AS 1359.102.1—1997
IEC 34-2:1972
IEC 34-2:1972/Amd.1:1995
IEC 34-2:1972/Amd.2:1996

Australian Standard®

Rotating electrical machines—General requirements

Part 102.1: Methods for determining losses and efficiency—General

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

This Australian Standard was prepared by Committee EL/9, Rotating Electrical Machinery. It was approved on behalf of the Council of Standards Australia on 10 March 1997 and published on 5 July 1997.

The following interests are represented on Committee EL/9:

Australian British Chamber of Commerce

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturers Association

Bureau of Steel Manufacturers of Australia

Department of Defence

Electricity Supply Association of Australia

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This Standard was issued in draft form for comment as DR 96091 and 96206.

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Part 102.1: Methods for determining losses and efficiency—General

Originated as part of AS 1359.33—1983.
Revised and redesignated in part as AS 1359.102.1— 1997.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7337 1178 2

PREFACE

This Standard was prepared by the Standards Australia Committee EL/9, Rotating Electrical Machinery to supersede, in part, AS 1359.33—1983, *General requirements for rotating electrical machines*, Part 33: *Methods for determining losses and efficiency*.

It is identical to and has been reproduced from IEC 34-2:1972, *Rotating electrical machines*, Part 2: *Methods for determining losses and efficiency of rotating electrical machinery from tests (excluding machines for traction vehicles*), including Amd.1:1995 and Amd.2:1996 as indicated by marginal bars near the affected text. Reproduction was done by scanning the IEC text and adjusting the style of the original publication to conform with later IEC style.

This Standard is a Part of the AS 1359 series listed in AS 1359.0, Part titled: *Introduction and list of Parts.*

The objective of this Standard is to provide the rotating electrical machine industry with standard methods for determining losses and efficiency.

The objective of this Revision is to clarify certain methods and to provide more details of the retardation method (from IEC 34-2 Amd.1); to amend the reference temperature used for correcting I^2R losses (from IEC 34-2 Amd.2); and to transfer the calorimetric method to a new AS 1359.102.2.

As this Standard is reproduced from an International Standard, the following applies:

(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 'this Recommendation' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

(d) References to International Standards should be replaced by references to Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
34	Rotating electrical machines	1359	Rotating electrical machines—General requirements
34-1	Part 1: Rating and performance	1359.101	Part 101: Rating and performance
34-2A	First supplement: Measurement of losses by the calorimetric method	1359.102.2	Part 102.2: Methods for determining losses and efficiency—Calorimetric method
50	International Electrotechnical Vocabulary (IEV)	1852	International Electrotechnical Vocabulary
51	Direct acting indicating analogue electrical measuring instruments and their accessories	—	

The references in Paragraph A.1.4 to clauses 11 and 13 and to table II of IEC 34-2A apply respectively to Clauses 4.4, 3.7 and Table 2 of AS 1359.102.2.

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AUSTRALIAN STANDARD

Rotating electrical machines—General requirements

Part 102.1:
Methods for determining losses and efficiency—General

SECTION ONE - GENERAL

1 Scope

This Recommendation applies to d.c. machines and to a.c. synchronous and induction machines of all sizes within the scope of IEC Publication 34-1. The principles can, however, be applied to other types of machines such as rotary converters, a.c. commutator motors and single-phase induction motors for which other methods of determining losses are generally used.

2 Object

This Recommendation is intended to establish methods of determining efficiencies from tests, and also to specify methods of obtaining particular losses when these are required for other purposes.

3 General

Tests shall be conducted on a completely sound machine with all covers fitted in the manner required for normal service, with any devices for automatic voltage regulation not a composite part of the machine itself being made inoperative, unless otherwise agreed.

1 Unless otherwise agreed, measuring instruments and their accessories, such as measuring transformers, shunts and bridges used during the test shall have an accuracy of 0,5 or better (IEC 51), excluding three-phase wattmeters and wattmeters for low power factor, for which an accuracy class shall be 1,0 or better.

Instruments shall be selected to give readings over the effective range such that a fraction of a division is a small percentage of the actual reading and can be easily estimated.

On machines with adjustable brushes, the brushes shall be placed in the position corresponding to the specified rating. For measurements on no-load, the brushes may be placed on the neutral axis.

Speed of rotation may be measured by a stroboscopic method, digital counter or tachometer. When measuring slip, the synchronous speed should be determined from the supply frequency during the test.