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NATIONAL STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 16936-2007

Replacing GB/T 16936-1997

Earth-moving machinery –

Engine test code - Net power

土方机械　发动机净功率试验规范

(ISO 9249: 1997, MOD)

Issued on: November 01, 2007　　Implemented on: January 01, 2008

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;

Standardization Administration Committee of the People's Republic of China.

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Foreword

This standard modifies and adopts ISO 9249:1997 *Earth-moving machinery – Engine test code - Net power* (English edition). It includes the technical corrigendum ISO 9249 Cor. 1:1999.

This standard is redrafted according to ISO 9249:1997.

The main technical differences between this standard and ISO 9249:1997 are as follows:

— Take our country's standards to replace the corresponding international standards which are referenced in ISO 9249:1997.

— Renumber the footnotes from [1a)], [1b)], [2] …… to [a)], [b)], [c)]…… in Table 1.

— Renumber the footnotes of full text. Add the number for the formulas of the full text.

— Add Table 4. The content in Table 8.4 is moved into Table 4, with the renumbering of its footnotes. The previous Table 4 is changed to Table 5.

— The tolerance values which are expressed by a%, b%, c% and d% are changed to the form of expression such as a, b, c and d (the a, b, c and d have been defined as percentages as specified in 9.3.1.4).

For ease of use, the following editorial modifications have been made in this standard:

— “The international standard’ is changed to ‘this standard’;

— The decimal point ‘, ’ is changed into decimal point ‘.’;

— The foreword of the international standard is deleted.

This standard is revision to GB/T 16936-1997 *Earth-moving machinery - Engine test code - Net power.*

Compared with GB/T 16936-1997, the main changes of this standard are as follows:

— Contents such as intake pressure drop, absolute pressure of engine import, exhaust back pressure are added in Clause 5.3;

— In Clause 5.3, the fuel oil temperature is stipulated according to the stipulation of spark ignition engine and compression ignition engine;

— In detail specify the ‘measurement and correction of smoke of compression ignition engine’ in Clause 7;

— Respectively specify the compression ignition engine and the spark ignition engine in Clause 8;

— Add the stipulation of '9.3 tolerance'.

This standard replaces GB/T 16936-1997, from the implementation date.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of China Machinery Industry Federation.

The drafting organization of this standard: Tianjin Engineering Machinery Research Institute.

The chief drafting staff of this standard: Yan Kun.

This standard replaces the following historical edition:

— GB/T 16936-1997.

Earth-moving machinery –

Engine test code - Net power

1 Scope

This standard specifies a method for testing internal combustion engines intended for propulsion of earth-moving machinery as defined in GB/T 8498.

This standard applies to evaluate the performance of earth-moving machinery's engine. It is used to introduce, at full load condition, the engine's characteristic curve of power, fuel consumption rate versus the rotation speed. These engines may be the natural aspirated or pressure-charged, either using a mechanical pressure-charger or turbocharger.

This standard concerns internal combustion engines used in earth-moving machinery and included in one of the following categories:

- reciprocating internal combustion engines (spark-ignition or compression-ignition) but excluding free piston engines;

- rotary piston engines.

NOTE: This standard provides engine power correction factors in conformity with ISO 1585:1992.

2 Normative references

The articles contained in the following documents have become part of this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this standard.

GB/T 1883.1 Reciprocating internal combustion engines – Vocabulary – Part 1: Terms for engine design and operation (GB/T 1883.1-2005, ISO 2710-1:2000, IDT)

GB/T 1883.2 Reciprocating internal combustion engines – Vocabulary – Part 2: Terms for engine maintenance (GB/T 1883.2-2005, ISO 2710-2:1999, IDT)

GB/T 1884 Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method (GB/T 1884-2000, eqv ISO 3675:1998)

GB/T 6809.1 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 1: Structure and external covers (GB/T 6809.1-2003, ISO 7967-1:1987, IDT)

GB/T 6809.2 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 3: Valves, camshaft drive and actuating mechanisms (GB/T 6809.2-2006, ISO 7967-3: 1987, IDT)

GB/T 6809.3 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 3: Main running gear (GB/T 6809.3-2006, ISO 7967-2-1987/Amd.1: 1999, IDT)

GB/T 6809.4 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 4: Pressure charging and air/exhaust gas ducting systems (GB/T 6809.4-2007, ISO 7967-4:2005 IDT)

GB/T 6809.5 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 5：Cooling systems (GB/T 6809.5-1999, idt ISO 7967-5:1992)

GB/T 6809.8 Reciprocating internal combustion engines - Vocabulary of components and systems - Part 8: Starting systems (GB/T 6809.8-2000, idt ISO 7967-8:1994)

GB/T 8498 Earth-moving machinery - Basic types - Vocabulary (GB/T 8498-1999, eqv ISO 6165:1997)

ISO 1585: 1992 Road vehicles - Engine test code - Net power

ISO 3104: 1994 Petroleum products; Transparent and opaque liquids; Determination of kinematic viscosity and calculation of dynamic viscosity

ISO 5163: 2005 Motor and aviation-type fuels - Determination of knock characteristics - Motor method

ISO 5164: 2005 Motor fuels - Determination of knock characteristics - Research method

ISO 5165: 1998 Diesel fuels - Determination of ignition quality - Cetane method

ISO 7876-1: 1990 Fuel injection equipment - Vocabulary - Part 1: Fuel injection pumps

ISO 11614: 1999 Reciprocating internal combustion compression-ignition engines - Apparatus for measurement of the opacity and for determination of the light absorption coefficient of exhaust gas

ASTM D 240-87 Standard test method for heat of combustion of liquid hydrocarbon

fuels by bomb calorimeter

ASTM D 3338-88 Standard test method for estimation of heat of combustion of aviation fuels

3 Terms and definitions

For the purpose of this standard, the following terms and definitions AND those established in GB/T 1883.1, GB/T 1883.2, GB/T 6809.1, GB/T 6809.2, GB/T 6809.3, GB/T 6809.4, GB/T 6809.5, GB/T 6809.8 and ISO 7876-1 shall apply.

3.1

net power

power obtained on a test bed at the end of the crankshaft or its equivalent at the corresponding engine speed with the equipment and auxiliaries listed in Table 1.

NOTE: If the power measurement can only be carried out with a mounted gear-box, the losses in the gear-box should be added to the measured power to give the engine power.

3.2

standard production equipment

any equipment provided by the manufacturer for a particular engine application.

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