

Australian Standard[®]

Rotating electrical machines

**Part 1: Rating and performance
(IEC 60034-1, Ed. 11(2004) MOD)**



This Australian Standard® was prepared by Committee EL-009, Rotating Electrical Machinery. It was approved on behalf of the Council of Standards Australia on 11 June 2009. This Standard was published on 15 July 2009.

The following are represented on Committee EL-009:

- Airconditioning and Refrigeration Equipment Manufacturers Association of Australia
 - Australian Chamber of Commerce and Industry
 - Australian Electrical and Electronic Manufacturers Association
 - Australian Greenhouse Office, Department of the Environment and Water Resources
 - Australian Industry Group
 - Bureau of Steel Manufacturers of Australia
 - Department of Defence (Australia)
 - Electrical Apparatus Service Association
 - Energy Efficiency and Conservation Authority of New Zealand
 - Engineers Australia
 - Ministry of Economic Development (New Zealand)
 - Registered Master Builders
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This Standard was issued in draft form for comment as DR 08200.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard[®]

Rotating electrical machines

Part 1: Rating and performance (IEC 60034-1, Ed. 11(2004) MOD)

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-009, Rotating Electrical Machinery to supersede AS 1359.101—1997, *Rotating electrical machines Part 101: Rating and performance* on publication.

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EL-009. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide the rotating electrical machine industry with standard duties, ratings, operating conditions and performance.

This Standard is an adoption with national modifications and has been reproduced from IEC 60034-1, Ed. 11 (2004), *Rotating electrical machines – Part 1: Rating and performance*, and has been varied as indicated to take account of Australian conditions.

Variations to IEC 60034-1, Ed. 11 (2004) are indicated at the appropriate places throughout this standard. Strikethrough (**example**) identifies IEC text, tables and figures which, for the purposes of this Australian Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (**example**). Added figures are not themselves shaded, but are identified by a shaded border.

This Standard is Part 1 of a Series dealing with rotating electrical machinery. Additional parts will be added from time to time. This Series when complete will consist of the following parts:

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|------------|---|
| 1359.102.2 | Rotating electrical machines—Methods for determining losses and efficiency of rotating electrical machinery from tests—Measurement of losses by the calorimetric method |
| 60034 | Rotating electrical machines |
| 60034.1 | Part 1: Rating and performance (this Standard) |
| 60034.2.1 | Part 2.1: Methods for determining losses and efficiency from tests (excluding machines for traction vehicles) |
| 60034.3 | Part 3: Specific requirements for synchronous generators driven by steam turbines or combustion gas turbines |
| 60034.4 | Part 4: Methods for determining synchronous machine quantities from tests |
| 60034.5 | Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code)—Classification |
| 60034.6 | Part 6: Method of cooling (IC code) |
| 60034.7 | Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM code) |
| 60034.8 | Part 8: Terminal markings and direction of rotation |
| 60034.9 | Part 9: Noise limits |
| 60034.11 | Part 11: Thermal protection |
| 60034.12 | Part 12: Starting performance of single-speed three-phase cage induction motors |
| 60034.14 | Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher—Measurement, evaluation and limits of vibration severity |
| 60034.15 | Part 15: Impulse voltage withstand levels of rotating a.c. machines with form-wound stator coils |
| 60034.16 | Part 16: Excitation systems for synchronous machines (all parts) |
| 60034.17 | Part 17: Cage induction motors when fed from converters—Application guide |
| 60034.18 | Part 18: Functional evaluation of insulation systems (all parts) |
| 60034.19 | Part 19: Specific test methods for d.c. machines on conventional and rectifier-fed supplies |

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- 60034.20.1 Part 20.1: Control motors—Stepping motors
- 60034.22 Part 22: AC generators for reciprocating internal combustion (RIC) engine driven generating sets
- 60034.23 Part 23: Specification for the refurbishing of rotating electrical machines
- 60034.25 Part 25: Guidance for the design and performance of a.c. motors specifically designed for converter supply
- 60034.26 Part 26: Effects of unbalanced voltages on the performance of three-phase cage induction motors
- 60034.27 Part 27: Off-line partial discharge measurements on the stator winding insulation of rotating electrical machines
- 60034.28 Part 28: Test methods for determining quantities of equivalent circuit diagrams for the three-phase low voltage cage induction motors
- 60034.29 Part 29: Equivalent loading and superposition techniques—Indirect testing to determine temperature rise.

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- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'IEC 60034-1' should read 'AS 60034.1'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

Rotating electrical machines

Part 1: Rating and performance (IEC 60034-1, Ed. 11(2004) MOD)

Any table, figure or text of the international standard that is struck through is not part of this Standard. Any Australian table, figure or text that is added is part of this Standard and is identified by shading.

1 Scope

This part of IEC 60034 is applicable to all rotating electrical machines except those covered by other IEC standards, for example, IEC 60349.

Machines within the scope of this standard may also be subject to superseding, modifying or additional requirements in other publications, for example, IEC 60079, and IEC 60092.

NOTE If particular clauses of this standard are modified to meet special applications, for example machines subject to radioactivity or machines for aerospace, all other clauses apply insofar as they are compatible.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

References to international standards that are struck through in this clause are replaced by references to Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is identified as such.

AS/NZS 1359.5, Rotating electrical machines—General requirements—Three phase cage induction motors—High efficiency and minimum energy performance standards requirements

IEC 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*

IEC 60027-4, *Letter symbols to be used in electrical technology – Part 4: Symbols for quantities to be used for rotating electrical machines*

IEC 60034-2, *Rotating electrical machines, Part 2: Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles)*

IEC 60034-3, *Rotating electrical machines – Part 3: Specific requirements for turbine-type synchronous machines*

~~IEC 60034-5, *Rotating electrical machines—Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) — Classification*~~

AS 60034.5, Rotating electrical machines, Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) — Classification (identical to IEC 60034-5)