

DR 90543

AS 3305—1988

* SK BY
AS/NZS 3350.2.3A-1997
2 YEARS FROM DATE
OF PUBLICATION
(TAS JUNE 1997)



Withdrawn
TAS Dec. 1999



**Standards
Association of
Australia**



Amdt 1
Amdt. 2

Australian Standard® 3305—1988

APPROVAL AND TEST SPECIFICATION— PARTICULAR REQUIREMENTS FOR MOTOR COMPRESSORS



This Australian Standard was prepared by Committee EL/2, Electrical Approvals Standards. It was approved on behalf of the Council of the Standards Association of Australia on 22 December 1987 and published on 7 March 1988.

The following interests are represented on Committee EL/2:

Australian Consumers Association
Australian Electrical and Electronic Manufacturers Association
Confederation of Australian Industry
Consumer Electronics Suppliers Association
Electrical Apparatus Approvals Authorities
Electrical Testing Laboratories
Electricity Supply Association of Australia
Institution of Engineers, Australia

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STANDARDS AUSTRALIA

Amendment No. 2
to
AS 3305—1988
Approval and test specification—Particular requirements for motor compressors

REVISED TEXT

The 1988 edition of AS 3305 is amended as follows; the amendments should be inserted in the appropriate place.

SUMMARY: This Amendment applies to the Preface, Clauses 1.1, 3.101, 7.1, 13, 15, 21.101, 25, 30.101.2, Figures 102A and 102B, Appendices H to O and the Annex.

Published on 16 March 1992.

AMDT
No. 2
MAR.
1992

Page 2 Preface

Delete the existing Preface and *substitute* the following:

PREFACE

This Specification was prepared by the Standards Australia Committee on Electrical Approvals Standards to supersede AS 3305—1984. It was prepared to align Australian Approval and Test Specifications progressively with International Electrotechnical Commission (IEC) Standards for appliances.

This Specification closely follows IEC 335-2-34:1980, *Safety of household and similar electrical appliances, Part 2: Particular requirements for motor compressors*. It is to be read in conjunction with AS 3300/NZS 6300, *Approval and test specification—General requirements for household and similar electrical appliances*, and modifies the corresponding clauses of AS 3300/NZS 6300 to convert that Specification into the Australian safety standard for motor compressors in the following manner:

- (a) Where a particular clause of AS 3300/NZS 6300 is not referred to in this Specification, that clause of AS 3300/NZS 6300 is applicable.
- (b) Where the word 'ADDITION' is used it means that the corresponding requirement of AS 3300/NZS 6300 is added to by the requirement of this Specification.
- (c) Where the word 'REPLACEMENT' is used it means that the corresponding requirement of AS 3300/NZS 6300 is replaced by the requirement of this Specification.

Where the word 'VOID' is used it means that the requirement in IEC 335-2-34:1980 is not used in Australia. The word is also used where the deletion of a requirement would lead to consequential renumbering of references within the body of this Specification.

In this Specification the reference to AS 3300 is taken to mean AS 3300/NZS 6300.

A number of variations have been made in this Specification to the text of IEC 335-2-34:1980. These variations are necessary to take into account the national requirements for electrical appliances that apply in Australia. The variations are indicated throughout the text of this Specification by marginal bars located against the changed text or figure. The majority are technical. Other variations to notes, explanatory matter, figures and references to Australian Standards and Specifications are also included for completeness.

Descriptions of these variations are to be found in the Annex to this Specification, given in the order found within the body of this Specification. These variations also form the Australian national variations for purposes of the IEC scheme for recognition of results of testing to Standards for safety of electrical equipment (the CB scheme).

(continued)

PREFACE (continued)

The numbering of clauses and figures closely follows that of IEC 335-2-34:1980. To allow for the introduction of additional material by the IEC, the numbers 101 to 200 have been reserved. To allow for additional material to be introduced by Australia, the numbers 301 to 400 are used. This scheme has been introduced to reduce the likelihood of the IEC and Australia using the same clause or figure number for differing requirements. Where Australia has added a requirement or made a change to a particular clause of IEC 335-2-34:1980, that clause number remains unchanged.

In this Specification the requirements appear in roman type, notes and explanatory matter appear in smaller roman type and tests appear in italic type.

The object of this Specification is to specify the particular safety requirements for sealed (hermetic and semihermetic type) motor compressors, in order to avoid retesting the same model compressor in various types and models of refrigerating and air-conditioning appliances. These requirements apply to sealed (hermetic and semihermetic type) motor compressors and their associated starting and protection systems, tested separately under the most severe conditions which, within reasonable limits, could occur in the application for which they are used.

In particular, the specification details locked-rotor testing, overload short-circuit testing, and the like, which may be performed separately on the compressor, thereby eliminating the need for retesting when the motor compressor is used in different types of appliances.

Operational tests may also be conducted on the compressor separately in certain instances. The recommendations for this type of testing are also provided. However, the test recommendations of the existing Approval and Test Specification relevant to the kind of application, such as AS 3303, *Particular requirements for refrigerators and food freezers*, and AS 3179, *Refrigerated room air conditioners*, may need to be conducted on the final application and used as the final determination of acceptability.

This Specification supersedes AS 3305—1984 on publication.

This Specification incorporates Amendment No. 1 to the 1984 edition and contains changes which more closely align it with IEC 335-2-34:1980. It has also been editorially changed to align it with the latest edition of AS 3300/NZS 6300.

This Specification requires reference to the following:

STANDARDS

AS

- 1430 Household refrigerators and freezers
- 2420 Fire test methods for solid insulating materials and non-metallic enclosures used in electrical equipment
- 2768 Electrical insulating materials—Evaluation and classification based on thermal endurance

APPROVAL AND TEST SPECIFICATIONS

AS NZS

- 3179 — Refrigerated room air conditioners
- 3182 — Commercial refrigerated food cabinets
- 3300 6300 General requirements for household and similar electrical appliances
- 3303 6324 Particular requirements for refrigerators and food freezers

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 4 Clause 1.1

After the third paragraph, *re designate* Note 3 as Note 301

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 4 Clause 3.101

Delete Clause 3.101 and *substitute* the following:

3.202 DIRECT CURRENT FROM ALTERNATING CURRENT APPLIANCES. Replace the fifth Paragraph and Notes 201 and 202 with the following:

The permissible direct current in the appliance neutral shall not exceed 5 mA.

This Amendment forms part of the Specification on publication.

Page 5 Clause 7.1

Delete '(l)' and *substitute* '(k)'.

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 5 Clause 13

Delete all text except the title and *substitute* the following:

This Clause of AS 3300/NZS 6300 is not applicable.

This Amendment forms part of the Specification on publication.

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1992

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1992

Page 6 Clause 15

After Clause 15.4, *redesignate* the Note as Note 301.

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 9 Clause 21.101

After the Table *redesignate* Note 2 as Note 301.

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 10 Clause 25

After the first paragraph, *redesignate* the Note as Note 301.

This Amendment forms part of the Specification on publication.

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No. 2
MAR.
1992

Page 11 Clause 30.101.2

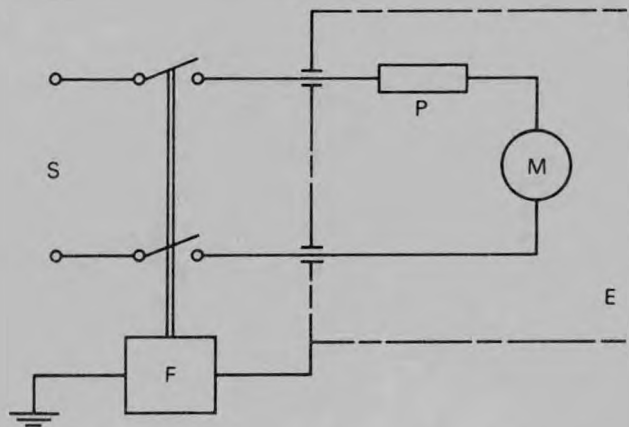
Redesignate Clause 30.101.2 as Clause 30.201.2.

This Amendment forms part of the Specification on publication.

AMDT
No. 2
MAR.
1992

Page 13 Figure 102A

Delete Figure 102A and the legend, but not the title, and *substitute* the following:

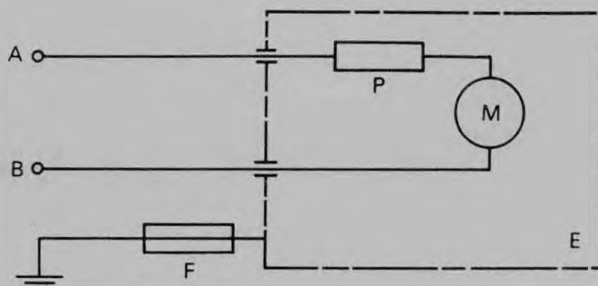


S = supply
E = motor-compressor enclosure
F = leakage-circuit-breaker 30 mA
P = protection device (external or internal)

This Amendment forms part of the Specification on publication.

Page 14 Figure 102B

Delete Figure 102B and the legend, but not the title, and substitute the following:



A = non-earthed supply cord
F = 30 A fuse
E = motor-compressor enclosure
P = protective device, if any (external or internal)

This Amendment forms part of the Specification on publication.

Page 15 Appendices

After Appendix G, add the following:

APPENDICES H TO O
(VOID)

This Amendment forms part of the Specification on publication.

Page 16 ANNEX

1 Delete the initial Note and substitute the following:

This Annex sets out variations between AS 3305 and IEC 335-2-34:1980. These variations indicate national variations for purposes of the IECEE CB Scheme and will be published in the IECEE CB Bulletin.

No indication is given of the variations between AS 3300/NZS 6300 and IEC 335-1. For such variations refer to AS 3300/NZS 6300.

- 2 Clause 1.1, delete the words 'Note 3' and substitute 'Note 301'.
- 3 Redesignate Clause 3.101 as Clause 3.202.
- 4 Clause 13.2, delete the variation to Clause 13.2 and substitute the following:
This clause is not applicable.
- 5 Clause 25, delete the word 'Note' and substitute 'Note 301'.
- 6 Redesignate Clause 30.101.2 as Clause 30.201.2.
- 7 Delete the variation to Figures 102A and 102B.
- 8 After the variations to the figures, add 'APPENDICES H to O Made void.'

This Amendment forms part of the Specification on publication.

STANDARDS AUSTRALIA

**Amendment No 1
to
AS 3305—1988
Approval and test specification—
Particular requirements for motor compressors**

REVISED TEXT

The 1988 edition of AS 3305 is amended as follows; the amendment(s) should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clause 19.3.1 and Figure 101A.

Published on 15 October 1990.

AMDT
No 1
OCT
1990

Page 7 Clause 19.3.1.

Delete the marginally barred text and notes.

This Amendment forms part of the Specification on publication.

AMDT
No 1
OCT
1990

Page 13 Figure 101A

Delete the marginally barred Figure 101A.

This Amendment forms part of the Specification on publication.

AUSTRALIAN STANDARD

**APPROVAL AND TEST
SPECIFICATION—
PARTICULAR REQUIREMENTS
FOR MOTOR COMPRESSORS**

AS 3305—1988

First published as AS 3305—1983.
Second edition 1984.
Third edition 1988.

**PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.**

ISBN 0 7262 4885 1

(See Amndt. 2 1992-03-16
for new text)

PREFACE

This Standard was prepared by the Association's Committee on Electrical Approvals Standards to supersede AS 3305—1984.

It contains specific requirements for motor-compressors and is a supplementary specification to AS 3300, *Approval and Test Specification—General requirements for household and similar electrical appliances* (which closely follows IEC 335-1).

The clauses of this Standard supplement or modify the corresponding clauses in AS 3300. Where the reference in the text of this Standard indicates an 'addition' or 'replacement' of the relevant requirements, tests or explanatory notes to AS 3300, these changes are made to the relevant text which then becomes part of that Standard. It will be observed that when no such change is necessary, the words 'this Clause of AS 3300 is applicable' are used.

This Standard closely follows IEC 335-2-34—1980, *Particular requirements for motor compressors*, but some of the requirements of that publication have been modified to adopt to local conditions. Where the requirements of AS 3300 do not apply to refrigerators and food freezers the words 'not applicable' are used. Where the requirements of AS 3300 are additional to the essential safety requirements presently specified in the AS 3100 series of Specifications and are not to be applied, the words 'not required' are used.

Where this Standard deviates technically from the IEC document by way of additional or different requirements, the deviation is indicated by a rule in the margin against the clause, or part thereof, affected. Editorial and other minor changes such as the reference to Australian Standards in notes are not indicated. An annex to the Standard lists the variations from IEC 335-2-34—1980.

The object of the Standard is to specify the particular safety requirements for sealed (hermetic and semi-hermetic type) motor-compressors, in order to avoid testing the same compressor again in various types and models of refrigerating and airconditioning equipment. These requirements apply to sealed (hermetic and semi-hermetic type) motor-compressors and their associated starting and protection systems, tested separately under the most severe conditions which, within reasonable limits, could occur in the application for which they are used.

In particular, the construction details, locked-rotor testing, overload short-circuit testing, etc., may be performed separately on the compressor, thereby eliminating the need for re-investigation and testing when the compressor is used in the many different types of appliances.

Operational tests may also be conducted on the compressor separately in certain instances. The recommendations for this type of testing are also provided. However, the test recommendations of the existing Standards relevant to the kind of application such as AS 3303, *Particular requirements of refrigerators and food freezers*, and AS 3179, *Small self-contained refrigerated air conditioners*, may need to be conducted on the final application and used as the final determination of acceptability.

This edition was published to incorporate Amendment No 1 to AS 3305—1984 (published 3 March 1986) and to effect the following changes:

Clause 1.1 Note with regard to unattended appliances added.

Clause 24.3 Requirements for category of switches added.

Amendment No 1—contained changes to Clause 30 and added Appendices F and G.

This Standard requires reference to the following Australian Standards:

AS

1430 *Household refrigerators and freezers*

2420 *Fire test methods for solid insulating materials and non-metallic enclosures used in electrical equipment*

2768 *Electrical insulating materials—Evaluation and classification of thermal endurance*

3179 *Approval and Test Specification—Small self-contained refrigerated air conditioners*

3182 *Approval and Test Specification—Refrigerated food commercial cabinets*

3300 *Approval and Test Specification—General requirements for household and similar electrical appliances*

3303 *Approval and Test Specification—Particular requirements for refrigerators and food freezers*

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

APPROVAL AND TEST SPECIFICATION—
PARTICULAR REQUIREMENTS FOR MOTOR-COMPRESSORS

1. SCOPE

This Clause of AS 3300 is applicable except as follows:

REPLACEMENT. Replace Clause 1.1 with the following:

1.1 SCOPE AND APPLICATION. This Specification applies to sealed (hermetic and semi-hermetic type) motor-compressors intended for use in airconditioning and refrigerating equipment for household and similar uses which complies with the Standards applicable to such equipment.

It also applies to motor-compressors for use in factory-built assemblies for transferring heat in applications for refrigerating, airconditioning or heating purposes or a combination of such purposes.

These requirements apply to sealed motor-compressors tested separately under the most severe conditions which, within reasonable limits, could occur in normal use.

NOTES:

1. These requirements do not supersede the requirements of existing Standards relevant to the kind of application such as AS 3303 or AS 3179, but if the compressor type used complies with these particular requirements the tests for motor-compressors specified in the Standard referred to need not be made in the appliance or assembly.
2. Attention is drawn to the fact that this specification does not take into consideration the special conditions of use which may occur when the appliance incorporating a motor-compressor is operating in locations where special conditions, such as explosive atmosphere, prevail.

(Amdt. 2) 301 For the purpose of this Specification motor compressors are considered to be unattended appliances.

2. DEFINITIONS

This Clause of AS 3300 is applicable except as follows:

ADDITIONS. Add the following:

2.2.101 Sealed (hermetic and semi-hermetic type) motor-compressor denotes a mechanical compressor consisting of a compressor and a motor, both of which are enclosed in the same sealed housing with no external shaft seals, the motor operating in a refrigerant atmosphere. The enclosure may be permanently sealed such as by welding or brazing (hermetic compressor) or may be sealed by one or more gasketed joints (semi-hermetic compressor). Hereafter, the term 'motor-compressor' is used whether it be hermetic or semi-hermetic.

2.2.102 Multiple rated voltage motor (dual voltage-single connection) denotes a motor which is suitable for use at more than one rated voltage without requiring adjustment of the motor winding connections, e.g. 220/240 V.

2.2.103 Multiple rated voltage motor (dual voltage-multiple connections) denotes a motor which is suitable for use at more than one rated voltage by adjusting the motor winding connections and connecting the motor to the appropriate electrical supply, e.g. 120/240 V.

2.2.104 Motor-compressor enclosure denotes a sealed housing which contains the compressor and motor and which is subjected to refrigerant pressures.

2.2.105 Application categories. For the purpose of this Standard, the following classifications of application categories are made relative to evaporation temperature range:

(a) *Low back pressure.* Evaporation temperature range: -35°C (or less, if necessary) to -15°C .

Examples: household refrigerators, food freezers, and the like.

(b) *Medium back pressure.* Evaporation temperature range: -20°C to 0°C .

Examples: beverage coolers, some types of milk coolers and the like.

(c) *High back pressure.* Evaporation temperature range: -5°C to $+15^{\circ}\text{C}$.

Examples: room air conditioners, dehumidifiers, some types of milk coolers, heat pumps, and the like.

3. GENERAL REQUIREMENTS

This Clause of AS 3300 is applicable except as follows:

REPLACEMENT.

~~3.202 (See Amdt. 2)
3.101 DC COMPONENT FROM AC APPLIANCES.~~ Replace paragraph 5 and Notes 1 and 2 with the following:

The permissible direct current in the equipment neutral shall not exceed 5 mA.

4. GENERAL NOTES ON TESTS

This Clause of AS 3300 is applicable except as follows:

REPLACEMENT.

4.2 SAMPLING. Replace the first paragraph with the following:

The tests are made on a single sample as delivered which shall withstand all the relevant tests, except that for the tests of Clauses 19.3 and 21.101.4 additional special samples are required. For the test of Clause 19.3, this special sample shall be identical in all respects with the test sample, charged with oil and refrigerant and provided with the overload protection device and starting