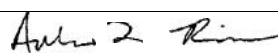
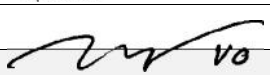




Test Report issued under the responsibility of:  
Intertek Testing Services NA, Inc.

<b>TEST REPORT</b> <b>IEC 60335-2-40</b> <b>Safety of household and similar electrical appliances</b> <b>Part 2-40: Particular requirements for electrical heat pumps, air conditioners and dehumidifiers</b>	
Report Number.....	103807635COL-001
Date of issue .....	26 March 2019
Total number of pages .....	145
Name of Testing Laboratory preparing the Report .....	Intertek, Columbus
Applicant's name .....	Unico, Inc
Address.....	1120 Intagliata Dr. Arnold, MO, 63010, US
<b>Test specification:</b>	
Standard .....	IEC 60335-2-40:2018 in conjunction with IEC 60335-1:2010, AMD1:2013, AMD2:2016
Test procedure.....	Intertek Testing Procedure
Non-standard test method .....	N/A
Test Report Form No. ....	IEC60335_2_400
Test Report Form(s) Originator ....	VDE Testing and Certification Institute
Master TRF .....	Dated 2018-04-05
<b>General disclaimer:</b>	
<p>This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.</p> <p>The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.</p>	

<b>Test item description .....</b>	The product covered by this report is a EC motor/blower and control module subassembly to be fitted into a larger assembly. Unit will be factory wired in final assembly.	
<b>Trade Mark .....</b>	Unico	
<b>Manufacturer .....</b>	Unico, Inc.	
<b>Model/Type reference .....</b>	U1218L-1EC (60Hz) or U1218L-1EC (50Hz) M2430B-EC (60Hz) or M2430B-EC (50Hz) M3036B-EC (60Hz) or M3036B-EC (50Hz) M3642B-EC (60Hz) or M3642B-EC (50Hz) M4860B-EC (60Hz) or M4860B-EC (50Hz)	
<b>Ratings .....</b>	See Ratings Table 01	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input type="checkbox"/>	<b>CB Testing Laboratory:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name, function, signature) .....</b>		
<b>Approved by (name, function, signature) ..</b>		
<input checked="" type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
<b>Testing location/ address .....</b>		Intertek, 1717 Arlingate Lane, Columbus, OH 43228
<b>Tested by (name, function, signature) .....</b>		Andy Raines, Engineer 
<b>Approved by (name, function, signature) ..</b>		That Vo 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature) .. :</b>		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
<b>Testing location/ address .....</b>		
<b>Tested by (name, function, signature) .....</b>		
<b>Witnessed by (name, function, signature) . :</b>		
<b>Approved by (name, function, signature) .. :</b>		
<b>Supervised by (name, function, signature) :</b>		

<b>List of Attachments (including a total number of pages in each attachment):</b>  <b>Attachment 1: Photos – 1 page</b>	
<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b> Legibility Test – 7.14 Current Input – 10.2 Heating – 11 Abnormal Operation – 19 Mechanical Strength – 21.1 Flexing Test – 23.3 Clearance Reduction – 29.2	<b>Testing location:</b> Intertek, 1717 Arlingate Lane, Columbus, OH 43228
<b>Summary of compliance with National Differences (List of countries addressed):</b> None  <input checked="" type="checkbox"/> <b>The product fulfils the requirements of IEC 60335 2 40:2018 in conjunction with IEC 60335 1:2010, AMD1:2013, AMD2:2016</b>	

**Copy of marking plate:**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

**BLOWER MODULE**

Module de Soufflerie

Model No. Modèle N°	EXAMPLE			
Serial No. N° De Serie	1301A287897			
TBD Volts	TBD Phase	TBD Hz		
Fan Motor Moteur Ventil.	TBD F.L.A.	TBD HP		
Min. Current Ampacity Courant Admissible D'Alim. Min.	TBD Amp			
Max. Fuse or CKT. BRK. Size Cal. Max. De Fusible/ DISJ	TBD Amp			
Max. External Static Pressure Les Pression Static Exterieur Max.	1.8 Inches Water/ 1.8 Pouces D'Eau			



ETL Control No. 81037

Certified to UL STD 1995  
CAN/CSA STD C22.2 No. 236.

Unico, Inc.  
7401 Alabama Ave.  
St. Louis, MO 63111



Made in USA

00113, Blower Rating Label, b1



EXAMPLE



1301A287897

1301A287897  
1301A287897  
1301A287897  
1301A287897  
1301A287897

<b>Test item particulars.....</b> : 1901A369401					
<b>Classification of installation and use.....</b> : Stationary appliance					
<b>Supply Connection .....</b> : Hardwire Pressure Terminals ..... :					
<b>Possible test case verdicts:</b> - test case does not apply to the test object .....: NA - test object does meet the requirement .....: P (Pass) - test object does not meet the requirement .....: F (Fail)					
<b>Testing .....</b> :					
<b>Date of receipt of test item.....</b> : 3 March 2019					
<b>Date (s) of performance of tests .....</b> :					
<b>General remarks:</b> "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. <b>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</b>					
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC60335-1:</b>					
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :			<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>		
<b>When differences exist; they shall be identified in the General product information section.</b>					
<b>Name and address of factory (ies) .....</b> : Unico, Inc 1120 Intagliata Dr. Arnold, MO, 63010, US					
<b>General product information:</b>					
	<b>U1218</b>	<b>M2430B</b>	<b>M3036B</b>	<b>M3642B</b>	<b>M4860B</b>
<b>Horse Power</b>	½ HP	½ HP	1.0 HP	1.0 HP	1.0 HP
<b>Volts</b>	120/240V	120/240V	120/240V	120/240V	120/240V
<b>Amps</b>	6.2/3.9A	6.2/3.9A	11.5/6.9A	11.5/6.9A	11.5/6.9A
<b>Frequency</b>	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
<b>Phase</b>	1Φ	1Φ	1Φ	1Φ	1Φ
<b>Capacity (Btu/hr)</b>	12000-18000	24000-30000	30000-36000	36000-42000	48000-60000

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5</b>	<b>GENERAL CONDITIONS FOR THE TESTS</b>		
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	Tests of clause 21 carried out on separate samples. Tests of clauses 11, 19 and 21 require pressure measurements made at various points in refrigerating system (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	At least one additional specially prepared sample required for tests of annex FF (Leak simulation tests) (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	Temperatures on refrigerant piping measured during test of clause 11 (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	If the tests of Annex LL are carried out, at least two additional sensors are needed. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	If the test of Annex NN has to be carried out, an additional appliance may be used. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	Due to the potentially hazardous nature of the tests of Clause 21 and Annexes EE and FF, special precautions need to be taken when carrying out the tests. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
5.6	Appropriate controls rendered inoperative during test (IEC 60335-2-40:2018)		Info
5.7	Tests of clauses 10 and 11 carried out under most severe operating conditions within operating temperature range specified by manufacturer. Annex AA provide examples of such temperature conditions (IEC 60335-2-40:2018)		Info
5.10	For split-package units, refrigerant lines installed in accordance with installation instructions (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	Length of pipe is between 5 m and 7,5 m. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	Thermal insulation of refrigerant lines applied in accordance with installation instructions (IEC 60335-2-40:2018)	Not a refrigerating system	NA
5.101	Motor-compressor subjected to relevant test of clause 19 of IEC 60335-2-34, unless (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	motor-compressor comply with that standard (IEC 60335-2-40:2018)	Not a refrigerating system	NA
5.102	Motor-compressors tested and comply with IEC 60335-2-34 need not additionally tested for clause 21 (IEC 60335-2-40:2018)	Not a refrigerating system	NA
<b>6</b>	<b>CLASSIFICATION</b>		

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
6.1	Protection against electric shock: Class I, II, III (IEC 60335-2-40:2018) .....	Subassembly is Class I and has Class II interconnection and Isolation through UL Recognized transformer	P
6.2	Protection against harmful ingress of water, IP degree in accordance with IEC 60529 (IEC 60335-2-40:2018)		P
	- appliances or parts intended for outdoor use be at least IPX4 (IEC 60335-2-40:2018)		NA
	- appliances intended only for indoor use (excluding laundry rooms) be IPX0 (IEC 60335-2-40:2018)		P
	- appliances intended to be used in laundry rooms be at least IPX1 (IEC 60335-2-40:2018)		NA
6.101	Degree of accessibility (accessible/not accessible to the general public) (IEC 60335-2-40:2018)	Commercial grade equipment Not accessible to the general public	P
<b>7</b>	<b>MARKING AND INSTRUCTIONS</b>		<b>P</b>
7.1	Rated voltage or voltage range (V) .....	230/208V	P
	Symbol for nature of supply including number of phases, unless for single phase operation (IEC 60335-2-40:2018).....	Single Phase – Marked	P
	Rated frequency (Hz) .....	50/60Hz	P
	Rated power input (W), or .....	Not marked	P
	Rated current (A) .....	3.2 A – Marked	P
	Manufacturer's or responsible vendor's name, trademark or identification mark.....	Unico	P
	Model or type reference .....	M2430BL1-EC3	P
	Symbol IEC 60417-5172, for class II appliances	Class I subassembly	NA
	IP number, other than IPX0.....	Ingress Protection Rating of IPX0	NA
	Symbol IEC 60417-5180, for class III appliances, unless	Class I	NA
	the appliance is operated by batteries only, or	No batteries	NA
	for appliances powered by rechargeable batteries recharged in the appliance	No batteries	NA
	Symbol IEC 60417-5018, for class II and class III appliances incorporating a functional earth	No functional earth	NA
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Refrigerant charge for each refrigerating system (IEC 60335-2-40:2018)..... :	Not a refrigeration system	NA
	Refrigerant number in accordance with ISO 817 (IEC 60335-2-40:2018)..... :	Not a refrigeration system	NA
	Permissible excessive operating pressure for the storage tank (for sanitary hot water heat pumps); (IEC 60335-2-40:2018)..... :	Not a refrigeration system	NA
	Maximum allowable pressure in the water and/or brine circuit for the heat exchanger for hydronic fan coil units; (IEC 60335-2-40:2018) .....	Not for use with a water or brine circuit	NA
	Maximum allowable pressure for the refrigerant circuit; if the permissible excessive operating pressure for the suction and discharge side differ, a separate indication is required; (IEC 60335-2-40:2018)..... :	Not a refrigeration system	NA
	for pre-charged pipe sets	Not a refrigeration system	NA
	- refrigerant number in accordance with ISO 817 (IEC 60335-2-40:2018)	Not a refrigeration system	NA
	- the refrigerant charge in the line set (IEC 60335-2-40:2018)	Not a refrigeration system	NA
	- maximum allowable pressure (IEC 60335-2-40:2018)	Not a refrigeration system	NA
	Ratings in watts and voltage of a UV-C germicidal lamp system if employed (IEC 60335-2-40:2018)	No UV-C germicidal lamps	NA
	Appliances are marked with all of the designations and the rated inputs of the supplementary heaters for which they are intended to be used, and have provision for identifying the actual heater that is field installed. (IEC 60335-2-40:2018)	No heaters	NA
	Marking of direction of fluid flow (IEC 60335-2-40:2018)	No fluids	NA
	For appliances using flammable refrigerants, the flame symbol ISO 7010-W021 (2011-05) and the operator's manual symbol described in 7.6 be visible when viewing the appliance after it has been installed. (IEC 60335-2-40:2018)	Not a refrigeration system	NA
	Marking may be behind a detachable part (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	Perpendicular height of the triangle used for the symbol shall be at least 30 mm. (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	For appliances that are not single packaged units, the required markings be provided on all indoor and outdoor units which complete the refrigerating system when installed. (IEC 60335-2-40:2018)	No flammable refrigerants	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	If a flammable refrigerant is used, the symbols for "read operator's manual", "operator's manual; operating instructions" and "service indicator; read technical manual" (symbols ISO 7000-0790 (2004-01) and ISO 7000-1659 (2004-01)) including colour and format be placed on the appliance in a location visible to the persons required to know the information. The perpendicular height of the symbol be at least 10 mm. (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	If a flammable refrigerant is used, an additional warning symbol (flame symbol: ISO 7010-W021 (2011-05)) be placed on the nameplate of the unit near declaration of refrigerant type and charge information. Perpendicular height of the symbol be at least 10 mm, and symbol need not be in colour (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	Following warning also be applied to the non-fixed appliance when a flammable refrigerant is employed. The warning be placed on the outside of the appliance such that it is visible when in service for non-fixed appliance. WARNING Appliance shall be installed, operated and stored in a room with a floor area larger than 'X' m <sup>2</sup> . (IEC 60335-2-40:2018)	No flammable refrigerants	NA
	Minimum room size X be specified on the appliance. The X in the marking be determined in m <sup>2</sup> according to Annex GG; the marking not be required if the refrigerant charge (mc) of the appliance is up to m1 according to GG.1.2.	Not for use with refrigerant	NA
	If not already visible when accessing service port and if service port provided, service port marked to identify type of refrigerant. If refrigerant is flammable, symbol B.3.2 of ISO 3864, be included, without specifying the colour. When an A2L refrigerant is used, the flame symbol ISO 7010-W021 (2011-05) be replaced with the A2L symbol described in 7.6. (IEC 60335-2-40:2018)	Not for use with refrigerant	NA
	Appliances employing refrigerating systems with maximum allowable pressures > than 7 MPa be marked with symbol ISO 7000-1701 (2004-01) followed by the text "(X) MPa" and the Operator's manual; operating instructions symbol ISO 7000-1641 (2004-01). (IEC 60335-2-40:2018)	Not for use with refrigerant	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Where: "X" is not less than the maximum allowable pressure as determined in Annex EE. (IEC 60335-2-40:2018)	Not for use with refrigerant	NA
7.2	Warning for stationary appliances for multiple supply	Only one supply	NA
	Warning placed in vicinity of terminal cover	Only one supply	NA
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		NA
	Different rated values marked with the values separated by an oblique stroke	230/208V	P
7.4	Appliances adjustable for different rated voltages or rated frequencies, the voltage or the frequency setting is clearly discernible		NA
	Requirement met if frequent changes are not required and the rated voltage or rated frequency to which the appliance is to be adjusted is determined from a wiring diagram		NA
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless	Only one rated current that applies for both rated voltages.	P
	the power input or current are related to the arithmetic mean value of the rated voltage range	Only one current rating	NA
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear	Input is the same at either voltage	NA
7.6	Correct symbols used	Symbols not used	NA
	Symbol ISO 7010-W021 (2011-05) (IEC 60335-2-40:2018)	Symbols not used	NA
	Symbol ISO 7000-1659 (2004-01) (IEC 60335-2-40:2018)	Symbols not used	NA
	A2L symbol (IEC 60335-2-40:2018)	Symbols not used	NA
	Symbol ISO 7000-1701 (2004-01) (IEC 60335-2-40:2018)	Symbols not used	NA
	Symbol IEC 60417-6040 (2010-08) (IEC 60335-2-40:2018)	Symbols not used	NA
	Symbol ISO 7000-1641 (2004-01) (IEC 60335-2-40:2018)	Symbols not used	NA
	Symbol for nature of supply placed next to rated voltage	Marking provided	P
	Symbol for class II appliances placed unlikely to be confused with other marking	Class I appliance	NA
	Units of physical quantities and their symbols according to international standardized system	Physical quantities given	P

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless	Single supply connection (2 conductors only)	NA
	correct mode of connection is obvious	Not applicable (See above)	NA
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		P
	- marking of terminals exclusively for the neutral conductor (letter N)	Marking provided	P
	- marking of protective earthing terminals (symbol IEC 60417-5019)	Marking provided	P
	- marking of functional earthing terminals (symbol IEC 60417-5018)	No functional earthing	NA
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard	Switches are inside of the SMART control box	P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means .....	Switches are marked with letters	P
	This applies also to switches which are part of a control	Switches are marked with letters	P
	If figures are used, the off position indicated by the figure 0	Off position marked with "0"	P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position	"0" does not indicate any position but "off"	P
7.11	Indication for direction of adjustment of controls	No integral controls	NA
7.12	Instructions for safe use provided	Instructions area provided in OWNER'S MANUAL, but not the blower module manual.	P
	Details concerning precautions during user maintenance	Instructions provided in OWNER'S MANUAL, but not the blower module manual.	P
	Appliances not accessible to general public, classification of clause 6.101 included (IEC 60335-2-40:2018)	Classification is provided	P
	Appliances using flammable refrigerants, an installation, service and operation manual, either separate or combined manuals, provided and include information given in annex DD (IEC 60335-2-40:2018)	No refrigerants used	NA
	The instructions state that:		
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction	Instruction is provided	P

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- children being supervised not to play with the appliance	Instruction provided	P
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided	No parts of class III construction supplied from detachable power supply	NA
	Instructions for class III appliances state that it must only be supplied at SELV, unless	Not a class III appliance	NA
	it is a battery-operated appliance, the battery being charged outside the appliance	Not battery operated	NA
	For appliances for altitudes exceeding 2000 m, the maximum altitude is stated..... :	Does not exceed 2000 m	NA
	The instructions for appliances incorporating a functional earth states that the appliance incorporates an earth connection for functional purposes only	Earth is protective, not functional	NA
7.12.1	Sufficient details for installation supplied		P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated	Not connected to water mains	NA
	If different rated voltages or different rated frequencies are marked, the instructions state what action to be taken to adjust the appliance	No action needed	NA
	Sufficient details for installation or maintenance supplied (IEC 60335-2-40:2018):		
	- that the appliance shall be installed in accordance with national wiring regulations (IEC 60335-2-40:2018)	Instruction is provided	P
	- the dimensions of the space necessary for correct installation of the appliance including the minimum permissible distance to adjacent structures (IEC 60335-2-40:2018)	Dimensional Data given in M SERIES BLOWER MODULE sheet	P
	- for appliances with supplementary heaters, the minimum clearance from the appliance to combustible surfaces (IEC 60335-2-40:2018)	No supplementary heaters	NA
	- a wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord (IEC 60335-2-40:2018)	Provided in S.M.A.R.T. CONTROL BOARD (SCB) INSTALLATION INSTRUCTIONS	P
	- the range of external static pressures at which the appliance was tested (add-on heat pumps and appliances with supplementary heaters only) (IEC 60335-2-40:2018)	Not a heat pump or for use w/ supplementary heaters	NA
	- the method of connection to the appliance to the electrical supply and interconnection of separate components (IEC 60335-2-40:2018)	Given in S.M.A.R.T. CONTROL BOARD (SCB) INSTALLATION INSTRUCTIONS	F

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- indication of which parts of the appliance are suitable for outdoor use, if applicable (IEC 60335-2-40:2018)	For indoor use only	NA
	- details of type and rating of fuses , or rating of circuit breakers; (IEC 60335-2-40:2018)	2A mini blade fuse	P
	- details of supplementary heating elements that may be used in conjunction with the appliance, including fitting instructions either with the appliance or with the supplementary heater (IEC 60335-2-40:2018)	No such elements	P
	- maximum and minimum water or brine operating temperatures (IEC 60335-2-40:2018)	Not for use with water or brine	NA
	- maximum and minimum water or brine operating pressures (IEC 60335-2-40:2018)	Not for use with water or brine	NA
	- instructions on charging of refrigerants when addition of charge is required by the manufacturer for completing the refrigerating system. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
	Open storage tanks of heat pumps for water heating, accompanied by an instruction sheet which state that the vent shall not be obstructed (IEC 60335-2-40:2018)	No such components	NA
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	Overvoltage cat II	NA
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected	No components have a temp rise of greater than 50 K	NA
7.12.4	Instructions for built-in appliances:		NA
	- dimensions of space	Not a built-in appliance	NA
	- dimensions and position of supporting and fixing	Not a built-in appliance	NA
	- minimum distances between parts and surrounding structure	Not a built-in appliance	NA
	- minimum dimensions of ventilating openings and arrangement	Not a built-in appliance	NA
	- connection to supply mains and interconnection of separate components	Not a built-in appliance	NA
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless	Not a built-in appliance	NA
	a switch complying with 24.3	Not a built-in appliance	NA
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord	No cord provided	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Replacement cord instructions, type Y attachment	No cord provided	NA
	Replacement cord instructions, type Z attachment	No cord provided	NA
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard	No heating	NA
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed	Instructions given in INSTALLATION MANUAL FOR 'M' SERIES MODULAR AIR HANDLER UNITS, but not the blower module instructions	P
7.12.8	Instructions for appliances connected to the water mains:		NA
	- max. inlet water pressure (Pa) .....	Not connected to water mains	NA
	- min. inlet water pressure, if necessary (Pa) .....	Not connected to water mains	NA
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets	Not connected to water mains	NA
7.12.9	Instructions specified in 7.12 and from 7.12.1 to 7.12.8 appear together before any other instructions supplied with the appliance	Instructions appear at the front of the manual	P
	These instructions may be supplied with the appliance separately from any functional use booklet	Info	NA
	They may follow the description of the appliance that identifies parts, or follow the drawings/sketches	Info	NA
	In addition, instructions are also available in an alternative format such as on a website or on request from the user in a format such as a DVD	Info	NA
	In addition, instructions are also available in an alternative format such as on a website or in a format such as a DVD .....		P
7.13	Instructions and other texts in an official language		P
7.14	Markings clearly legible and durable:		
	Signal words WARNING, CAUTION, DANGER in uppercase having a height as specified .....	7.6 mm tall minimum	P
	Uppercase letter of the text explaining the signal word not smaller than 1,6 mm .....	2.3 mm tall minimum	P
	Moulded in, engraved, or stamped markings either raised above or have a depth below the surface of at least 0,25 mm, unless	Not applicable per below	NA
	contrasting colours are used	Contrasting colours are used	P

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Markings checked by inspection, measurement and rubbing test as specified	Tested on 4-Feb-2019. Marking is clear after testing	P
7.15	Markings on a main part	Markings are on a main part	P
	Marking clearly discernible from the outside, if necessary after removal of a cover	Marking are clearly discernible from the outside	P
	For portable appliances, cover can be removed or opened without a tool	Fixed appliance	NA
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation	Visible after installation	P
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions	Visible after installation	P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading	Switches are in SMART Controller, and are marked in close proximity to the components	P
	The symbol IEC 60417-5018 placed next to the symbol IEC 60417-5172 or IEC 60417-5180	Not a class II or class III appliance	NA
	Marking on panel allowed, provided panel in place for intended operation of appliance (IEC 60335-2-40:2018)	No such marking	NA
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link	No such link	NA
7.101	Marking of fuses and overload protective devices, if replaceable (IEC 60335-2-40:2018):		NA
	- fuse rated current in amperes, type and rated voltage or (IEC 60335-2-40:2018)	Only fuse is a low-voltage blade fuse.	NA
	- manufacturer and model of overload protective device (IEC 60335-2-40:2018)	No resettable overload devices	NA
7.102	Marking for connection with aluminium wire, if necessary (IEC 60335-2-40:2018)	Not intended to be connected via aluminium wires	NA
7.103	For appliances made up of more than one factory made assembly specified by the manufacturer to be used together, instructions shall be provided for completing the assembly to ensure compliance with the requirements. (IEC 60335-2-40:2018)	Instructions give in SMART Control Board	P
7.104	For partial units, the instructions or markings shall include the following additional information: (IEC 60335-2-40:2018)		
	- For evaporating units and condensing units, the instructions or markings shall include wording to assure that the maximum operating pressure is considered when connecting to any condenser unit or evaporator unit. (IEC 60335-2-40:2018)	Not an evaporating or condensing unit	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- For evaporating units, condensing units and condenser units, the instructions or markings shall include refrigerant charging instructions. (IEC 60335-2-40:2018)	Not an evaporating or condensing unit	NA
	- A warning to assure that partial units shall only be connected to an appliance suitable for the same refrigerant. (IEC 60335-2-40:2018)	Not for use with refrigerant	NA
	- This unit (model M2430BL1-EC3) is a partial unit air conditioner, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard. (IEC 60335-2-40:2018)	Unit is a blower module to be used with other cells	P
	- The electrical interfaces shall be specified with purpose, voltage, current, and safety class of construction. (IEC 60335-2-40:2018)	Not to be electrically connected with other appliances	NA
	- The SELV connection points, if provided, are to be clearly indicated in the instructions. The connection point should be marked with the "read the instructions" symbol per ISO 7000-0790 (2004-01) and the Class III symbol according to IEC 60417-5180 (2003- 02). (IEC 60335-2-40:2018)	No such connection points	NA
7.105	For appliances using flammable refrigerants that have safety features depending upon the proper function of a refrigerant detecting system, the instructions or unit markings contain the substance of the following: (IEC 60335-2-40:2018)		NA
	"This unit is equipped with a refrigerant leak detector for safety. To be effective, the unit must be electrically powered at all times after installation, other than when servicing." (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
	If any supplemental unit is employed to detect leaked refrigerant, such unit shall also apply this marking or be accompanied by such instructions. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
7.106	For appliances using flammable refrigerants that have safety features depending upon the proper function of ventilation, the instructions or unit markings shall contain the substance of the following: (IEC 60335-2-40:2018)		NA
	"This unit is equipped with electrically powered safety measures. To be effective, the unit must be electrically powered at all times after installation, other than when servicing." (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
	If any supplemental unit is employed to dilute leaked refrigerant, such unit shall also apply this marking or be accompanied by such instructions. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
7.107	For flammable refrigerants, when addition of charge is required by the manufacturer installation instructions for completing the refrigerating system, the manufacturer provides a label that allows the installer to note the resulting total refrigerant charge for each refrigerating system. See Figure 101 for an example of label for field charged units. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
7.108	For appliances using flammable refrigerants, the flame symbol described in 7.6 be visible in each of the following conditions: (IEC 60335-2-40:2018)		NA
	- on the packaging of the appliance if the appliance is charged with refrigerant excluding appliances with A2L refrigerant charge not exceeding $m_1$ ; (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
	- when viewing the appliance on display for sale. This does not apply to appliances using A2L refrigerants. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
	For appliances that are not factory sealed single packaged units, the required markings shall be provided on all indoor and outdoor units which complete the refrigerating system. (IEC 60335-2-40:2018)	Not for use with refrigerants	NA
7.109	Appliances employing UV-C germicidal lamp systems shall be marked with ultraviolet radiation hazard symbol IEC 60417-6040 (2010-08) and the Read operator's manual symbol ISO 7000-0790 (2004-01) in the following locations: (IEC 60335-2-40:2018)		NA
	- doors and access panels that provide direct access to an area within the appliance where the measured UV-C spectral irradiance is greater than $1,7 \text{ W/cm}^2$ ; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- user maintenance access panels (IEC 60335-2-40:2018)	Not for use with UV	NA
	- UV-C barriers. (IEC 60335-2-40:2018)	Not for use with UV	NA
7.110	For appliances that employ UV-C germicidal lamp systems, the instructions include the substance of the following: (IEC 60335-2-40:2018)		NA
	- this appliance contains a UV-C lamp; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- read the maintenance instructions before opening the appliance; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- details for cleaning and other user maintenance of the appliance. They shall state that prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains;; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- precautions to be taken when replacing UV-C emitters and starters, if applicable; (IEC 60335-2-40:2018)	Not for use with UV	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in small doses, cause harm to the eyes and skin; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- the appliance must be disconnected from the supply before replacing the UV-C lamp; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- doors and access panels bearing the ultraviolet radiation hazard symbol which may have UV-C spectral irradiance greater than 1,7 W/cm <sup>2</sup> are provided with an interlock switch to interrupt the power to the UV-C lamps for your safety. Do not over-ride; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- before opening doors and access panels bearing the ultraviolet radiation hazard symbol for the conducting user maintenance, it is recommended to disconnect the power; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- UV-C barriers bearing the ultraviolet radiation hazard symbol should not be removed; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- for appliances with UV-C lamps, information on the replacement of UV-C lamps shall be given, including the model and/or part number; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- if field installed, the factory specified UV-C germicidal lamp systems approved for use with the subject product shall be specified in the instructions by the specific model number; (IEC 60335-2-40:2018)	Not for use with UV	NA
	- do not operate UV-C lamps outside of the appliance. (IEC 60335-2-40:2018)	Not for use with UV	NA
7.111	For appliances employing refrigerating systems with maximum allowable pressures greater than 7 MPa, the instructions shall include the substance of the following: (IEC 60335-2-40:2018)		NA
	- WARNING: System contains refrigerant under very high pressure. The system must be serviced by qualified persons only. (IEC 60335-2-40:2018)	Not for use with refrigerant	NA
<b>8</b>	<b>PROTECTION AGAINST ACCESS TO LIVE PARTS</b>		
8.1	Adequate protection against accidental contact with live parts	Enclosure prevents accidental contact with live parts.	P
8.1.1	Requirement applies for all positions, detachable parts removed	Enclosure prevents accidental contact with live parts.	P
	Lamps behind a detachable cover not removed, if conditions met	No lamps	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap	No lamps	NA
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts	No contact with live parts	P
	Use of test probe B of IEC 61032 through openings, with a force of 20 N: no contact with live parts	Openings did not allow probe to pass through with a force of 20 N	P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts	Not a class 0 or class II appliance	NA
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts	Not a class 0 or class II appliance	NA
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements or supporting parts	No heating devices	NA
	For a single switching action obtained by a switching device, requirements as specified	No heating devices	NA
	For appliances with a supply cord and without a switching device, the single switching action may be obtained by the withdrawal of the plug	No heating devices	NA
8.1.4	Accessible part not considered live if:		NA
	- safety extra-low a.c. voltage: peak value not exceeding 42,4 V	Informational	NA
	- safety extra-low d.c. voltage: not exceeding 42,4 V	Informational	NA
	- or separated from live parts by protective impedance	Informational	NA
	If protective impedance: d.c. current not exceeding 2 mA, and	Informational	NA
	a.c. peak value not exceeding 0,7 mA	Informational	NA
	- for peak values over 42,4 V up to and including 450 V, capacitance not exceeding 0,1 $\mu$ F	Informational	NA
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 $\mu$ C	Informational	NA
	- for peak values over 15 kV, the energy in the discharge not exceeding 350 mJ	Informational	NA
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
	- built-in appliances	Not a built-in appliance	NA
	- fixed appliances	Live parts are protected by at least basic insulation prior to assembly.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- appliances delivered in separate units	Live parts are protected by at least basic insulation prior to assembly.	P
	As regards the products which have a dedicated installation panel or cover and which cannot be installed without them, compliance is checked according to 5.10 (after the installation as instructed in the installation manual). (IEC 60335-2-40:2018)	No such panel or cover	NA
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only	Not class II	NA
	Only possible to touch parts separated from live parts by double or reinforced insulation	Not class II	NA
<b>9</b>	<b>STARTING OF MOTOR-OPERATED APPLIANCES</b>		
	Requirements and tests are specified in part 2 when necessary	Not applicable per IEC 60335-2-40:2018	NA
<b>10</b>	<b>POWER INPUT AND CURRENT</b>		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 .....	(see appended table)	NA
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period	Current rating, not power rating	NA
	Otherwise the power input is the arithmetic mean value	Current rating, not power rating	NA
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless	Current rating, not power rating	NA
	the rated power input is related to the arithmetic mean value	Current rating, not power rating	NA
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 .....	(see appended table)	P
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		Info

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Otherwise the current is the arithmetic mean value		Info
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless	Carried out at 208V and 230V	P
	the rated current is related to the arithmetic mean value of the range		NA
<b>11</b>	<b>HEATING</b>		
11.1	No excessive temperatures in normal use (IEC 60335-2-40:2018)		P
	Compliance is checked by the tests of annex C, if (IEC 60335-2-40:2018):		P
	- temperature of motor winding exceeds values shown in table 3 (IEC 60335-2-40:2018)		P
	- there is doubt about classification of insulation system of the motor (IEC 60335-2-40:2018)	Class B	NA
11.2	Appliances are installed in a test room in accordance with the installation instructions. In particular, (IEC 60335-2-40:2018):		P
	- clearances to adjacent surfaces (IEC 60335-2-40:2018)		P
	- flow rates for liquid source or sink equipment be minimum, except for hydronic fan coil units where flow rates and liquid temperatures be maximum (IEC 60335-2-40:2018)	No liquid	NA
	- static pressures (IEC 60335-2-40:2018)		P
	- means of adjusting the flow, flow for tests be minimum obtainable (IEC 60335-2-40:2018)	No liquid	NA
	- adjustable limit controls set at maximum cut-out setting and minimum differential (IEC 60335-2-40:2018)		P
	Appliances with supplementary heaters, use test casing as described in 11.9 (IEC 60335-2-40:2018)		NA
11.2.1	Appliances with supplementary heaters, inlet duct connected to inlet air opening (IEC 60335-2-40:2018)	No heaters	NA
	Appliance that includes or has provision for supplementary heater is fitted with a metal outlet duct in accordance with Figure 102a) or Figure 102b), depending on the direction of the airflow. (IEC 60335-2-40:2018)	No heaters	NA
	Inlet duct is provided with an adjustable restricting means by which the airflow can be reduced. (IEC 60335-2-40:2018)	No heaters	NA
	Restriction should be uniform across the duct's cross sectional area, so that the full heating coil surface will be exposed to the airflow except when the restriction is closed. (IEC 60335-2-40:2018)	No heaters	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
11.2.2	Ducted appliance without supplementary heaters is fitted with an outlet duct sized to fit the casing flanges, or opening without flanges, or locations marked for flanges, and arranged to discharge away from the return air inlet. (IEC 60335-2-40:2018)	Outlet restricted for maximum static air pressure and fan speed	P
	Outlet duct is provided with a restricting means to obtain the maximum static pressure given in the instructions (IEC 60335-2-40:2018)	Outlet restricted for maximum static air pressure and fan speed	P
11.2.3	For the evaluation and testing of partial units, the following test setup and conditions are to be applied. (IEC 60335-2-40:2018)	Not a partial unit	NA
	- evaporator units and condenser units are tested as individual units at the maximum ambient temperature stated in the instructions. If not stated in the instructions, these units shall be tested at an ambient temperature that is equal to the saturated temperature of the refrigerant at the marked maximum allowable operating pressure ( $\pm 0,1$ MPa) minus 10 K ( $\pm 1$ K). (IEC 60335-2-40:2018)	Not a partial unit	NA
	- condensing units are tested in the cooling mode only, at the maximum specified ambient temperature with 9 K ( $\pm 1$ K) sub-cooling and the maximum specified evaporating pressure with 11 K ( $\pm 1$ K) superheat. For condensing units provided with expansion device(s), the superheat/sub-cooling is to be as under the normal control of the expansion device(s). (IEC 60335-2-40:2018)	Not a partial unit	NA
	- evaporating units, intended for cooling only, are tested in the cooling mode only with a condensing pressure that is equal to the marked maximum allowable operating pressure ( $\pm 0,1$ MPa) with 9 K ( $\pm 1$ K) sub-cooling. (IEC 60335-2-40:2018)	Not a partial unit	NA
	- evaporating units that are intended for reverse cycle operation are tested in the heating mode only, at the maximum specified evaporating pressure. (IEC 60335-2-40:2018)	Not a partial unit	NA
11.3	Temperature rise determine by thermocouples or resistance method (IEC 60335-2-40:2018)	Thermocouples used	P
11.4	Test performed at supply voltage between 0,94 and 1,06 times the rated voltage (IEC 60335-2-40:2018)	Tested at 0.94 times 208 and 1.06 times 230	P
	Heating elements energized at voltage which gives an electrical input of 1,15 times maximum rated power input (IEC 60335-2-40:2018)	No such elements	P
11.5	Test conducted in heating mode and cooling mode, if both exist (IEC 60335-2-40:2018)	Testing only the blower module. No difference between modes	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	All supplementary heating elements operative simultaneously (IEC 60335-2-40:2018)	No heating elements	NA
11.6	Defrost test in most unfavourable conditions, if needed (IEC 60335-2-40:2018)	No defrost	NA
11.7	Appliances operated continuously until steady conditions except for defrost tests (IEC 60335-2-40:2018)		Info
11.8	Temperatures not exceeding values of table 3 (IEC 60335-2-40:2018)	(See appended tables)	P
	Protective devices do not operate (IEC 60335-2-40:2018)		P
	Sealing compound not flowing out (IEC 60335-2-40:2018)		P
	Temperature of air in outlet duct not exceed 90 °C (IEC 60335-2-40:2018)		P
11.9	Test casing and installation of appliances in accordance with manufacturer's instructions (IEC 60335-2-40:2018)		NA
	Glass fibre insulation for appliances without indication of minimum clearances according to manufacturer; thermocouple in contact with enclosure (IEC 60335-2-40:2018)		NA
<b>13</b>	<b>LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE</b>		
13.1	Leakage current not excessive and electric strength adequate	1.75mA tested, 3.5mA allowed	P
	Heating appliances operated at 1,15 times the rated power input (W) .....	Not a heating device	NA
	Motor-operated appliances and combined appliances supplied at 1,06 times the rated voltage (V) .....	Tested at 254.4V, which is worse case than required 243.8V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests	Not tested	NA
13.2	The leakage current is measured by means of the circuit described in figure 4 of IEC 60990:1999		Info
	For stationary class I appliances, the leakage current shall not exceed 2 mA per kilowatt rated power input with a maximum value of 10 mA for appliances accessible to the general public, and a maximum value of 30 mA for appliances not accessible to the general public. (IEC 60335-2-40:2018)	Input current is rated, not power	NA
	Leakage current measurements.....	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4 .....	(see appended table)	P

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	No breakdown during the tests	No breakdown when electrically protected motor is disconnected	P
<b>14</b>	<b>TRANSIENT OVERVOLTAGES</b>		
	Appliances withstand the transient over-voltages to which they may be subjected	Clearances are acceptable	NA
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 ..... :	Clearances are acceptable	NA
	No flashover during the test, unless	Clearances are acceptable	NA
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited	Clearances are acceptable	NA
<b>15</b>	<b>MOISTURE RESISTANCE</b>		
15.1	Enclosure provides degree of moisture protection against ingress of water (rain, overflow from drain pan or defrosting), tests of clause 15.2, 15.3, 11.6 and 16) (IEC 60335-2-40:2018)	Rated IPX0	NA
	Motor-compressor not operated and detachable parts removed during tests of clause 15.2 and 15.3 (IEC 60335-2-40:2018)	Rated IPX0	NA
15.2	Tests in accordance with IEC 60529 in appliances other than IPX0, as specified (IEC 60335-2-40:2018)..... :	Rated IPX0	NA
15.3	Drain pan filled to brim and subjected to continuous overflow and fan(s) switched on (IEC 60335-2-40:2018)	No drain pan	NA
15.101	Spillage test as specified (IEC 60335-2-40:2018)	Not accessible by the general public	NA
	After spillage completed, appliance withstand test of clause 16 (IEC 60335-2-40:2018)	Not accessible by the general public	NA
<b>16</b>	<b>LEAKAGE CURRENT AND ELECTRIC STRENGTH</b>		
16.1	Leakage current not excessive and electric strength adequate	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	Protective impedance disconnected from live parts before carrying out the tests	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	Tests carried out at room temperature and not connected to the supply	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
16.2	Single-phase appliances: test voltage 1,06 times rated voltage (V) ..... :	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	Three-phase appliances: test voltage 1,06 times rated voltage divided by $\sqrt{3}$ (V)..... :	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Leakage current measurements (IEC 60335-2-40:2018)..... :	(see appended table)	NA
	Limit values doubled if:		NA
	- all controls have an off position in all poles, or	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	- the appliance has no control other than a thermal cut-out, or	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	- all thermostats, temperature limiters and energy regulators do not have an off position, or	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	- the appliance has radio interference filters	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
	With the radio interference filters disconnected, the leakage current do not exceed limits specified ..... :	(see appended table)	NA
16.3	Electric strength tests according to table 7 ..... :	(see appended table)	NA
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified..... :	(see appended table)	NA
	No breakdown during the tests	Moisture Resistance Tests not performed. Leakage and Dielectric not needed.	NA
<b>17</b>	<b>OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS</b>		
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use ..... :	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
	Appliance supplied with 1,06 or 0,94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V) ..... :	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
	Basic insulation is not short-circuited	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
	Temperature of the winding not exceeding the value specified in table 8	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1	UL Recognized Class 2 Transformer – Per Third party UL evaluation	P
<b>18</b>	<b>ENDURANCE</b>		

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Requirements and tests are specified in part 2 when necessary	No required per IEC 60335-2-40:2018	NA
<b>19</b>	<b>ABNORMAL OPERATION</b>		
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe .....	(see appended table)	P
	Failure of transfer medium flow, or of any control device, does not result in a hazard (IEC 60335-2-40:2018)	Subassembly. All heaters, cooling systems, etc. must have their own safety mechanisms.	NA
	Appliances are subjected to the tests specified in 19.2 to 19.10, 19.101, 19.102 and 19.103, as applicable. (IEC 60335-2-40:2018)		Info
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		Info
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	Appliances incorporating voltage selector switches subjected to the test of 19.15	Performed on 13-Feb-19	P
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		Info
	until steady conditions are established		Info
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample	No such components	NA
19.2	Test of appliances with supplementary heaters (IEC 60335-2-40:2018)	No supplementary heaters	NA
19.3	Test at temperature permitting continuous operation of the motor-compressor and electric heating elements at same time (IEC 60335-2-40:2018)	No motor compressors or electric heating elements	NA
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited	Subassembly. All heaters, cooling systems, etc. must have their own safety mechanisms.	NA
	Test of appliance with any defect which expected during normal use (IEC 60335-2-40:2018)	Subassembly. All heaters, cooling systems, etc. must have their own safety mechanisms.	NA

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Clause	Requirement + Test	Result - Remark	Verdict
19.5	Test of 19.4 repeated on class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath	Not class 0I or I	NA
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath	Not class 0I or I	NA
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4	Not class 0I or I	NA
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions	No heating elements	NA
	The working voltage of the PTC heating element is increased by 5 % and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times working voltage or until the PTC heating element ruptures (V)..... :	No heating elements	NA
19.7	Test of appliance with motor rotors, other than motor-compressors and stationary circulation pumps in compliance with IEC 60335-2-51, operated for 15 days (360 h) or until protection device opens circuit (IEC 60335-2-40:2018)	CE Approved motor	NA
	Insulation of motor windings (IEC 60335-2-40:2018)..... :	CE Approved motor	NA
	Temperature of enclosure does not exceed (°C) (IEC 60335-2-40:2018)..... :	CE Approved motor	NA
	Temperature of the windings does not exceed the values shown in the table 8; temperature (°C) (IEC 60335-2-40:2018)..... :	CE Approved motor	NA
	Electric strength test as specified in 16.3, 72 h after the beginning of the test (IEC 60335-2-40:2018)	CE Approved motor	NA
	At the end, leakage current between windings and enclosure does not exceed 2 mA (IEC 60335-2-40:2018)	CE Approved motor	NA
	Winding temperatures not exceeding values specified in table 8..... :	(see appended table)	NA
	If the motor-compressor has not been type-tested against the requirements of IEC 60335-2-34, a sample is provided with the rotor locked and being filled with oil and refrigerant as intended. (IEC 60335-2-40:2018)	No motor-compressor	NA
	Sample is subjected to the tests specified in 19.101, 19.102, 19.103 and 19.105 of IEC 60335-2-34:2012, if applicable, and complies with the requirements in 19.104 of IEC 60335-2-34:2012. (IEC 60335-2-40:2018)	No motor-compressor	NA

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Clause	Requirement + Test	Result - Remark	Verdict
19.8	Three phase motors other than motor compressors are operated under the conditions of Clause 11 at rated voltage or at the upper limit of the rated voltage range with one phase disconnected, until steady conditions are obtained or the protective device operates. (IEC 60335-2-40:2018)	No three phase motors	NA
19.10	Series motor operated at 1,3 times rated voltage for 1 min (V) .....	Induction motor used, not series.	NA
	During the test, parts not being ejected from the appliance	Induction motor used, not series.	NA
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless	Not applicable per 19.11.1	NA
	they comply with the conditions specified in 19.11.1	Complies with 19.11.1	P
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless	Performed test on 13-Feb-19	P
	restarting does not result in a hazard		NA
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4	EMC Testing - Plano	NA
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out	No fuse link	NA
	During and after each test the following is checked:		NA
	- the temperature of the windings do not exceed the values specified in table 8	No fuse link	NA
	- the appliance complies with the conditions specified in 19.13	No fuse link	NA
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4	No fuse link	NA
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		Info
	- the base material of the printed circuit board withstands the test of annex E		Info
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		Info
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		NA
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit	Low voltage circuits do not control safety and are downstream of a class 2, 50VA, inherently protected transformer	NA
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		TBD
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29	Not applicable per 19.11.1	NA
	b) open circuit at the terminals of any component	Not applicable per 19.11.1	NA
	c) short circuit of capacitors, unless	Not applicable per 19.11.1	NA
	they comply with IEC 60384-14	Not applicable per 19.11.1	NA
	d) short circuit of any two terminals of an electronic component, other than integrated circuits	Not applicable per 19.11.1	NA
	This fault condition is not applied between the two circuits of an optocoupler	Not applicable per 19.11.1	NA
	e) failure of triacs in the diode mode	Not applicable per 19.11.1	NA
	f) failure of microprocessors and integrated circuits	Not applicable per 19.11.1	NA
	g) failure of an electronic power switching device	Not applicable per 19.11.1	NA
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made	Not applicable per 19.11.1	NA
19.11.3	If the appliance incorporates a protective electronic circuit that operates to ensure compliance with clause 19, the appliance is tested as specified	No such protective circuit	NA
19.11.4	The first paragraph of Part 1 in not applicable for stand-by mode if unintentional operation does not cause any hazards. (IEC 60335-2-40:2018)	Unintentional operation causes hazard if unit is being serviced	NA
	Appliances having a device with an off position obtained by electronic disconnection, or	Off by electric disconnection	P
	a device that can be placed in the stand-by mode,	Software defined	P
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode	EMC Testing - Plano	NA
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.4.1 to 19.11.4.7. (IEC 60335-2-40:2018)	EMC Testing - Plano	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Tests are carried out after the protective electronic circuit has operated during the relevant tests of Clause 19 except 19.2, 19.6, 19.11.3, 19.102 and 19.103. (IEC 60335-2-40:2018)	EMC Testing - Plano	NA
	If the appliance incorporates more than one protective electronic circuit, each protective electronic circuit has to be tested individually with the appliance operated under normal operation at any temperature within the working range. (IEC 60335-2-40:2018)	Only one electronic circuit	NA
	Components protected by a protective electronic, if engineering judgement gives evidence that the test in the final application will not lead to a hazardous condition. (IEC 60335-2-40:2018)	No such components	NA
	Surge protective devices disconnected, unless	No such devices	NA
	They incorporate spark gaps	No such devices	NA
	For these tests, it may be necessary to provide specially prepared component samples, e.g. compressors with locked rotor. (IEC 60335-2-40:2018)	Not needed	NA
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4	EMC Testing - Plano	NA
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, at frequency ranges specified	EMC Testing - Plano	NA
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified	EMC Testing - Plano	NA
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified	EMC Testing - Plano	NA
	An open circuit test voltage of 2 kV is applicable for the line-to-line coupling mode	EMC Testing - Plano	NA
	An open circuit test voltage of 4 kV is applicable for the line-to-earth coupling	EMC Testing - Plano	NA
	Earthed heating elements in class I appliances disconnected	EMC Testing - Plano	NA
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3	EMC Testing - Plano	NA
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the class 3 voltage dips and interruptions in accordance with IEC 61000-4-11	EMC Testing - Plano	NA
	Appliances having a rated current exceeding 16 A are subjected to the class 3 voltage dips and interruptions in accordance with IEC 61000-4-34	EMC Testing - Plano	NA

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Clause	Requirement + Test	Result - Remark	Verdict
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2	EMC Testing - Plano	NA
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation at any temperature within the working range. After 60 s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate. (IEC 60335-2-40:2018)	Motor ceased to operate at 133V.  Tested on 13-Feb-2019	P
	The appliance continues to operate normally, or	Appliance continued to operate normally when voltage level was returned to normal	P
	requires a manual operation to restart		NA
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)..... :	No fuse-links	NA
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts	EMC Testing - Plano	NA
	Temperature rises not exceeding the values shown in table 9..... :	(see appended table)	NA
	Compliance with clause 8 not impaired	EMC Testing - Plano	NA
	If the appliance can still be operated it complies with 20.2	EMC Testing - Plano	NA
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		NA
	- basic insulation (V) ..... :	EMC Testing - Plano	NA
	- supplementary insulation (V)..... :	EMC Testing - Plano	NA
	- reinforced insulation (V) ..... :	EMC Testing - Plano	NA
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage	EMC Testing - Plano	NA
	The appliance does not undergo a dangerous malfunction, and	EMC Testing - Plano	NA
	no failure of protective electronic circuits, if the appliance is still operable	EMC Testing - Plano	NA
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		NA
	- do not become operational, or	EMC Testing - Plano	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4	EMC Testing - Plano	NA
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		NA
	- the lid or door does not move automatically to an open position when the interlock is released, and	EMC Testing - Plano	NA
	- the appliance does not start after the cycle in which the interlock was released	EMC Testing - Plano	NA
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	Locking in the "on" position of the main contacts of a contact intended for switching on and off the heating element(s) in normal use is considered to be a fault condition, unless the appliance is provided with at least two sets of contacts connected in series. (IEC 60335-2-40:2018)	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
	This condition is, for example, achieved by providing two contactors operating independently of each other or by providing one contactor having two independent armatures operating two independent sets of main contacts. (IEC 60335-2-40:2018)	Relays are not solid state and are operated in normal use. Shorting them is not an abnormal.	NA
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied	Unit operates without risk of hazard Tested on 13-Feb-2019	P
19.101	Test of appliance with heat transfer medium flow of the outdoor heat exchanger restricted or shut off when reaching steady conditions (IEC 60335-2-40:2018)	Not a heat exchanger	NA
	Test of appliance with heat transfer flow of the indoor heat exchanger restricted or shut off when reaching steady conditions (IEC 60335-2-40:2018)	Not a heat exchanger	NA



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Clause	Requirement + Test	Result - Remark	Verdict
	Disconnection of motor common to both the outdoor and the indoor heat exchangers when reaching steady conditions (IEC 60335-2-40:2018)	Not a heat exchanger	NA
19.102	Test of appliances using water as heat transfer medium (IEC 60335-2-40:2018)	No water	NA
19.103	Test of air to air appliances at rated voltage or at the upper limit of the rated voltage range. Dry-bulb temperature is 5 K below values specified by manufacturer (IEC 60335-2-40:2018)	Not such an appliance	NA
	Test with the dry-bulb temperature 10 K over the values specified by manufacturer (IEC 60335-2-40:2018)	Not such an appliance	NA
19.104	All appliances provided with supplementary heaters and free air discharge subjected to specified test in each mode of operation (IEC 60335-2-40:2018)	No heaters	NA
	During test temperature not exceed 150 °C but an overshoot of 25 °C is permitted during first hour (IEC 60335-2-40:2018)	No heaters	NA
	Thermal protective devices are allowed to operate. (IEC 60335-2-40:2018)	No heaters	NA
<b>20</b>	<b>STABILITY AND MECHANICAL HAZARDS</b>		
20.1	Appliances having adequate stability	Not intended for use such as on the floor or table	NA
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn	Not intended for use such as on the floor or table	NA
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°	Not intended for use such as on the floor or table	NA
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9	Not intended for use such as on the floor or table	NA
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	Moving parts are adequately arranged so as to protect against personal injury. The impeller can be contacted, but this subassembly is for use with a plenum that would prevent such contact	P
	Protective enclosures, guards and similar parts are non-detachable, and	Enclosures and guards are non-detachable and	P
	have adequate mechanical strength	have adequate mechanical strength	P
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts	No such enclosures	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure	No such hazards	NA
	Not possible to touch dangerous moving parts with the test probe described	Subassembly for use in a larger product	NA
<b>21</b>	<b>MECHANICAL STRENGTH</b>		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J	Performed on 14-Feb-19	P
	The appliance shows no damage impairing compliance with this standard, and	No damage	P
	compliance with 8.1, 15.1 and clause 29 not impaired	No damage	P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3		NA
	If necessary, repetition of groups of three blows on a new sample		NA
	Safety requirements specified in annex EE apply. Pressure test in annex EE applies to parts other than pressure vessels (IEC 60335-2-40:2018)	No components under pressure	NA
	Safety requirements of ISO 14903 apply (IEC 60335-2-40:2018)	Not a refrigerating system or heat pump	NA
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements	No such accessible parts	NA
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm	No such accessible parts	NA
	The insulation is tested as specified, and does withstand the electric strength test of 16.3	No such accessible parts	NA
	Appliances using flammable refrigerants withstand the effects of vibration during transport. (IEC 60335-2-40:2018)	No refrigerants	NA
	Appliance is tested in its final packaging for transport and withstands a random vibration test according to ASTM D4728-06. Tests be run for a duration of 180 min. (IEC 60335-2-40:2018)	No refrigerants	NA
	Compliance is checked as specified (IEC 60335-2-40:2018)	No refrigerants	NA
<b>22</b>	<b>CONSTRUCTION</b>		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	Not marked	NA

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Clause	Requirement + Test	Result - Remark	Verdict
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		P
	- a supply cord fitted with a plug, or		NA
	- a switch complying with 24.3, or		NA
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or	Such an instruction exists	P
	- an appliance inlet		NA
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor	No such devices	NA
22.3	Appliance provided with pins: no undue strain on socket-outlets	Not provided with pins	NA
	Applied torque not exceeding 0,25 Nm	No pins	NA
	Pull force of 50 N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1 mm	No pins	NA
	Each pin subjected to a torque of 0,4 Nm; the pins are not rotating, unless	No pins	NA
	rotating does not impair compliance with this standard	No pins	NA
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets	Not provided with pins	P
22.5	No risk of electric shock when touching pins, for appliances having a capacitor with rated capacitance equal to or greater than 0,1 $\mu$ F, the appliance being disconnected from the supply at the instant of voltage peak	Not provided with plug or pins	NA
	Voltage not exceeding 34 V (V) .....	Not provided with plug or pins	NA
	If compliance relies on the operation of an electronic circuit, the electromagnetic phenomena tests of 19.11.4.3 and 19.11.4.4 are applied	Not provided with plug or pins	NA
	The discharge test is then repeated three times, voltage not exceeding 34 V (V) .....	Not provided with plug or pins	NA
22.6	Electrical insulation not affected by condensing water or leaking liquid	Not affected	NA
	Electrical insulation of class II appliances not affected if a hose ruptures or seal leaks	No hoses	NA
	In case of doubt, test as described		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Electrical insulation not affected by snow penetration to appliance enclosure (IEC 60335-2-40:2018)		NA
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices	Appliance does not contain liquid or gas or have steam-producing devices	NA
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use	Electrical connections in blower module are not subject to pulling	P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless	Not subject to oil or grease	NA
	the substance has adequate insulating properties	Not subject to oil or grease	NA
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:	No non-self-resetting thermal cut-outs	NA
	- a non-self-resetting thermal cut-out is required by the standard, and		NA
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		NA
	Non-self-resetting thermal motor protectors have a trip-free action, unless		NA
	they are voltage maintained		NA
	Reset buttons of non-self-resetting controls so located or protected that accidental resetting is unlikely		NA
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts	SMART Control Box cover is secured with screws.	P
	Obvious locked position of snap-in devices used for fixing such parts	No such devices	NA
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing	No such devices	NA
	Tests as described	Not applicable per above	NA
22.12	Handles, knobs etc. fixed in a reliable manner, if loosening result in a hazard	No handles, knobs, grips	NA
	Removing or fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible, if resulting in a hazard	No handles, knobs, grips	NA
	A choking hazard does not apply to appliances for commercial use	No handles, knobs, grips	NA
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied	No handles, knobs, grips	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied	No handles, knobs, grips	NA
	If the part is removed and can be contained within the small parts cylinder, it is considered to be a choking hazard	No handles, knobs, grips	NA
22.13	Unlikely that handles, when gripped as in normal use, make the operator's hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only	No handles, knobs, grips	NA
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	No such edges	P
	No exposed pointed ends of self-tapping screws or other fasteners, likely to be touched by the user in normal use or during user maintenance	<del>Self-tapping screws likely to be touched by user or installer and can contact wires</del>  Screws that can contact wiring changed to blunt end screws	<del>F</del>  P
	This requirement does not apply to the metallic fins of heat exchangers. (IEC 60335-2-40:2018)	Not a heat exchanger	NA
22.15	Storage hooks and the like for flexible cords smooth and well rounded	No such hooks	NA
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands and no undue wear of contacts	No cord reels	NA
	Cord reel tested with 6000 operations, as specified	No cord reels	NA
	Electric strength test of 16.3, voltage of 1000 V applied	No cord reels	NA
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No such spacers	NA
22.18	Current-carrying parts and other metal parts resistant to corrosion	Wires and conductors are resistant to corrosion. Enclosures are galvanized or galvanized.	P
22.19	Driving belts not relied upon to provide the required level of insulation, unless	No driving belts	NA
	constructed to prevent inappropriate replacement	No driving belts	NA
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless	No contact	P
	material used is non-corrosive, non-hygroscopic and non-combustible	No contact	P
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless	No such materials used	P
	impregnated		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		Info
22.22	Appliances not containing asbestos	No asbestos	P
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No oils used	P
22.24	Bare heating elements adequately supported to prevent contact with accessible metal parts nor give rise to a hazard in case of rupture or sagging (IEC 60335-2-40:2018)	No heating elements	NA
	Bare heating elements not used with wood or wood composite enclosures. (IEC 60335-2-40:2018)	No heating elements	NA
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts	Not class III	NA
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation	Not class III	NA
22.27	Parts connected by protective impedance separated by double or reinforced insulation	No protective impedance used	NA
22.28	Metal parts of class II appliances conductively connected to gas pipes or in contact with water, separated from live parts by double or reinforced insulation	No water or gas	NA
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation	Not class II	NA
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or	Not class II	NA
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete	Not class II	NA
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear	Supplementary and reinforced insulation not used	NA
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose	Supplementary and reinforced insulation not used	NA
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29	Supplementary and reinforced insulation not used	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2	Supplementary and reinforced insulation not used	NA
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation	No ceramic materials	NA
	Ceramic and similar porous material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation	No ceramic or similar materials	NA
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature	Test not applicable per above	NA
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts, or	No liquids	NA
	unearthed metal parts separated from live parts by basic insulation only	No liquids	NA
	Electrodes not used for heating liquids	No liquids	NA
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless	Not class II	NA
	the reinforced insulation consists of at least 3 layers	Not class II	NA
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless	Not class II	NA
	the reinforced insulation consists of at least 3 layers	Not class II	NA
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid	No liquid	NA
22.34	Shafts of operating knobs, handles, levers etc. not live, unless	No handles, knobs, levers etc.	NA
	the shaft is not accessible when the part is removed	No handles, knobs, levers etc.	NA
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation	No handles, knobs, levers etc.	NA
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation	No handles, knobs, levers etc.	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	This requirement does not apply to handles, levers and knobs on stationary appliances and cordless appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal	No handles, knobs, levers etc.	NA
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation	No handles, knobs, levers etc.	NA
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless	No handles, knobs, levers etc.	NA
	they are separated from live parts by double or reinforced insulation	No handles, knobs, levers etc.	NA
22.37	Capacitors in class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless	Not class II	NA
	the capacitors comply with 22.42	Not class II	NA
22.38	Capacitors not connected between the contacts of a thermal cut-out	No thermal cut-outs	NA
22.39	Lamp holders used only for the connection of lamps	No lamps	NA
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible	Not intended to be moved while in operation	NA
	If the appliance cannot operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch for stopping the operation. The actuating member of the switch being easily visible and accessible	Appliance can operate continuously without giving rise to a hazard	NA
22.41	No components, other than lamps, containing mercury	No components containing mercury	P
22.42	Protective impedance consisting of at least two separate components	No protective impedance	NA
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited	No protective impedance	NA
	Resistors checked by the test of 14.1 a) in IEC 60065	No protective impedance	NA
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14	No protective impedance	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	Switch in internal to the SMART Control Box. Accidental changing in unlikely.	P
22.44	Appliances not having an enclosure that is shaped or decorated like a toy	Not shaped or decorated like a toy	P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure	Deformation does not shrink clearances	P
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1	Software does not control safety	NA
	If the protective electronic circuit software is a part of the normal operation control, inspection of software shall be limited to relevant source code of safety controls or related software controls. (IEC 60335-2-40:2018)	Software does not control safety	NA
	Alternative methods are used (IEC 60335-2-40:2018)	Software does not control safety	NA
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards	Software does not control safety	NA
	These requirements are not applicable to software used for functional purpose or compliance with clause 11	Software does not control safety	NA
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use	Not connected to water mains	NA
	No leakage from any part, including any inlet water hose	Not connected to water mains	NA
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water	Not connected to water mains	NA
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless	Not operated remotely	NA
	the appliance switches off automatically or can operate continuously without hazard	Not operated remotely	NA
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation	No remote operation	NA
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode	No remote operation	NA
	There is a visual indication showing that the appliance is adjusted for remote operation	No remote operation	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		NA
	- continuously, or	No remote operation	NA
	- automatically, or	No remote operation	NA
	- remotely	No remote operation	NA
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold	No socket outlets on appliance	NA
22.53	Class II appliances and class III appliances that incorporate functionally earthed parts have at least double insulation or reinforced insulation between live parts and the functionally earthed parts	Class I	NA
22.54	Button cells and batteries designated R1 not accessible without the aid of a tool, unless	No batteries	NA
	the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously	No batteries	NA
22.55	Devices operated to stop the intended function of the appliance, if any, are be distinguished from other manual devices by means of shape, size, surface texture or position .....	No such devices	NA
	The requirement concerning position does not preclude use of a push on push off switch	No such devices	NA
	An indication when the device has been operated is given by:		NA
	- tactile feedback from the actuator or from the appliance, or	No such devices	NA
	- reduction in heat output; or	No such devices	NA
	- audible and visible feedback	No such devices	NA
22.56	Detachable power supply part provided with the part of class III construction	No detachable power supply	NA
22.57	The properties of non-metallic materials do not degrade from exposure to UV-C radiation, as specified in annex T	Materials not subject to UV-C radiation	NA
	This requirement does not apply to glass, ceramics or similar materials	Materials not subject to UV-C radiation	NA
22.101	Appliances intended to be fixed, securely fixed (IEC 60335-2-40:2013)	Clear installation instructions	P
22.102.1	At least two thermal cut-outs in appliances with supplementary heating elements for air (first one be self-resetting thermal cut-out or a non-self-resetting thermal cut-out, the other be a non-self-resetting thermal cut-out.) (IEC 60335-2-40:2018)	No thermal cut-outs	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.102.2	Appliances provided with supplementary heaters for water incorporate non-self-resetting thermal cut-out, providing all-pole disconnection that operates separately from water thermostats (IEC 60335-2-40:2018)	No supplementary heaters	NA
	However, for appliances intended to be connected to fixed wiring, the neutral conductor need not be disconnected (IEC 60335-2-40:2018)	No supplementary heaters	NA
22.102.3	Thermal cut-outs of capillary type open in event of leakage from capillary tube (IEC 60335-2-40:2018)	No thermal cut-outs	NA
22.103	Sensing and switching elements of electromechanical non-self-resetting cut-outs be functionally independent of other control devices. (IEC 60335-2-40:2018)	No thermal cut-outs	NA
	If the switching element of a non self-resetting cut-out is operating a relay or contactor, the relay or contactor may also be operated by other control devices. Protective electronic circuits are covered by Clause 19. (IEC 60335-2-40:2018)	No thermal cut-outs	NA
22.104	Containers of sanitary hot water heat pumps withstand twice permissible operating pressure in closed containers (IEC 60335-2-40:2018) or	No hot water pumps	NA
	0,15 MPa in open containers (IEC 60335-2-40:2018)	No hot water pumps	NA
	without leakage or rupture (IEC 60335-2-40:2018)	No hot water pumps	NA
22.105	Air or vapour cushion in closed containers not exceeding 10 % (IEC 60335-2-40:2018)	No air or vapor cushions in closed containers	NA
22.106	Pressure relief devices operating at 0,1 MPa over permissible operating pressure (IEC 60335-2-40:2018)	No pressure relief devices	NA
22.107	Water outlet systems of open containers free from obstruction causing over-pressure (IEC 60335-2-40:2018)	No water used	NA
	Vented containers of sanitary hot water heat pumps always open to the atmosphere through appropriate aperture (IEC 60335-2-40:2018)	No water used	NA
22.108	Not vented open containers subjected to test in accordance with clause 22.104 to vacuum of 33 kPa for 15 min (IEC 60335-2-40:2018)	No air or vapor cushions in closed containers	NA
	Container show no deformation which result in a hazard (IEC 60335-2-40:2018)	No air or vapor cushions in closed containers	NA
22.109	Replacement of non-self-resetting thermal cut-outs does not damage other connections (IEC 60335-2-40:2018)	No thermal cut-outs	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.110	Non-self-resetting thermal cut-outs operate without short-circuiting live parts of different potential and without causing contact between live parts and enclosure (IEC 60335-2-40:2018)	No thermal cut-outs	NA
	Test repeated five times without blowing 3 A fuse which connects appliance to earth (IEC 60335-2-40:2018)	No thermal cut-outs	NA
	Electric strength test as specified in clause 16.3 for supplementary heating elements (IEC 60335-2-40:2018)	No thermal cut-outs	NA
22.111	Manual resetting of thermostats not necessary after power supply interruption (IEC 60335-2-40:2018)	Thermostat is external to unit	P
22.112	Construction of refrigerating system comply with requirements of Section 3 of ISO 5149 (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	Appliances using flammable refrigerants shall comply with the requirements and tests of Annex GG. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
22.113	Flammable refrigerant used, refrigerant tubing protected or enclosed to avoid mechanical damage (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Tubing protected to extent that it will not be handled or used for carrying during moving of product (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Tubing located within confines of cabinet considered to be protected from mechanical damage (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.114	Flammable refrigerant used, low temperature solder alloys, such as lead/tin alloys, not acceptable for pipe connections or any other refrigerant pressure containing purposes. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.115	Refrigerant charge (mc) of all refrigerating systems within appliance employing A2 and A3 refrigerants, not exceed $m_3$ defined in annex GG (IEC 60335-2-40:2018)	No refrigerants are used	NA
	The refrigerant charge ( $m_c$ ) in each refrigerating system employing A2L refrigerant not exceed $m_3$ as defined in Annex GG. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.116	Appliances using flammable refrigerants constructed that any leaked refrigerant not flow or stagnate so as to cause fire or explosion hazard in areas within appliance and connected ducts where electrical components, which could be a source of ignition and which could function under normal conditions or in event of leak, fitted (IEC 60335-2-40:2013/am1:2016)	No refrigerants are used	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Separate components, such as thermostats, which charged with less than 0,5 g of flammable gas not considered to cause fire or explosion hazard in event of leakage of gas within component itself (IEC 60335-2-40:2018)	No flammable gases	NA
	Refrigerant pipes containing A2L refrigerant which connect refrigerating system components not be considered a source of leaked refrigerant for the purpose of evaluating potential for fire or explosion hazard relative to potential ignition sources within the appliance if the piping within the area of the appliance to be evaluated complies with all of the following; (IEC 60335-2-40:2018):		NA
	- no connecting joints;	No refrigerants are used	NA
	- no bends with centreline bend radius less than 2,5 times the external pipe diameter;	No refrigerants are used	NA
	- protected from potential damage during normal operation, service or maintenance.	No refrigerants are used	NA
	All electrical components that could be a source of ignition and which could function under normal conditions or in the event of a leak, complies with at least one of the following: (IEC 60335-2-40:2018)		NA
	- be located in an enclosure which complies with Clause 20 of IEC 60079-15:2010 for restricted breathing enclosures suitable for use with group IIA gases or the refrigerant used. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- not be located in an area where a potentially flammable gas mixture will accumulate as demonstrated by the test of Annex FF. Electrical components not located in an area where a potentially flammable gas mixture will accumulate as demonstrated by the test of Annex FF are not considered an ignition source. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- for A2L refrigerants, located in an enclosure which is in compliance with Annex NN. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Components and apparatus complying with Clause 8 to 19 of IEC 60079-15:2010, for group IIA gases or the refrigerant used or an applicable standard that makes electrical components suitable for use in Zone 2, 1 or 0 as defined IEC 60079-14 are not considered as a source of ignition. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	For A2L refrigerants, electrical components in compliance with Annex JJ are not considered a potential ignition source. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	For A2L refrigerants, switching devices in compliance with all of the following are not considered a potential ignition source: (IEC 60335-2-40:2018)		NA
	- the device is capable of 100 000 cycles per Clause 24; (IEC 60335-2-40:2018)	No refrigerants are used	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- the switched electrical load ( $L_e$ ) in kVA is less than or equal to: (IEC 60335-2-40:2018)	No refrigerants are used	NA
	$L_e = 5 \times (6,7/S_u)^4$ when breaking all phases; (IEC 60335-2-40:2018)	No refrigerants are used	NA
	$L_e = 2,5 \times (6,7/S_u)^4$ when breaking two legs of a three phase load, or when breaking one or two legs of a single phase load (IEC 60335-2-40:2018)	No refrigerants are used	NA
	The burning velocity ( $S_u$ ) for the purpose of determining the maximum quenching diameter ( $d_q$ ) in Annex JJ and the maximum allowable electrical load $L_e$ according to the above shall take into consideration the effect of humidity on burn velocity ( $S_u$ ). (IEC 60335-2-40:2018)	No refrigerants are used	NA
	The burning velocity ( $S_u$ ) be the highest value of (IEC 60335-2-40:2018)		NA
	- as specified in ISO 817; or (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- as measured in humid air at $27^\circ\text{C} \pm 0,5^\circ\text{C}$ dew point at 101,3 kPa containing $21,0 \pm 0,1\%$ $\text{O}_2$ excluding water vapour determined at the nominal composition as specified in ISO 817. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Burning velocity ( $S_u$ ) (cm/s) .....: (IEC 60335-2-40:2018)	No refrigerants are used	NA
	For appliances with A2L refrigerants, electrostatic air cleaners and similar devices which may produce electrical arcing during normal operation that could ignite the refrigerant used, and which are installed in the unit airstream or connecting ducts, are not considered as a potential ignition source if the airflow is monitored and the energy source of the electric arcing is switched off when the airflow is below the minimum airflow according to Annex GG. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.117	Hot surfaces	No refrigerants are used	NA
22.117.1	Temperatures on surfaces that exposed to leakage of flammable refrigerants not exceed maximum allowable surface temperature given in Annex BB (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Flammable refrigerants except A2L refrigerants not listed in Annex BB, the maximum allowable surface temperature is determined by AIT reduced by 100 K. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	A2L refrigerants not listed in Annex BB, the maximum allowable surface temperature is determined by the highest of AIT reduced by 100 K or, if tested per annex KK, the hot surface ignition temperature reduced by 100 K, but not higher than $700^\circ\text{C}$ . (IEC 60335-2-40:2018)	No refrigerants are used	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Surfaces in compliance with this clause not be considered a potential ignition source. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.117.2	Temperatures on surfaces that may be exposed to leakage of A2L refrigerants may exceed the maximum allowable surface temperature in case of loss of airflow when all the following applies: (IEC 60335-2-40:2018):		NA
	- the temperatures are not exceeding the maximum allowable surface temperature with the minimum airflow; (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- the airflow is supervised and the heat source of the hot surface is switched off, when the airflow is below the minimum airflow. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.117.3	Open source of ignition, including open flames, pilot flames, direct spark ignition or hot surface ignition or other similar sources of ignition in the combustion air-stream, if the combustion air is drawn from an unventilated space in which leaked refrigerant may enter through the combustion air intake, are allowed, when these appliances are provided with a flame arrest or equivalent to ensure that in the event of an ignition, the flame will not propagate. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.118	Flammable refrigerant used, all appliances charged with refrigerant at manufacturing location or charged on site as recommended by manufacturer (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Part of appliance that charged on site, which requires brazing or welding in installation not shipped with flammable refrigerant charge. Joints made in installation between parts of refrigerating system, with at least one part charged, made in accordance with following: (IEC 60335-2-40:2018):		NA
	- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system part (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- Refrigerant tubing shall be protected or enclosed to avoid damage (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage (IEC 60335-2-40:2018)	No refrigerants are used	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.119	Condensing units and evaporating units are equipped with a pressure limiting device or equivalent to assure that the equipment does not exceed the maximum allowable pressure. (IEC 60335-2-40:2018)	Not a refrigerant system	NA
	For partial units, the interconnection circuits for signal communication between each unit be of the same type. (IEC 60335-2-40:2018)	Not a refrigerant system	NA
	SELV level connection is recommended. (IEC 60335-2-40:2018)	Not a refrigerant system	NA
22.120	Partial units shall be provided with a means of connection to the supply mains and not be powered by an electrical circuit from another appliance. (IEC 60335-2-40:2018)	Not a refrigerant system	NA
22.121	For the installation condition of appliances using an A2L refrigerant and where a refrigerant detection system is applied to fulfil the requirements of Annex GG, the refrigerant sensor of the system shall be located where leaking refrigerant is likely to stagnate. The sensor be located: (IEC 60335-2-40:2018):		NA
	- within the unit for appliances connected via an air duct system to one or more rooms, (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- within the unit where release height h0 as determined in Clause GG.2 is not more than 1,5 m (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- where the release height h0 as determined in Clause GG.2 is more than 1,5 m, the sensor may be located within (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- the unit, or (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- 100 mm or less directly below the unit, or (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- remote located within 300 mm above the floor. If a remote located sensor is specified by the manufacturer, the instructions shall state that the sensor shall be located within (IEC 60335-2-40:2018)	No refrigerants are used	NA
	1) .....1 0 m horizontal distance in line sight of the unit and on a wall within the room in which the unit is installed, or (IEC 60335-2-40:2018)	No refrigerants are used	NA
	2) .....7 m, if not in line sight of the unit, and on a wall within the room in which the unit is installed. The distance from the unit to the sensor shall be measured as the shortest horizontal unobstructed path between the unit and the nearest sensor. (IEC 60335-2-40:2018)	No refrigerants are used	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	For installations with field applied mechanical joints which are exposed in the occupied space, the instructions state that a sensor be located (IEC 60335-2-40:2018):		NA
	- remote located within 2 m horizontal distance in line of sight of the unit and on a wall within the room in which the unit is installed; and (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- 100 mm above the floor where h0 is not more than 300 mm from the floor; or (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- 300 mm above the floor where h0 is greater than 300 mm from the floor. (IEC 60335-2-40:2018)	No refrigerants are used	NA
	The following mechanical joints not require that sensor: (IEC 60335-2-40:2018)		N
	- mechanical joints in compliance with ISO 14903; (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- joints in enclosures which vent to the unit or to the outside (IEC 60335-2-40:2018)	No refrigerants are used	NA
	Tested in accordance with Annex MM. Remote located sensor location is not tested. Sensors located 100 mm or less directly below the unit are not considered remote sensors. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.122	Refrigerant detection systems that are required by this standard for A2L refrigerants comply with Annex LL. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.123	For appliances connected via an air duct system to one or more rooms using an A2L refrigerant (IEC 60335-2-40:2018)		
	- which include a separate section with refrigerant containing components except pipes (e.g. compressors, condensers), and (IEC 60335-2-40:2018)	No refrigerants are used	NA
	- which are isolated from the airflow and located in a room smaller than Amin per Clause GG.2, (IEC 60335-2-40:2018)	No refrigerants are used	NA
	then Clause GG.4 (ventilated enclosure) can be applied, where the required ventilation can be provided by the ventilation system. That section shall have an opening to the outdoor or indoor air-stream to be able to ventilate the refrigerant to an area in compliance with Annex GG. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.124	If a refrigerant detection system is used, care has to be taken that in the event of a leak, accumulating refrigerant will be detected properly in every operating mode (e.g. indoor fan off). (IEC 60335-2-40:2018)	No refrigerants are used	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Tested in accordance with Annex MM. Remote located sensor location is not tested. Sensors located 100 mm or less directly below the unit are not considered remote sensors. (IEC 60335-2-40:2018)	No refrigerants are used	NA
22.125	Refrigerating systems that fulfil all of the following conditions be considered enhanced tightness refrigerating systems: (IEC 60335-2-40:2018)		NA
	bullet a) to bullet f) (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	g) vibrations exceeding 0,30 G RMS, when measured with a low pass filter at 200 Hz, are not allowed in the refrigerant containing parts in the occupied space under normal operation (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	h) indoor heat exchangers be protected from damage in the event of freezing (IEC 60335-2-40:2018)	Not a refrigerating system	NA
	i) the maximum speed of the fan, in normal operation, shall be less than 90 % of the maximum allowable fan speed as specified by the manufacturer of the fan wheel. If the manufacturer does not specify a maximum allowable fan speed then the fan wheel shall be tested as described. (IEC 60335-2-40:2018)	Not a refrigerating system	NA
22.126	Germicidal lamps are limited to low pressure mercury lamps with a quartz envelope having a continuous spectral irradiance at 254 nm. (IEC 60335-2-40:2018)	No UV-C lamps	NA
22.127	Appliance enclosure, UV-C lamps and UV-C barriers be located in such a manner that the UV-C spectral irradiance is not emitted outside the unit into an occupied space at a level exceeding the irradiance limit specified in 32.101.1. (IEC 60335-2-40:2018)	No UV-C lamps	NA
	Appliance indoor airflow inlet and outlet be considered as possible radiation paths. The unit filters are not considered UV-C barriers. (IEC 60335-2-40:2018)	No UV-C lamps	NA
22.128	For appliances that employ UV-C germicidal lamp systems and which have doors and/or panels that provide direct access to an area within the appliance where the measured UV-C spectral irradiance is greater than 1,7 $\mu\text{W}/\text{cm}^2$ , the doors and/or panels be equipped with an interlock device that terminates the power to the lamps when opened. (IEC 60335-2-40:2018)	No UV-C lamps	NA
	If a switch is used to de-energize the UV-C lamps so as to meet the requirement, it is not possible to operate the switch with test probe B of IEC 61032. (IEC 60335-2-40:2018)	No UV-C lamps	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
22.129	For user maintenance access areas, the UV-C spectral irradiance not exceed the limit specified in 32.101.2 with the access panels opened or removed as needed to perform the required user maintenance. (IEC 60335-2-40:2018)	No UV-C lamps	NA
	Panels that are opened or removed to perform user maintenance are required to be closed or put back in place for proper operation of the appliance. (IEC 60335-2-40:2018)	No UV-C lamps	NA
22.130	If the replacement of the UV-C lamp is allowed by the user, the appliance shall be constructed so that (IEC 60335-2-40:2018)		NA
	- the replacement of the UV-C lamp is easily possible (IEC 60335-2-40:2018)	No UV-C lamps	NA
	- if screws or components are omitted or incorrectly positioned or fastened, the appliance is rendered inoperable or manifestly incomplete. (IEC 60335-2-40:2018)	No UV-C lamps	NA
22.131	Appliances that employ refrigerants in a transcritical refrigerating system are equipped with a pressure-limiting device that operates no greater than the maximum allowable pressure plus the tolerance of the pressure-limiting device. (IEC 60335-2-40:2018)	No UV-C lamps	NA
<b>23</b>	<b>INTERNAL WIRING</b>		
23.1	Wireways smooth and free from sharp edges	Wireways are smooth	P
	Wires protected against contact with burrs, cooling fins etc.	Wires can contact self-tapping screws	F
		Screws now blunt end	P
	Wire holes in metal well-rounded or provided with bushings	Knock-outs are allowable per Clause 25.3	P
	Wiring effectively prevented from coming into contact with moving parts	Wiring prevented from coming into contact with moving parts	P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges	No beads or other ceramic insulators	NA
	Beads inside flexible metal conduits contained within an insulating sleeve	No beads or other ceramic insulators	NA
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress	No undue stress	P
	Flexible metallic tubes not causing damage to insulation of conductors	No conduit	NA
	Open-coil springs not used	No open coil springs	P
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another	No coiled spring	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	No damage after 10 000 flexings for conductors flexed during normal use, or	No conductors are flexed during normal use	NA
	100 flexings for conductors flexed during user maintenance	Performed on the conductors from the SMART Box into the Blower Module on 6 February 2019. No damage.	P
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		P
	Not more than 10 % of the strands of any conductor broken, and	No damage	P
	not more than 30 % for wiring supplying circuits that consume no more than 15 W	No damage	P
23.4	Bare internal wiring sufficiently rigid and fixed	No such wiring	NA
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use	Wiring is acceptable	P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or	Complies with below	NA
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation	Wiring is UL listed as per UL 1063, which requires a dielectric test of the same requirements as this clause.	P
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,	Class I	NA
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.	Class I	NA
	A single layer of internal wiring insulation does not provide reinforced insulation		Info
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or	No sleeving used	NA
	be such that it can only be removed by breaking or cutting	No sleeving used	NA
23.7	The colour combination green/yellow only used for earthing conductors	Grounding conductors are green/yellow	P
23.8	Aluminium wires not used for internal wiring	No aluminium wires	P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless	No stranded conductors consolidated by soldering	NA
	the contact pressure is provided by spring terminals	No stranded conductors consolidated by soldering	NA

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Clause	Requirement + Test	Result - Remark	Verdict
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)	Not connected to water mains	NA
23.101	Internal wiring that is exposed to direct or reflected UV-C radiation be UV-C resistant. (IEC 60335-2-40:2018)	No UV-C radiation	NA
	Samples of the internal wiring are conditioned in accordance with Annex OO. (IEC 60335-2-40:2018)	No UV-C radiation	NA
	On completion of the conditioning, the cable is wrapped in metal foil and is wound around a conductive mandrel 15 mm in diameter for three turns. (IEC 60335-2-40:2018)	No UV-C radiation	NA
	A voltage of 2 000 V is applied for 15 min between the conductor and the mandrel. (IEC 60335-2-40:2018)	No UV-C radiation	NA
	No breakdown. (IEC 60335-2-40:2018)	No UV-C radiation	NA
<b>24</b>	<b>COMPONENTS</b>		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components .....: (see appended table)		
	Motors not required to comply with IEC 60034-1, they are tested as part of the appliance		Info
	Relays tested as part of the appliance, or	Relays are either CE approved or have been tested as a part of the appliance	P
	alternatively acc. to IEC 60730-1, and meeting the additional requirements in IEC 60335-1		P
	The requirements of clause 29 apply between live parts of components and accessible parts of the appliance		Info
	Components can comply with the requirements for clearances and creepage distances for functional insulation in the relevant component standard		Info
	30.2 of this standard apply to parts of non-metallic material in components including parts of non-metallic material supporting current-carrying connections		Info
	Components that have not been previously tested to comply with the IEC standard for the relevant component are tested according to the requirements of 30.2		Info

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Components that have been previously tested to comply with the resistance to fire requirements in the IEC standard for the relevant component need not be retested provided the specified conditions are met		Info
	If these conditions are not satisfied, the component is tested as part of the appliance.		Info
	Power electronic converter circuits not required to comply with IEC 62477-1, they are tested as part of the appliance	No such components	NA
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		Info
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		Info
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		Info
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard	No lamps	NA
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309	No plugs	NA
	Motor-compressors not tested according to IEC 60335-2-34 (not necessary to meet all requirements of IEC 60335-2-34) (IEC 60335-2-40:2018)	No compressors	NA
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, comply with IEC 60384-14	No high voltage capacitors	NA
	If the capacitors have to be tested, they are tested according to annex F	Not applicable per above	NA
24.1.2	Transformers in associated switch mode power supplies comply with annex BB of IEC 61558-2-16	Transformers are CE approved	NA
	Safety isolating transformers comply with IEC 61558-2-6	Transformers are CE approved	NA
	If they have to be tested, they are tested according to annex G	Transformers are CE approved	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
24.1.3	Switches comply with IEC 61058-1, the number of cycles of operation being at least 10 000	Switches are low power and are unlikely to be operated	NA
	If they have to be tested, they are tested according to annex H	Switches are low power and are unlikely to be operated	NA
	If the switch operates a relay or contactor, the complete switching system is subjected to the test	No switches operate a relay	NA
	If the switch only operates a motor starting relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested	No switches operate a relay	NA
24.1.4	Automatic controls comply with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		
	- thermostats:.....10 000	No such devices	NA
	- temperature limiters: .....1 000	No such devices	NA
	- self-resetting thermal cut-outs:.....3000 (IEC 60335-2-40:2018)	No such devices	NA
	- voltage maintained non-self-resetting thermal cut-outs:.....1 000	No such devices	NA
	- other non-self-resetting thermal cut-outs: .....300 (IEC 60335-2-40:2018)	No such devices	NA
	- timers:.....3 000	No such devices	NA
	- energy regulators: .....10 000	No such devices	NA
	- thermostats which control motor-compressor (IEC 60335-2-40:2018)..... 100 000	No such devices	NA
	- motor-compressor starting relays (IEC 60335-2-40:2018)..... 100 000	No such devices	NA
	- automatic thermal motor-protectors for hermetic and semi-hermetic type motor-compressors (not less than number of operations during locked rotor test) (IEC 60335-2-40:2018) .....min 2000	No such devices	NA
	- manual reset thermal motor-protectors for hermetic and semi-hermetic type motor-compressors (IEC 60335-2-40:2018) ... 50	No such devices	NA
	- other automatic thermal motor-protectors (IEC 60335-2-40:2018)..... 2000	No such devices	NA
	- other manual reset thermal motor-protectors (IEC 60335-2-40:2018)..... 30	No such devices	NA
	- refrigerant detection systems self-resetting (IEC 60335-2-40:2018)..... 300	No such devices	NA
	- refrigerant detection systems non self-resetting (IEC 60335-2-40:2018)..... 30	No such devices	NA
	- electromechanical proof of airflow control (IEC 60335-2-40:2018)..... 100 000	No such devices	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- self-resetting electrical pressure-limiting device (IEC 60335-2-40:2018)..... 3 000	No such devices	NA
	- non-self-resetting electrical pressure-limiting device (IEC 60335-2-40:2018) ..... 300	No such devices	NA
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited	No such devices	NA
	Thermal motor protectors are tested in combination with their motor under the conditions specified in annex D	No such devices	NA
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7	No such devices	NA
	Thermal cut-outs of the capillary type comply with the requirements for type 2.K controls in IEC 60730-2-9	No such devices	NA
24.1.5	Appliance couplers comply with IEC 60320-1	No such devices	NA
	However, for class II appliances classified higher than IPX0, the appliance couplers comply with IEC 60320-2-3	No such devices	NA
	Interconnection couplers comply with IEC 60320-2-2	No such devices	NA
24.1.6	Small lamp holders similar to E10 lampholders comply with IEC 60238, the requirements for E10 lampholders being applicable	No such devices	NA
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151	Not for remote operation	NA
24.1.8	The relevant standard for thermal links is IEC 60691	No such devices	NA
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of clause 19	No such devices	NA
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance	Relays are UL approved, and have been endurance tested	P
	They are also tested in accordance with clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance.....:	Relays are UL approved, and have been endurance tested	P
24.2	Appliances not fitted with:		
	- switches, automatic controls or power supplies in flexible cords	No such devices	P



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance	No such devices	P
	- thermal cut-outs that can be reset by soldering, unless	No such devices	P
	the solder has a melting point of at least 230 °C	No such devices	NA
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions	No such devices	NA
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1	No such devices	NA
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly	No such devices	NA
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load	No such devices	NA
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V	Motor insulation is adequate for the rated voltage	P
	In addition, the motors comply with the requirements of annex I	Motor insulation is adequate for the rated voltage	NA
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770	Not connected to water mains	NA
	They are supplied with the appliance	Not connected to water mains	NA
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set	Not connected to water mains	NA
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure	No motor running capacitors	NA
	One or more of the following conditions are to be met:		NA
	- the capacitors are of class S2 or S3 according to IEC 60252-1	No motor running capacitors	NA
	- the capacitors are housed within a metallic or ceramic enclosure	No motor running capacitors	NA
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm	No motor running capacitors	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of annex E	No motor running capacitors	NA
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10	No motor running capacitors	NA
24.101	Replaceable parts of thermal control devices identified by marking (IEC 60335-2-40:2018)	No such devices	NA
24.102	Pressure-limiting devices used in transcritical refrigerating systems complies with IEC 60730-2-6 and (IEC 60335-2-40:2018)		NA
	- be of type 2A or 2B; (IEC 60335-2-40:2018)	No such devices	NA
	- have a trip free mechanism of type 2 J (IEC 60335-2-40:2018)	No such devices	NA
	- the deviation and drift not exceed + 0 %. (IEC 60335-2-40:2018)	No such devices	NA
<b>25</b>	<b>SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS</b>		
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		NA
	- supply cord fitted with a plug, the current rating and voltage rating of the plug being not less than the corresponding ratings of its associated appliance	Intended for permanent connection	NA
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or	Intended for permanent connection	NA
	- pins for insertion into socket-outlets	Intended for permanent connection	NA
	Supply cord fitted with plug provided, if (IEC 60335-2-40:2018):		NA
	- appliance only for indoor use (IEC 60335-2-40:2018)	Supply cord not provided	NA
	- marked with rating of 25 A or less and (IEC 60335-2-40:2018)	Supply cord not provided	NA
	- complies with code requirements of country where it will be used (IEC 60335-2-40:2018)	Supply cord not provided	NA
	Appliance inlet not allowed (IEC 60335-2-40:2018)	Supply cord not provided	NA
25.2	Appliance not provided with more than one means of connection to the supply mains	Only one means of connection	P
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown	Only one means of connection	NA
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		P
	- a set of terminals allowing the connection of a flexible cord	Not such a system	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- a fitted supply cord	Not such a system	NA
	- a set of supply leads accommodated in a suitable compartment	Not such a system	NA
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support	Not such a system	NA
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support	Terminals provided, along with knock-outs, and can be accessed after installation.	P
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support	Not such a system	NA
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm) .....	21.8 mm knockout is acceptable	P
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29	Spacings not reduced	P
25.5	Method for assembling the supply cord to the appliance:		NA
	- type X attachment	Not supplied with a cord	NA
	- type Y attachment	Not supplied with a cord	NA
	- type Z attachment, if allowed in relevant part 2	Not supplied with a cord	NA
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords	Not supplied with a cord	NA
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment	Not supplied with a cord	NA
25.6	Plugs fitted with only one flexible cord	No plug	NA
25.7	Supply cords, other than for class III appliances, being one of the following types:		NA
	- rubber sheathed (at least 60245 IEC 53)	Not supplied with a cord	NA
	- polychloroprene sheathed (at least 60245 IEC 57)	Not supplied with a cord	NA
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		NA
	- light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg	Not supplied with a cord	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances	Not supplied with a cord	NA
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		NA
	- heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg	Not supplied with a cord	NA
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances	Not supplied with a cord	NA
	- halogen-free, low smoke, thermoplastic insulated and sheathed		NA
	- light duty halogen-free low smoke flexible cable (62821 IEC 101) for circular cable and (62821 IEC 101f) for flat cable	Not supplied with a cord	NA
	- Ordinary duty halogen-free low smoke flexible cable (62821 IEC 102) for circular cable and (62821 IEC 102f) for flat cable	Not supplied with a cord	NA
	Supply cords for class III appliances adequately insulated	Not supplied with a cord	NA
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts	Not supplied with a cord	NA
	Supply cords for outdoor use not lighter than polychloroprene sheathed flexible cord (60245 IEC 57) (IEC 60335-2-40:2018)	Not supplied with a cord	NA
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm <sup>2</sup> ).....:	Not supplied with a cord	NA
25.9	Supply cords not in contact with sharp points or edges	Not supplied with a cord	NA
25.10	Supply cord of class I appliances have a green/yellow core for earthing	Not supplied with a cord	NA
	In multi-phase appliances, the colour of the neutral conductor of the supply cord is blue	Not supplied with a cord	NA
	Where additional neutral conductors are provided in the supply cord:		NA
	- other colours may be used for these additional neutral conductors;	Not supplied with a cord	NA
	- all of the neutral conductors and line conductors are identified by marking using the alpha numeric notation specified in IEC 60445	Not supplied with a cord	NA
	- the supply cord is fitted to the appliance	Not supplied with a cord	NA
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless	Not supplied with a cord	NA
	the contact pressure is provided by spring terminals	Not supplied with a cord	NA
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure	Not supplied with a cord	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
25.13	Inlet openings so constructed as to prevent damage to the supply cord	Not supplied with a cord	NA
	If it is not evident that the supply cord can be introduced without risk of damage, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided	Not supplied with a cord	NA
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is	Not supplied with a cord	NA
	class 0, or	Not supplied with a cord	NA
	a class III appliance not containing live parts	Not supplied with a cord	NA
25.14	Supply cords moved while in operation adequately protected against excessive flexing	Not supplied with a cord	NA
	Flexing test, as described:		NA
	- applied force (N).....:	Not supplied with a cord	NA
	- number of flexings .....	Not supplied with a cord	NA
	The test does not result in:		NA
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current	Not supplied with a cord	NA
	- breakage of more than 10% of the strands of any conductor	Not supplied with a cord	NA
	- separation of the conductor from its terminal	Not supplied with a cord	NA
	- loosening of any cord guard	Not supplied with a cord	NA
	- damage to the cord or the cord guard	Not supplied with a cord	NA
	- broken strands piercing the insulation and becoming accessible	Not supplied with a cord	NA
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage	Not supplied with a cord	NA
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged	Not supplied with a cord	NA
	Pull and torque test of supply cord:		NA
	- fixed appliances: pull 100 N; torque (not on automatic cord reel) (Nm) .....	Not supplied with a cord	NA
	- other appliances: values shown in table 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm).....:	Not supplied with a cord	NA
	Cord not damaged and max. 2 mm displacement of the cord	Not supplied with a cord	NA
25.16	Cord anchorages for type X attachments constructed and located so that:		NA
	- replacement of the cord is easily possible	Not supplied with a cord	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	- it is clear how the relief from strain and the prevention of twisting are obtained	Not supplied with a cord	NA
	- they are suitable for different types of supply cord	Not supplied with a cord	NA
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless	Not supplied with a cord	NA
	they are separated from accessible metal parts by supplementary insulation	Not supplied with a cord	NA
	- the cord is not clamped by a metal screw which bears directly on the cord	Not supplied with a cord	NA
	- at least one part of the cord anchorage securely fixed to the appliance, unless	Not supplied with a cord	NA
	it is part of a specially prepared cord	Not supplied with a cord	NA
	- screws which have to be operated when replacing the cord do not fix any other component, unless	Not supplied with a cord	NA
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool	Not supplied with a cord	NA
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood	Not supplied with a cord	NA
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless	Not supplied with a cord	NA
	failure of the insulation of the cord does not make accessible metal parts live	Not supplied with a cord	NA
	- for class II appliances they are of insulating material, or	Not supplied with a cord	NA
	if of metal, they are insulated from accessible metal parts by supplementary insulation	Not supplied with a cord	NA
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals	Not supplied with a cord	NA
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance	Not supplied with a cord	NA
25.18	Cord anchorages only accessible with the aid of a tool, or	Not supplied with a cord	NA
	Constructed so that the cord can only be fitted with the aid of a tool	Not supplied with a cord	NA
25.19	Type X attachment, glands not used as cord anchorage in portable appliances	Not supplied with a cord	NA
	Tying the cord into a knot or tying the cord with string not used	Not supplied with a cord	NA
25.20	The conductors of the supply cord for type Y and Z attachment insulated from accessible metal parts	Not supplied with a cord	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		NA
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover	Not supplied with a cord	NA
	- so there is no risk of damage to the conductors or their insulation when fitting the cover	Not supplied with a cord	NA
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts	Not supplied with a cord	NA
	2 N test to the conductor for portable appliances; no contact with accessible metal parts	Not supplied with a cord	NA
25.22	Appliance inlets:		NA
	- live parts not accessible during insertion or removal	Not supplied with a cord	NA
	Requirement not applicable to appliance inlets complying with IEC 60320-1	Not supplied with a cord	NA
	- connector can be inserted without difficulty	Not supplied with a cord	NA
	- the appliance is not supported by the connector	Not supplied with a cord	NA
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless	Not supplied with a cord	NA
	the supply cord is unlikely to touch such metal parts	Not supplied with a cord	NA
25.23	Interconnection cords comply with the requirements for the supply cord, except that:		NA
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11	Not supplied with a cord	NA
	- the thickness of the insulation may be reduced	Not supplied with a cord	NA
	- for class I or class II appliance with class III construction, the cross sectional areas of the conductors need not comply with 25.8 if specified conditions are met	Not supplied with a cord	NA
	If necessary, electric strength test of 16.3	Not supplied with a cord	NA
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected	Not supplied with a cord	NA
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.	Not supplied with a cord	NA
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083	Not supplied with a cord	NA
26	<b>TERMINALS FOR EXTERNAL CONDUCTORS</b>		

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors	Appliance provided with terminals	P
	Terminals only accessible after removal of a non-detachable cover, except	Only accessible after removing non-detachable cover of the SMART Control Box	P
	for class III appliances that do not contain live parts	Not class III	NA
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection	Earthing terminal is behind cover as well	NA
26.2	Appliances with type X attachment and appliances for the connection of cables of fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless	Not supplied with a cord	NA
	the connections are soldered	Not supplied with a cord	NA
	Screws and nuts not used to fix any other component, except	Not supplied with a cord	NA
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors	Not supplied with a cord	NA
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless	Not supplied with a cord	NA
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint	Not supplied with a cord	NA
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor	Not supplied with a cord	NA
	Terminals fixed so that when the clamping means is tightened or loosened:		NA
	- the terminal does not become loose	Not supplied with a cord	NA
	- internal wiring is not subjected to stress	Not supplied with a cord	NA
	- neither clearances nor creepage distances are reduced below the values in clause 29	Not supplied with a cord	NA
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm).....:	Not supplied with a cord	NA
	No deep or sharp indentations of the conductors	Not supplied with a cord	NA



IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and	Not supplied with a cord	NA
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened	Not supplied with a cord	NA
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard	Not supplied with a cord	NA
	Stranded conductor test, 8 mm insulation removed	Not supplied with a cord	NA
	No contact between live parts and accessible metal parts and,	Not supplied with a cord	NA
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only	Not supplied with a cord	NA
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm <sup>2</sup> ) .....	Not supplied with a cord	NA
	If a specially prepared cord is used, terminals need only be suitable for that cord	Not supplied with a cord	NA
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure	Not supplied with a cord	NA
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other	Terminals are close together	P
26.9	Terminals of the pillar type constructed and located as specified	Wires can pass beyond the threaded hole by 3.3 mm, which is greater than the specified half of the screw, which has a diameter of 3.3 mm.	P
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless	Not supplied with a cord	NA
	conductors ends fitted with means suitable for screw terminals	Not supplied with a cord	NA
	Pull test of 5 N to the connection	Not supplied with a cord	NA
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used	Not supplied with a cord	NA
	For class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone	Not supplied with a cord	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free	Not supplied with a cord	NA
<b>27</b>	<b>PROVISION FOR EARTHING</b>		
27.1	Accessible metal parts of class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet	<del>All metal parts are grounded except for the blower module enclosure when smart controller is remotely mounted</del>  Extension cable provided for remote mounting is provided with means for grounding	<del>F</del>  P
	Earthing terminals and earthing contacts not connected to the neutral terminal	Earthing terminal is separate from neutral terminal	P
	Class 0, II and III appliances have no provision for protective earthing	Class I	NA
	Class II appliances and class III appliances can incorporate an earth for functional purposes	Class I	NA
	Safety extra-low voltage circuits not earthed, unless	Not applicable per below	NA
	protective extra-low voltage circuits	Low voltage circuits are earthed protective extra-low voltage circuits.	P
27.2	Clamping means of earthing terminals adequately secured against accidental loosening	Adequately secured	P
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6 mm <sup>2</sup> , and	No external equipotential bonding conductors	NA
	- do not provide earthing continuity between different parts of the appliance, and	No external equipotential bonding conductors	NA
	- conductors cannot be loosened without the aid of a tool	No external equipotential bonding conductors	NA
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes	No external equipotential bonding conductors	NA
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part	<del>Motor ground pin connection is made and separated simultaneously to the current carrying connections.</del>  Statement in instructions warns user to disconnect power before servicing motor	<del>F</del>  P

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Clause	Requirement + Test	Result - Remark	Verdict
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage	Not provided with a cord	NA
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes	Class I	NA
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal	No such risk	NA
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion	Only earthing parts are wires and enclosures	P
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm	No such components	NA
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure	No such components	NA
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion	No such risk	NA
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes	Class I	NA
27.5	Low resistance of connection between earthing terminal and earthed metal parts	Low resistance	P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance	Low resistance	P
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes	Class I	NA
	Resistance not exceeding 0,1 at the specified low-resistance test ( ) .....	Previously tested model no. MB2430EC during the December of 2009 under project no. 3196141.	P
	If the ground continuity between system components meets the minimum values specified in 27.5, it is considered to meet the requirements without dedicated grounding conductors. (IEC 60335-2-40:2018)		Info
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.	Not a handheld appliance	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit	Not a handheld appliance	NA
	Requirements not applicable to class II appliances and class III appliances that incorporate an earth for functional purposes	Not a handheld appliance	NA
<b>28</b>	<b>SCREWS AND CONNECTIONS</b>		
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses	Screws are adequate to withstand mechanical stresses	P
	Screws not of soft metal liable to creep, such as zinc or aluminium	Screws are stainless	P
	Diameter of screws of insulating material min. 3 mm	No screws securing insulating materials	NA
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity	No screws securing insulating materials	NA
	Screws used for electrical connections or connections providing earthing continuity screwed into metal	All screws are screwed into metal	P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation	No screws made of insulating materials	NA
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation	No cord supplied	NA
	For screws and nuts; torque-test as specified in table 14.....:	(see appended table) Screws were not allowed to be torqued beyond acceptable values	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless	Stress is not transmitted to insulation	P
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material	Not applicable per above	NA
	This requirement does not apply to electrical connections in circuits of appliances for which:		NA
	- 30.2.2 is applicable and that carry a current not exceeding 0,5 A	30.2.2 is not applicable	NA
	- 30.2.3 is applicable and that carry a current not exceeding 0,2 A	30.2.2 is not applicable	NA

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Clause	Requirement + Test	Result - Remark	Verdict
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together	Screws not used for electrical connections besides earthing, in which the parts are clamped together	NA
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread	Self-tapping screws are not used for electrical connections	NA
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer	Self-tapping screws are not used for electrical connections	NA
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		NA
	- in normal use,	Self-tapping screws are not used for electrical connections	NA
	- during user maintenance,	Self-tapping screws are not used for electrical connections	NA
	- when replacing a supply cord having a type X attachment, or	Self-tapping screws are not used for electrical connections	NA
	- during installation	Self-tapping screws are not used for electrical connections	NA
	At least two screws being used for each connection providing earthing continuity, unless	Self-tapping screws are not used for electrical connections	NA
	the screw forms a thread having a length of at least half the diameter of the screw	Self-tapping screws are not used for electrical connections	NA
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity	No screws with nuts	NA
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or	No screws with nuts	NA
	if an alternative earthing circuit is provided	No screws with nuts	NA
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion	Rivets are secure	P
<b>29</b>	<b>CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION</b>		
	Clearances, creepage distances and solid insulation withstand electrical stress	Clearances, creepage distances are acceptable	P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), annex J applies .....	Recognized V-0 coating used with acceptable type FR-4.0 board	NA
	The microenvironment is pollution degree 1 under type 1 protection	Type 2	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3	Spacings are adequate	P
	These values apply to functional, basic, supplementary and reinforced insulation .....	Spacings are adequate	P
	For motor-compressor not complying with IEC 60335-2-34, additions and modifications as specified (IEC 60335-2-40:2018)	No motor-compressors	NA
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless .....	(see appended table)	
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14	Overvoltage class II	NA
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable	Overvoltage class II	NA
	For appliances intended for use at altitudes exceeding 2 000 m, the clearances in Table 16 is increased according to the relevant multiplier values in Table A.2 of IEC 60664-1	Overvoltage class II	NA
	Impulse voltage test is not applicable:		NA
	- when the microenvironment is pollution degree 3, or		NA
	- for basic insulation of class 0 and class 01 appliances, or		NA
	- to appliances intended for use at altitudes exceeding 2 000 m		NA
	Appliances are in overvoltage category II	Overvoltage category II	P
	A force of 2 N is applied to bare conductors, other than heating elements	Test not applicable	NA
	A force of 30 N is applied to accessible surfaces	Test not applicable	NA
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage	Rated 2,500V per Table 15	P
	The values of table 16 or the impulse voltage test of clause 14 are applicable .....	(see appended table)	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1	No heating elements	NA
	Lacquered conductors of windings considered to be bare conductors		Info

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Clause	Requirement + Test	Result - Remark	Verdict
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16 .....	(see appended table)	P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, using the next higher step for rated impulse voltage .....	(see appended table)	P
	For double insulation, with no intermediate conductive part between basic and supplementary insulation, clearances are measured between live parts and the accessible surface, and the insulation system is treated as reinforced insulation		Info
29.1.4	Clearances for functional insulation are the largest values determined from:		NA
	- table 16 based on the rated impulse voltage .....	(see appended table)	NA
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz	Functional insulation not used outside of transformer, inductor, and relays, which are CE approved or have been tested in the end product.	NA
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz	See above	NA
	If values of table 16 are largest, the impulse voltage test of clause 14 may be applied instead, unless	See above	NA
	the microenvironment is pollution degree 3, or	See above	NA
	the distances can be affected by wear, distortion, movement of the parts or during assembly	See above	NA
	However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited	See above	NA
	Lacquered conductors of windings considered to be bare conductors	See above	NA
	However, clearances at crossover points are not measured	See above	NA
	Clearance between surfaces of PTC heating elements may be reduced to 1 mm	See above	NA
29.1.5	Appliances having higher working voltages than rated voltage, clearances for basic insulation are the largest values determined from:		NA
	- table 16 based on the rated impulse voltage .....	Working voltage is the same as rated voltage	NA
	- table F.7a in IEC 60664-1, frequency not exceeding 30 kHz	See above	NA
	- clause 4 of IEC 60664-4, frequency exceeding 30 kHz	See above	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1 or clause 4 of IEC 60664-4, the clearances of supplementary insulation are not less than those specified for basic insulation	See above	NA
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160 % of the withstand voltage required for basic insulation	See above	NA
	If clearances for basic insulation are selected from clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation	See above	NA
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage	See above	NA
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15	See above	NA
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree..... :	(see appended table)	P
	Pollution degree 2 applies, unless	Pollution degree 2	P
	- precautions taken to protect the insulation; pollution degree 1	Precautions not taken	NA
	- insulation subjected to conductive pollution; pollution degree 3	Insulation and air gaps not subjected to conductive pollution	NA
	A force of 2 N is applied to bare conductors, other than heating elements	Spacings not reduced (Tested on 8-February-2018)	NA
	A force of 30 N is applied to accessible surfaces	Spacings not reduced (Tested on 8-February-2018)	NA
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		Info
	Insulation located in airflow, pollution degree 3 unless (IEC 60335-2-40:2018)	Not applicable per below	NA
	insulation enclosed or located so that unlikely to be exposed to pollution due to normal use (IEC 60335-2-40:2018)	Only insulation in airstream is in the CE approved motor	P



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Clause	Requirement + Test	Result - Remark	Verdict
29.2.1	Creepage distances of basic insulation not less than specified in table 17 .....	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17 .....	50/60Hz	NA
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14 .....	Not tested per clause 14	NA
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or .....	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable .....	Table 17 used	NA
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or .....	(see appended table)	P
	Table 2 of IEC 60664-4, as applicable .....	Table 17 used	NA
29.2.4	Creepage distances of functional insulation not less than specified in table 18 .....	(see appended table)	NA
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18 .....	50/60Hz	NA
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		Info
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses	No insulation besides in components that are approved or have been tested	NA
	Compliance checked:		NA
	- by measurement, in accordance with 29.3.1, or	No such insulation	NA
	- by an electric strength test in accordance with 29.3.2, or	No such insulation	NA
	- for insulation, other than single layer internal wiring insulation, by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and	No such insulation	NA
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or	No such insulation	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- by an assessment of the thermal quality of the material according to 29.3.3 combined with an electric strength test in accordance with 23.5, for each single layer internal wiring insulation touching each other, or	No such insulation	NA
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz	No such insulation	NA
29.3.1	Supplementary insulation have a thickness of at least 1 mm	No such insulation	NA
	Reinforced insulation have a thickness of at least 2 mm	No such insulation	NA
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation	No such insulation	NA
	Supplementary insulation consist of at least 2 layers	No such insulation	NA
	Reinforced insulation consist of at least 3 layers	No such insulation	NA
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by	No such insulation	NA
	the electric strength test of 16.3	No such insulation	NA
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out	No such insulation	NA
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19.....:	No such insulation	NA
<b>30</b>	<b>RESISTANCE TO HEAT AND FIRE</b>		
30.1	External parts of non-metallic material,	No such parts	NA
	parts supporting live parts, and	No such parts	NA
	parts of thermoplastic material providing supplementary or reinforced insulation	No such parts	NA
	sufficiently resistant to heat	No such parts	NA
	Ball-pressure test according to IEC 60695-10-2	No such parts	NA
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C).....:	(see appended table 30.1)	NA
	Parts supporting live parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C) .....	(see appended table 30.1)	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) .....	(see appended table 30.1)	NA
30.2	Parts of non-metallic material resistant to ignition and spread of fire	Fiberglass insulation has a flame rating 25, smoke rating 50 per NFPA 255.	P
	This requirement does not apply to:		Info
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		Info
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		Info
	Compliance checked by the test of 30.2.1, and in addition:		NA
	- for attended appliances, 30.2.2 applies	Unattended appliance	NA
	- for unattended appliances, 30.2.3 applies		NA
	For appliances for remote operation, 30.2.3 applies	Not for remote operation	NA
	For base material of printed circuit boards, 30.2.4 applies		NA
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C	Non-metallic materials are insulation with flame rating 25, smoke rating 50, and VF-1 rated wiring insulation	NA
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or	See above	NA
	the material is classified at least HB40 according to IEC 60695-11-10	See above	NA
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF	See above	NA
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2	Tests not applicable per above	NA
	The tests are not applicable to conditions as specified .....	Tests not applicable	P
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and	Non-metallic materials are insulation with flame rating 25, smoke rating 50, and VF-1 rated wiring insulation	NA
	parts of non-metallic material, other than small parts, within a distance of 3 mm,	See above	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C	(see appended table 30.2)	NA
	Glow-wire applied to an interposed shielding material, if relevant	See above	NA
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C	See above	NA
30.2.3.2	Parts of non-metallic material supporting connections, and	Non-metallic materials are insulation with flame rating 25, smoke rating 50, and VF-1 rated wiring insulation	NA
	parts of non-metallic material within a distance of 3 mm,	See above	NA
	subjected to the glow-wire test of IEC 60695-2-11 with appropriate severity level:	(see appended table 30.2)	NA
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation	See above	NA
	- 650 °C, for other connections	See above	NA
	Glow-wire applied to an interposed shielding material, if relevant	See above	NA
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		NA
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:	See above	NA
	- 775 °C, for connections carrying a current exceeding 0,2 A during normal operation	See above	NA
	- 675 °C, for other connections	See above	NA
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:	See above	NA
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation	See above	NA
	- 650 °C, for other connections	See above	NA
	The glow-wire test is also not carried out on small parts. These parts are to:		NA
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or	See above	NA
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or	See above	NA
	- comply with the needle-flame test of annex E, or	See above	NA
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10	See above	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	The consequential needle-flame test of annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		NA
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or	See above	NA
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or	See above	NA
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or	See above	NA
	- small parts for which the needle-flame test of annex E was applied, or	See above	NA
	- small parts for which a material classification of V-0 or V-1 was applied	See above	NA
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		NA
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or	See above	NA
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or	See above	NA
	- parts shielded by a flame barrier that meets the needle-flame test of annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10	See above	NA
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of annex E	(see appended table 30.2/30.2.4)	NA
	Test not applicable to conditions as specified.....:	94-V0 per report no. 3196141COL-002	NA
<b>31</b>	<b>RESISTANCE TO RUSTING</b>		
	Relevant ferrous parts adequately protected against rusting	Enclosures are galvanized or galvanealed	P
	Tests specified in part 2 when necessary	Enclosures are galvanized or galvanealed	NA
	Salt mist test of IEC 60068-2-52, severity 2 (IEC 60335-2-40:2018)	Enclosures are galvanized or galvanealed	NA
	Before test, coatings are scratched by means of a harden steel pin as specified (IEC 60335-2-40:2018)	Enclosures are galvanized or galvanealed	NA
	Five scratches made at least 5 mm apart and at least 5 mm from the edges (IEC 60335-2-40:2018)	Enclosures are galvanized or galvanealed	NA

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliance not deteriorated to such an extent that compliance with clause 8 and 27 is impaired (IEC 60335-2-40:2018)	Enclosures are galvanized or galvanealed	NA
	Coating not be broken and not loosened from the metal surface (IEC 60335-2-40:2018)	Enclosures are galvanized or galvanealed	NA
<b>32</b>	<b>RADIATION, TOXICITY AND SIMILAR HAZARDS</b>		
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use	No emission of harmful radiation	NA
	Compliance is checked by the limits or tests specified in part 2, if relevant	No emission of harmful radiation	NA
32.101	UV-C irradiance test (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
32.101.1	For the occupied space outside the unit, a test be performed to determine the UV-C spectral irradiance. (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	Emissions from the equipment not exceed a UV-C spectral irradiance limit of 0,2 $\mu\text{W}/\text{cm}^2$ (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
32.101.2	For areas inside the unit that are accessible for anticipated user maintenance and are not equipped with the interlock required by Subclause 22.128, there be no UV-C spectral irradiance greater than 1,7 $\mu\text{W}/\text{cm}^2$ (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	UV-C spectral irradiance is measured at any point of accessibility required for user maintenance. (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	When determining user accessibility, consideration should be given to the actual degree of exposure that the user would experience in performing his duties. (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	Compliance is determined by measuring the UV-C irradiance per IEC 62471:2006, Clause 5 and Annex B. (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
32.101.3	UV-C irradiance is measured at the location in Table 101 (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
32.101.4	When conducting UV-C irradiance tests: (IEC 60335-2-40:2018)		NA
	- the UV-C irradiance measurements are conducted with a scanning spectroradiometer, or a narrow band range radiometer; (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	- all panels and components are positioned or adjusted in the most severe position (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	- removable air filters are removed; (IEC 60335-2-40:2018)	No emission of harmful radiation	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- measurements are made at the worst case location and angle of incidence; (IEC 60335-2-40:2018)	No emission of harmful radiation	NA
	- the minimum specified duct and configuration, including any duct liners, specified by the manufacturer be in place and the measurements taken at the opening at the end of the duct. (IEC 60335-2-40:2018)+	No emission of harmful radiation	NA
<b>A</b>	<b>ANNEX A (INFORMATIVE) ROUTINE TESTS</b>		<b>Info</b>
	Description of routine tests to be carried out by the manufacturer		Info
<b>B</b>	<b>ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES THAT ARE RECHARGED IN THE APPLIANCE</b>		<b>NA</b>
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance	No batteries used	NA
	Three forms of construction covered:		NA
	a) Appliance supplied directly from the supply mains or a renewable energy source, the battery charging circuitry and other supply unit circuitry incorporated within the appliance		NA
	b) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the part of the appliance containing the battery		NA
	c) The part of the appliance incorporating the battery is supplied from the supply mains or a renewable energy source, via a detachable supply unit. The battery charging circuitry is incorporated within the detachable supply unit		NA
3.1.9	Appliance operated under the following conditions:		NA
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		NA
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		NA
	- if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		NA
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		NA
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		NA
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage (V) and polarity of the terminals .....		NA
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		NA
	Appliances intending to be supplied from a detachable supply unit marked with symbol IEC 60417-6181 and its type reference along with symbol ISO 7000-0790 (2004-01), or		NA
	use only with <model designation> supply unit .....		NA
7.6	Additional symbols		NA
7.12	The instructions give information regarding charging		NA
	Instructions for appliances incorporating batteries intended to be replaced by the user include required information		NA
	Instructions for appliances containing non user-replaceable batteries state the substance of the following:		NA
	This appliance contains batteries that are only replaceable by skilled persons		NA
	Instructions for appliances containing non-replaceable batteries shall state the substance of the following:		NA
	This appliance contains batteries that are non-replaceable		NA
	For appliances intending to be supplied from a detachable supply unit for the purposes of recharging the battery, the type reference of the detachable supply unit is stated along with the following:		NA
	WARNING: For the purposes of recharging the battery, only use the detachable supply unit provided with this appliance		NA
	If the symbol for detachable supply unit is used, its meaning is explained		NA
7.15	Markings placed on the part of the appliance connected to the supply mains		NA
	The type reference of the detachable supply unit is placed in close proximity to the symbol		NA



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Clause	Requirement + Test	Result - Remark	Verdict
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		NA
	If the appliance can be operated without batteries, double or reinforced insulation required		NA
11.7	The battery is charged for the period stated in the instructions or 24 h.....:		NA
11.8	Temperature rise of the battery surface does not exceed the limit in the battery manufacturer's specification; measured (K); limit (K) .....		NA
	If no limit specified, the temperature rise does not exceed 20 K; measured (K) .....		NA
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		NA
19.10	Not applicable		NA
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		NA
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		NA
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		NA
19.13	The battery does not rupture or ignite		NA
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		NA
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		NA
	- 100, if the mass of the part does not exceed 250 g (g) .....		NA
	- 50, if the mass of the part exceeds 250 g .....		NA
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		NA
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		NA
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		NA
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	For other parts, 30.2.2 applies		NA
<b>C</b>	<b>ANNEX C (NORMATIVE) AGEING TEST ON MOTORS</b>		<b>NA</b>
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding	Class B Insulation	NA
	Test conditions as specified		NA
<b>E</b>	<b>ANNEX E (NORMATIVE) NEEDLE-FLAME TEST</b>		<b>NA</b>
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		NA
7	Severities		NA
	The duration of application of the test flame is 30 s ± 1 s		NA
9	Test procedure		NA
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		NA
9.2	The first paragraph does not apply		NA
	If possible, the flame is applied at least 10 mm from a corner		NA
9.3	The test is carried out on one specimen		NA
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		NA
11	Evaluation of test results		NA
	The duration of burning not exceeding 30 s		NA
	However, for printed circuit boards, the duration of burning not exceeding 15 s		NA
<b>F</b>	<b>ANNEX F (NORMATIVE) CAPACITORS</b>		<b>NA</b>
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		NA
1.5	Terms and definitions		NA
1.5.3	Class X capacitors tested according to subclass X2		NA
1.5.4	This subclause is applicable		NA
1.6	Marking		NA
	Items a) and b) are applicable		NA
3.4	Approval testing		NA
3.4.3.2	Table 3 is applicable as described		NA

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Clause	Requirement + Test	Result - Remark	Verdict
4.1	Visual examination and check of dimensions		NA
	This subclause is applicable		NA
4.2	Electrical tests		NA
4.2.1	This subclause is applicable		NA
4.2.5	This subclause is applicable		NA
4.2.5.2	Only table 11 is applicable		NA
	Values for test A apply		NA
	However, for capacitors in heating appliances the values for test B or C apply		NA
4.12	Damp heat, steady state		NA
	This subclause is applicable		NA
	Only insulation resistance and voltage proof are checked		NA
4.13	Impulse voltage		NA
	This subclause is applicable		NA
4.14	Endurance		NA
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		NA
4.14.7	Only insulation resistance and voltage proof are checked		NA
	No visible damage		NA
4.17	Passive flammability test		NA
	This subclause is applicable		NA
4.18	Active flammability test		NA
	This subclause is applicable		NA
<b>G</b>	<b>ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS</b>		
	The following modifications to this standard are applicable for safety isolating transformers:		
7	Marking and instructions		P
7.1	Transformers for specific use marked with:		P
	- name, trademark or identification mark of the manufacturer or responsible vendor .....	CE approved transformer	P
	- model or type reference .....	CE approved transformer	P
17	Overload protection of transformers and associated circuits		P
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1	CE approved transformer	P
22	Construction		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable	CE approved transformer	P
29	Clearances, creepage distances and solid insulation		
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply	CE approved transformer	P
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances	CE approved transformer	P
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed	CE approved transformer	P
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1	CE approved transformer	P
<b>H</b>	<b>ANNEX H (NORMATIVE) SWITCHES</b>		<b>NA</b>
	Switches comply with the following clauses of IEC 61058-1, as modified below:		NA
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance	All switches are low voltage and non safety	NA
	Before being tested, switches are operated 20 times without load	All switches are low voltage and non safety	NA
8	Marking and documentation		
	Switches are not required to be marked	All switches are low voltage and non safety	NA
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference	All switches are low voltage and non safety	NA
13	Mechanism		NA
	The tests may be carried out on a separate sample	All switches are low voltage and non safety	NA
15	Insulation resistance and dielectric strength		NA
15.1	Not applicable	All switches are low voltage and non safety	NA
15.2	Not applicable	All switches are low voltage and non safety	NA
15.3	Applicable for full disconnection and micro-disconnection	All switches are low voltage and non safety	NA
17	Endurance		NA
	Compliance is checked on three separate appliances or switches	All switches are low voltage and non safety	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless	All switches are low voltage and non safety	NA
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335 .....	All switches are low voltage and non safety	NA
	Switches for operation under no load and which can be operated only by a tool, and	All switches are low voltage and non safety	NA
	switches operated by hand that are interlocked so that they cannot be operated under load,	All switches are low voltage and non safety	NA
	are not subjected to the tests	All switches are low voltage and non safety	NA
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation	All switches are low voltage and non safety	NA
	Subclauses 17.2.2 and 17.2.5.2 not applicable	All switches are low voltage and non safety	NA
	The ambient temperature during the test is that occurring in the appliance during the test of clause 11 in IEC 60335-1	All switches are low voltage and non safety	NA
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K) .....	All switches are low voltage and non safety	NA
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		NA
	Clause 20 is applicable to clearances across full disconnection and micro-disconnection	All switches are low voltage and non safety	NA
	It is also applicable to creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in Table 24	All switches are low voltage and non safety	NA
<b>J</b>	<b>ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS</b>		<b>NA</b>
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		NA
5.7	Conditioning of the test specimens		NA
	When production samples are used, three samples of the printed circuit board are tested	Recognized V-0 coating used with acceptable type FR-4.0 board	NA
5.7.1	Cold		NA
	The test is carried out at -25 °C	Recognized V-0 coating used with acceptable type FR-4.0 board	NA
5.7.3	Rapid change of temperature		NA
	Severity 1 is specified	Recognized V-0 coating used with acceptable type FR-4.0 board	NA
5.9	Additional tests		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	This subclause is not applicable	Recognized V-0 coating used with acceptable type FR-4.0 board	NA
<b>K</b>	<b>ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES</b>		
	The information on overvoltage categories is extracted from IEC 60664-1		Info
	Overvoltage category is a numeral defining a transient overvoltage condition		Info
	Equipment of overvoltage category IV is for use at the origin of the installation		Info
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		Info
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation	Category II	P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		Info
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		Info
<b>L</b>	<b>ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES</b>		Info
	Information for the determination of clearances and creepage distances		Info
<b>M</b>	<b>ANNEX M (NORMATIVE) POLLUTION DEGREE</b>		Info
	The information on pollution degrees is extracted from IEC 60664-1		Info
	Pollution		Info
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		Info
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		Info
	Minimum clearances specified where pollution may be present in the microenvironment		Info
	Degrees of pollution in the microenvironment		Info
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		Info

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Clause	Requirement + Test	Result - Remark	Verdict
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		Info
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected	Pollution degree 2	P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		Info
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		Info
<b>N</b>	<b>ANNEX N (NORMATIVE) PROOF TRACKING TEST</b>		
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		NA
7	Test apparatus		NA
7.3	Test solutions		NA
	Test solution A is used		NA
10	Determination of proof tracking index (PTI)		NA
10.1	Procedure		NA
	The proof voltage is 100 V, 175 V, 400 V or 600 V .....		NA
	The test is carried out on five specimens		NA
	In case of doubt, additional test with proof voltage reduced by 25 V, the number of drops increased to 100		NA
10.2	Report		NA
	The report states if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		NA
<b>O</b>	<b>ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF clause 30</b>		<b>Info</b>
	Description of tests for determination of resistance to heat and fire		Info
<b>P</b>	<b>ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN TROPICAL CLIMATES</b>		<b>Info</b>
	Modifications applicable for class 0 and 0I appliances having a rated voltage exceeding 150 V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332		Info

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Clause	Requirement + Test	Result - Remark	Verdict
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150 V, intended to be used in countries having a tropical climate and that are marked with symbol IEC 60417-6332, if liable to be connected to a supply mains that excludes the protective earthing conductor		Info
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		Info
7.1	The appliance marked with symbol IEC 60417-6332		Info
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		Info
	The instructions state that the appliance is considered to be suitable for use in countries having a tropical climate, but may also be used in other countries		Info
	If symbol IEC 60417-6332 is used, its meaning is explained		Info
11.8	The values of Table 3 are reduced by 15 K		Info
13.2	The leakage current for class I appliances not exceeding 0,5 mA		Info
15.3	The value of t is 37 °C		Info
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		Info
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		Info
<b>Q</b>	<b>ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS</b>		<b>Info</b>
	Description of tests for appliances incorporating electronic circuits		Info
<b>R</b>	<b>ANNEX R (NORMATIVE) SOFTWARE EVALUATION</b>		<b>NA</b>
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex	Failure of software does not create safety hazard	NA
R.1	Programmable electronic circuits using software		NA
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 constructed so that the software does not impair compliance with the requirements of this standard	Failure of software does not create safety hazard	NA
R.2	Requirements for the architecture		NA



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Clause	Requirement + Test	Result - Remark	Verdict
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 use measures to control and avoid software-related faults/errors in safety-related data and safety-related segments of the software	Failure of software does not create safety hazard	NA
R.2.1.1	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.2 have one of the following structures:		NA
	- single channel with periodic self-test and monitoring	Failure of software does not create safety hazard	NA
	- dual channel (homogenous) with comparison	Failure of software does not create safety hazard	NA
	- dual channel (diverse) with comparison	Failure of software does not create safety hazard	NA
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 have one of the following structures:		NA
	- single channel with functional test	Failure of software does not create safety hazard	NA
	- single channel with periodic self-test	Failure of software does not create safety hazard	NA
	- dual channel without comparison	Failure of software does not create safety hazard	NA
R.2.2	Measures to control faults/errors		NA
R.2.2.1	When redundant memory with comparison is provided on two areas of the same component, the data in one area is stored in a different format from that in the other area	Failure of software does not create safety hazard	NA
R.2.2.2	Programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.2 and that use dual channel structures with comparison, have additional fault/error detection means for any fault/errors not detected by the comparison	Failure of software does not create safety hazard	NA
R.2.2.3	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, means are provided for the recognition and control of errors in transmissions to external safety-related data paths	Failure of software does not create safety hazard	NA
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate	Failure of software does not create safety hazard	NA

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Clause	Requirement + Test	Result - Remark	Verdict
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 is impaired	Failure of software does not create safety hazard	NA
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions	Failure of software does not create safety hazard	NA
R.2.2.7	Labels used for memory locations are unique	Failure of software does not create safety hazard	NA
R.2.2.8	The software is protected from user alteration of safety-related segments and data	Failure of software does not create safety hazard	NA
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 is impaired	Failure of software does not create safety hazard	NA
R.3	Measures to avoid errors		NA
R.3.1	General		NA
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		NA
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1	Failure of software does not create safety hazard	NA
R.3.2	Specification		NA
R.3.2.1	Software safety requirements:	Software Id:	NA
	The specification of the software safety requirements includes the descriptions listed	Failure of software does not create safety hazard	NA
R.3.2.2	Software architecture		NA
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Failure of software does not create safety hazard	NA
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis	Failure of software does not create safety hazard	NA

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Clause	Requirement + Test	Result - Remark	Verdict
R.3.2.3	Module design and coding		NA
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules	Failure of software does not create safety hazard	NA
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements	Failure of software does not create safety hazard	NA
R.3.2.3.2	Software code is structured	Failure of software does not create safety hazard	NA
R.3.2.3.3	Coded software is validated against the module specification by static analysis	Failure of software does not create safety hazard	NA
	The module specification is validated against the architecture specification by static analysis	Failure of software does not create safety hazard	NA
R.3.3.3	Software validation		NA
	The software is validated with reference to the requirements of the software safety requirements specification	Failure of software does not create safety hazard	NA
	Compliance is checked by simulation of:		NA
	- input signals present during normal operation	Failure of software does not create safety hazard	NA
	- anticipated occurrences	Failure of software does not create safety hazard	NA
	- undesired conditions requiring system action	Failure of software does not create safety hazard	NA

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Clause	Requirement + Test	Result - Remark	Verdict

<b>S</b>	<b>ANNEX S (NORMATIVE) BATTERY OPERATED APPLIANCES POWERED BY BATTERIES THAT ARE NON-RECHARGEABLE OR NOT RECHARGED IN THE APPLIANCE</b>		<b>NA</b>
	The following modifications to this standard are applicable for battery-operated appliances where the batteries are either non-rechargeable (primary batteries), or		NA
	rechargeable batteries (secondary batteries) that are not recharged in the appliance		NA
5.8.1	If the supply terminals for the connection of the battery have no indication of polarity, the more unfavourable polarity is applied		NA
5.S.101	Appliances intended for use with a battery box are tested with the battery box supplied with the appliance or with the battery box recommended in the instructions		NA
5.S.102	Appliances are tested as motor-operated appliances.		NA
7.1	Appliances marked with the battery voltage (V) and the polarity of the terminals, unless.....:		NA
	the polarity is irrelevant		NA
	Appliances also marked with:		
	- name, trade mark or identification mark of the manufacturer or responsible vendor .....		NA
	- model or type reference .....		NA
	- IP number according to degree of protection against ingress of water, other than IPX0 .....		NA
	- type reference of battery or batteries .....		NA
	If relevant, the positive terminal is indicated by the symbol IEC 60417-5005 and the negative terminal by the symbol IEC 60417-5006		NA
	If appliances use more than one battery, they are marked to indicate correct polarity connection of the batteries		NA
7.6	Additional symbols		NA
7.12	The instructions contain the following, as applicable:		NA
	- the types of batteries that may be used .....		NA
	- how to remove and insert the batteries		NA
	- non-rechargeable batteries are not to be recharged		NA
	- rechargeable batteries are to be removed from the appliance before being charged		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- different types of batteries or new and used batteries are not to be mixed		NA
	- batteries are to be inserted with the correct polarity		NA
	- exhausted batteries are to be removed from the appliance and safely disposed of		NA
	- if the appliance is to be stored unused for a long period, the batteries are removed		NA
	- the supply terminals are not to be short-circuited		NA
11.5	Appliances are supplied with the most unfavourable supply voltage between		NA
	- 0,55 and 1,0 times the battery voltage, if the appliance can be used with non-rechargeable batteries		NA
	- 0,75 and 1,0 times battery voltage, if the appliance is designed for use with rechargeable batteries only		NA
	The values specified in Table S.101 for the internal resistance per cell of the battery is taken into account		NA
19.1	The tests are carried out with the battery fully charged unless otherwise specified		NA
19.13	The battery does not rupture or ignite		NA
19.S.101	Appliances are supplied with the voltage specified in 11.5. The supply terminals having an indication of polarity are connected to the opposite polarity, unless		NA
	such a connection is unlikely to occur due to the construction of the appliance		NA
19.S.102	For appliances with provision for multiple batteries, one or more of the batteries are reversed and the appliance is operated, if reversal of batteries is allowed by the construction		NA
25.5	The flexible leads or flexible cord used to connect an external battery or battery box in is connected to the appliance by a type X attachment		NA
25.13	This requirement is not applicable to the flexible leads or flexible cord connecting external batteries or a battery box with an appliance		NA
25.S.101	Appliances have suitable means for connection of the battery. If the type of battery is marked on the appliance, the means of connection is suitable for this type of battery		NA
26.5	Terminal devices in an appliance for the connection of the flexible leads or flexible cord connecting an external battery or battery box are so located or shielded that there is no risk of accidental connection between supply terminals		NA

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Clause	Requirement + Test	Result - Remark	Verdict
30.2.3.2	There is no battery in the area of the vertical cylinder used for the consequential needle flame test, unless		NA
	the battery is shielded by a barrier that meets the needle flame test of annex E, or		NA
	that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		NA
<b>T</b>	<b>ANNEX T (NORMATIVE) UV-C RADIATION EFFECT ON NON-METALLIC MATERIALS</b>		<b>NA</b>
	Requirements for non-metallic materials subject to direct or reflected UV-C radiation exposure and whose mechanical and electrical properties are relied upon for compliance with the		NA
	Does not apply to glass, ceramic and similar materials		NA
	Tested as specified in ISO 4892-1 and ISO 4892-2, with the following modifications:		NA
	Modifications to ISO 4892-1:		NA
5.1.6	The UV-C emitter is a low pressure mercury lamp with a quartz envelope having a continuous spectral irradiance of 10 W/m <sup>2</sup> at 254 nm		NA
	Subclause 5.1.6.1 and Table 1 are not applicable		NA
5.2.4	The black-panel temperature be 63 °C +/- 3 °C		NA
5.3.1	Humidification of the chamber air is specified in part 2 when necessary		NA
9	This clause is not applicable		NA
	Modifications to ISO 4892-2:		NA
7.1	At least three test specimens are tested		NA
	Ten samples of internal wiring is tested		NA
7.2	The specimens are attached to the specimen holders such that they are not subject to any stress		NA
7.3	Apparatus prepared as specified		NA
	The test specimens and, if used, the irradiance-measuring instrument are exposed for 1 000 h		NA
7.4	If used, a radiometer is mounted and calibrated such that it measures the irradiance at the exposed surface of the test specimen		NA
7.5	Material properties and test methods for parts providing mechanical support or impact resistance as specified in Table T.1		NA
	Material properties and test method for electrical insulation of internal wiring as specified in Table T.2		NA
8	This clause is not applicable		NA

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Clause	Requirement + Test	Result - Remark	Verdict
<b>AA</b>	<b>ANNEX AA (INFORMATIVE) (IEC 60335-2-40:2018) EXAMPLES FOR OPERATING TEMPERATURES OF THE APPLIANCE</b>		<b>Info</b>
	Table AA.1 Examples for operating temperatures of the appliance		Info
<b>BB</b>	<b>ANNEX BB (NORMATIVE) (IEC 60335-2-40:2018) SELECTED INFORMATION ABOUT REFRIGERANTS</b>		<b>NA</b>
	Table BB.1 Selected information about refrigerants		NA
<b>CC</b>	<b>ANNEX CC (INFORMATIVE) (IEC 60335-2-40:2018) TRANSPORTATION, MARKING AND STORAGE FOR UNITS THAT EMPLOY FLAMMABLE REFRIGERANTS</b>		<b>NA</b>
<b>DD</b>	<b>ANNEX DD (NORMATIVE) (IEC 60335-2-40:2018) REQUIREMENTS FOR OPERATION, SERVICE AND INSTALLATION MANUALS OF APPLIANCES USING FLAMMABLE REFRIGERANTS</b>		<b>NA</b>
<b>DD.1</b>	<b>General</b>		NA
	Each service manual shall include requirements of clauses according to Table DD.1. Different manuals can be combined into one manual.		NA
<b>DD.2</b>	<b>Symbols</b>		NA
	The symbols referred to in 7.6 (without colours is permitted) and the information of the warning marking shall be provided as follows:		NA
	WARNING Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.		NA
	The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.		NA
	Do not pierce or burn.		NA
	Be aware that refrigerants may not contain an odour.		NA
	The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odour.		NA
<b>DD.3</b>	<b>Information in manual</b>		NA
<b>DD.3.1</b>	<b>General</b>		NA
	The following information shall be specified in the manual where the information is needed for the function of the manual and as applicable to the appliance:		NA
	- information for spaces where refrigerant pipes are allowed, including statements		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	that the installation of pipe-work shall be kept to a minimum;		NA
	that pipe-work shall be protected from physical damage and, in the case of flammable refrigerants, shall not be installed in an unventilated space, if that space is smaller than $A_{min}$ in Annex GG, except for A2L refrigerants where the installed pipes comply with 22.116. In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified;		NA
	that compliance with national gas regulations shall be observed;		NA
	that mechanical connections made in accordance with 22.118 shall be accessible for maintenance purposes;		NA
	that, for appliances containing flammable refrigerants, the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;		NA
	- the maximum refrigerant charge ( $m_{max}$ );		NA
	- instructions how to determine the additional refrigerant charge and how to complete the refrigerant charge on the label provided by the manufacturer considering the requirements in 7.107;		NA
	- the minimum rated airflow, if required by Annex GG;		NA
	- information for handling, installation, cleaning, servicing and disposal of refrigerant;		NA
	-for appliances using flammable refrigerants, instructions shall include the minimum installed height $h_{inst}$ (when required to calculate $A_{min}$ ), refrigerant charge $m_c$ and minimum room area of the space $A_{min}$ or a minimum room area of conditioned space $T_{Amin}$ where applicable. Additional minimum room area data may be provided based on other installed heights and/or charge levels.		NA
	- detailed instructions on how to install the appliance to ensure that the release height $h_0$ as determined in Clause GG.2 of the installed appliance is not lower than $h_0$ used for the calculation of $A_{min}$ ;		NA
	- a warning to keep any required ventilation openings clear of obstruction;		NA
	- a notice that servicing shall be performed only as recommended by the manufacturer;		NA
	- a warning that ducts connected to an appliance shall not contain a potential ignition source;		NA



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Clause	Requirement + Test	Result - Remark	Verdict
	- instructions for wiring to external zoning dampers and/or mechanical ventilation, if required to comply with Clause GG.9, to ensure that upon detection of a leak, the zoning dampers are driven fully open and additional mechanical ventilation is activated;		NA
	- for appliances relying on safety measures according to GG.8.3 instructions for wiring to external ventilation;		NA
	- when a remote located refrigerant sensor is specified by the manufacturer, the instructions shall state when it is required and how to install and connect the sensor;		NA
	- for appliances using A2L refrigerants, connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct;		NA
	- the following information requirements apply for enhanced tightness refrigerating systems using A2L refrigerants:		NA
	Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.		NA
	Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.		NA
	Protection devices, piping and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.		NA
	Provision shall be made for expansion and contraction of long runs of piping.		NA
	Piping in refrigerating systems shall be so designed and installed to minimize the likelihood hydraulic shock damaging the system.		NA
	Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.		NA
	Solenoid valves shall not block in liquid refrigerant unless adequate relief is provided to the refrigerant system low pressure side.		NA
	Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.		NA
	Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces. They should be checked for mechanical damage annually.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.		NA
	Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in GG.12.2.		NA
	Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described in GG.12.1.		NA
	Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.		NA
	- For mechanical ventilation as specified in GG.8.3, the air extraction opening from the room shall be located equal or below the refrigerant release point. For floor mounted units, it shall be as low as practicable. The air extraction openings shall be located in a sufficient distance from the air intake openings to prevent re-circulation to the space.		NA
<b>DD.3.2</b>	<b>Unventilated areas</b>		NA
	For appliances containing more than m1 for any refrigerating circuit, the manual shall include a statement advising that an unventilated area where the appliance using flammable refrigerants is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. This shall include:		NA
	- a warning that the non-fixed appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation;		NA
	- a warning that the non-fixed appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and or other potential ignition sources (for example an operating electric heater, hot surfaces);		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- a warning that if appliances with A2L refrigerants connected via an air duct system to one or more rooms are installed in a room with an area less than $A_{min}$ as determined in Clause GG.2, that room shall be without continuously operating open flames (for example an operating gas appliance) or other potential ignition sources (for example an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest;		NA
	- for appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning with the substance of the following: "Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding X°C and electric switching devices";		NA
	- for appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning that only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork. The manufacturer can list in the instructions all approved auxiliary devices by the manufacturer and model number for use with the specific appliance, if those devices have a potential to become an ignition source.		NA
	The manufacturer should specify other potential continuously operating sources known to cause ignition of the refrigerant used.		NA
<b>DD.3.3</b>	<b>Qualification of workers</b>		NA
	The manual shall contain specific information about the required qualification of the working personnel for maintenance, service and repair operations. Every working procedure that affects safety means shall only be carried out by competent persons according to Annex HH.		NA
	Examples for such working procedures are:		NA
	breaking into the refrigerating circuit;		NA
	opening of sealed components;		NA
	opening of ventilated enclosures.		NA
<b>DD.4</b>	<b>Information on servicing</b>		NA
<b>DD.4.1</b>	<b>General</b>		NA
	The manual shall contain specific information for service personnel according to DD.4.2 to DD.4.10.		NA
<b>DD.4.2</b>	<b>Checks to the area</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, DD.4.3 to DD.4.7 shall be completed prior to conducting work on the system.		NA
<b>DD.4.3</b>	<b>Work procedure</b>		NA
	Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.		NA
<b>DD.4.4</b>	<b>General work area</b>		NA
	All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.		NA
<b>DD.4.5</b>	<b>Checking for presence of refrigerant</b>		NA
	The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.		NA
<b>DD.4.6</b>	<b>Presence of fire extinguisher</b>		NA
	If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.		NA
<b>DD.4.7</b>	<b>No ignition sources</b>		NA
	No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.		NA
	All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.		NA
	Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.		NA
<b>DD.4.8</b>	<b>Ventilated area</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.		NA
	A degree of ventilation shall continue during the period that the work is carried out.		NA
	The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.		NA
<b>DD.4.9</b>	<b>Checks to the refrigerating equipment</b>		NA
	Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.		NA
	At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.		NA
<b>DD.4.10</b>	<b>Checks to electrical devices</b>		NA
	Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.		NA
	If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.		NA
	Initial safety checks shall include:		NA
	that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;		NA
	that no live electrical components and wiring are exposed while charging, recovering or purging the system;		NA
	that there is continuity of earth bonding.		NA
<b>DD.5</b>	<b>Repairs to sealed components</b>		NA
DD.5.1	During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
DD.5.2	Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.		NA
	Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.		NA
	Replacement parts shall be in accordance with the manufacturer's specifications.		NA
<b>DD.6</b>	<b>Repair to intrinsically safe components</b>		NA
	Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.		NA
	Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.		NA
	Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.		NA
<b>DD.7</b>	<b>Cabling</b>		NA
	Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.		NA
	The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.		NA
<b>DD.8</b>	<b>Detection of flammable refrigerants</b>		NA
	Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.		NA
	Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration.		NA
	Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.		NA
	If a leak is suspected, all naked flames shall be removed/extinguished.		NA
	If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.		NA
<b>DD.9</b>	<b>Removal and evacuation</b>		NA
	When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.		NA
	However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration.		NA
	The following procedure shall be adhered to:		NA
	remove refrigerant;		NA
	purge the circuit with inert gas		NA
	evacuate		NA
	purge with inert gas		NA
	open the circuit by cutting or brazing.		NA
	The refrigerant charge shall be recovered into the correct recovery cylinders.		NA
	For appliances containing flammable refrigerants other than A2L refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants		NA
	This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.		NA
	For appliances containing flammable refrigerants, other than A2L refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.		NA
	This process shall be repeated until no refrigerant is within the system.		NA
	When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.		NA
<b>DD.10</b>	<b>Charging procedures</b>		NA
	In addition to conventional charging procedures, the following requirements shall be followed.		NA
	Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.		NA
	Cylinders shall be kept in an appropriate position according to the instructions.		NA
	Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.		NA
	Label the system when charging is complete (if not already).		NA
	Extreme care shall be taken not to overfill the refrigerating system.		NA
	Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.		NA
	The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.		NA
<b>DD.11</b>	<b>Decommissioning</b>		NA
	Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.		NA
	It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.		NA
	a) Become familiar with the equipment and its operation.		NA
	b) Isolate system electrically.		NA
	c) Before attempting the procedure, ensure that:		NA
	mechanical handling equipment is available, if required, for handling refrigerant cylinders;		NA
	all personal protective equipment is available and being used correctly;		NA
	the recovery process is supervised at all times by a competent person;		NA



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Clause	Requirement + Test	Result - Remark	Verdict
	recovery equipment and cylinders conform to the appropriate standards.		NA
	d) Pump down refrigerant system, if possible.		NA
	e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.		NA
	f) Make sure that cylinder is situated on the scales before recovery takes place.		NA
	g) Start the recovery machine and operate in accordance with instructions.		NA
	h) Do not overfill cylinders (no more than 80 % volume liquid charge).		NA
	i) Do not exceed the maximum working pressure of the cylinder, even temporarily.		NA
	j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.		NA
	k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.		NA
<b>DD.12</b>	<b>Labelling</b>		NA
	Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.		NA
	The label shall be dated and signed.		NA
	For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.		NA
<b>DD.13</b>	<b>Recovery</b>		NA
	When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.		NA
	When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.		NA
	The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.		NA
	If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.		NA
<b>EE</b>	<b>ANNEX EE (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>PRESSURE TESTS</b>		NA
<b>EE.1</b>	<b>General</b>		NA
	All refrigerating system parts shall withstand the maximum allowable pressure expected in normal operation, abnormal operation, and standstill.		NA
	compressor tested for compliance with IEC 60335-2-34 need not be additionally tested.		NA
<b>EE.2</b>	<b>Pressure test value determined under testing carried out in Clause 11</b>		NA
	A refrigerating system component that is exposed to pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system when tested under the conditions specified in Clause 11.		NA
	The pressure test value shall be at least three times the maximum allowable pressure developed during operation under Clause 11.		NA
<b>EE.3</b>	<b>Pressure test value determined under testing carried out in Clause 19</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	A refrigerating system component that is exposed to pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system when tested under the conditions specified in Clause 19.		NA
	The pressure test value shall be at least three times the maximum allowable pressure developed during abnormal operation (see Clause 19).		NA
<b>EE.4</b>	<b>Pressure test value determined under testing carried out under standstill conditions</b>		NA
EE.4.1	In order to determine the standstill pressure, the appliance shall be soaked in the highest operating temperature specified by the manufacturer for 1 h with power off.		NA
	A refrigerating system component that is exposed only to low side pressure shall be subjected to measurement of the maximum allowable pressure developed in the refrigerating system under the condition of standstill.		NA
	The pressure test value shall be at least three times the maximum allowable pressure developed during standstill.		NA
	Pressure gauges and control mechanisms need not be subjected to the test, provided the parts meet the requirements of the component.		NA
EE.4.2	The pressure test shall be carried out on three samples of each component. The test samples are filled with a liquid, such as water, to exclude air and are connected in a hydraulic pump system. The pressure is raised gradually until the required test pressure is reached. The pressure is maintained for at least 1 min, during which time the sample shall not leak.		NA
	Where gaskets are employed for sealing parts under pressure, leakage at gaskets is acceptable, provided the leakage only occurs at a value greater than 120 % of the maximum allowable pressure and the test pressure is still reached for the specified time. Additional sealing measures, such as an "O" ring, for pressure testing may be provided.		NA
<b>EE.5</b>	<b>Fatigue test option for Clause EE.1 and EE.4.2</b>		NA
EE.5.1	The components shall be subjected to a test at 66,7 % of the test pressure determined by Clauses EE.2, EE.3 or EE.4, provided the components comply with the fatigue test in Clause EE.5. This test is conducted on a separate sample.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
EE.5.2	Three samples of each refrigerant-containing part shall be tested at the cyclic pressure values specified in EE.5.7 and EE.5.8 for the number of cycles specified in EE.5.6, as described in EE.5.4.		NA
EE.5.3	The samples shall be considered to comply with EE.5.5 on completion of the test and if they do not rupture, burst, or leak.		NA
EE.5.4	The test samples shall be filled with fluid, and shall be connected to a pressure driving source. The pressure shall be raised and lowered between the upper and lower cyclic values at a rate specified by the manufacturer. The pressure shall reach the specified upper and lower values during each cycle. The shape of the pressure cycle shall be such that the upper and lower pressure values shall be maintained for at least 0,1 s.		NA
	the operating temperatures of the appliance under the conditions of steady state operation of Clause 11 are less than or equal to 125 °C for copper or aluminium, or 200 °C for steel, the test temperature of the component part or assembly shall be at least 20 °C.		NA
	If the continuous operating temperature of the component exceeds 125 °C for copper or aluminium, or 200 °C for steel, the test temperature of the parts or assemblies that are at these temperatures, and subjected to the pressure, shall be at least 25 °C greater than the temperature of the part measured during the test of Clause 11 for copper or aluminium and 60 °C higher for steel.		NA
	For other materials, the effects of temperature on the material fatigue characteristics shall be evaluated by conducting the test at the higher temperatures and considering the material characteristics at the higher temperatures.		NA
EE.5.5	The pressure for the first cycle shall be the maximum evaporating pressure for low-pressure side components or the maximum condensing pressure for the high-pressure side components.		NA
EE.5.6	The total number of cycles shall be 250 000. The test pressures shall be determined by EE.5.7 (except the first and last cycles as noted in EE.5.5 and EE.5.8).		NA
EE.5.7	The pressure for the test cycles shall be as follows:		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	a) For components subject to high side pressures, the upper pressure value shall not be less than the saturated vapour pressure of the refrigerant at 50 °C and the lower pressure value shall not be greater than the saturated vapour pressure of the refrigerant at 5 °C. For hot water heat pumps, the upper pressure shall not be less than 80 % of the maximum allowable pressure under the conditions of Clause 11.		NA
	b) For components subjected to only low side pressures, the upper pressure value shall be not less than the saturated vapour pressure of the refrigerant at 30 °C and the lower pressure value shall be between 0 bar and the greater of 4,0 bar or the saturated vapour pressure of the refrigerant at – 13 °C.		NA
EE.5.8	For the final test cycle, the test pressure shall be increased to two times the minimum upper pressure specified in EE.5.7.		NA
<b>FF</b>	<b>ANNEX FF (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>LEAK SIMULATION TESTS</b>		NA
<b>FF.1</b>	<b>General</b>		NA
	A leakage of refrigerant is simulated at the most critical point in the refrigeration refrigerating system.		NA
	The method to simulate a leakage at the most critical point is to inject refrigerant vapour through a suitable capillary tube at that point.		NA
	A critical point is a joint in the refrigerant system tubing, a bend of more than 90°, or other point judged to be a weak point in the refrigerant containing system due to the thickness of the metal, exposure to damage, sharpness of a bend or the manufacturing process.		NA
	A quantity of refrigerant leaked is equal to the rated refrigerant charge amount or the amount that will leak as determined by test. The refrigerant is injected at the most critical point and the most unfavourable direction at ambient temperature (20 °C to –25 °C). Where LFL is referenced in this annex, the LFL shall be taken at the nominal composition as specified in ISO 817.		NA
<b>FF.2</b>	<b>Test methods</b>		NA
FF.2.1	The appliance is modified by introducing a simulated leak through a capillary tube. The leak rate shall be maintained at 25 % ± 5 % of the refrigerant charge in 1 min.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
FF.2.2	During this test, the appliance is switched off or operated under normal operation at rated voltage, whichever gives the most unfavourable result unless a prepurge is activated prior to energizing any loads, in which case the test shall be conducted with the appliance operating. During a test where the appliance is operating, refrigerant gas injection is started at the same time as the appliance is switched on.		NA
FF.2.3	For refrigerant blends, the test shall be carried out using the nominal composition as defined in ISO 817.		NA
FF.2.4	The test is conducted in a room that is draft free and of sufficient size to conduct the test.		NA
	The minimum volume (V) is: $V = (15 \times mc)/LFL$		NA
	Care shall be taken that the installation of the capillary tube does not unduly influence the results of the test and that the structure of the appliance does not unduly influence the results of the test.		NA
	The instrument used for monitoring the refrigerant gas concentration shall have a fast response to the gas concentration, typically 2 s to 3 s and shall be located so as to not unduly influence the results of the test.		NA
	If gas chromatography is used to measure the refrigerant gas concentrations, the gas sampling in confined areas shall not exceed 2 ml every 30 s.		NA
FF.2.5	The measured concentration of refrigerant gas surrounding the component shall not exceed 25 % of the LFL of the refrigerant gas, and shall not exceed 15 % of the LFL of the refrigerant gas for a time period of 5 min or the duration of the test if less than 5 min during and after the amount has been injected. The measured concentration of refrigerant gas surrounding a component that will not function during the prepurge time may exceed the 25 % of the LFL during the prepurge time.		NA
	The LFL is as specified in Annex BB for the refrigerant used.		NA
<b>GG</b>	<b>ANNEX GG (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>CHARGE LIMITS, VENTILATION REQUIREMENTS AND REQUIREMENTS FOR SECONDARY CIRCUITS</b>		NA
<b>GG.1</b>	<b>Requirements for refrigerant charge limits</b>		NA
GG.1.1	General		NA
	When a flammable refrigerant is used, the requirements for installation space of appliance and/or ventilation requirements are determined according to		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- the refrigerant charge (M) (mc) used in the appliance,		NA
	- the installation location,		NA
	- the type of ventilation of the location or of the appliance.		NA
	Symbol mc denotes the refrigerant charge of a single refrigerating system. Where multiple refrigerating systems are servicing the same space, the refrigerating system with the largest refrigerant charge shall be used.		NA
	Where the parameters lower flammability limit (LFL) and molecular weight (M) are referenced in Annex GG, the values used shall be based on WCF – Worst Case Formulation as defined in ISO 817.		NA
<b>GG.1.2</b>	<b>Determination of the case applicable</b>		NA
	Determine the case applicable based on the relationship of the refrigerant charge (mc) and m1, m2, m3, defined as follows:		NA
	$m1 = 4 \times LFL$		NA
	$m2 = 26 \times LFL$		NA
	$m3 = 130 \times LFL$		NA
	where <i>LFL</i> is the lower flammability limit in kg/m3 for the refrigerant used.		NA
	For A2L refrigerants, m1, m2, m3 is defined as follows:		NA
	$m1 = 6 \times LFL$		NA
	$m2 = 52 \times LFL$		NA
	$m3 = 260 \times LFL$		NA
	where <i>LFL</i> is the lower flammable limit in kg/m3 for the refrigerant used.		NA
	If an appliance with A2L refrigerant has more than one refrigerating system, refrigerant charge (mc) refers to the refrigerating system with the largest charge serving the same space.		NA
<b>GG.1.3</b>	<b>Determination of unventilated room area for appliances using A2L refrigerants</b>		NA
	For the purpose of determination of room area (A) when used to calculate the maximum allowable refrigerant charge (mmax) in an unventilated space, the following shall apply.		NA
	The room area (A) shall be defined as the room area enclosed by the projection to the floor of the walls, partitions and doors of the space in which the appliance is installed.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	Spaces connected by only drop ceilings, ductwork, or similar connections shall not be considered a single space.		NA
	For units mounted higher than 1,6 m, and in compliance with GG.2.2, spaces divided by partition walls which are no higher than 1,6 m shall be considered a single space.		NA
	For fixed appliances, rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to Amin, if the passageway complies with all of the following.		NA
	It is a permanent opening.		NA
	It extends to the floor.		NA
	It is intended for people to walk through.		NA
	For fixed appliances, the area of the adjacent rooms, on the same floor, connected by permanent opening in the walls and/or doors between occupied spaces, including gaps between the wall and the floor, can be considered a single room when determining compliance to Amin, provided all of the following are met.		NA
	The space shall have appropriate openings according to GG.1.4.		NA
	The minimum opening area for natural ventilation $An_{vmin}$ shall not be less than $An_{vmin}$		NA
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		NA
<b>GG.1.4</b>	<b>Opening conditions for connected rooms and natural ventilation</b>		NA
	When the openings for connected rooms or natural ventilation are required, the following conditions shall be applied.		NA
	The area of any openings above 300 mm from the floor shall not be considered in determining compliance with $An_{vmin}$ . The area of any openings above 300 mm from the floor shall not be considered in determining compliance with $An_{vmin}$ .		NA
	At least 50 % of the required opening area $An_{vmin}$ shall be below 200 mm from the floor.		NA
	The bottom of the lowest openings shall not be higher than the point of release when the unit is installed and not more than 100 mm from the floor.		NA
	Openings are permanent openings which cannot be closed.		NA



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Clause	Requirement + Test	Result - Remark	Verdict
	The height of the openings between the wall and floor which connect the rooms are not less than 20 mm.		NA
	A second higher opening shall be provided. The total size of the second opening shall not be less than 50 % of minimum opening area for Anvmin and shall be at least 1,5 m above the floor.		NA
<b>GG.2</b>	<b>Requirements for charge limits in unventilated areas</b>		NA
<b>GG.2.1</b>	<b>General</b>		NA
	Clause GG.2 is applicable for appliances with a refrigerant charge $m1 < mc \leq m2$ and for non-fixed factory sealed single package units with a refrigerant charge of $m1 < mc \leq 2 \times m1$ :		NA
	For non-fixed factory sealed single package units with a refrigerant charge of $m1 < mc \leq 2 \times m1$ , the requirements of Clause GG.7 apply.		NA
	For systems using A2L refrigerants with a refrigerant charge of $m1 < mc \leq m3$ that comply with the conditions in 22.125, the requirements of Clause GG.10 can apply.		NA
	For other appliances with a refrigerant charge of $m1 < mc \leq m2$ :		NA
	The maximum refrigerant charge in a room shall be in accordance with the following:		NA
	$m_{max} = 2,5 \times (LFL)(5/4) \times h_0 \times (A)^{1/2}$ , not to exceed $m_{max} = SF \times LFL \times h_0 \times A$ (GG.8)		NA
	or the required minimum floor area $A_{min}$ to install an appliance with refrigerant charge $mc$ (kg) shall be in accordance with following:		NA
	$A_{min} = (mc / (2,5 \times (LFL)(5/4) \times h_0)) ^2$ , not less than $A_{min} = mc / (SF \times LFL \times h_0)$ (GG.9)		NA
	If the minimum installed height given by the manufacturer is higher than the reference installed height, then in addition $A_{min}$ and $m_{max}$ for the reference installed height have to be given by the manufacturer. An appliance may have multiple reference installed heights. In this case, $A_{min}$ and $m_{max}$ calculations shall be provided for all applicable reference installed heights.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	For appliances serving one or more rooms with an air duct system, the lowest opening of the duct connection to each conditioned space or any opening of the indoor unit greater than 5 cm <sup>2</sup> , at the lowest position to the space, shall be used for $h_0$ . However, $h_0$ shall not be less than 0,6 m. $A_{min}$ shall be calculated as a function of the opening heights of the duct to the spaces and the refrigerant charge for the spaces where leaked refrigerant may flow to, considering where the unit is located. $A_{min}$ shall be calculated for the spaces where a duct is connected or an indoor unit is located. If all spaces have room area more than respective $A_{min}$ , no further measure is required. If any room area of spaces is below $A_{min}$ , measures according to Clause GG.8 or GG.9 shall be provided for appliances using A2L refrigerants.		NA
<b>GG.2.2</b>	<b>Appliances using A2L refrigerants with incorporated circulation airflow</b>		NA
<b>GG.2.2.1</b>	<b>General</b>		NA
	Incorporated circulation airflow applies to fixed appliances only.		NA
	When the fan incorporated to an appliance is continuously operated or operation is initiated by a refrigerant detection system with a sufficient circulation airflow rate (see also Table GG.2), the maximum refrigerant charge can be increased or minimum room area can be reduced according to the following:		NA
	The maximum refrigerant charge in a room shall be in accordance with $m_{max}$		NA
	or the required minimum room area $A_{min}$ of installed appliance with refrigerant charge $m_c$ (kg) shall be in accordance with $A_{min}$		NA
	Circulation airflow (Table GG.2)		NA
<b>G.2.2.2</b>	<b>Continuous circulation airflow</b>		NA
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		NA
	Disable the compressor operation.		NA
	Warn user that airflow is reduced.		NA
<b>GG.2.2.3</b>	<b>Circulation airflow activated by a refrigerant detection system</b>		NA
	If a refrigerant detection system is activated per Annex LL, the following actions shall be taken and continue for at least 5 min after the refrigerant detection system has reset:		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The fan shall be switched on.		NA
	Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		NA
	Where a remote refrigerant detection system is used in a room with multiple units, all of the detection system activated safety measures shall be applied to all units in the room which rely on the remote refrigerant detection system.		NA
<b>GG.3</b>	<b>Requirements for charge limits in areas with mechanical ventilation</b>		NA
	Mechanical ventilation applies to fixed appliances only.		NA
	Mechanical ventilation occurs when the appliance enclosure or the room is provided with a ventilating system that, in the event of a leak, is intended to vent refrigerant into an area where there is not a potential ignition source and the gas can be readily dispersed.		NA
	The appliance enclosure shall have a ventilation system that produces airflow within the appliance enclosure and meets the requirements of Clause GG.4 or is intended to be installed in a room that meets the requirements of Clause GG.5.		NA
<b>GG.4</b>	<b>Requirements for mechanical ventilation within the appliance enclosure</b>		NA
	The refrigerating circuit is provided with a separate enclosure that does not communicate with allow flow from inside the enclosure to the room. The appliance enclosure shall have a ventilation system that produces airflow from the appliance interior to the outside through a ventilation shaft.		NA
	The manufacturer shall specify the ventilation shaft width and height, the maximum length and number of bends		NA
	The negative pressure measurement in the interior of the appliance enclosure shall be 20 Pa or more and the flow rate to the exterior shall be at least Qmin.		NA
<b>GG.5</b>	<b>Requirements for mechanical ventilation for rooms complying with ISO 5149</b>		NA
	Machinery rooms shall meet the requirements of Clause 5 of ISO 5149-3:2014.		NA
<b>GG.6</b>	<b>Requirements for refrigerating systems employing secondary heat exchangers</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	If a flammable refrigerant is used and the system contains a secondary heat exchanger, the heat exchanger shall not allow the release of refrigerant into areas served by the secondary heat exchanger fluid if these areas are covered by Annex GG. The following may be considered to comply with this requirement:		NA
	- an open loop secondary system vented to the outside; or		NA
	- an automatic air/refrigerant separator and pressure relief valve is placed in the secondary circuit on the outlet pipe from the evaporator or the condenser. The air/refrigerant separator and pressure relief valve is at a high level relative to the outlet of the heat exchanger where leaked refrigerant may accumulate. The pressure relief valve shall have a flow rating rated to discharge the refrigerant that can be released through the heat exchanger. The air/refrigerant separator and pressure relief valve shall discharge the refrigerant into a space compliant with the charge limitations in Annex GG or to the outside; or		NA
	- a double wall heat exchanger, or		NA
	- a refrigerant system where the pressure of the secondary circuit is always greater than the pressure of the primary circuit in the area of contact, or		NA
	- the bursting of the secondary heat exchanger is avoided by		NA
	1) the use of a freezing protection device (testing of which is described in item 2) below) which considers:		NA
	fluid freezing point;		NA
	distribution through the heat exchanger;		NA
	glide of the evaporating refrigerant;		NA
	service procedures that could lead to freeze damage, for example adding or removing the refrigerant in liquid phase from a heat exchanger containing standing water;		NA
	2) specifying requirements for specific properties of the secondary heat exchanger fluid to prevent corrosion, including:		NA
	water: the manufacturer shall specify in the installation manual the water quality necessary for the specified heat exchanger;		NA
	brine: the manufacturer shall specify in the installation manual the type of brine and its permitted concentration range for which the heat exchanger is suitable.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
<b>GG.7</b>	<b>Non fixed factory sealed single package units with a refrigerant charge of <math>m1</math> <math>&lt; mc \leq 2 \times m1</math></b>		NA
<b>GG.7.1</b>	<b>Determination of refrigerant charge</b>		NA
	For non-fixed factory sealed single package units (i.e. one functional unit in one enclosure) with a refrigerant charge amount of $m1 < M mc \leq 2 \times m1$ , the maximum refrigerant charge in a room shall be in accordance with $m_{max}$		NA
	or the required minimum floor area, $A_{min}$ , to install an appliance with refrigerant charge $mc$ shall be in accordance with $A_{min}$		NA
	When the appliance is switched on, a fan shall operate continuously supplying a minimum airflow as under normal steady state conditions, even when the compressor is switched off by the thermostat.		NA
<b>GG.7.2</b>	<b>Mechanical requirements</b>		NA
<b>GG.7.2.1</b>	<b>General</b>		NA
	The appliance shall withstand the effects of dropping and vibration during transport and normal use without leaking refrigerant.		NA
<b>GG.7.2.2</b>	<b>Random vibration test</b>		NA
	The appliance is tested in its final packaging for transport and shall withstand a random vibration test for 180 min according to ASTM D 4728-06. The power spectral density profiles to be applied are those specified in Figure X1.1 and Table X1.1 of ASTM D 4728-06:2012 for truck transportation.		NA
<b>GG.7.2.3</b>	<b>Drop test with packaging</b>		NA
	The appliance is tested in its final packaging for transport and shall withstand the following number of drops on a horizontal hardwood board 20 mm thick placed on a concrete or similar hard surface:		NA
	one with the appliance held upright;		NA
	one for each of the four edges of the bottom side, with the bottom side forming an angle of about 30° to the horizontal.		NA
<b>GG.7.2.4</b>	<b>Drop test without packaging</b>		NA
	The tests of GG.7.2.3 are repeated on the appliance without its packaging and with the drop height according to the Table GG.4		NA
<b>GG7.2.5</b>	<b>Test after installation</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The appliance is installed in accordance with the installation instructions. It is supplied at rated voltage or at the upper limit of the rated voltage range and operated at ambient temperature.		NA
<b>GG.7.3</b>	<b>Vibration test</b>		NA
	The appliance shall be constructed so that its operation does not cause resonance points in the piping connected to the compressor.		NA
<b>GG.8</b>	<b>Ventilated area requirements for appliances using A2L refrigerants</b>		NA
<b>GG.8.1</b>	<b>General</b>		NA
	Clause GG.8 is applicable for appliances with a refrigerant charge $0 < m_c \leq m_3$ .		NA
	Ventilation shall be employed when refrigerant charge is $m_c > m_{max}$ .		NA
	Natural and mechanical ventilation apply to fixed appliances only.		NA
<b>GG.8.2</b>	<b>Natural ventilation requirements for appliances using A2L refrigerants</b>		NA
<b>GG.8.2.1</b>	<b>General</b>		NA
	Natural ventilation shall be permitted for A2L refrigerants on the conditions as outlined in GG.8.2.2 and GG.8.2.3.		NA
	Subclause GG.8.2 is applicable for appliances with a refrigerant charge of $m_c < m_3$ .		NA
<b>GG.8.2.2</b>	<b>Natural ventilation to occupied indoor space</b>		NA
	If natural ventilation is applied in occupied space, all of the following shall be met.		NA
	- Natural ventilation shall be made to a room where sufficient air is available to dilute the refrigerant below the LFL.		NA
	- Natural ventilation from an occupied space shall not be made to outdoor.		NA
	- For natural ventilation opening provided to an unoccupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation shall have a room area more than $A_{min}$ according to Clause GG.2 for $m_c$ . If the total room area is not large enough, the measure of GG.8.3 or Clause GG.9 shall be taken.		NA
	- The openings for natural ventilation shall comply with GG.1.4.		NA
	The minimum opening area for natural ventilation shall be calculated using $An_{v_{min}}$		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		NA
<b>GG.8.2.3</b>	<b>Natural ventilation to outdoors or unoccupied indoor space</b>		NA
	If natural ventilation is applied in occupied space, all of the following shall be met.		NA
	- Natural ventilation to the outside is not allowed below ground level.		NA
	- For natural ventilation opening provided to an unoccupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation, shall have a room area more than $A_{min}$ according to Clause GG.2 for mc. If the total room area is not large enough, other measure of GG.8.3 or Clause GG.9 shall be taken.		NA
	- The openings for natural ventilation shall comply with GG.1.4.		NA
	- The minimum opening area for natural ventilation shall be calculated using the following equation: $m_{max}$ and $Anv_{min}$		NA
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		NA
<b>GG.8.3</b>	<b>Mechanical ventilation requirements for rooms with appliances using A2L refrigerants</b>		NA
<b>GG.8.3.1.1</b>	<b>Continuous operation of the fan</b>		NA
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		NA
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		NA
	- Warn user that airflow is reduced.		NA
<b>GG.8.3.1.2</b>	<b>Fan activated by a refrigerant detection system</b>		NA
	If a refrigerant detection system is activated per Annex LL, the following actions shall be taken and continue for at least 5 min after the refrigerant detection system has reset:		NA
	- The fan shall be switched on.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		NA
	The refrigerant detection system and controls shall maintain the purge cycle for at least 5 min after the refrigerant detection system has reset.		NA
<b>GG.8.3.2</b>	<b>Required airflow</b>		NA
	The airflow shall be calculated using of the formula below. Losses caused by ducts or other components in the air stream shall be considered.		NA
<b>G.8.3.3</b>	<b>Requirement for opening</b>		NA
	The lower edge of the opening of the mechanical ventilation shall not be more than 100 mm above the floor.		NA
	The air extraction openings shall be located at sufficient distance from the air intake openings to prevent re-circulation to the space.		NA
<b>GG.9</b>	<b>Charge limits for appliances using A2L refrigerants connected via an air duct system to one or more rooms</b>		NA
<b>GG.9.1</b>	<b>General</b>		NA
	Clause GG.9 is applicable for appliances with a refrigerant charge $0 < m_c \leq m_3$ . The maximum refrigerant charge can be increased or the minimum room area can be reduced if the following requirements are met.		NA
	The appliance shall be provided with a refrigerant detection system according to Annex LL, or the fan shall operate continuously and the airflow shall be monitored continuously.		NA
	$m_{max}$ shall be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration that the circulation airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room. In the case when no refrigerant detection system is provided then, spaces where the airflow may be limited by zoning dampers shall not be included in the determination of TA.		NA
<b>GG.9.2</b>	<b>Continuous circulation airflow</b>		NA
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		NA
	- Disable the compressor operation.		NA
	- Warn user that airflow is reduced.		NA



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Clause	Requirement + Test	Result - Remark	Verdict
<b>GG.9.3</b>	<b>Circulation airflow activated by a refrigerant detection system</b>		NA
	When a refrigerant detection system according to Annex LL operates, the following shall be initiated.		NA
	Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount of charge released to the indoor space.		NA
	Fully open all zoning damper of the appliance and energize control signals to open any external zoning dampers if applicable.		NA
	Activate additional mechanical ventilation, if required.		NA
	The refrigerant detection system and controls shall maintain the above action until at least 5 min after the refrigerant detection system has reset. Building fire and smoke systems may override this function.		NA
	If the continuous operation of duct fan is employed, additional ventilation shall also be continuously operated.		NA
<b>GG.10</b>	<b>Allowable charge for enhanced tightness refrigerating systems</b>		NA
<b>GG.10.1</b>	<b>General</b>		NA
	Clause GG.10 is applicable to enhanced tightness refrigerating systems using A2L refrigerants with refrigerant charge $m1 < m_c \leq \text{number of indoor units} \times m2$ , not to exceed $4 \times m2$ .		NA
	For appliances with more than one indoor unit, individual indoor unit cooling capacity shall not exceed 35 kW when tested in accordance with ISO 5151, ISO 13253, or ISO 15042 at T1 conditions.		NA
	For heating only appliances with more than one indoor unit, individual indoor unit heating capacity shall not exceed 35 kW when tested in accordance with ISO 5151, ISO 13253, or ISO 15042 at H1 conditions.		NA
	The appropriate measures to be taken shall be ventilation (natural or mechanical), safety shut-off valves and safety alarm, in conjunction with refrigerant detection systems as specified in GG.10.2 to GG.10.5.		NA
	A safety alarm alone shall not be considered as an appropriate measure where occupants are restricted in their movement (see Clause GG.13).		NA
<b>GG.10.2</b>	<b>Requirement for units with incorporated circulation airflow to prevent stagnation</b>		NA
<b>GG.10.2.1</b>	<b>General</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	For indoor units where $h_0$ as determined in Clause GG.2 is less than 1,8 m, and for indoor units connected to one or more spaces by ducts which supply or return air from the space at a height less than 1.8 m, circulation airflow for the purpose of mixing the air in the room shall be provided.		NA
	Where mechanical ventilation is required per Subclause GG.10.4 or Subclause GG.10.5, units where $h_0$ is equal or greater than 1,8 m, air circulation for the purpose of mixing the air in the room shall also be provided.		NA
	The circulation shall operate continuously or be turned on by refrigerant detection systems. The minimum air velocity and minimum airflow shall be as follows:		NA
	Minimum airflow = 240 m <sup>3</sup> /h		NA
	Minimum air velocity		NA
	The unit air velocity ( $v$ ) shall be calculated as airflow divided by the nominal face area of the outlet. The grill area shall not be deducted.		NA
	As an alternative, for airflow angles between 15 degrees and 90 degrees, the minimum air velocity ( $v_{min}$ ) can be determined by linear interpolation of the values included in Table GG.5.		NA
	Where a single remote refrigerant detection system sensor is used in a room with multiple units, this requirement shall apply to all units in the room which do not have a dedicated refrigerant detection system.		NA
<b>GG.10.2.2</b>	<b>Continuous circulation airflow</b>		NA
	The fan shall run continuously, other than for short periods for maintenance and service. The airflow shall be detected continuously or monitored continuously. Within 10 s in the event that the airflow is reduced, the following actions shall be taken:		NA
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		NA
	- Warn user that airflow is reduced.		NA
<b>GG.10.2.3</b>	<b>Circulation airflow initiated by a refrigerant detection system</b>		NA
	When any refrigerant detection system is activated per Annex LL in response to a detected leak into the space, all indoor units in that room which are served by the same outdoor unit shall take the following actions and continue for at least 5 min:		NA
	- The fan shall be switched on.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	- Disable the compressor operation unless the compressor operation reduces the leak rate or the total amount released to the indoor space.		NA
<b>GG.10.3</b>	<b>Required measures for allowable refrigerant charge</b>		NA
<b>GG.10.3.1</b>	<b>Spaces except lowest underground floor of the building</b>		NA
	Where the refrigerant charge does not exceed maximum refrigerant charge in GG.10.4, no additional measures are required.		NA
	Where the charge exceeds the maximum refrigerant charge in GG.10.4 but is less than or equal to the maximum refrigerant charge in GG.10.5, then at least one additional measure shall be taken in accordance with Clause GG.11, GG.12, or GG.13.		NA
	Where the refrigerant charge exceeds the maximum refrigerant charge in GG.10.5, at least two additional measures are taken in accordance with Clause GG.11, GG.12, or GG.13.		NA
<b>GG.10.3.2</b>	<b>Lowest underground floor of the building</b>		NA
	Where the refrigerant charge exceeds the maximum refrigerant charge in GG.10.4, two additional measures shall be taken in accordance with Clause GG.11, GG.12, or GG.13.		NA
	The refrigerant charge shall not exceed the maximum refrigerant charge in GG.10.5.		NA
<b>GG.10.4</b>	<b>Maximum refrigerant charge</b>		NA
	The maximum refrigerant charge $m_{max}$ in a room and the required minimum room area $A_{min}$ of the installed appliance with refrigerant charge $m_c$ shall be in accordance with $m_{max}$ and $A_{min}$		NA
<b>GG.10.5</b>	<b>Maximum refrigerant charge when employing additional measures</b>		NA
	The maximum refrigerant charge $m_{max}$ and minimum room area $A_{min}$ are calculated in accordance with $m_{max}$ and $A_{min}$		NA
<b>GG.11</b>	<b>Ventilation for enhanced tightness refrigerating systems using A2L refrigerants</b>		NA
<b>GG.11.1</b>	<b>General</b>		NA
	Ventilation shall be made to a place where sufficient air is available to dilute the leaked refrigerant such as outdoors or a large space. The indoor place used to provide ventilation air shall have sufficient volume, including the volume of the room in which the indoor unit is installed, to ensure that the maximum refrigerant charge specified in GG.10.4 is not exceeded.		NA
<b>GG.11.2</b>	<b>Natural ventilation</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	If natural ventilation is applied, all of the following shall be met.		NA
	- Natural ventilation from an occupied space shall not be made to outdoors.		NA
	- For natural ventilation opening provided to an occupied space, the total area of the space in which the appliance is installed and the adjacent space which is connected by the natural ventilation shall have a room area more than $A_{min}$ according to Clause GG.2 for mc. If the total room area is not large enough, the measure of GG.11.3 shall be taken.		NA
	- Openings for natural ventilation shall comply with GG.1.4.		NA
	- The minimum opening area for natural ventilation shall be calculated using equation (GG.29): $An_{vmin}$		NA
	The equation is not applicable for refrigerants with a molar mass less than 42, as the equation is based on the principle that the density of the gases generates sufficient driving force to be successfully used with natural ventilation.		NA
<b>G.11.3</b>	<b>Mechanical ventilation</b>		NA
<b>GG.11.3.1</b>	<b>Operation of mechanical ventilation</b>		NA
	Operation shall be according to GG.8.3.1, and for all indoor units in the same space which are served by a single refrigerating system, the fan shall be switched on to provide the minimum circulation airflow per GG.10.2.		NA
<b>GG.11.3.2</b>	<b>Required airflow</b>		NA
	For $(Q \times 0,25 \times LFL)/10 < 1$ , the airflow of the mechanical ventilation shall be at least the quantity that satisfies the following formula for $m_c$		NA
	For $(Q \times 0,25 \times LFL)/10 \geq 1$ , the airflow shall be determined according the following formula for Q		NA
<b>GG.11.3.3</b>	<b>Mechanical ventilation openings</b>		NA
	The upper edge of the air extraction opening from the room shall be located equal or below the refrigerant release point.		NA
	For floor mounted units, openings shall be according to GG.8.3.3.		NA
<b>GG.11.3.4</b>	<b>Operation of mechanical ventilation</b>		NA
	Mechanical ventilation shall be operated continuously or shall be switched on by a refrigerant detection system.		NA
<b>GG.12</b>	<b>Safety shut-off valves for enhanced tightness refrigerating systems using A2L refrigerants</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
<b>GG.12.1</b>	<b>Location</b>		NA
	Safety shut-off valves shall be located in a space with a room volume large enough so that the maximum refrigerant charge complies with GG.10.4, GG.10.5, or outside. Safety shutoff valve shall be positioned to enable access for maintenance by an authorized person.		NA
<b>GG.12.2</b>	<b>Design</b>		NA
	Safety shut-off valves shall be designed to close in the event of an electric power failure, e.g. spring return solenoid valves.		NA
	If safety shut-off valves are used to comply with GG.10.4 or GG.10.5, then the released amount of refrigerant shall be limited to $0,5 \times \text{LFL} \times \text{room volume}$ .		NA
	The amount of refrigerant that can be leaked shall consider the response time of the sensor and the controller that activates the valves and the remaining amount of refrigerant that is contained in each section of the refrigerating system after the valves are closed.		NA
<b>GG.13</b>	<b>Safety alarms for enhanced tightness refrigerating systems using A2L refrigerants</b>		NA
<b>GG.13.1</b>	<b>General</b>		NA
	If an alarm is employed to warn of a leak in the occupied space, the alarm shall warn of a refrigerant leak in accordance with GG.13.2. The alarm shall be turned on by the signal from the refrigerant detection system. The alarm shall also alert an authorized person to take appropriate action.		NA
<b>GG.13.2</b>	<b>Alarm system warning</b>		NA
<b>GG.13.2.1</b>	<b>General</b>		NA
	The alarm system shall warn both audibly and visibly, such as both a loud (15 dBA above the background level) buzzer and a flashing light.		NA
<b>GG.13.2.2</b>	<b>Alarm for general occupancy</b>		NA
	At least one alarm inside the occupied space shall be installed. For the occupancy listed below, the alarm system shall also warn at a supervised location, such as the night porter's location, as well as the occupied space.		NA
	Rooms, parts of buildings, building where		NA
	sleeping facilities are provided,		NA
	people are restricted in their movement,		NA
	an uncontrolled number of people are present, or		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	to which any person has access without being personally acquainted with the necessary safety precautions.		NA
<b>JJ</b>	<b>ANNEX JJ (NORMATIVE) (IEC 60335-2-40:2018) ALLOWABLE OPENING OF RELAYS AND SIMILAR COMPONENTS TO PREVENT IGNITION OF A2L REFRIGERANTS</b>		NA
<b>JJ.1</b>	<b>General</b>		NA
	Annex JJ is applicable to electric components or devices of appliances using A2L refrigerants.		NA
	Annex JJ defines the maximum size of openings in relays and similar components that prevents flame propagation to outside. A relay and similar components that comply with the requirements of this annex are not considered as a potential ignition source for A2L refrigerants.		NA
<b>JJ.2</b>	<b>Definition of the opening</b>		NA
	The effective diameter is the equivalent diameter of a circular opening that has the same quenching effect to an opening of any shape. The effective diameter of the opening of relays and similar components is defined as $d_{\text{eff}}$		NA
<b>JJ.3</b>	<b>Determination of maximum allowable opening</b>		NA
	Relays and similar components shall not be considered as a potential ignition source if the effective diameter of all holes complies with the following equation:		NA
	Alternatively, a type test can be used to determine if relays and similar components are not a potential ignition source. This type test shall show that there is no propagation of a flame from any contact inside of the relay to the outside, for the concentration of the refrigerant as used for determining the maximum burning velocity. Where the type test is used, the effective diameter limit is 12 mm.		NA
<b>KK</b>	<b>ANNEX KK (NORMATIVE) (IEC 60335-2-40:2018) TEST METHOD FOR HOT SURFACE IGNITION TEMPERATURE FOR A2L</b>		NA
<b>KK.1</b>	<b>General</b>		NA
	The hot surface ignition temperature of A2L refrigerants shall be determined according to Annex KK. The refrigerants shall be sprayed onto a horizontal flat plate surface which is set at the test temperature.		NA
	The test system consists of a hot plate, a spray tube and a chimney. Figure KK.1, Figure KK.2 and Figure KK.3 display the set-up of the test apparatus.		NA
<b>KK.2</b>	<b>Test equipment requirements</b>		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The hot plate shall have the following characteristics. The hot plate shall consist of a flat stainless steel plate with the dimensions:		NA
	Diameter: 50 mm $\pm$ 2,0 mm		NA
	Thickness: 6 mm $-0/+2,0$ mm		NA
	Surface texture: ISO 1302		NA
	The hot plate shall be positioned horizontally. The heaters shall provide uniform heating of the plate. All surfaces other than the test surface should be thermally insulated using ceramic fibre board capable to withstand 815 °C. This insulation shall be such that vapours cannot be ignited by other than the hot plate top surface.		NA
	Spray system shall consist of a liquid supply, two valves (trap liquid volume of 1,0 cm <sup>3</sup> $\pm$ 0,2 cm <sup>3</sup> ), tubing for directing the spray. The spray tube from valve to the end shall have the following dimensions:		NA
	Length: 250 mm $\pm$ 5,0 mm		NA
	Outer diameter: $\leq$ 4 mm		NA
	Inner diameter: 1,6 mm $\pm$ 0,1 mm		NA
	Use a type K thermal couple with the individual wires spot welded on opposite sides of the centre of the upper surface of the hot plate.		NA
	A borosilicate or quartz glass chimney shall be 230 mm $\pm$ 10 mm long and 70 mm $\pm$ 10 mm inner diameter. The chimney shall be supported so that it is vertically mounted and has a gap of 2,5 mm $\pm$ 0,2 mm between its bottom edge and the top on the insulation.		NA
<b>KK.3</b>	<b>Procedure</b>		NA
	The ambient conditions of the test shall be set at 23 °C $\pm$ 3 °C and 50 % RH $\pm$ 5 % RH. The chimney and hot plate establishes a constant air velocity during the test. This airflow dilutes the vapours so that an optimum (near stoichiometric) concentration for ignition develops over the hot surface.		NA
	The test shall be performed in a laboratory fume hood. The test apparatus including the chimney top shall be located in the laminar flow region of the laboratory fume hood so the chimney flow is not disturbed.		NA
	The end of the spray refrigerant line shall be placed 40 mm $\pm$ 10 mm above the hot plate and shall point at the centre of the hot plate. The tube shall be perpendicular to the horizontal plate.		NA
	Operating steps:		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	1) The hot plate shall be heated until a steady test temperature is maintained for 5 min. The plate temperature shall be kept within $\pm 15$ °C of the set-point during the test.		NA
	2) Refrigerant used for the test shall be the nominal composition (NC) per ISO 817. Refrigerant from the liquid phase shall be trapped between valve 1 and valve 2. Open valve C to spray the liquid refrigerant onto the centre of the hot plate.		NA
	3) Observe and record if ignition (flames) occurs or does not occur within 3 min after release.		NA
	Care shall be given to avoid vapours getting under the insulation, any ignition outside of the chimney is due to ignition on surfaces hotter than the test surface.		NA
	4) A minimum of 5 min of ventilation shall be allowed between runs to clear out reaction products and residual refrigerant.		NA
	5) Perform a minimum of 5 repetitions trials at each temperature being tested.		NA
	6) The temperature of the hot plate shall be set at 800 °C, if ignition occurs, then the plate temperature is to be reduced in increments of 20 °C until no ignition occurs in five trials. This temperature is to be recorded as the hot surface ignition temperature (HSIT).		NA
<b>KK.4</b>	<b>Test report</b>		NA
	The results shall be recorded in a test report. The report shall include all the information necessary for the interpretation of the test and all information required by the method used. The report shall include:		NA
	documentation with the sample identity and composition,		NA
	temperature where ignition did not occur and where ignition did occur if applicable.		NA
	The reported hot surface ignition temperature shall be highest temperature with no ignition in five trials.		NA
<b>LL</b>	<b>ANNEX LL (NORMATIVE) (IEC 60335-2-40:2018) REFRIGERANT DETECTION SYSTEMS FOR A2L REFRIGERANTS</b>		NA
<b>LL.1</b>	<b>General</b>		NA
	Refrigerant detection systems shall be set to be activated before the refrigerant concentration reaches 25 % of the LFL. Where LFL is referenced in this annex, the LFL shall be taken at WCF – Worst Case Formulation as specified in ISO 817.		NA
<b>LL.2</b>	<b>Function of the refrigerant detection systems</b>		NA



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Clause	Requirement + Test	Result - Remark	Verdict
	The refrigerant detection systems shall be capable of detecting a pre-set level of the refrigerant concentration of the refrigerant that the sensor is designated to be used with and initiate the operation as defined in Annex GG.		NA
<b>LL.3</b>	<b>Refrigerant detection system range, accuracy and response time</b>		NA
	Refrigerant detection system shall make output according to the applicable clauses of Annex GG of this standard within 30 s when the sensor is put into refrigerant concentration of 25 % of LFL or lower.		NA
	The refrigerant detection system, including the sensors, shall comply with the above requirements over the full range of operating temperature and humidity as specified by the appliance manufacturer		NA
<b>LL.4</b>	<b>Refrigerant detection system calibration</b>		NA
	The refrigerant detection systems shall be pre-set and calibrated (with an accuracy of $\pm 20\%$ ) from the factory for the refrigerant used.		NA
<b>LL.5</b>	<b>Electrical outputs for refrigerant detection system</b>		NA
	The device shall have an output in accordance with the applicable clauses of Annex GG of this standard.		NA
<b>LL.6</b>	<b>Vibration requirements</b>		NA
	A sensor shall withstand vibration without breakage or damage of parts and shall continue to function. The vibration parameters shall be defined based on the intended application and expected transportation. If vibration operating parameters are not established by the manufacturer, then a sample of the sensor shall be subject to the requirements defined below.		NA
<b>LL.7</b>	<b>Refrigerant detection system self-test routine</b>		NA
	The detection system shall include a means for self-testing the sensor to determine the output is at proper range. The test shall be run at least every hour and if a failure is detected, an alarm shall be activated.		NA
	If the sensor has a defined life and requires replacement after a given period, then the detection system shall initiate an alarm or indication that replacement is required. If sensor becomes more sensitive with aging to generate false alarm, the end of life alarm can be omitted.		NA
<b>LL.8</b>	<b>Sensor identification</b>		NA
	The sensors shall be marked with		NA
	name, trade mark or identification mark of the manufacturer or responsible vendor;		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	model or type reference.		NA
<b>MM</b>	<b>ANNEX MM (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>REFRIGERANT SENSOR LOCATION CONFIRMATION TEST</b>		NA
<b>MM.1</b>	<b>General</b>		NA
	This test is applicable to appliances with refrigerant detection systems other than remote detection.		NA
	The purpose of this test is to demonstrate that the sensor(s) of the refrigerant detection system(s), where required, will adequately detect refrigerant, in the event of a leak when installed in the location specified by the manufacturer.		NA
	Compliance will be determined by measurement of the refrigerant concentration in the location of the sensor.		NA
	The composition of the refrigerant used for the test shall be taken as the nominal composition as specified in ISO 817. Where LFL is referenced in this annex, the LFL shall be taken at the nominal composition as specified in ISO 817.		NA
<b>MM.2</b>	<b>Test methods</b>		NA
MM.2.1	The appliance is modified by introducing a simulated leak through a capillary tube. The leak rate shall be maintained at $m_r$ in g/s. The simulated leak is applied for 1 min.		NA
	The free volume ( $V_{free}$ ) shall be determined by calculating the volume of the appliance bounded by a horizontal plane at the lowest point of the simulated leak, the appliance enclosure walls and the plane of the supply and return openings.		NA
	The volume shall be reduced by the volume of components or enclosed compartments within the bounded space. Components and enclosed compartments within the bounded space with a volume of less than 0,001 m <sup>3</sup> can be ignored.		NA
	A leakage of refrigerant in the refrigerating system is simulated at the unfavourable critical points for detection of the leak.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
	A critical point is a joint in the refrigerant system tubing, a bend of more than 90 degrees, or other point judged to be a weak point in the refrigerant containing system due to the thickness of the metal, exposure to damage, sharpness of a bend or the manufacturing process, an unfavourable point is a point where the path between the leakage point and the point of detection location is more distant or more obstructed. The refrigerant is injected at the most critical point and the most unfavourable direction at ambient temperature (15 °C to 35 °C). The capillary tube shall discharge refrigerant into a chamber or similar device which will reduce the refrigerant velocity into the appliance or space.		NA
	Care shall be taken that the installation of the capillary tube does not unduly influence the results of the test and that the structure of the appliance does not unduly influence the results of the test.		NA
MM.2.2	During this test, following appliance operating modes shall be tested;		NA
	- Fan OFF, and		NA
	- Fan ON.		NA
	If the minimum airflow specified by the manufacturer is not less than the minimum airflow specified in GG.2.2 or Clause GG.9, testing in the fan ON mode is not required.		NA
MM.2.3	The appliance shall be installed according to the instructions.		NA
	Appliances that can be installed in different positions shall be tested in all positions allowed by the manufacturer. The supply and return openings shall not be covered and the manufacturers recommended air-filters shall be installed per instructions.		NA
M.2.5	The instrument used for monitoring the refrigerant gas concentration shall have a fast response to the gas concentration, at least 90 % response within 10 s (time constant 4,3 s) and shall be located as close to the intended sensor location as possible, but care should be taken not to unduly influence the results of the test. It shall be calibrated to have an accuracy of $\pm 1$ % of gas concentration between 20 % and 30 % gas concentration.		NA
	For small products where an additional sensor cannot be built-in, the evaluation of MM.2.6 shall suffice.		NA
	The refrigerant gas concentrations sampling shall be made at least every 10 s.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
<b>NN</b>	<b>ANNEX NN (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>FLAME ARREST ENCLOSURE VERIFICATION TEST FOR A2L REFRIGERANTS</b>		NA
<b>NN.1</b>	<b>General</b>		NA
	Annex NN is applicable to appliances using A2L refrigerants		NA
	A flame arrest enclosure is a device or assembly enclosing components with electrical contacts that are made and broken, or similar devices which may become a source of ignition which will withstand an internal ignition of a A2L refrigerant vapour which may enter it without suffering damage and without transmission of flame from the internal ignition to an external A2L refrigerant vapour of the same refrigerant.		NA
	Electrical components enclosed in a flame arrest enclosure in compliance with the test procedures below shall not be considered as a source of ignition.		NA
	If all openings in the enclosure comply with Annex JJ, the enclosure is deemed to comply.		NA
	The following test requirements are based on consideration of IEC 60079-15:2010, Clause 17, as applicable to the products within the scope of IEC 60335-2-40, and specific to the use of flammable A2L refrigerants.		NA
<b>NN.2</b>	<b>Test method</b>		NA
<b>OO</b>	<b>ANNEX OO (NORMATIVE) (IEC 60335-2-40:2018)</b> <b>UV RADIATION CONDITIONING</b>		NA
OO.1	Ten samples of the internal wiring are subjected to ultraviolet light conditioning according to Clause OO.2 or OO.3. When the internal wiring is provided in more than one colour, ten samples of each colour are subjected to this conditioning.		NA
	The test samples are mounted on the inside of the cylinder in the ultraviolet light apparatus perpendicular to the light source and in such a way that the samples do not touch each other.		NA

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Clause	Requirement + Test	Result - Remark	Verdict
OO.2	The samples are to be exposed for 1 000 h to xenon-arc, method A, in accordance with ISO 4892-2. There shall be continuous exposure to light and intermittent exposure to water spray. The cycle shall consist of 102 min without water spray and 18 min with water spray. The apparatus shall operate with a water-cooled xenon-arc lamp, borosilicate glass inner and outer optical filters, a spectral irradiance of 0,35 W/m <sup>2</sup> /nm at 340 nm and a black panel temperature of (65 ± 3) °C. The temperature of the chamber shall be (45 ± 3) °C. The relative humidity in the chamber shall be (50 ± 5) %.		NA
OO.3	The samples are to be exposed for 720 h to open-flame carbon-arc, in accordance with ISO 4892-4. There shall be continuous exposure to light and intermittent exposure to water spray. The cycle shall consist of 102 min without water spray and 18 min with water spray. The apparatus shall operate with an open-flame carbon-arc lamp, borosilicate glass Type 1 inner and outer optical filters, a spectral irradiance of 0,35 W/m <sup>2</sup> /nm at 340 nm and a black panel temperature of (63 ± 3) °C. The temperature of the chamber shall be (45 ± 3) °C. The relative humidity in the chamber shall be (50 ± 5) %.		NA

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Clause	Requirement + Test	Result - Remark	Verdict

10.2	TABLE: Current deviation					P
Current deviation of/at:	I rated (A)	I measured (A)	I	Required I	Remark	
208 V	3.2	2.7	-0.5	< +0.48	P	
230 V	3.2	2.6	-0.6	< +0.48	P	
Supplementary information: Tested on 12 February 2019 21.0 deg C, 43.9%RH, 28.57inHg Outlet was restricted to force the fan speed to its highest allowable value (1800 RPM) at cool conditions, and the input was measured.						

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Clause	Requirement + Test	Result - Remark	Verdict
<b>11.8</b>	<b>TABLE: Heating test</b>		<b>P</b>
	Test voltage (V) .....	195V for initial 2.5 hours, then adjusted to 244V	—
	Ambient (°C) .....	20.2	—
Thermocouple locations		Max. temperature measured, T (°C)	Max. temperature limit, T (°C)
Line Lead		83.57	105
Power In Terminal Block		83.33	85
Inductor		83.48	90
Transformer		86.84	90
Line Voltage Board Connector		84.16	105
Small TE Relay		115.47	140
Omron Relay		88.17	90
Large TE Relay		83.65	90
Low Voltage Terminal Block		84.80	85
Circuit Board Material		100.32	145
Motor Winding		81.23	90
Motor Body		81.49	Not specified
Motor Hot Lead		80.50	105
Molex Connector		80.48	105
Enclosure		80.25	92
Ambient (measured at the air inlet)		80.85	NA
<b>Supplementary information:</b> Tested on 13 February 2019 20.2 deg C, 21.1%RH, 29.02 inHg Outlet was restricted to force the fan speed to its highest allowable value (1800 RPM). Tested unit which was set for 208V at the undervoltage condition. When steady state was reached, the unit was disconnected from power, set for 230V, and run at overvoltage condition until steady state was reached.			

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Clause	Requirement + Test	Result - Remark	Verdict

<b>13.2</b>	<b>TABLE: Leakage current</b>		<b>P</b>
	Heating appliances: 1,15 x rated input (W) ..... :	NA	—
	Motor-operated and combined appliances: 1,06 x rated voltage (V) ..... :	230V*1.06=243.8V	—
Leakage current between		I (mA)	Max. allowed I (mA)
<i>No heating components conditions</i>		NA	NA
Tested at 254.4VAC		1.75mA	3.5mA
Supplementary information: Previously tested model no. MB2430EC during the December of 2009 under project no. 3196141.			

<b>13.3</b>	<b>TABLE: Dielectric strength</b>		
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
Line Voltage to Line voltage shorted test to Gnd with motor installed		1500Vac (failed during voltage ramp process, less than 300Vac)	Yes, Failed
Line Voltage to Line voltage shorted test to Gnd, no motor installed		1500Vac	No, Pass
Supplementary information: Motor is a recognized component. Previously tested model no. MB2430EC during the December of 2009 under project no. 3196141.			

<b>16.2</b>	<b>TABLE: Leakage current</b>		<b>P</b>
	Single phase appliances: 1.06 x rated voltage .... :		—
	Three phase appliances 1.06 x rated voltage divided by $\sqrt{3}$ : ..... :	NA	—
Leakage current between		I (mA)	Max. allowed I (mA)
Between Input Gnd and Dead metal Gnd assembly		1.75mA	3.5mA
Supplementary information: Previously tested model no. MB2430EC during the December of 2009 under project no. 3196141.			



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Clause	Requirement + Test	Result - Remark	Verdict

<b>16.3</b>	<b>TABLE: Dielectric strength</b>		
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
Line Voltage to Line voltage shorted test to Gnd with motor installed		1500Vac (failed during voltage ramp process, less than 300Vac)	Yes, Failed
Line Voltage to Line voltage shorted test to Gnd, no motor installed		1500Vac	No, Pass
Supplementary information: Motor is a recognized component. Previously tested model no. MB2430EC during the December of 2009 under project no. 3196141.			

<b>19</b>	<b>Abnormal operation conditions</b>						<b>P</b>
Operational characteristics		YES/NO	Operational conditions				
Are there electronic circuits to control the appliance operation?		Yes					
Are there "off" or "stand-by" position?		No					
The unintended operation of the appliance results in dangerous malfunction?		No					
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.11.2	Component Short	See Table 19.11.2	-	-	-	-	P
19.11.4.8	Voltage dip	Started running without issue	--	--	--	--	P
Supplementary information: Voltage dip performed on 13 February 2019: 20.2 C, 21.1%RH Component short performed on 25 March 2019: 20.6C, 31.5%RH							

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Clause	Requirement + Test	Result - Remark	Verdict
<b>19.11.2</b>	<b>Abnormal Operation</b>		P
Fault condition	Effect		Verdict
Shorted D1 – Rectification Diode	Fuse Blew, rendered inoperable		P
Shorted VR1 (Voltage Regulator) Output to Ground	Unit would not run, but the fuse did not blow. Current flowed through VR1. Temperatures were measured until steady state. Component reached 70.4 C. No fire or hazards created		P
Shorted VR1 (Voltage Regulator) Input to Ground	Fuse blew, rendered inoperable		P
Shorted output of U5 - Optotriac	Unit ran as usual, without fault		P
Shorted Base and Emitter of Q13	Unit ceases to operate. No hazard observed		P
Shorted Base and Emitter of Q28	Unit ceases to operate. No hazard observed		P

21.1	TABLE: Impact resistance			P
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
3x3 (corner, center, corner)		Blower module front	0.5	No distortion or reduction of spacings
3x4 (corner, center, corner, mount)		Blower module top	0.5	No distortion or reduction of spacings
3x3 (corner, center, corner)		Blower module side	0.5	No distortion or reduction of spacings
3x4 (corner, center, corner, bushing)		Control board box front	0.5	No distortion or reduction of spacings
3x3 (corner, center, corner)		Control board box top	0.5	No distortion or reduction of spacings
3x3 (corner, center, corner)		Control board box side	0.5	No distortion or reduction of spacings
Supplementary information: Performed on 14 February 2019				

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Clause	Requirement + Test	Result - Remark	Verdict

24.1	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
BLOWER MODULE COMPONENTS						
Enclosure	Various	Various	Formed from minimum thickness 0.029 inch (22 gauge) ASTM A653, G90 galvanized (or galvanized) steel. All parts formed and assembled with sheet metal screws or pop rivets.	Tested as a part of the end product	NR	
Insulation	Rubatex	Insul-Sheet 1800	Sheet insulation flame rating maximum 25, smoke rating maximum 50, secured with adhesive. Covers all inside surfaces of the enclosure. Insulation is secured with hot melt adhesive.	Tested as a part of the end product	NR	
	Various	Vinyl-nitrile closed cell insulation	0.5 inch thick minimum			
Motor, Blower Assembly	Emerson	K55HXHRT-8837	Class B Insulation. 208/230, 230/460, 120/240 VAC. 1 or 3 phase. 50/60Hz. ½, 1 HP. 6.2 FLA max.	IEC 60730-2-9	CE	
	Emerson	K55HXKLZ-9668				
	Emerson	K55HXFCJ-7644				
	Emerson	K55HXLGP-3709				
	Emerson	P55DBK-1364				
	Emerson	K55HXHRP-8834				
	Emerson	K55BWKRF-9909				
	Emerson	K55FYFCK-7645				
	Emerson	K55BZS-6300				
	Emerson	P63FJW-4170				
	Nidec	M055PWCTD-0289				
Blower Wheel and Housing	Various	Various	Full scroll style housing with forward curved wheel, counter-clockwise operation, wheel is drive connected	Tested as a part of the end product	NR	

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Clause	Requirement + Test	Result - Remark	Verdict

S.M.A.R.T. CONTROL BOX COMPONENTS					
Enclosure	Various	Various	Formed from 1mm thick galvanized (or galvanized) sheet steel. The base has two holes in the bottom for wire entry into the blower module, secured with screws on the outside of the blower module on the air discharge end or top. Low voltage, Class 2 field wiring terminals are separated from other wiring by a steel barrier of minimum 0.029 inch thick.	Tested as a part of the end product	NR
Power Terminal Block	Various	Various	Min Voltage Rating: 300V Min Amp Rating: 20A	Tested as a part of the end product	NR
Low Voltage Terminal Block	Various	Various	Min Voltage Rating: 150V Min Amp Rating: 20A	Tested as a part of the end product	NR
Low Voltage Transformer	Wabash	Various	Multi Tapped Input, 24Vac Secondary. 50VA, Class 2. Secondary is grounded.	IEC 61558-2-6	CE
Motor Inductor	Wabash	A01526-G01	½ HP. 2.4 mH, 3.5A. 45 turns per coil. No. 16 AWG leads.	Tested as a part of the end product	NR
Relay	TE	OSA-SH-224DM5	24Vac Coil, 5A Contact rated to 250Vac	Tested as a part of the end product	NR
		T77S1D10-24	1 pole normally open, 10A, 24VDC.	Tested as a part of the end product	NR
	Omron	G2R-1A-E 24VDC	One pole, normally open, high capacity. 24VDC.	Tested as a part of the end product	NR
Printed Wiring Board	Unico	Various	Rated 208-230V, output 1 HP. 94-V0	Tested as a part of the end product	NR
PWB Coating	Humiseal	1B73/521 PB65	Covering traces and soldered connections on the circuit board. Must be 25-75 microns thick.	UL 746E	UR
Fuse	Various	Various	2A Mini Blade Fuse. Rated for 240VAC minimum	Tested as a part of the end product	NR

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Clause	Requirement + Test		Result - Remark		Verdict
Fuse Holder	Various	Various	Minimum amp rating: 2A Minimum volt rating 240VAC	Tested as a part of the end product	NR
Switch	Various	Various	Minimum amp rating: 2A Minimum volt rating 240VAC	Tested as a part of the end product	NR
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

28.1	TABLE: Threaded part torque test			P
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Blower Module Enclosure screw		4.6	II	<1.8 Nm Screw would untap before reaching 1.8Nm and the torque would decrease.
Supplementary information: Screw would untap but continue to hold the enclosure fast before reaching 1.8Nm and the torque would decrease.				
Performed on 14 February 2019				

<b>29.1</b>	<b>TABLE: Clearances</b>					P
	Overvoltage category .....: II					—
		Type of insulation:				None
Rated impulse voltage (V):	Min. cl (mm)	Basic (mm)	Supplementary (mm)	Reinforced (mm)	Functional (mm)	Verdict / Remark
1 500	0,5 / 0,8** / 1,0***					
2 500	1,5 / 2,0***	4.5mm				P
4 000	3,0 / 3,5***		4.5mm	4.5mm		P
Supplementary information: *) For tracks on printed circuit boards if pollution degree 1 and 2 **) For pollution degree 3 ***) If the construction is affected by wear, distortion, movement of the parts or during assembly						

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Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										Verdict
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	4.5	—	—	P
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—	4.5	—	P
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—	4.5	P
Supplementary information:											
*) Material group IIIb is allowed if the working voltage does not exceed 50 V											
**) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation											

IEC 60335-2-40			
Clause	Requirement + Test	Result - Remark	Verdict

29.2	TABLE: Creepage distances, functional insulation							
Working voltage (V)	Creepage distance (mm) Pollution degree							Verdict / Remark
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	NA
50	0,16	0,56	0,8	1,1	1,4	1,6	1,8	P
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	P
250	0,42	1,0	1,4	2,0	2,5	2,8	3,2	NA
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	NA
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	NA
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	NA
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	NA
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	NA
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	NA
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	NA
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	NA
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	NA
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	NA
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	NA
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	NA
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	NA
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	NA
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	NA
Supplementary information:								
*) Material group IIIb is allowed if the working voltage does not exceed 50 V								

**List of test equipment used:**

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
All	Ambient Condition Meter	CE2560	15-30 C 0-100% RH 10-30 inHg	18-Jan-19	18-Jan-20
19	Stopwatch	CE2786	0-3600 s	13-Oct-18	13-Oct-19
10, 11, 19	Digital Multimeter	E130	0-250 V 0-10 A	13-Feb-18	13-Feb-19
10, 11, 19	Veriac	E593	0-250 V	VBU	VBU
28	Digital Wrench	TG002	0-2.5 Nm	15-May-18	15-May-19
21, 22, 29	Force Gauge	E204	0-50 N	8-Oct-18	8-Oct-19
21	Spring Hammer	354007	0.5 J	5-Feb-19	31-Jan-20
22, 28	Callipers	CE2296	0-158 mm	1-Oct-18	1-Oct-19
22	Finger Probe	FP035	NA	Cat III	Cat III
11	Data Card	CE2699	0-100 C	9-Jan-19	9-Jan-20
11	Data Acquisition Unit	CE2480	0-100 C	25-Apr-18	25-Apr-19



## Attachment 1 – Photos:

Photo 1 – Internal View of Blower Module

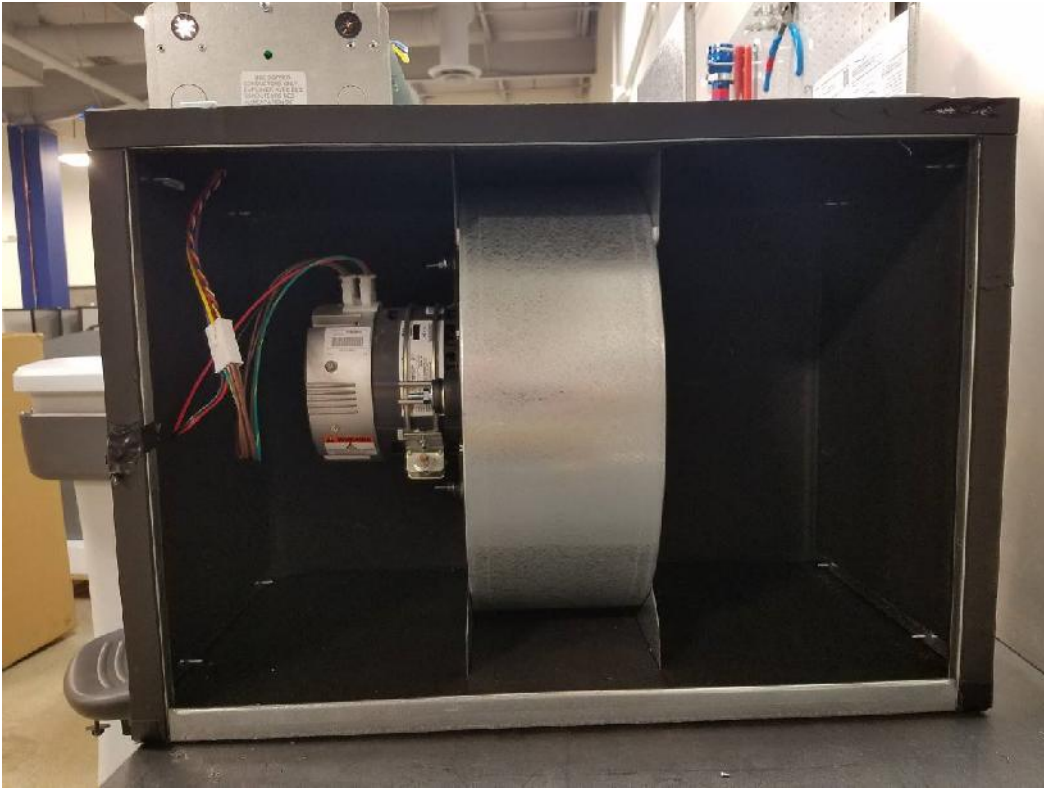


Photo 2 – Control Internal View of Control Box

