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Australian Standard®
2789.1—1985

INTERNAL COMBUSTION ENGINES— PERFORMANCE

Part 1—ENGINES FOR LAND, RAIL-TRACTION AND MARINE USE— STANDARD REFERENCE CONDITIONS AND DECLARATIONS OF POWER, FUEL CONSUMPTION AND LUBRICATING OIL CONSUMPTION

STANDARDS ASSOCIATION OF AUSTRALIA
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The following interests are represented on Committee ME/20:

Australian Assembly of Fire Authorities

Australian Chamber of Commerce

Building Owners and Managers Association of Australia Limited

Confederation of Australian Industry

Construction Equipment Importers and Manufacturers of Australia

Department of Agriculture, Vic.

Department of Defence

Electricity Supply Association of Australia

Federal Chamber of Automotive Industries

Federation of Automotive Products Manufacturers

Institution of Engineers Australia

Metal Trades Industry Association of Australia

National Farmers Federation

Society of Automotive Engineers Australasia

State Insurance Office, Vic.

Tractor and Machinery Association of Australia

University of Melbourne

Victoria Police

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AS 2789 Parts 0-10 supersedes AS1501-1976

AS 2789 Parts 1-6 were published in May 1985 and in the May 1985 TAS they were given as superseding AS 1501-1976 which was withdrawn.

AS 2789 Parts 0 and 7-10 were published in May 1986. Information received from the technical officer, Peter Moore, is ~~that~~ they do supersede in part AS 1501-1976 but no information to that effect was given in the May 1986 TAS.

AUSTRALIAN STANDARD

INTERNAL COMBUSTION ENGINES—PERFORMANCE

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AS 2789.1—1985

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PREFACE

This standard was prepared by the Association's Committee on Internal Combustion Engines. It supersedes (in part) AS 1501—1976, Method for Rating and Testing of Internal Combustion Engines. It is one of a series of six standards on the performance of internal combustion engines which are identical with and have been reproduced from International Standards ISO 3046/1, 3046/2, 3046/3, 3046/4, 3046/5 and 3046/6, drawn up by ISO/TC 70.

The standards in the series are as follows:

AS 2789.1	Internal Combustion Engines—Performance, Part 1—Engines for Land, Rail-traction and Marine Use—Standard Reference Conditions and Declarations of Power, Fuel Consumption and Lubricating Oil Consumption
AS 2789.2	Internal Combustion Engines—Performance, Part 2—Engines for Land, Rail-traction and Marine Use—Test Methods
AS 2789.3	Internal Combustion Engines—Performance, Part 3—Engines for Land, Rail-traction and Marine Use—Test Measurements
AS 2789.4	Internal Combustion Engines—Performance, Part 4—Engines for Land, Rail-traction and Marine Use—Speed Governing
AS 2789.5	Internal Combustion Engines—Performance, Part 5—Engines for Land, Rail-traction and Marine Use—Torsional Vibration
AS 2789.6	Internal Combustion Engines—Performance, Part 6—Engines for Land, Rail-traction and Marine Use—Overspeed Protection

The series of standards applies to internal combustion engines for land, rail-traction and marine use, excluding engines used to propel agricultural tractors, road construction and earthmoving machines, road vehicles, motor cycles and aircraft.

It is proposed that additional parts will be reproduced from ISO standards which cover further matters in relation to the performance of internal combustion engines. An application standard (AS 2789.0)* is also intended which will be read in conjunction with these standards to cover any variation which the committee considers warranted to meet Australian conditions.

For the purpose of this Australian standard, the text of the ISO standard used herein should be modified as follows:

(a) *Terminology.* The words 'Australian standard' should replace the words 'International Standard' wherever they appear.

(b) *Decimal comma.* The decimal point should replace the decimal comma wherever it appears.

(c) *Cross-references.* The reference to International Standards should be replaced by references to Australian standards as follows:

Reference to International Standard	*Appropriate Australian Standard*
ISO 1000—SI units and recommendations for the use of their multiples and of certain other units	AS 1000—The Internation Systems of Units (SI) and Its Application
ISO 3046/2—Reciprocating internal combustion engines—Performance—Part 2: Test methods	AS 2789.2—Internal Combustion Engines—Performance, Part 2—Engines for Land, Rail-traction and Marine Use—Test Methods
ISO 3046/4—Reciprocating internal combustion engines—Performance—Part 4: Speed governing	AS 2789.4—Internal Combustion Engines—Performance, Part 4— Engines for Land, Rail-traction and Marine Use—Speed Governing
ISO 3046/6—Reciprocating internal combustion engines—Performance—Part 6: Overspeed protection	AS 2789.6—Internal Combustion Engines—Performance, Part 6—Engines for Land, Rail-traction and Marine Use—Overspeed Protection

* In course of preparation.

Contents

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ternal combustion engines—Performance Part 1—Engines for land, rail-traction and marine use— Standard reference conditions and declarations of power, fuel consumption and lubricating oil consumption

1 Scope

This part of ISO 3046 specifies the standard reference conditions and the methods of declaring the power, fuel consumption and lubricating oil consumption for reciprocating internal combustion engines using liquid or gaseous fuels. Where necessary, individual requirements are given for particular engine applications.

2 Field of application

This part of ISO 3046 covers reciprocating internal combustion engines for land, rail-traction and marine use, excluding engines used to propel agricultural tractors, road vehicles and aircraft.

This part of ISO 3046 may be applied to engines used to propel road construction and earth-moving machines, industrial trucks and for other applications where no suitable International Standard for these engines exist.

3 References

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units.*

ISO 1204, *Reciprocating internal combustion engines — Designation of the direction of rotation.*

ISO 1205, *Reciprocating internal combustion engines — Designation of the cylinders.*

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

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

ISO 2710, *Reciprocating internal combustion engines — General definitions.*

ISO 3046/2, *Reciprocating internal combustion engines — Performance — Part 2 : Engine tests.*

ISO 3046/4, *Reciprocating internal combustion engines : Performance — Part 4 : Speed governing.*

ISO 3046/6, *Reciprocating internal combustion engines — Performance — Part 6 : Overspeed protection.*

4 Units and terms

4.1 The units used are those of the International System of Units (SI Units) described in ISO 1000.

4.2 The general engine terms used are as defined in ISO 2710.

5 Standard reference conditions

For the purpose of determining the power and fuel consumption of engines, the following standard reference conditions shall be used :

Total barometric pressure :

p_r = 100 kPa

Air temperature :

T_r = 300 K (27 °C)

Relative humidity :

ϕ_r = 60 %

Charge air coolant temperature :

T_{cr} = 300 K (27 °C)

If other reference conditions are chosen, these shall be stated.

NOTES

1 Relative humidity of 60 % corresponds to a water vapour pressure of 2,133 kPa (16 mmHg) at a temperature of 300 K.

2 The air density at the standard reference conditions is equivalent to that at 98 kPa (736 mmHg) and 20 °C and to that at 101 kPa (760 mmHg) and 30 °C.

3 For automotive type inboard and outboard marine propulsion engines, the standard reference conditions in ISO 1585 and ISO 2534 may be applied but they shall be stated.