



National Differences For

UL 60335-2-34

Safety of Household and Similar Electrical Appliances, Part 2-34: Particular Requirements for Motor-Compressors

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Safety of Household and Similar Electrical Appliances, Part 2-34: Particular Requirements for Motor-Compressors

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The following is the Fifth Edition of UL 60335-2-34, the common ANCE, CSA Group, and UL (trinational) standard that is an adoption of IEC 60335-2-34, Safety Standard for of Household and Similar Electrical Appliances, Part 2: Particular Requirements for Motor-Compressors (IEC 60335-2-34, Edition 4.2:2008 – Edition 4:2002 consolidated with amendment 1:2004 and amendment 2:2008). Please note that the national difference document incorporates all of the U.S. national differences for UL 60335-2-34.

This document provides a single listing of the National Differences included in the UL adoption of the corresponding IEC standard.

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Preface

This document provides a single listing of the technical National Differences included in the UL adoption of the corresponding IEC standard.

In its IEC-based standards, UL uses the notations indicated below to identify national difference type, and these types are additionally noted in this document. The standard may not use all types of these deviations.

D1 - These are deviations which are based on basic safety principles and requirements, elimination of which would compromise safety for U.S. consumers and users of products.

D2 - These are deviations based on safety practices. These are deviations for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC - These are deviations based on the component standards and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE - These are deviations based on editorial comments or corrections.

DR - These are deviations based on the national regulatory requirements.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

National Differences

1DV.1 D2 Modification to replace the second sentence of the second paragraph in Clause 1 with the following:

It applies to motor-compressors tested separately, under the most severe conditions that may be expected to occur in normal use, their rated voltage being not more than 300V for single-phase motor-compressors and 600 V for other motor-compressors intended for use in accordance with:

- CSA C22.1, Canadian Electrical Code (CEC) Part I, and CAN/CSA-C22.2 No. 0, General requirements – Canadian Electrical Code, Part II, in Canada;
- NOM-001-SEDE, La Norma de Instalaciones Electricas (Mexican Electrical Code [MEC]), in Mexico;
- NFPA 70, National Electrical Code (NEC), in the United States.

2DV DC Modification by adding the following to 2:

Any reference within this standard to International Standards that are adopted in Canada, in Mexico, and in the United States shall be replaced by a reference to the equivalent adopted standard. The requirements of these adopted Standards shall take precedence over International Standards on which they are based.

**CSA C22.1-12,
Canadian Electrical Code (CEC) Part I**

**CAN/CSA-C22.2 No. 0-10,
General requirements – Canadian Electrical Code, Part II**

**IEC 60068-2-52,
Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium, chloride solution)**

**IEC 60216,
Electrical insulating materials — Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens**

**IEC 60243-1,
Electrical strength of insulating materials – Test methods – Part 1: Tests at power frequencies**

**IEC 60695-11-20,
Fire hazard testing – Part 11-20: Test flames – 500 W flame test methods**

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ISO 817,
Refrigerants – Designation system

ISO 4892-2,
Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps

ASHRAE 34,
Designation and Safety Classification of Refrigerants

ASME,
Boiler and Pressure Vessel Code – Section VIII

ASTM A90/A90M,
Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

3.108DV DE Modification of 3.108 definition to add NOTE as follows:

NOTE 1A: The pressure in the low pressure side can be either above or below the critical pressure in a transcritical refrigeration system.

3.111DV DE Addition of the following definitions to Clause 3 as follows:

3.111DV.1 PRIMARY SINGLE PHASING Primary single-phase failure occurs when one of the three incoming lines to the primary of the transformer supplying the MOTOR-COMPRESSOR supplies no voltage to the transformer.

3.111DV.2 MAXIMUM CONTINUOUS CURRENT The maximum amount of current that is allowed to flow to the MOTOR-COMPRESSOR MOTOR by the MOTOR-COMPRESSOR PROTECTION SYSTEM.

3.111DV.3 BYPASS VALVE A device that relieves high-side pressure into the low-side at a predetermined pressure differential.

7.1DV.1 DR Modification of Clause 7.1 of the Part 1 to replace the second dashed item with:

– Symbol for nature of supply including number of phases, unless for single phase operation.

7.1DV.2 DR Modification of Clause 7.1 of the Part 1 to add the following dashed items and note after the seventh dashed item:

Addition:

- Motor compressor locked rotor amperage (LRA) rating(s).
- Manufacturing date or date code and location if the product is produced in more than one location.
- If the motor compressor is thermally protected it shall be marked with
 - “Thermally Protected” if a THERMAL PROTECTOR is provided or is specified by the MOTOR-COMPRESSOR manufacturer, or

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- “Thermally Protected System” if a protective system with all sensing elements and motor-current-interrupting means is provided or specified by the MOTOR-COMPRESSOR manufacturer.

NOTE 1A If motor winding switching or alternate motor wiring options cause the measured LRA to exceed the limits specified in 7.1DV, additional LRA marking may be required.

19.11DV.2 D1 Modification by replacing 19.11.2 with the following:

For simulation of the fault conditions, a MOTOR-COMPRESSOR incorporating an ELECTRONIC CIRCUIT shall be connected to the substitute refrigeration circuit of Figure AA.1 and operated under the conditions given in AADV.5. The condensing temperature applied shall be 5K lower than that which caused the MOTOR-COMPRESSOR PROTECTIVE ELECTRONIC CIRCUIT to operate or the MOTOR-COMPRESSOR to stall during the test of AADV.5.

19.101DV DR Modification to Clause 19.101 to add the following:

19.101DV.1 The value of locked-rotor current of a MOTOR-COMPRESSOR assembly as determined by test shall not exceed 110 percent of the marked locked-rotor current rating.

19.101DV.2 The locked-rotor current and voltage shall be measured 4 s after the MOTOR-COMPRESSOR assembly is energized in accordance with 19.101. Values measured in less than 4 s are acceptable if the motor protective device operates within that time. If the MOTOR-COMPRESSOR is designed for more than one rated voltage or a voltage range, the test shall be performed using the higher RATED VOLTAGE.

19.101DV.3 A calculation shall then be made by multiplying the locked-rotor current measured at 4 s by the MOTOR-COMPRESSOR rated voltage. This value shall then be divided by the voltage measured at 4 s and used for comparison to the marked locked-rotor current rating. For three-phase motors, the locked-rotor current and voltage at 4 s shall be the average of these values.

21.1.DV.2 D2 Addition of the following note to the Part 2:

NOTE 1A For the alternative test of 21.1DV.1 in Part 1, a force of 6.8 J may be required by some existing North American final application product standards. The 6.8 J value would be employed to evaluate a non-metallic enclosure cover if additional protection was not afforded by final application equipment design.

21.101.DV D1 Addition to Clause 21 of the Part 1 as follows:

If electrical enclosure seal gaskets are required to comply with the tests of Clause 15, then they shall comply with Annex 101.DVBB, Accelerated aging tests – Gaskets.

22.7DV.1 D1 Modification to Clause 22.7 to add the following bullet item to the third paragraph of Part 2:

- a minimum of 3 times the maximum high side pressure during the heat transfer medium failure test on the end use product, but not less than the minimum test pressure as required in Table 101, if the motor compressor employs a BYPASS VALVE.

22.7DV.2 D1 Modification to Clause 22.7 to replace the fourth paragraph of the Part 2 as follows:

A HOUSING which is exposed only to low side pressure shall be subjected to a pressure equal to:

- *for subcritical systems, a minimum of 5 times the saturated vapor pressure of the refrigerant at 20°C or equal to 2.5 MPa, whichever is higher, rounded up to the next 0.2 MPa.*
- *for TRANSCRITICAL REFRIGERATION SYSTEMS, 5 times the DESIGN PRESSURE but not less than the minimum test pressure as required by Table 102.*
- *for a MOTOR-COMPRESSOR employing a BYPASS VALVE, the housing which is exposed only to low side pressure shall be subjected to a pressure equal to 3 times the maximum low side pressure recorded when the valve is relieving during the heat transfer medium failure test on the end use product, but not less than the minimum test pressure as required in Table 102.*

22.7DV.3 D1 Modification by adding the following to Clause 22.7:

A motor PROTECTIVE DEVICE located within the MOTOR-COMPRESSOR HOUSING shall be subjected to the test specified below. Following this test, the PROTECTIVE DEVICE shall not be structurally damaged. In addition, the maximum allowable operating (opening) and reset (closing) temperature:

- a) Deviation shall not exceed 8 K of the test value between the two PROTECTIVE DEVICE samples, and
- b) Drift shall not exceed 5 percent of the test value of the specific PROTECTIVE DEVICE sample.

If the operating and reset temperatures of a PROTECTIVE DEVICE have not been declared, one sample PROTECTIVE DEVICE shall be mounted within an air oven having a forced air circulation velocity of not less than 0,51 m/s and designed to nullify the effects of radiation. The oven temperature shall be measured at a location immediately adjacent to the PROTECTIVE DEVICE. Operating and reset temperature shall be indicated by a continuity-indicating circuit that does not influence operation of the PROTECTIVE DEVICE.

Temperatures of all PROTECTIVE DEVICE parts shall be maintained at equilibrium. The oven temperature shall then be increased at a rate of not greater than 0,5 K per minute until the PROTECTIVE DEVICE operates. Oven equilibrium conditions shall then be reestablished. The oven temperature shall then be decreased at a rate of not greater than 0,5 K per minute until the PROTECTIVE DEVICE resets. The test shall be repeated on the same sample PROTECTIVE DEVICE.

The test shall then be conducted using a second sample PROTECTIVE DEVICE.

NOTE If the operating and reset temperatures of a PROTECTIVE DEVICE have been declared, then determining the operating and reset temperatures prior to the pressure test is not required.