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STANDARD

**ISO**  
**3046-3**

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**Reciprocating internal combustion engines —  
Performance —**

**Part 3 :  
Test measurements**

*Moteurs alternatifs à combustion interne — Performances —  
Partie 3 : Mesures pour les essais*



Reference number  
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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3046-3 was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*.

This second edition cancels and replaces the first edition (ISO 3046-3: 1979), of which it constitutes a technical revision.

ISO 3046 consists of the following parts, under the general title *Reciprocating internal combustion engines — Performance*:

- *Part 1: Standard reference conditions and declarations of power, fuel consumption and lubricating oil consumption*
- *Part 2: Test methods*
- *Part 3: Test measurements*
- *Part 4: Speed governing*
- *Part 5: Torsional vibrations*
- *Part 6: Overspeed protection*
- *Part 7: Codes for engine power*

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International Organization for Standardization

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# Reciprocating internal combustion engines — Performance —

## Part 3 : Test measurements

### 1 Scope

This part of ISO 3046 summarizes the common measurement techniques of the main performance parameters of reciprocating internal combustion engines to ensure that the required accuracy of measurement is achieved for comparison of the measured values with those values specified by the engine manufacturer. Where necessary, individual requirements may be given for particular engine applications.

It applies to reciprocating internal combustion engines for land, rail-traction and marine use, excluding engines used to propel agricultural tractors, road vehicles and aircraft.

It may be applied to engines used to propel road construction and earth-moving machines, industrial trucks and for other applications where no suitable International Standards for these engines exist.

### 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 3046. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3046 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2710:1978, *Reciprocating internal combustion engines — Vocabulary*.

### 3 Other regulations and requirements

**3.1** For engines used on board ships and offshore installations which have to comply with rules of a classification society, the additional requirements of the classification society shall be observed. If this applies, the classification society shall be stated by the customer before placing the order.

For non-classed engines, such additional requirements are in each case subject to agreement between the manufacturer and customer.

**3.2** If special requirements from regulations of any other authority, for example inspecting and/or legislative authorities, have to be met, the authority shall be stated by the customer before placing the order.

Any further additional requirements shall be subject to agreement between the manufacturer and customer.

### 4 Requirements

#### 4.1 Accuracy of measurement

The accuracy of measurement depends on a number of factors. Therefore, for all parameters measured it is necessary to specify permissible deviations to cover the following factors which result in measurement uncertainty :

- error of the measuring instrument;
- correctness of the location of the measuring instrument;
- conditions under which the measuring instrument is used;
- accuracy of the readings;
- scatter of the readings of the measuring instrument during the measuring period.

The permissible deviations define the allowable range between the extreme values of the measurement.

#### 4.2 Operating conditions

**4.2.1** Before a set of measurements is commenced, the engine shall have operated at the particular conditions of load and speed for a sufficient period of time to ensure that it has reached stable operating conditions as specified by the engine manufacturer.

**4.2.2** During the period in which a set of measurements is being made, the load, speed and all fluid temperatures and pressures shall be maintained constant within the permissible deviations given in column 6 of table 1 which gives the list of parameters (see clause 5).