

ICS 27.020
CCS J 90



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

GB/T 8190.11-2009

**Reciprocating internal combustion engines -- Exhaust emission measurement --
Part 11: Test-bed measurement of gaseous and particulate exhaust emissions
from engines used in nonroad mobile machinery under transient test conditions
(English Translation)**

Issued on: March 19, 2009

Implemented on: November 1, 2009

Issued by: Standardization Administration of China

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Foreword

GB/T 8190 "Reciprocating internal combustion engines - Exhaust emission measurement" is divided into eleven sections.

--- Part 1. gaseous and particulate emissions test bench measurements;

--- Part 2. gas and particulate exhaust emissions at site;

--- Part 3. Definitions and methods of measurement of exhaust gas smoke under steady conditions of;

- Part 4. Test cycles for different engine applications;
- Part 5. Test fuels;
- Part 6. Report of measuring results and test;
- Part 7. Engine family determination;
- Part 8. Engine group determination;
- Part 9. Test Bench compression ignition engines under transient operating conditions smoke emission measurement test cycles and test procedures;
- Part 10. Compression ignition engines under transient operating conditions smoke emission test cycles with field measurements and test procedures;

Non-road mobile machinery operating conditions and gas engine test bench measuring transient particulate emissions. --- Section 11.

This section GB/T 8190 Part 11.

This section identical with ISO 8178-11:2006 "Reciprocating internal combustion engines - Exhaust emission measurement - Part 11. Non-road mobile machinery made Motivation transient conditions gaseous and particulate emissions measurement test station "(in English).

This section is equivalent translation ISO 8178-11:2006.

For ease of use, this section made the following editorial changes.

--- "This International Standard", "ISO 8178 This part of" the words to "this part" or "GB/T 8190 to the present section";

--- With a decimal point instead of a comma as the decimal point, "";

--- Deleted international standards foreword;

--- For ISO 8178-11. other international standards referenced in 2006, has been adopted as a standard by our country instead of the standard, not Adopted as the standard of a direct use of international standards.

This section of the Appendix A, Appendix B, Appendix C, Appendix D and Appendix G are normative appendices, Appendix E and F are informative appendices.

This part is proposed by China Machinery Industry Federation.

This part of the internal combustion engine by the National Standardization Technical Committee (SAC/TC177) centralized.

This section drafted by. China Shipbuilding Technology and Economy Research Institute, Shanghai Institute of the internal combustion engine, Guangxi Yuchai Machinery Co.

Shares the company.

Introduction

Measuring system depends on the type of test cycle, the steady-state or transient, and the kind of measured pollutants. Under steady-state cycling conditions, exhaust gas Total emissions can be easily measured in accordance with the original engine exhaust concentration and exhaust flow, or diluted depending on the concentration and total diluted exhaust gas flow System CVS (Constant Volume Sampling) flow calculated. Both have a similar system is described in GB/T 8190.1 Lane. For particulate matter , The only part of the exhaust gas may dilution using a full flow dilution system or the partial flow dilution system.

In this part of the transient cycle conditions GB/T 8190 regulations, the more difficult real-time determination of the exhaust gas flow. Thus, since the whole Flow dilution system does not require the determination of the total exhaust flow, CVS principle has been applied for many years. The total diluted exhaust gas, so that the total flow Volume (dilution air and exhaust gas flow and) maintain a constant exhaust gas and particulate matter would have to be measured in diluted state. This system Partial flow dilution system is much higher demand for space and cost than under steady state cycling conditions. On the other hand, if you use a complex control system Systems and calculation methods, the raw exhaust gas measurement and partial flow dilution system can also be used for transient conditions.

For most non-road use and heavy-duty engines, CVS system seem large and wasteful. Thus, ISO 16183 by ISO/T C22/SC5 improvements, and a detailed description of the raw exhaust gas measured under transient test conditions of heavy-duty engines in the standard method and partial flow dilution system. Since many non-road engines on engine size, displacement and heavy-duty engines with similar power, ISO 16183 content can also be used for non-road engines.

In this section, the full flow dilution and partial-flow dilution/exhaust original method is considered to be equal, so here are two methods include.

GB/T 8190.11-2009/ISO 8178-11:2006 Reciprocating internal combustion engines - Exhaust emission measurement Part 11. Non-road mobile machinery Gas engine and transient conditions Test bed measurement of particulate emissions

1 Scope

This section GB/T 8190 specifies the test stand measurement and evaluation side reciprocating internal combustion engine under transient operating conditions of gaseous and particulate emissions Method to determine the emission values for each pollutant emissions.

Specific transient test cycle covered in this section applies to the output power from 37kW ~

560kW of compression-ignition engines, mainly for Except for road vehicles designed engines. This section applies to GB/T 8190.4-road vehicles as defined in 8.3.1.3 and diesel Driver non-road engines of industrial equipment, including the construction machine including a variety of engine applications, these applications include. wheel loaders Machines, bulldozers, crawler tractors, crawler loaders, truck-type loaders, off-road trucks, hydraulic excavators, agricultural equipment, self-propelled agricultural Vehicles (including tractors), forestry machinery, forklifts, road maintenance equipment and mobile cranes.

Since a discharge measured value requires a complex set of individual measurements, rather than just to provide a single measurement, so below Many procedures for laboratory methods are described in detail in the narrative, so that the test results depends not only on the engine and test methods, but also on the course of measurement.

2 Normative references

The following documents contain provisions which, through reference to GB/T 8190 to the present, constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 8190.5 Reciprocating internal combustion engines - Exhaust emission measurement - Part 5. Test fuels (GB/T 8190.5-2005, ISO 8178-5:1997, IDT) GB/T 21404-2008 and measuring methods for determining internal combustion engine power - General requirements (ISO 15550:2002, IDT) Attached GB/T 21405-2008 reciprocating internal combustion engine power and methods of measurement to determine the exhaust emission tests Plus requirements (ISO 14396:2002, IDT) ISO 5167-1 full pipe flow of circular cross-section measuring fluid flow pressure differential devices - Part 1. General principles and requirements ISO 5725-2:1994 Test Methods and Results Accuracy (trueness and precision) - Part 2. Standard Test Method for determining weight the basic method of refolding and reproducibility ISO 8178-1:2006 Reciprocating internal combustion engines - Exhaust emission measurement - Part 1. Test - bed gas and particulate emissions measurement ISO 16183:2002 heavy-duty engine emission measurement directly under the test conditions and transient partial flow dilution system with particulate emissions measuring SAEJ1937.1995 in the cold intake air cooling systems of the engine dynamometer test test

3 Terms and Definitions

The following terms and definitions apply to this part of the GB/T 8190's.

After dilution with clean filtered air exhaust, so that in close proximity to the main filter