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Internal combustion engines — Determination and method for the measurement of engine power — General requirements

*Moteurs à combustion interne — Détermination et méthode de mesure de
la puissance du moteur — Exigences générales*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15550 was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*.

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Introduction

This International Standard establishes the framework for ISO engine power measurement standards. By applying this framework the disadvantages of the existence of many similar, but different, ISO standards for the definition and determination of engine power can be avoided.

This framework uses the “Core” and “Satellite” approach. The “Core” standard contains the requirements that are common to all engine applications described in the scope and the “Satellite” standards contains those requirements that are necessary to tailor power measurement and declaration to suit a particular engine application.

This International Standard is only applicable in conjunction with a particular “Satellite” standard in order to completely specify the requirements for the particular engine application. The “Core” standard therefore, is not a document that can stand alone but only represents addenda to a particular “Satellite” standard used to create a complete standard together with the said “Satellite” standard.

The advantage of this approach is that the use of standards for the same or similar engines used in different applications will be rationalized and the harmonization of standards in the course of revision or development will be ensured.

This International Standard is the “Core” standard.

This International Standard was prepared in order to serve as the “Core” standard for making engine power measurements. It was drafted in close co-operation with technical committees ISO/TC 22 *Road vehicles*, ISO/TC 23 *Machinery for forestry and agriculture*, ISO/TC 127 *Earth moving machinery* and ISO/TC 188 *Small craft*. The prerequisite for any future modification of ISO 15550 will be the formal approval of all the above technical committees. Together with the “Satellite” standard for each engine application, the “Core” standard serves as the basis for engine power declaration and measurement. Each technical committee is fully responsible for the administration of its own “Satellite” standard(s).

If requirements from the regulations of any other authority (e.g. inspecting and/or legislative authority) have to be met, the relevant authority must be confirmed by the customer prior to placing the order.

Any further requirements are subject to agreement between the manufacturer and customer.

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Internal combustion engines — Determination and method for the measurement of engine power — General requirements

1 Scope

1.1 This International Standard specifies standard reference conditions and methods of declaring the power, fuel consumption, lubricating oil consumption and test methods for internal combustion engines in commercial production using liquid or gaseous fuels. It applies to:

- a) reciprocating internal combustion (RIC) engines (spark-ignition or compression-ignition engines) but excluding free piston engines;
- b) rotary piston engines.

These engines may be naturally aspirated or pressure-charged either using a mechanical pressure-charger or turbocharger.

1.2 This International Standard applies to engines used for:

- a) land, rail-traction and marine use as defined in ISO 3046-1;
- b) the propulsion of automotive vehicles as defined in ISO 1585 and ISO 2534;
- c) motorcycles as defined in ISO 4106;
- d) the propulsion of agricultural tractors and machines as defined in ISO 2288;
- e) the propulsion of earth-moving machinery as defined in ISO 9246;
- f) the propulsion of recreational craft or other small marine craft up to 24 m hull length as defined in ISO 8665.

This International Standard may be applied to engines used to propel road construction machines, industrial trucks, and for other applications where no suitable International Standard for these engines exists.

It also may be applied to tests performed both on a test bed at a manufacturer's works as well as on site.

1.3 Individual requirements for a particular engine application are given in the relevant "Satellite" standard. In order to completely specify the requirements relevant to a particular engine application, this "Core" standard shall only be used in conjunction with the relevant "Satellite" standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1585:1992, *Road vehicles — Engine test code — Net power*

ISO 2288:1997¹⁾, *Agricultural tractors and machines — Engine test code — Net power*

ISO 2534:1998, *Road vehicles — Engine test code — Gross power*

ISO 2710-1:2000, *Reciprocating internal combustion engines — Vocabulary — Part 1: Terms for engine design and operation*

ISO 3046-4:1997, *Reciprocating internal combustion engines — Performance — Part 4: Speed governing*

ISO 3046-5:2001, *Reciprocating internal combustion engines — Performance — Part 5: Torsional vibrations*

ISO 3046-6:1990, *Reciprocating internal combustion engines — Performance — Part 6: Overspeed protection*

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

ISO 3675:1998, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method*

ISO 4106:1993, *Motorcycles — Engine test code — Net power*

ISO 5163:1990, *Motor and aviation-type fuels — Determination of knock characteristics — Motor method*

ISO 5164:1990, *Motor fuels — Determination of knock characteristics — Research method*

ISO 5165:1998, *Petroleum products — Determination of the ignition quality of diesel fuels — Cetane engine method*

ISO 8665:1994, *Small craft — Marine propulsion engines and systems — Power measurements and declarations*

ISO 9249:1997, *Earth-moving machinery — Engine test code — Net power*

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*

ISO 14396, *Reciprocating internal combustion engines — Determination and method for the measurement of engine power — Additional requirements for exhaust emission tests in accordance with ISO 8178*

ASTM D 240-00, *Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter*

ASTM D 3338-00, *Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels*

1) Since withdrawn.