually the same as its steady state exhaust smoke.

Only extinction smoke meter can be used for smoke measurement GB/T 8190 provisions of

this section allows the use of full or partial flow smoke extinction

Gauge, this section considers the difference between the response time of these two types of smokeless smoke meter, but did not consider any difference caused by the sampling zone temperature

difference.

The test cycle specified in Annex E represents the engine used for the purposes described in the E1, E2, E3 and E5 cycles of IEC 60068-1.

The test cycles specified in Annex F represent the engine used for the purpose described in Cycle F of GB/T 8190.4.

Reciprocating internal combustion engines - Part 9. Measurement of emissions.

Test of Exhaust Smoke Degree in Compression Ignition Engine Transient Condition

Test cycle for measuring and testing procedures

1 Scope

GB/T 8190 provisions of this part of the test bench to assess the compression ignition engine exhaust smoke test cycle and test procedures.

For transient smoke test cycles, smokes should be measured using a smoke meter operating according to the principle of extinction. This section is intended to provide smoke test cycle

As well as methods of measuring and analyzing smoke. The detailed rules for the measurement of smoke using the principle of extinction are given in ISO 11614.1999. Chapter 1 of this section

The test procedures and measuring methods specified in Chapter 11 apply to reciprocating internal combustion engines. However, for each use of the engine can only use the regulations of this section

A test cycle to be assessed. Appendix A, Appendix B, Appendix E and Appendix F each contain a list of only suitable for the scope of the appendix

The purpose of the engine. The smoke test cycles specified in the appendix can also be used for the types of engines and machines specified in ISO /

For some off-road engines, a smoke test on site must be carried out without having to conduct a test bench smoke test. For additional requirements

(Such as occupational health and safety regulations) of the machinery used in the engine may require additional test conditions and a dedicated evaluation method.