

**Engine Power Test Code—Spark Ignition and
Compression Ignition—Net Power Rating**

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1. Scope

This standard is intended to provide a method to obtain repeatable measurements that accurately reflect true engine performance in customer service. Whenever there is an opportunity for interpretation of the standard, a good faith effort shall be made to obtain the engine's typical in-service performance and avoid finding the best possible performance under the best possible conditions. Intentional biasing of engine component or assembly tolerances to optimize performance for this test is prohibited.

1.1 Purpose of Standard

This SAE Standard has been adopted by SAE to specify:

- a. A basis for net engine power and torque rating
- b. Reference inlet air and fuel supply test conditions
- c. A method for correcting observed power and torque to reference conditions
- d. A method for determining net full load engine power and torque with a dynamometer
- e. A procedure to ensure that engine controls are operating in a manner consistent with customer operation.

1.2 Field of Application

This test code document is applicable to both spark ignition (SI) and compression ignition (CI) engines, naturally aspirated and pressure-charged, with and without charge air cooling. This document does not apply to aircraft or marine engines.

1.2.1 This test code supersedes those portions of SAE J1349 JUN1995 dealing with net power rating. It can be used immediately, and it shall be used for testing after January 1, 2005.

1.2.2 Standard CI diesel fuel specifications are range mean values for Type 2-D EPA test fuel per Title 40, Code of Federal Regulations, Part 86.1313-87.

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1.2.3 The corresponding test code for gross power and torque rating is SAE J1995.

1.2.4 The document for mapping engine performance is SAE J1312.

1.3 Relationship to ISO 1585

ISO 1585 (DIS in 1989) differs from SAE J1349 in several areas, among which the most important are:

- a. This document is not limited to road vehicles.
- b. This document requires inlet fuel temperature be controlled to 40 °C on CI engines.
- c. This document includes a reference fuel specification and requires that engine power be corrected to that specification on all CI engines.
- d. This document includes a different procedure for testing engines with a laboratory charge air cooler.
- e. This document stipulates a 20% duty cycle limit on variable speed cooling fans in order to qualify for testing at the minimum power loss settings.
- f. This document provides procedures for transient testing of light duty vehicles with the associated changes in control parameters and exhaust back pressure.
- g. This document includes accessory losses if the accessories are standard on the vehicle application.

2. References

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or at www.SAE.org.

SAE J1312—Procedure for Mapping Engine Performance—SI and CI Engines

SAE J1995—Engine Power Test Code—SI and CI—Gross Power Rating

2.1.2 ISO PUBLICATIONS

Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002.

ISO 1585—Road vehicles—Engine test code—Net power

ISO 2288—Agricultural tractors and machines—Engine test code (bench test)—Net power

ISO 3046—Reciprocating internal combustion engines—Performance

ISO 4106—Motorcycles—Engine test code—Net power

ISO 9249—Earth-moving machinery—Engine test code—Net power

2.1.3 FEDERAL REGULATION

Available from The Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. (<http://bookstore.gpo.gov/cgi-bin/spcgate2001.cgi>)

CFR 40 Part 86.1313-87