3305—1988 Approval and Test Specification—Particular requirements for motor compressors
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Australian Standard 3305—1984

Amdt 1.—1986

APPROVAL AND TEST SPECIFICATION FOR PARTICULAR REQUIREMENTS FOR MOTOR-COMPRESSORS

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
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The following interests are represented on Committee EL/2:

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Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Consumer Electronics Suppliers Association

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AMENDMENT No 1
to
AS 3305—1984
Approval and Test Specification—
PARTICULAR REQUIREMENTS FOR MOTOR COMPRESSORS

REVISED TEXT

The 1984 edition of AS 3305 is amended as follows; the amendments should be inserted in the appropriate place.

SUMMARY: The following sections of the standard are covered by this amendment: Clauses 19.3.1 and 30, and Appendices F and

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Page 7. Clause 19.3.1.

Add the following after the first paragraph:

If not provided with a condenser or evaporator containing a normal charge, the correct saturated vapour pressure within the compressor shall be maintained during the test.

NOTE: A suggested method for maintaining the correct vapour pressure is as follows:

The compressor unit is initially charged with refrigerant vapour only and equipped with a valve and pressure gauge having a full-scale deflection suitable for measuring the saturated vapour pressure of the appliance for which the unit is designed.

The manufacturer shall also supply a small pressure vessel partially charged with the appropriate liquid refrigerant. The pressure vessel shall be provided with a shut-off valve and means for connecting it to the valve on the compressor using a pipe at least 0.9 m long so that the pressure vessel is located in a position where it is not influenced by the temperature rise of the compressor motor.

The procedure shall be as follows, and shall b conducted at an ambient temperature of 20 ±5°C.

(i) Make all electrical connections to both windin of the motor.

(ii) Momentarily open the valve on the compress to ensure that liquid refrigerant is not prese in the compressor.

(iii) connect the pressure vessel to the compress taking care that the outlet from this vessel above the level of the liquid refrigerant.

The test set up is diagrammatically illustrated Fig. 101A.

NOTE: Subject to the conditions outlined in this Clause bei observed, the correct saturated vapour pressure is automatical maintained. The pressure gauge is necessary only as a check th the correct refrigerant is in use and great accuracy is not requir in measuring the pressure: it should read approximately 550 kP for Freon 12 and 950 kPa for Freon 22. Relevant vapour pressur for other refrigerants are obtainable from standard table Substantial departures from the relevant vapour pressures indica the use of a wrong refrigerant or not sufficient refrigerant in th pressure vessel.

This amendment forms part of the specification on publicatio

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Page 11. Clause 30.

Delete the following:

'Clauses 30.1 and 30.2 are not required.'

Delete Clause 30.101 and *substitute* the following:

30.101.2 Glow-wire tip temperature and duration of test.

Item (a)—replace 'As specified in the individual approval and test specification' with '850°C for 30 s'.

Item (b)—replace 'As specified in the individual approval and test specification' with '750°C for 30 s'.

This amendment forms part of the specification on publication.

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Page 12. Fig. 101A.

Add the following new Fig. 101A:

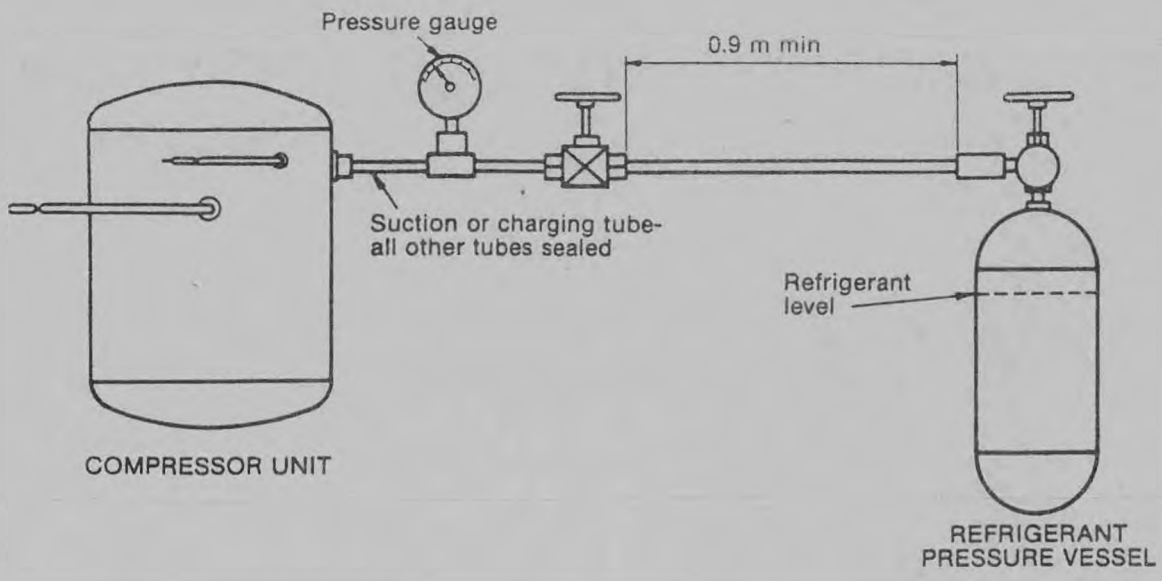

Fig. 101A. TEST APPARATUS FOR HERMETICALLY SEALED UNIT

This amendment forms part of the specification on publication.

AMDT No 1 MAR. 1986

Appendix F.

Add the following new Appendix F:

APPENDIX F

MOTORS NOT ISOLATED FROM THE SUPPLY MAINS AND HAVING BASIC INSULATION NOT DESIGNED FOR THE RATED VOLTAGE OF THE APPLIANCE

This Appendix of AS 3300 is applicable.

This amendment forms part of the specification on publication.

AMDT No 1 MAR. 1986

Appendix G.

Add the following new Appendix G:

APPENDIX G

CIRCUIT FOR MEASURING LEAKAGE CURRENTS

This Appendix of AS 3300 is applicable.

This amendment forms part of the specification on publication.

PREFACE

This standard was prepared by the Association's Committee on Electrical Approvals Standards.

It contains specific requirements for motor-compressors and is a supplementary specification to AS 3300, Approval and Test Specification for 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 explanation 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, Particular Requirements for Motor Compressors; however, some of the requirements of that publication have been modified to take account of local conditions. 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. Where the requirements of AS 3300 do not apply to Motor Compressors 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. An annex to the standard lists the variations from IEC-2-34. It should be noted that there are variations between AS 3300 and IEC 335-1 (see AS 3300 for such information), which must also be taken into account.

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 reinvestigation 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 indicate those requirements of AS 3300 which are not required.

This standard will supersede AS 3305—1983 from the date of publication.

This standard requires reference to the following approval and test specifications:

AS 3174 Domestic Electric Refrigerators and Freezers

AS 3179 Small Self-contained Refrigerated Air Conditioners

AS 3182 Refrigerated Food Commercial Cabinets

AS 3300 General Requirements for Household and Similar Electrical Appliances

AS 3303 Particular Requirements for Refrigerators and Food Freezers

and the following Australian standards:

AS 1430 Household Refrigerators and Freezers

AS 2420 Fire Test Methods for Solid Insulating Materials and Non-metallic Enclosures Used in Electrical Equipment

AS C320 Classification of Insulating Materials for Electrical Machinery and Apparatus on the Basis of Thermal Stability in Service

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
APPROVAL AND TEST SPECIFICATION
FOR
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 air-conditioning 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.

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°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.

3.101 D.C. COMPONENT FROM A.C. 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 relay specified by the manufacturer, except that the rotor shall have been locked by the manufacturer. For the test of Clause 21.101.4, two samples as specified in that Clause are required.