Annexes

The annexes of Part 1 are applicable except as follows.

Annex A
(informative)

Routine tests

This annex of Part 1 is applicable except as follows.

ADV.1 DE *Modify Annex A of the Part 1 by adding the following NOTE:*

NOTE 101DV This informative Annex has been written in mandatory language to facilitate adoption by anyone wishing to do so.

A.101DV D2 *Add the following clause to Annex A of the Part 1 as follows:*

A.101DV.1 Routine pressure tests

Each appliance shall be tested and proved tight at not less than the design pressure(s) marked on the appliance.

NOTE 1 A method other than pressure testing at the design pressure may be employed if it can be demonstrated that the alternate test method produces results that are at least equivalent to the pressure test method.

If the final assembly of an appliance is completed with flare-type fittings or telescoped tubing joints that are sealed with solder, brazing, or the equivalent, the pressure test of the complete system may be at the low-side design pressure provided that the high-side parts are individually tested either by the appliance manufacturer or by the manufacturer of the part at not less than the high-side design pressure.

At least once each year, the manufacturer shall conduct a strength test on refrigerant-containing or carbon dioxide-pressured parts of the shell type, including compressor shells that have an inside diameter greater than 76 mm (3 in). The test is to be conducted on at least one sample of each size and type. The sample shall be proved tight when subjected to pressures indicated in Annex 101.DVJ.

NOTE 2 ASME Code vessels bearing the Code "U" symbol need not be retested.

Each centrifugal liquid chiller with a design pressure of 103 kPa (15 psig) or less shall be tested at a pressure not less than 1-1/3 times the design pressure and shall be tested and proved tight at not less than the design pressure of the low side of the system.

Each refrigerant-containing component of a centrifugal liquid chiller with a design pressure greater than 103 kPa (15 psig) shall be tested at a pressure not less than the design pressure of the component, and the chiller shall be tested and proved tight at not less than the design pressure of the low side of the system.

For a unit cooler intended for use with R744 in a secondary loop or cascade system, if the design pressure marked on the unit cooler is less than 6685 kPa (955 psig), then the test shall be conducted at the marked design pressure but not less than 3448 kPa (500 psig).

If the test described in this Clause is conducted prior to reforming or bending of the coil assembly, the test shall be repeated on at least one finished coil assembly from each production run, but no less than four times per year. Records of such tests shall be made available for review.

Annex C
(normative)

Ageing test on motors

This annex of Part 1 is applicable except as follows.

Addition:

This annex does not apply to motor-compressors.

Annex D
(normative)

Thermal motor protectors

This annex of Part 1 is applicable except as follows.

Addition:

This annex does not apply to motor-compressors or condenser fan motors.

Annex P
(informative)

Guidance for the application of this standard to appliances used in tropical climates

This annex of Part 1 is applicable except as follows.

5 General conditions for the tests

5.7 *Modification:*

The ambient temperature of the tests of Clauses 10, 11 and 13 is 43 °C ± 1 °C.

11 Heating

11.8 *Modification:*

The values of Table 3 are reduced by 18 K.

Annex R
(normative)

Software evaluation

R.2.2.5 *Modification:*

For PROGRAMMABLE ELECTRONIC CIRCUITS with functions requiring software incorporating measures to control the fault/error conditions specified in Table R.1, detection of a fault/error shall occur before compliance with Clause 19 and 22.116 is impaired.

R.2.2.9 *Modification:*

The software and safety-related hardware under its control shall be initialized and shall terminate before compliance with Clause 19 and 22.116 is impaired.

Annex AA
(normative)

Locked-rotor test of fan motors

The winding of a fan motor shall not reach excessive temperatures if the motor locks or fails to start.

Compliance is checked by the following test.

The fan and its motor are mounted on wood or similar material. The motor's rotor is locked. Fan blades and motor brackets are not removed.

The motors are supplied at their supplied voltage when the appliance is supplied at RATED VOLTAGE or at the upper limit of the RATED VOLTAGE RANGE. The supply circuit is given in Figure AA.1.

The assembly is to operate under these conditions for 15 days (360 h) unless the PROTECTIVE DEVICE, if any, permanently open circuits prior to the expiration of that time. In this case, the test is discontinued.

If the temperature of motor windings stays lower than 90 °C, the test is discontinued when steady conditions are established.

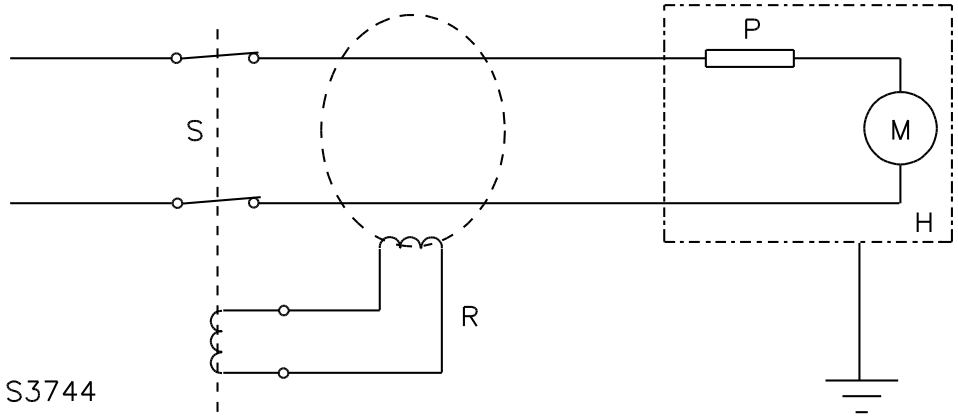
Temperatures are measured under conditions specified in 11.3.

During the test, winding temperatures shall not exceed the values given in Table 8.

After a period of 72 h from the beginning of the test, the motor shall withstand the electric strength test of 16.3.

For other than DC motors, a residual current device with a rated residual current of 30 mA is connected so as to disconnect the supply in the event of an excessive earth leakage current.

At the end of the test, the leakage current is measured between windings and the body at a voltage equal to twice the RATED VOLTAGE; its value shall not exceed 2 mA.



Key

S supply source

H housing

R residual current device ($I_{\Delta n}$ = 30 mA)

P thermal motor-protector (external or internal) if fitted

M motor

The circuit shall be modified for three-phase fan motors. For DC motors the RCD is not necessary.

Care has to be taken to complete the earthing system to permit the correct operation of the residual current device (RCCB/RCBO).

Figure AA.1

Supply circuit for locked-rotor test of a single-phase fan motor

Annex BB
(normative)

Non-sparking “n” electrical apparatus

Where reference is made to IEC 60079-15, the following clauses are applicable as modified below.

7 Requirements for non-incendive components

Clause 7 is applicable.

8 Requirements for hermetically sealed devices

Clause 8 is applicable.

9 Requirements for sealed devices

All of the subclauses of Clause 9 are applicable, except 9.1 and 9.6, which are replaced by the following.

9.1 Non-metallic materials

Seals are tested using 11.2. However, if the device is tested in the appliance, then 11.2.1 and 11.2.2 are not applicable. After the tests of Clause 19 in IEC 60335-2-89, by inspection, no damage that could impair the type of protection shall be evident.

9.6 Type tests

The type tests described in 11.2 shall be performed where relevant.

10 Requirements for restricted-breathing enclosures

Clause 10 is applicable.

Annex CC
(normative)

Test method for determining gas concentration beyond the boundary of the appliance

CC.1 Arrangement

The appliance is installed according to the instructions empty with doors or lids closed, or roller blinds closed or open, whichever is the more unfavourable and energized if necessary. Positioning of the appliance shall be against the centre of the shortest wall within the test room at a distance from the wall of the distance specified in the instructions or 50 mm whichever is greater. If the appliance can be fitted with any accessories, they shall be used or arranged in a manner that gives the most unfavourable result.

NOTE Accessories can include condensing unit cover, roof panels and kick-plates.

The test room floor area A (m^2) is given by

$$24 \geq A \geq \frac{M}{0{,}55LFL}$$

where

M is the FLAMMABLE REFRIGERANT CHARGE (kg);

LFL is the lower flammability limit of the FLAMMABLE REFRIGERANT (kg/m^3).

The room height shall be not less than 2,2 m. The distance between the top of the appliance and the ceiling shall be not less than 0,5 m. The floor aspect ratio shall be not more than 2:1 (width:length).

During the test, the temperature of the room shall be maintained within 2 K of any convenient value between 15 °C and 25 °C. The room temperature is measured at one of the air velocity measurement locations.

Air velocity shall be measured at two positions located 1 m from the centreline of the appliance front at a height above floor level of 0,1 m and 2 m. The air velocity is measured using omnidirectional anemometers The air velocity measured shall not exceed 0,1 m/s with the appliance and all its fans off.

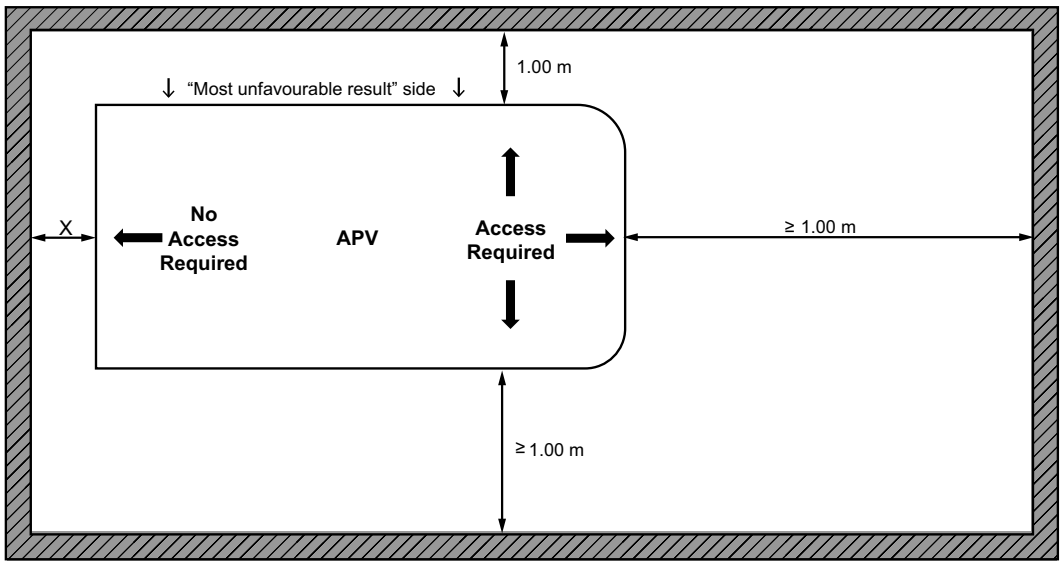
CC.1DV.1 D2 ***Modify Clause CC.1 of the Part 2 by adding the following:***

For ice machines that are not integral with a storage bin, and are designed to allow installation on top of a storage bin or an ice/beverage dispenser, the test shall be conducted with the ice machine mounted on the shortest height storage bin, or on the shortest ice/beverage dispenser available from the manufacturer placed on a 91.4 cm (36,0 in) tall countertop that is equal in depth to the base of the ice/beverage dispenser, whichever is lower in overall height. The countertop shall extend 610 ±50 mm beyond the outer edge of the appliance, on either side (see Figure CC.2DV)

CC.1DV.2 D2 ***Modify Clause CC.1 of the Part 2 by adding the following after the formula and subsequent variable key:***

CC.1DV.2.1 ***For equipment that is designed for access on more than one side, the equipment shall be installed in the test room with a minimum of 1 m of clearance on the accessible sides. The longest accessible side that produces the most unfavorable result shall be aligned with the longest wall of the test room, 1 m from the wall. One of the***

nonaccessible sides, if one exists, shall be placed against the shortest wall of the test room, at a dimension X as shown in Figure CC.1DV.2.



su4075

Figure CC.1DV.2

Example Installation of Equipment Designed for Access on More Than One Side in Test Room

CC.1DV.2.2 ***For equipment designed for access on multiple sides, with a footprint area > 7,2 m^2, the test room area may be increased to be no greater than 24 m^2 plus the size of the footprint area, to allow sufficient clearance for all sides requiring access.***

CC.1DV.3 D1 ***Modify Clause CC.1 of the Part 2 by adding the following after the sentence “M is the flammable refrigerant charge (kg)”;***

0,55 is a constant (m)

CC.2 Release conditions

Refrigerant is leaked from any CRITICAL POINT, in the direction that gives the most unfavourable result.

CC.2DV.1 DE ***Modify the first sentence of Clause CC.2 of the Part 2 by replacing it with the following:***

Refrigerant vapour is leaked from any critical point, in the direction that gives the most unfavourable result.