



Ref. Certif. No.

JPTUV-013837

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
Produit

Air conditioner indoor unit

Name and address of the applicant
Nom et adresse du demandeur

Electra Consumer Products
21 Aminadav St., Tel-Aviv
67067, Israel

Name and address of the manufacturer
Nom et adresse du fabricant

Electra Consumer Products
21 Aminadav St., Tel-Aviv
67067, Israel

Name and address of the factory
Nom et adresse de l'usine

(See appendix for factories information)

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

AC 220-240V; 50Hz; Class I
1) 167W, 2) 195W, 3) 260W, 4) 260W
IP20 (Indoor unit only)
Refrigerant: R410A
ELECTRA

Trade mark (if any)
Marque de fabrique (si elle existe)

1) DNG50 DCI, 2) DNG60 DCI, 3) DNG72 DCI, 4) DNG80 DCI

Model/type Ref.
Ref. de type

For model differences, refer to the test report.

Additional information (if necessary)
Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

IEC 60335-2-40:1995 + A1
IEC 60335-1:1991 + A1 + A2

As shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue une partie de ce Certificat

12012854 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



TUV Rheinland Group

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Signature:

Dipl.-Ing. W. Herlitschke

Date: 02.03.2006

Appendix to CB Certificate JPTUV-013837
Report Number: 12012854 001

PAGE 1 OF 1

Name and address of the manufacturer
Electra Consumer Products
21 Aminadav St., Tel-Aviv
67067
Israel

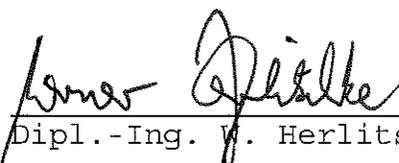
Name and address of the factory(ies)
Electra Air-conditioning (Shenzhen) Co., Ltd.

2 WUHE AVENUE S.,
BANTIAN, BUJI
Shenzhen, Guangdong, P.R. China

Electra Consumer Products Ltd.

Sapir 1, Rishon Lezion
75704
Israel

Date: 02.03.2006


Dipl.-Ing. W. Herlitschke

TEST REPORT**IEC 60335-2-40**

Safety of household and similar electrical appliances
Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Report Reference No.: 12012854 001

Compiled by (+ signature).....: H. Irie

Approved by (+ signature).....: M. Kera

Contents.....: 51 Pages

Date of issue.....: 2006-02-27



CB Testing laboratory Name.....: TÜV Rheinland Japan Ltd., Yokohama Laboratory

Address.....: 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

Testing location/procedure.....: CBTL SMT TMP

Address.....: Same as above

Applicant's Name.....: ELECTRA CONSUMER PRODUCTS

Address.....: 21 Aminadav St, Tel-Aviv, 67067 Israel

Test specification

Standard: IEC 60335-2-40: 1995 + A1: 2000 used in conjunction with
IEC 60335-1: 1991 + A1: 1994 + A2: 1999

Test procedure: CB

Non-standard test method.....: N.A.

Test Report Form No.....: IEC60335_2_40C

TRF originator.....: AENOR

Master TRF: Dated 2002-02

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Test item description: Air conditioner indoor unit

Trademark.....: ELECTRA

Model and/or type reference: DNG50 DCI, DNG60 DCI, DNG72 DCI, DNG80 DCI

Manufacturer.....: Same as applicant

Factory.....: See page 2

Rating(s): 220-240V~ 50Hz

Rated input: see rating labels

Refrigerant: R410A

IP20

<p>Summary of testing</p> <ol style="list-style-type: none"> 1. Tests performed on models DNG50 DCI, DNG60 DCI, DNG80 DCI; 2. Input test, heating test and some abnormal tests made in a test chamber, which can imitate the most severe condition in normal use.
<p>Test items particulars:</p> <p>Serial Number : Prototype samples</p> <p>Additional information : N(.A.)</p> <p>..... :</p> <p>..... :</p>
<p>Test case verdicts</p> <p>Test case does not apply to the test object..... : N(.A.)</p> <p>Test item does meet the requirement : P(ass)</p> <p>Test item does not meet the requirement : F(ail)</p>
<p>Testing</p> <p>Date of receipt of test item : 2005-11-25</p> <p>Date(s) of performance of test : 2005-12-04—2006-02-10</p>
<p>General remarks</p> <p>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IEC EE 02.</p> <p>The test results presented in this report relate only to the item tested.</p> <p>This test report shall not be reproduced except in full, without the written approval of the issuing testing laboratory.</p> <p>Clause numbers between brackets refer to clauses in IEC 60335-1</p> <p>"(see Enclosure #)" refers to an additional information appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>Factory 1: Electra Air-Conditioning (Shenzhen) Co., Ltd. Address: 2 Wuhe Avenue S., Bantian, Buji, Shenzhen, Guangdong, P. R. China</p> <p>Factory 2: ELECTRA CONSUMER PRODUCTS LTD. Address: Sapir 1, Rishon Lezion, 75704, Israel</p>

General product information:

- The appliances are indoor unit only, the indoor unit is a ceiling mounted type air conditioner, which is usually not accessible except for maintenance purpose. It will be mounted on the wall at a height of min. 2,3 m above floor level;
- The unit is supplied by power cord, the power cord is permanently fixed to main power supply;
- The test was performed with a connection to representative outdoor unit;
- The equipment is equipped with an infrared wireless battery powered remote control unit.

Model description:

Model DNG60 DCI is identical with model DNG50 DCI except the fan speed is different;

Model DNG72 DCI is identical with model DNG50 DCI except fan motor is different;

Model DNG80 DCI is identical with model DNG72 except model name is different, and evaporator is different.

Copy of marking plate:

ELECTRA	MODEL: DNG50 DCI	
PROD NO.:	Fuse: 20A(G)*	Cooling capacity: 5000(1600-6400)W*
TYPE:	COS ϕ =0.97	Heating capacity: 6000(1400-7700)W*
220-240V~ 50Hz	IP20 Rev.A	Dehumidification: 1.0 l/h
R-410A:	Prated:167 W	PS: 6.3MPa Ps: 0.8MPa
*is applied to single refrigerant circuit only		Temp.Class: T1 Weight: 29kg

ELECTRA	MODEL: DNG60 DCI	
PROD NO.:	Fuse: 20A(G)*	Cooling capacity: 5600(1600-6600) W *
TYPE:	COS ϕ =0.97	Heating capacity: 6600(1800-8000)W*
220-240V~ 50Hz	IP20 Rev.A	Dehumidification: 1.24 l/h
R-410A:	Prated::195 W	PS: 6.3MPa Ps: 0.8MPa
*is applied to single refrigerant circuit only		Temp. Class: T1 Weight: 29kg

ELECTRA	MODEL: DNG72 DCI	
PROD NO.:	Fuse: 20A(G) *	Cooling capacity: 6800(1600-8000)W*
TYPE:	COS ϕ =0.97	Heating capacity: 7600(1800-8800)W*
220-240V~ 50Hz	IP20 Rev.A	Dehumidification: 1.53 l/h
R-410A:	Prated: 260 W	PS: 6.3MPa Ps: 0.8MPa
*is applied to single refrigerant circuit only		Temp.Class: T1 Weight: 29kg

ELECTRA	MODEL: DNG80 DCI	
PROD NO.:	Fuse: 20A(G) *	Cooling capacity: 7500(1600-9000)W*
TYPE:	COS ϕ =0.97	Heating capacity: 8800(1800-10500)W*
220-240V~ 50Hz	IP20 Rev.A	Dehumidification: 2.5 l/h
R-410A:	Prated: 260 W	PS: 6.3MPa Ps: 0.8MPa
*is applied to single refrigerant circuit only		Temp.Class: T1 Weight: 31kg

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
4	GENERAL NOTES ON TESTS		P
	Tests performed according to Cl. 4, e.g. nature of supply, sequence of testing, etc.		P
4.6	Appropriate controls rendered inoperative during the test (IEC 60335-2-40:1995)		P
4.101	Motor-compressors comply with IEC 60335-2-34 (IEC 60335-2-40:1995)	Indoor unit	N
	Motor-compressors subjected to the relevant test (IEC 60335-2-40:1995)		N
6	CLASSIFICATION		P
6.1	Protection against electric shock: Class I, II, III	Class I	P
6.2	Protection against harmful ingress of water, IP degree in accordance with IEC 529 (IEC 60335-2-40:1995)	IP20	P
	Appliances for outdoor use (IEC 60335-2-40:1995)		N
	Appliances for indoor use (IEC 60335-2-40:1995)	IP20	P
	Appliances for laundry rooms (IEC 60335-2-40:1995)	Warning: "the appliance shall not be installed in the laundry" is stated on user manual.	N
6.101	Degree of accessibility (accessible/not accessible to the general public (IEC 60335-2-40:1995)	Accessible to general public, but intended to be technically maintained (except for air filter cleaning) only by qualified service personnel.	P
7	MARKING		P
7.1	Rated voltage or voltage range (V) :	220-240V	P
	Symbol for nature of supply including number of phases, unless for single phase operation (IEC 60335-2-40:1995)	~	P
	Rated frequency or frequency range (Hz) :	50Hz	P
	Rated input or rated current	See rating labels	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	ELECTRA	P
	Model or type reference	See rating labels	P
	Symbol for Class II	Class I	N
	Symbol for degree of protection against ingress of water, other than IPX0 (IEC 60335-2-40:1995)	IP20	N
	Mass of the refrigerant or of each refrigerant in a blend (except for azeotropic type (IEC 60335-2-40:1995)		N
	Refrigerant identification (IEC 60335-2-40:1995)	R410A	P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Permissible excessive operating pressure in pascals for sanitary hot water heat pumps (IEC 60335-2-40:1995)		N
	Excessive operating pressure of the refrigerant circuit for suction and discharge, if they differ (IEC 60335-2-40:1995)	See rating labels	P
	The maximum operating pressure for the heat exchanger (IEC 60335-2-40/A1:2000)	See rating labels	P
	Separate marking of the appliances with all the rated characteristics of the supplementary heaters (IEC 60335-2-40:1995)		N
	Marking of the direction of the fluid flow (IEC 60335-2-40:1995)		N
7.2	Warning for stationary appliances	Single supply	N
	Warning placed in vicinity of terminal cover	Single supply	N
7.3	Range of rated values correctly marked	Single voltage supply	P
7.4	Voltage setting clearly discernible	Single voltage supply	N
7.5	Marking of rated input for each rated voltage	Single voltage supply	N
	Marking for upper and lower limits of rated input		N
7.6	Correct symbols used		P
7.7	Correct connection diagram, fixed to the appliance	Near the terminal	P
7.8	Not for type Z attachment:		P
	- marking of terminals for the neutral conductor (N)	Neutral conductor terminal marked with letter 'N'.	P
	- marking of earthing terminals		P
	- marking not placed on removable parts	Marking of earthing terminals is applied by embossing into metal.	P
	- marking of terminal for single-pole protective device		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches and regulating devices by use of figures, letters or other		P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		P
7.11	Indication for direction of adjustment of controls		N
7.12	Instructions for safe use provided	Stated in user manual.	P
	Classification of 6.101 included, for appliances not accessible to general public (IEC 60335-2-40:1995)		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.1	Sufficient details for installation or maintenance supplied:		P
	- national wiring regulations for installation (IEC 60335-2-40:1995)	Stated in user manual.	P
	- dimensions of space for installation (IEC 60335-2-40:1995)	Stated in user manual.	P
	- wiring diagram (IEC 60335-2-40:1995)	Provided.	P
	- range of external static pressures (only heat pumps and appliances with electric resistance heaters) (IEC 60335-2-40:1995)		N
	- minimum clearance from appliances with supplementary heaters to combustible surfaces (IEC 60335-2-40:1995)		N
	- indication of suitable parts for outdoor use (IEC 60335-2-40:1995)		P
	- method of connection to the electrical supply and interconnection of separate components (IEC 60335-2-40:1995)		P
	- type and rated characteristics of fuses (IEC 60335-2-40:1995)		P
	- details of supplementary heating elements, including fitting instructions (IEC 60335-2-40:1995)		N
	- maximum and minimum water or brine operating temperatures (IEC 60335-2-40:1995)		N
	- maximum and minimum water or brine operating pressures (IEC 60335-2-40:1995)		N
	- indication of open water storage tanks (IEC 60335-2-40:1995)		N
7.12.2	Means for disconnection with contact separation at least 3 mm or instruction regarding means of disconnection in the fixed wiring (IEC 60335-1/A2:99)	Stated in user manual.	P
7.12.3	Insulation in contact with parts exceeding 50 K; instruction		N
7.12.4	Information with regard to building-in:	Ceiling mounted type	N
	- dimensions of space		N
	- dimensions and position of support		N
	- ventilation openings		N
	- connection/interconnection plug accessible		N
7.12.5	Replacement cord, type X attachment	Fixed wiring.	N
	Replacement cord, type Y attachment		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Replacement cord, type Z attachment		N
7.13	Instructions and other texts in official language	English	P
7.14	Marking easily legible and durable		P
7.15	Marking on a main part		P
	Marking clearly discernible from outside		P
	Stationary appliance: name or trademark and model or type reference visible after installation	Trademark and model are visible.	P
	Indication for switches and controls in vicinity of components; not on removable parts if misleading		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		P
7.101	Marking of fuses and overload protective devices, if replaceable (IEC 60335-2-40:1995):		P
	- fuse rated current in amperes, type and rated voltage (IEC 60335-2-40:1995)	T 3,15A 250VAC	P
	- manufacturer and model of the overload protective device (IEC 60335-2-40:1995)		N
7.102	Marking for connection with aluminium wire, if necessary (IEC 60335-2-40:1995)	The use of aluminium wires is not intended.	N
8	PROTECTION AGAINST ACCESSIBILITY TO LIVE PARTS		P
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	All positions; detachable parts removed	See below	P
	<ul style="list-style-type: none"> - Installation only by authorized service personnel. Basic insulation is provided before installation is carried out. Test finger and test pin applied to all openings after equipment was installed as described in installation manual. - Indoor part: The evaporator is connected to earth, no bare live parts accessible through openings in the enclosure. 		
	Removal of lamps: protection against contact with live parts	No lamps	N
	Use of test finger: no contact with live parts		P
8.1.2	Use of test pin: no contact with live parts		P
	Test pin applied to openings in earthed metal enclosures having a coating such as enamel or lacquer (IEC 60335-1/A2:1999)		P
8.1.3	Use of test probe: no contact with live parts of visible glowing heating elements	No visible glowing heating elements used.	N
8.1.4	Accessible part not considered live if:		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	-extra-low a.c. voltage: peak values not exceeding 42,4 V		N
	- extra-low d.c. voltage: not exceeding 42,4 V	Remote controller	P
	- or separated from live parts by protective impedance, d.c. current not exceeding 2 mA		N
	- or separated from live parts by protective impedance, a.c. peak value not exceeding 0,7 mA		N
	- for peak value 42,4 V up to and including 450 V capacitance not exceeding 0,1 μ F		N
	- for peak value 450 V up to and including 15 kV capacitance not exceeding 0,1 μ F		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		P
	- built-in appliances		N
	- fixed appliances		P
	- separate units		N
8.2	Class II appliances and constructions adequately protected against accidental contact with basic insulation and metal parts separated from live parts with only basic insulation		P
10	POWER INPUT AND CURRENT		P
10.1	Power input at rated voltage and normal operating temperature not deviating from rated input by more than shown in table; measured power input (W); rated input (W); deviation:	(see appended table)	P
10.2	Current at normal operating temperature not deviating from rated current by more than shown in table; measured current at rated voltage under normal operation (A); rated current (A); deviation . :	Not marked on rating label	N
11	HEATING		P
11.1	No excessive temperatures in normal use		P
	Compliance is checked by the tests of Annex C, if (IEC 60335-2-40:1995):		N
	- temperature of motor winding exceeds values shown in Table 3 (IEC 60335-2-40:1995)		N
	- there is no doubt about the classification of the insulation system of the motor (IEC 60335-2-40:1995)	The insulation material used in the motors is UL approved.	N
11.2	Placing and mounting of appliance (IEC 60335-2-40:1995):		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	- clearances to adjacent surfaces (IEC 60335-2-40:1995)		P
	- static pressures, (IEC 60335-2-40:1995) except for fan coils where the flow rates and liquid temperatures, that shall be the maximum specified in the manufacturer's instruction (IEC 60335-2-40:1995+A1:2000)		P
	- adjustable limit controls set at the maximum cut-out setting and the minimum differential (IEC 60335-2-40:1995)		P
	- flows (IEC 60335-2-40:1995)		P
	For appliances with supplementary heaters, use test casing of 11.9 (IEC 60335-2-40:1995)		N
	For appliances with supplementary heaters, an inlet duct is connected to the inlet air opening (IEC 60335-2-40:1995)		N
	Air outlet duct if necessary (IEC 60335-2-40:1995)		N
11.3	Temperature rises determined by thermocouples or resistance method		P
11.4	Test performed at supply voltage between 0,94 and 1,06 times the rated voltage (IEC 60335-2-40:1995)	254V is considered as the more severe voltage.	P
	Heating appliances operated under normal operation at 1,15 times rated power input		N
11.5	Test conducted in the heating mode and in the cooling mode, if both exist (IEC 60335-2-40:1995)		P
	All the supplementary heating elements operative simultaneously (IEC 60335-2-40:1995)		N
11.6	Defrost test in the most unfavourable conditions, if needed (IEC 60335-2-40:1995)	Indoor unit	N
11.7	Appliances operated continuously until steady conditions except for defrost tests (IEC 60335-2-40:1995)		P
11.8	Monitored temperatures not exceeding the values of Table 3 (IEC 60335-2-40:1995)	(see appended table)	P
	Protective devices do not operate		P
	Sealing compound not flowing out		P
	Temperature of the air in the outlet duct not exceeding 90 °C (IEC 60335-2-40:1995)		N
11.9	Test casing and installation of the rest of the appliances in accordance with the manufacturer's instructions (IEC 60335-2-40:1995)		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Glass fibre insulation for appliances without indication of minimum clearances according to the manufacturer; thermocouple in contact with the enclosure (IEC 60335-2-40:1995)		N
13	LEAKAGE CURRENT		P
13.1	Leakage current not excessive and electric strength adequate		P
13.2	Leakage current measured by means of circuit described in Annex G (IEC 60335-2-40:1995)		P
	Leakage current measurements	(see appended table)	P
13.3	Electric strength test of insulation. See Note in Interpretation Sheet I-SH 02, August 1994	(see appended table)	P
	No breakdown during the test		P
15	MOISTURE RESISTANCE		P
15.1	Enclosure provides the degree of moisture protection against the ingress of water (rain, overflow from the drain pan of defrosting, tests of 15.2, 15.3, 11.6 and Cl. 16) (IEC 60335-2-40:1995)		P
	Motor-compressor not operated and detachable parts not removed during 15.2 and 15.3 (IEC 60335-2-40/A1:2000)		N
	After test, water inside the enclosure has not reduced the creepage distances and clearances below the values of Cl. 29 (IEC 60335-2-40:1995)		P
15.2	Tests in accordance with IEC 529 in appliances other than IPX0, as specified (IEC 60335-2-40:1995)	IP20	N
15.3	Spillage of liquid does not affect the electrical insulation (IEC 60335-2-40:1995)		N
15.4	Spillage test according to IEC 60335-2-40/A1:2000		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		P
16.1	No excessive leakage current and adequate insulation and electric strength (tests 16.2 and 16.3)		P
16.2	Leakage current measurements (IEC 60335-2-40:1995)	(see appended table)	P
16.3	Electric strength tests (values in table 5). See Note in Interpretation Sheet I-SH 02, August 1994	(see appended table)	P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		P
	Appliance supplied with 1,06 or 0,94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied	(see appended table)	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		N
	Temperature of the winding not exceeding the value specified in table 6	(see appended table)	P
	Except fail-safe transformer complying 15.5 of IEC 61558-1 (IEC 60335-1/A2:1999)	Not fail-safe transformer	N
19	ABNORMAL OPERATION		P
19.1	The risk of fire or mechanical damage or electric shock under abnormal or careless operation obviated (tests 19.2-19.14) (IEC 60335-2-40:1995)		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe (electric shock, fire or mechanical hazard, dangerous malfunction) (test 19.11 and 19.12) (IEC 60335-2-40:1995)		P
19.2	Test of appliance with motor rotors, other than motor-compressors, operated for 15 days (360 h) or until a protection device opens the circuit (IEC 60335-2-40:1995)	(see appended table)	P
	Insulation of motor windings (IEC 60335-2-40:1995)	(see appended table)	P
	Temperature of enclosure does not exceed (°C) (IEC 60335-2-40:1995)	(see appended table)	P
	Temperature of the windings does not exceed the values shown in the table; temperature (°C) (IEC 60335-2-40:1995)		P
	Electric strength test as specified in 16.3, 72 h after the beginning of the test (IEC 60335-2-40:1995)		P
	A 30 mA residual current device does not open (IEC 60335-2-40:1995)		P
	At the end, the leakage current between the windings and the enclosure does not exceed 2 mA (IEC 60335-2-40:1995)		P
19.3	Motor-compressor complies with IEC 60335-2-34 (IEC 60335-2-40:1995)		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Test of the motor-compressor with the rotor locked as specified in 19.3 of IEC 60335-2-34 (IEC 60335-2-40:1995)		N
19.4	Test of three-phase motors operated under the conditions of Cl. 11 with one phase disconnected until steady conditions (IEC 60335-2-40:1995)		N
19.5	Test of appliance with heat transfer medium flow of the outdoor heat exchanger restricted or shut off when reaching steady conditions (IEC 60335-2-40:1995)		N
	Test of appliance with heat transfer flow of the indoor heat exchanger restricted or shut off when reaching steady conditions (IEC 60335-2-40:1995)		P
	Disconnection of the motor common to both the outdoor and the indoor heat exchangers when reaching steady conditions (IEC 60335-2-40:1995)		N
19.6	Test of appliances using water as heat transfer medium (IEC 60335-2-40:1995)		N
19.7	The test of air to air appliances at rated voltage or at the upper limit of the rated voltage range. The dry-bulb temperature is 5 K below the values specified by the manufacturer (IEC 60335-2-40:1995)	11°C	P
	Test with the dry-bulb temperature 10 K over the values specified by the manufacturer (IEC 60335-2-40:1995)	42°C	P
19.8	Test of appliances with supplementary electric heaters (IEC 60335-2-40:1995)	No heating element	N
19.9	Test at a temperature permitting continuous operation of the motor-compressor and the electric heating elements at the same time (IEC 60335-2-40:1995)		P
19.10	Test of the appliance with any defect which may be expected during normal use (IEC 60335-2-40:1995)	Open circuiting and short-circuiting of motor capacitor performed, and no hazards occurred.	P
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 they comply with the conditions specified in 19.11.1		P
	Windings temperature not exceeding values shown in Table 6 (IEC 60335-2-40:1995)		P
	Appliance shall comply with the conditions of 19.14 (IEC 60335-2-40:1995)		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliance withstands the test: a conductor becomes open circuited and three conditions are met (IEC 60335-2-40:1995)		P
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		P
	- 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		N
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in Cl. 11, but supplied at rated voltage, the duration of the tests as specified:	(see appended table)	P
	a) short circuit of creepage distances and clearances between live parts of different potential, if these distances are less than the values specified in 29.1, unless the relevant part is adequately encapsulated	The Cl/Cr distances are not less than the values specified in 29.1.	N
	b) open circuit at the terminals of any component	(see appended table)	P
	c) short circuit of capacitors, unless they comply with IEC 60384-14 or 14.2 of IEC 60065	(see appended table)	P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the circuits of an optocoupler		P
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit. In this case the possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component		N
	Short-circuit of low-power circuits (IEC 60335-2-40:1995)		N
	The duration of the tests (IEC 60335-2-40:1995):		P
	- as specified in 11.7 but only for one operating cycle (in case the fault cannot be recognised by user) IEC 60335-2-40:1995)		P
	- as specified in 19.2, if fault can be recognised by user (IEC 60335-2-40:1995)		P
	- until steady conditions are established (IEC 60335-2-40:1995)		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Test ended if interruption of supply occurs within the appliance (IEC 60335-2-40:1995)		P
	Fault condition f) applied to encapsulated or similar components (IEC 60335-2-40:1995)		N
	PTC's, NTC's and VDR's resistors not short-circuited if used as specified by manufacturer (IEC 60335-2-40:1995)		P
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 127, the test is repeated but with fuse-link replaced by an ammeter (IEC 60335-2-40:1995)	Fuse-link not operated during 19.11 tests.	N
	Current $\leq 2,1$ times rated current of fuse-link, circuit not adequately protected (fuse-link short-circuited) (IEC-335-2-40:95)		N
	Current $\geq 2,75$ times rated current of fuse-link, circuit adequately protected (IEC 60335-2-40:1995)		N
	Current $\geq 2,1$ and $I \leq 2,75$ times rated current, fuse-link short-circuited and test carried out during specified time (IEC 60335-2-40:1995)		N
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Test for appliances with PTC heating elements (IEC 60335-2-40:1995)		N
19.14	No flames, molten metal, poisonous or ignitable gas or deformed enclosures (IEC 60335-2-40:1995)		P
	Temperatures rise shall not exceed the values shown in Table 7 (IEC 60335-2-40:1995)	The temperature rise of test corner, sheath of supply cord are lower than 175°C	P
	The electric strength test, the test voltage being:		P
	- basic insulation: 1000 V		P
	- supplementary insulation: 2750 V		P
	- reinforced insulation: 3750 V		P
19.15	Appliance with supplementary heaters and free air discharge subjected to the additional tests of (IEC 60335-2-40/A1:2000)		N
	Appliance operated under conditions of clause 11 with temperature controls shorts-circuited and appliance covered as required (IEC 60335-2-40/A1:2000)		P
	During the test the temperature rise not exceed 150°C (IEC 60335-2-40/A1:2000)		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
20	STABILITY AND MECHANICAL HAZARDS		P
20.1	Adequate stability	Fixed to the ceiling	P
	Tilting test through an angle of 10 ° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		N
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15 °		N
	Possible heating test in overturned position; temperature rise does not exceed values shown in Table 7		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	Indoor unit: installed 2,3m above the ground and grill used to prevent moving part.	P
	Protective enclosures, guards and similar parts are non-detachable		P
	Adequate mechanical strength and fixing of protective enclosures		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, if unexpectedly reclosed		P
	Not possible to touch dangerous moving parts with test finger		P
21	MECHANICAL STRENGTH		P
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling (safety requirements of ISO 5149 apply, IEC 60335-2-40:1995)		P
	No damage after three blows applied to various parts of the enclosure, impact energy $0,5 \pm 0,04$ Nm		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		P
	If necessary, repetition of groups of three blows on a new sample		N
22	CONSTRUCTION		P
22.1	Appliance marked with the first numeral of the IP system: relevant requirements of IEC 529 are fulfilled	IP20	P
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		P
	- a supply cord fitted with a plug	Fixed wiring.	N
	- a switch complying with 24.3		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided	Stated in user manual.	P
	- an appliance coupler		N
	Single-phase Class I appliance with heating elements, intended to be permanently connected to fixed wiring, incorporating single-pole switches or single-pole protective devices for the disconnection of the heating element(s): the switches/devices being connected in the phase conductor	No heating element.	N
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0,25 Nm		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N
22.5	No risk of electric shock when touching the pins of the plug		N
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N
	Electrical insulation not affected by snow penetration to the appliance enclosure (IEC 60335-2-40:1995)	Indoor unit.	N
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices	No over-pressure expected, which could lead to a hazardous situation. Refrigerant circuit is intrinsic pressure safe according to ISO 5149. See also clause 21.	N
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 which are likely to be cleaned in normal use		P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		P
22.10	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely	No non-self-resetting controls employed	N

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Clause	Requirement - Test	Result - Remark	Verdict
22.11	Reliable fixing of non-detachable parts which provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N
	No deterioration of the fixing properties of snap-in devices used in parts which are likely to be removed during installation or servicing		N
	Tests		N
22.12	Handles, knobs etc. fixed in a reliable manner		N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N
	Axial force 15 N applied to parts, the shape of which being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape of which being so that an axial pull is likely to be applied		N
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance	No sharp edges. Corners are well rounded.	P
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance	Checked	P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts	No automatic cord reels	N
	Cord reel tested with 6000 operations, as specified		N
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No spacers	N
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
22.19	Driving belts not used as electrical insulation		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material used as insulation, unless impregnated	No such materials used as insulator	N
22.22	Asbestos not used in the construction of the appliance		P
	Asbestos is used, but the liberation of dust of impregnated asbestos or of asbestos fibres into the surrounding air adequately prevented		N
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements adequately supported to prevent contact with accessible metal parts in case of rupture or sagging (IEC 60335-2-40:1995)	No bare heating elements employed.	N
	Bare heating elements only used with metal enclosures (wood or composite enclosures not allowed) (IEC 60335-2-40:1995)		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation	No SELV circuits employed	N
22.27	Parts connected by protective impedance separated by double or reinforced insulation		P
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	Class I appliances	N
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of protection against electric shock is maintained after installation	Class I appliances	N
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	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		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
22.31	Creepage distances and clearances over supplementary and reinforced insulation not reduced below values specified in 29.1 as a result of wear		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29.1 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		P
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		P
	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 29.1		N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
	See Note ("In case of doubt") (IEC 60335-1/A2:1999)		N
22.33	Conductive liquids which are or may become accessible in normal use are not in direct contact with live parts	Checked by clause 15	P
	Conductive liquids are not in direct contact with basic insulation or reinforced insulation in Class II constructions	Condensing water cannot become in contact with basic or reinforced insulation	P
	Conductive liquids in contact with live parts, not in direct contact with reinforced insulation in class II construction (IEC 60335-1/A2:1999)		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		N
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation	No handles, which are continuously held.	N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42	Class I appliance. However, capacitors are separated from accessible metal parts by double or reinforced insulation.	N
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders only used for the connection of lamps	No lamp holder employed	N
22.40	Motor-operated appliances and combined appliances, intended to be moved while in operation, are fitted with a switch to control the motor	Fixed appliance.	N
22.41	Mercury switches mounted according to the requirement	Mercury switches not employed.	N
22.42	Protective impedance consisting of at least two separate components		P
	Values specified in 8.1.4 not exceeded if any one of the components is short-circuited or open-circuited		P
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur	Single supply voltage	P
22.44	Appliances shall not have an enclosure likely to be treated as a toy by children (IEC 60335-1/A2:1999)		P
22.101	Appliances intended to be fixed, securely fixed (IEC 60335-2-40:1995)		P
22.102	Double thermal cut-out in appliances with supplementary heating elements (the first one shall be a self-resetting and the other a non-self-resetting thermal cut-out) (IEC 60335-2-40:1995)		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Thermal cut-outs of the capillary type open in the event of leakage of the capillary tube (IEC 60335-2-40:1995)		N
	Thermal cut-outs comply with 24.3 (switches) (IEC 60335-2-40:1995)		N
	Thermal cut-outs operating in Cl. 19. Shall be of the non-self-resetting type (IEC 60335-2-40:1995)		N
22.103	Non-self-resetting cut-outs independent of other control devices (IEC 60335-2-40:1995)		N
22.104	Containers of sanitary hot water heat pumps withstand twice the permissible pressure in closed containers or 0,15 MPa in open containers, without leakage or rupture (IEC 60335-2-40:1995)		N
22.105	Air or vapour cushion in closed containers not exceeding the 10% (IEC 60335-2-40:1995)		N
22.106	Pressure relief devices operating at 0,1 MPa over the permissible pressure (IEC 60335-2-40:1995)		N
22.107	Water outlet systems of open containers free from obstructions causing over-pressure (IEC 60335-2-40:1995)		N
	Vented containers of sanitary hot water heat pumps always open to the atmosphere through appropriate aperture (IEC 60335-2-40:1995)		N
22.108	Not vented open containers are subjected to a test in accordance with 22.104 to a vacuum of 33 kPa for 15 min (IEC 60335-2-40:1995)		N
22.109	Replacement of non-self-resetting thermal cut-outs does not damage other connections (IEC 60335-2-40:1995)		N
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 the enclosure (IEC 60335-2-40:1995)		N
	Test repeated five times without blowing a 3 A fuse which connects the appliance to earth (IEC 60335-2-40:1995)		N
	Electric strength test as specified in 16.3 for supplementary heating elements (IEC 60335-2-40:1995)		N
22.111	Manual resetting of thermostats not necessary after power supply interruption (IEC 60335-2-40:1995)		P
23	INTERNAL WIRING		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
23.1	Wireways smooth and free from sharp edges	Self-tapping screw cannot damage wires. Wires are kept away by fixing with cable ties. Wires close the sharp edges of the blades are kept away by cable ties.	P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings	Without wire hole in metal part	N
	Wiring effectively 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 or corners		N
	Beads inside flexible metal conduits contained within an insulating sleeve		N
23.3	Electrical connections and internal conductors wiring movable relatively to each other not exposed to undue stress		N
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings		N
	Electric strength test, 1000 V between live parts and metal parts		N
23.4	Bare internal wiring sufficiently rigid and fixed		P
23.5	The basic insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		P
23.7	Only the colour combination green/yellow used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		N
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards	Respective safety relevant components complying with international standards or equivalent national version.	P
	Motor-compressors not tested according to IEC 60335-2-34 (not necessary to meet all requirements of IEC 60335-2-34) (IEC 60335-2-40:1995)		N
24.1.1	Fixed capacitors for radio interference suppression, compliance with annex Q (IEC 60335-1/A2:1999)		P
	Small lampholders: compliance with requirements for E10 lampholders	No lampholders employed.	N
	Isolating transformers and safety isolating transformers: compliance with IEC 61558-2-6 or comply with annex R (IEC 60335-1/A2:1999)		P
	Appliance couplers for IPx0 appliances: compliance with IEC 60320		N
	Other appliance couplers: compliance with IEC 309		N
	Automatic controls: compliance with IEC 60730, unless tested with the appliance	Thermal cutouts are approved type.	P
	Switches: compliance with IEC 61058-1, unless tested with the appliance (IEC 60335-1/A2:1999)		P
24.1.2	Automatic controls complying with IEC 60730: additional tests according to this standard and 11.3.5 to 11.3.8 and Cl. 17 of IEC 60730 as type 1 controls (see number of cycles of operation IEC 60335-2-40:1995)		N
24.1.3	Switches tested under the conditions occurring in the appliance, comply with annex S (IEC 60335-1/A2: 1999)		N
	Switch tested separately according to IEC 61058-1 for 10 000 cycles of operation (IEC 60335-1/A2:1999)		N
	Switches for no-load-operation and operable only with the aid of a tool, are not subjected to the tests of clauses of IEC 61058-1 This applies also to switches operated by hand, and with interlock for no-load-operation (IEC 60335-1/A2: 1999)		N
	Switches without this interlock subjected to the test of Cl. 17.2.7 for 100 cycles of operation (IEC 60335-1/A2: 1999)		N
24.1.4	Components marked with their operating characteristics are used in the appliance in accordance with these markings		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Component which have to comply with other standard is tested separately, according to the relevant standard		P
	Component used within the limits of its marking, tested in accordance with conditions occurring in the appliance		P
	Component not marked, or not used in accordance with its marking, or no IEC standard exists, tested under the conditions occurring in the appliance		P
	Components not mentioned in table 3 tested as part of the appliance		P
24.1.5	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	Indoor fan capacitor: 329V Supplied voltage: 264V	P
	Capacitors for which 30.2.3. is applicable and permanently connected in series with a motor shall be class P1 or P2 of IEC 60252 (IEC 60335-1/A2:1999)		P
	List of components	(see appended table)	P
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs which can be reset by soldering		P
24.3	Switch intended for all-pole disconnection of stationary appliances is directly connected to the supply terminals, having a contact separation of at least 3 mm in each pole	Stated in user manual.	P
24.4	Plugs and socket-outlets for heating elements and extra-low voltage circuits, not interchangeable with plugs and	No extra-low voltage circuits.	N
	Socket-outlets or with connectors and appliance inlets complying with IEC 60083, IEC 60906-1 or IEC 60320, respectively		N
24.5	Plugs and socket-outlets etc. for interconnection cords, not interchangeable with plugs and socket-outlets or connectors and appliance inlets complying with IEC 60083 and IEC 60906-1 or IEC 60320, respectively, if direct supply from the mains could give rise to a hazard		N
24.6	Motors connected to the supply mains and having inadequate basic insulation for the rated voltage of the appliance, comply with the requirements of Annex F		N

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	The components are listed on an appended table		N
24.101	Replaceable parts of thermal control devices identified by marking (IEC 60335-2-40:1995)		N
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		P
25.1	For connection to the supply, a supply cord fitted with a plug may be provided, if (IEC 60335-2-40:1995):	Fixed wiring.	N
	- the appliance is only for indoor use (IEC 60335-2-40:1995)		N
	- it is marked with a rating of 25 A or less (IEC 60335-2-40:1995)		N
	- it complies with the code requirements of the country where it will be used (IEC 60335-2-40:1995)		N
	- pins for insertion into socket-outlets provided for connection to the supply (IEC 60335-2-40:1995)		N
	- appliance inlet not allowed (IEC 60335-2-40:1995)		N
25.2	Appliance not provided with more than one means of connection to the supply		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		N
25.3	Connection of supply wires for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support		P
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.3		P
	Appliance provided with a set of terminals allowing the connection of a flexible cord		P
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		P
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 8		P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Introduction of conduit or cable does not affect the protection against electric shock or reduce creepage distances and clearances below values specified in 29.1		P
25.5	Method for assemble supply cord with the appliance:		N
	- type X attachment		N
	- type Y attachment		N
	- type Z attachment, if allowed in part 2		N
	Type X attachment: specially prepared cord		N
	Type X attachment not used for flat twin tinsel cord		N
25.6	Plugs fitted with only one flexible cord		N
25.7	Appliance supply cord not lighter than:		P
	- braided cord (245 IEC 51)		N
	- ordinary tough rubber sheathed cord (245 IEC 53)		N
	- flat twin tinsel cord (227 IEC 41)		N
	- light polyvinyl chloride sheathed cord (227 IEC 52), appliance not exceeding 3 kg		N
	- ordinary polyvinyl chloride sheathed cord (227 IEC 53), appliance exceeding 3 kg	For power cord	P
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used		N
	PVC cord used: appliance so constructed that the supply cord is not likely to touch external metal parts in normal use		N
	PVC supply cord appropriate for higher temperatures, type Y or type Z attachment used		N
	Supply cords for outdoor use not lighter than polychloroprene sheathed flexible cord (design 245 IEC 57) (IEC 60335-2-40:1995)		N
25.8	Nominal cross-sectional area of supply cords according to table 9; rated current (A); cross-sectional area (mm ²):		P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless	No soldering used.	P

IEC 60 335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening provided with a bushing, or is so constructed, that there is no risk of damage to the supply cord when introduced		P
25.13.1	Inlet bushing so shaped as to prevent damage to the supply cord		P
	Inlet bushing not detachable		P
25.13.2	At inlet openings, the insulation between the conductor of a supply cord and the enclosure of the appliance is consisting of the insulation of the conductor, and in addition:		P
	- for Class 0 appliances: at least one separate insulation		N
	- for other appliances: at least two separate insulations		P
	Only one separate insulation is required if the enclosure at the inlet opening is of insulating material		N
	The separate insulation consists of:		P
	- the sheath of a supply cord at least equivalent to that of a cord complying with IEC 227 or 245		P
	- a lining or bushing of insulating material complying with the requirements of 29.2 for supplementary insulation		N
25.14	Supply cords adequately protected against excessive flexing	Appliance not moved while in operation	N
	Flexing test; applied force (N); number of flexing: ..		N
	The test does not result in:		N
	- short circuit between the conductors		N
	- breakage of more than 10% of the strands of any conductor		N
	- separation of the conductor from its terminal		N
	- loosening of any cord guard		N
	- damage, within the meaning of the standard, to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N

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Clause	Requirement - Test	Result - Remark	Verdict
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorages		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm):	100N, 0,35Nm	P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments so constructed and located that:	Not type X attachments.	N
	- replacement of the cord is easily possible		N
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from		N
	- accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
25.17	Adequate cord anchorages for type Y and Z attachment		N

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Clause	Requirement - Test	Result - Remark	Verdict
25.18	Cord anchorages only accessible with the aid of a tool,		P
	Or so constructed that the cord only can be fitted with the aid of a tool		N
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N
25.21	Space for supply cable for fixed wiring or supply cord for type X attachment constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage, no contact with accessible metal parts if a conductor becomes loose, etc.		P
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:	No inlets employed	N
	- live parts not accessible during insertion or removal		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N
	If necessary, electric strength test of 16.3		N
25.24	Accessible metal parts not live when detachable interconnection cords are disconnected	Interconnection cords not detachable.	N
25.25	Interconnection cords not detachable without the aid of a tool		N
26	TERMINALS FOR EXTERNAL CONDUCTORS		P
26.1.1	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connection is made by means of screws, nuts or equally effective devices		P
	Screws and nuts serve only to clamp supply conductors, except		P

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Clause	Requirement - Test	Result - Remark	Verdict
	Internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N
26.1.2	For type X attachment soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone	No soldering method used for external conductors	N
	Soldering alone used, barriers provided, creepage distances and clearances satisfactory if the conductor becomes free		N
	For type Y and Z attachment: soldered, welded, crimped and similar connections used		N
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, creepage distances and clearances satisfactory if the conductor becomes free		N
26.2	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 11; rated current (A); nominal cross-sectional area (mm ²):		P
	Terminals only suitable for a specially prepared cord		N
26.3	Terminals for the supply cord suitable for their purpose		P
	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		P
	Pull test of 5 N to the connection		P
26.4	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		P
	- the terminal does not loosen		P
	- internal wiring is not subjected to stress		P
	- creepage distances and clearances are not reduced below the values in 29.1		P
26.5	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		P

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Clause	Requirement - Test	Result - Remark	Verdict
26.6	Terminals for type X attachment, no special preparation of conductors required, and so constructed and placed that conductors prevented from slipping out, except those with a specially prepared cord and those for connection to fixed wiring		N
26.7	Terminals of the pillar type constructed and located as specified		N
26.8	Terminals for the connection to fixed wiring located close to each other, including the earthing terminal		P
26.9	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N
26.10	Terminals not accessible without removal of a non-detachable part (IEC 60335-1/A2:1999)		P
26.11	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection between live parts and accessible metal parts,		N
	And for Class II construction, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N
	Stranded conductor test, 8 mm insulation removed		N
27	PROVISION FOR EARTHING		P
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal	Metal parts are reliable earthed, earthing wire is used for fan motor and evaporator	P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N
27.2	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2,5 to 6 mm ² , and		N
	do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		N
	Clamping means adequately secured against accidental loosening		N
27.3	Earth connection "made before" and "separated after" current-carrying connections	No such construction.	N
	Current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P

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Clause	Requirement - Test	Result - Remark	Verdict
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		P
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		P
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In case of aluminium alloys precautions taken to avoid risk of corrosion	Aluminium alloys not applied.	N
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	Resistance not exceeding 0,1Ω at the specified low-resistance test	All of the samples performed the test. The biggest measured value is 0,07 Ω.	P
27.6	Printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances or complying the requirements specified for other appliances (IEC 60335-1/A1:1999)		P
28	SCREWS AND CONNECTIONS		P
28.1	Fixings and electrical connections withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N
	Screws of insulating material not used for any electrical connection		P
	Screws transmitting electrical or providing earthing continuity contact only screwing into metal (IEC 60335-1/A2:1999)		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	Type X attachment, screws to be removed for replacement of supply cord, or for users maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N
	Screws and nuts of the uses described subjected to torque test as specified, applying torque as shown in table 12 (IEC 60335-1/A2:1999)	Earthing screw, screws of enclosure, and screws of terminal: 1,2Nm, 5 times.	P

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Clause	Requirement - Test	Result - Remark	Verdict
28.2	Contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	The requirement is not applicable in circuits carrying current less than 0,5 A (IEC 60335-1/A2: 1999)		P
28.3	Space-threaded (sheet metal) screws only used for the electrical connection if they clamp these parts directly in contact with each other (IEC 60335-1/A2: 1999)		N
	Thread-cutting (self-tapping) screws not used for electrical connections, unless generating a full form standard machine screw thread		P
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		N
	Use of thread-cutting and space-threaded screws for earthing continuity according to specification	At least two self-tapping screws used	P
28.4	Screws for current-carrying mechanical connection or screws providing earthing continuity secured against loosening	Star washer used	P
	Rivets for electrical connections and for earthing continuity subject to torsion secured against loosening (IEC 60335-1/A2:1999)	No rivet for electrical connection.	N
29	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		P
29.1	Creepage distances and clearances not less than specified in table 13	(see appended table)	P
	Values increased by 4 mm in case of reinforced insulation when resonance voltage		N
	Creepage distances and clearances for circuits with voltages greater than 250 V r.m.s. (345 V peak) comply with table (IEC 60335-2-40:1995)		P
	For motor-compressors with working voltages \leq 250 V, 29.1 of IEC 60335-2-34 applies (IEC 60335-2-40:1995)		N
	Creepage distances and clearances for motor-compressors with working voltages $>$ 250 V r.m.s. and \leq 600 V r.m.s. not less than stated in Table 101 (IEC 60335-2-40:1995)		P
29.2	Distances through insulation not less than 1,0 mm for supplementary insulation, and 2,0 mm for reinforced insulation. Interpretation of this requirement: see Interpretation Sheet I-SH 02, August, 1994		P

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Clause	Requirement - Test	Result - Remark	Verdict
29.2.1	Supplementary insulation applied in thin sheet form, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3 for supplementary insulation	No such constructions.	N
	Reinforced insulation applied in thin sheet form, other than mica or similar scaly material, consists of at least three layers, and any two of the layers together withstand the electric strength test of 16.3 for reinforced insulation	No such constructions.	N
29.2.2	Supplementary or reinforced insulation inaccessible and does not exceed the maximum permissible temperature values		N
	Supplementary or reinforced insulation, after conditioning as specified, withstands the electric strength test as specified in 16.3, both at the oven temperature and room temperature		N
30	RESISTANCE TO HEAT, FIRE AND TRACKING		P
30.1	See Annex H		P
	Relevant external parts of non-metallic material		P
	Parts supporting live parts and parts providing supplementary or reinforced insulation sufficiently resistant to heat		P
	Ball-pressure test with a force of 20 N, diameter of impression not exceeding 2 mm:	(see appended table)	P
	External parts: at 75 °C	Enclosure	P
	Parts supporting live parts: at 125 °C	Terminal block, PCB Transformer bobbin	P
	Parts providing supplementary or reinforced insulation: temperature (°C):		P
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Possible burning test of relevant parts according to Annex J		N
	Glow-wire test of Annex K made at temperature 550 °C		N
30.2.3	Appliances operated while unattended, possible bad-connection test according to Annex L		N
	Glow-wire test of Annex K made at 850 °C	Terminal block, PCB Transformer bobbin	P
	Possible needle-flame test according to Annex M		N

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Clause	Requirement - Test	Result - Remark	Verdict
30.2.4	Parts of non-metallic material within a distance of 50 mm from parts not withstanding the tests of 30.2.2 or 30.2.3, subjected to the needle-flame test of Annex M		N
30.3	Relevant insulating material have adequate resistance to tracking	(see appended table)	P
	Tracking test at 175 V according to Annex N	Terminal block, PCB Transformer bobbin	P
	Tracking test at 250 V according to Annex N		N
	No hazard other than fire, tracking test at 175 V according to Annex N, and in addition needle-flame test of surrounding parts according to Annex M		N
	Possible needle-flame test of non-metallic material		N
31	RESISTANCE TO RUSTING		P
	Relevant ferrous parts adequately protected against rusting		P
A	ANNEX A, NORMATIVE REFERENCES		P
	The annex contains a list of standards which are referred to, and thus become part of, this standard		P
C	ANNEX C, AGEING TEST ON MOTORS		N
	Test carried out when doubt with regard to the classification of the insulating system of a motor winding		N
E	ANNEX E, MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Methods of measuring creepage distances and clearances, specified in 29.1, indicated in 10 different cases		P
G	ANNEX G, CIRCUIT FOR MEASURING LEAKAGE CURRENTS		P
	A suitable circuit for measuring leakage currents is shown		P
H	ANNEX H, SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		P
J	ANNEX J, BURNING TEST		N
	The burning test is made in accordance with IEC 707, and method FH is used		N
	Category FH3 applies, the maximum burning rate being 40 mm/min		N
K	ANNEX K, GLOW-WIRE TEST		P

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Clause	Requirement - Test	Result - Remark	Verdict
	The glow-wire test is made in accordance with IEC 695-2-1 (clause numbers between parentheses refer to IEC 695-2-1)		P
(4)	Description of test apparatus: the last paragraph before the note is replaced		P
(5)	Severities: the duration of application of the tip of the glow-wire to the specimen being (30 ± 1) s		P
(10)	Observations and measurements: item c) does not apply		P
L	ANNEX L, BAD-CONNECTION TEST WITH HEATERS		N
	The bad-connection test with heaters is made in accordance with IEC 695-2-3 (clause numbers between parentheses refer to IEC 695-2-3)		N
(3)	General description of the test: additions concerning crimped connections		N
(4)	Description of test apparatus: replacements of some of the test specifications and the first paragraph of the note		N
(6)	Severities: the duration of application of the test power being (30 ± 1) min		N
(8)	Test procedure: subclause 8.6 replaced		N
(11)	Information to be given in the relevant specification: item h), the first dashed paragraph, does not apply		N
M	ANNEX M, NEEDLE-FLAME TEST		N
	The needle-flame test is made in accordance with IEC 695-2-2 (clause numbers between parentheses refer to IEC 695-2-2)		N
(4)	Description of the apparatus: the sixth paragraph is replaced		N
(5)	Severities: the duration of application of the test flame is (30 ± 1) s		N
(8)	Test procedure: some changes in the test specifications		N
(10)	Evaluation of the test results: addition in the test specification		N
N	ANNEX N, PROOF TRACKING TEST		P
	The proof tracking test is made in accordance with IEC 112 (clause numbers between parentheses refer to IEC 112)		P
(3)	Test specimen: the last sentence of the first paragraph does not apply		P

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Clause	Requirement - Test	Result - Remark	Verdict
(5)	Test apparatus: some changes in the subclauses		P
(6)	Procedure: adjustments of the test specifications		P
P	ANNEX P, SEVERITY OF DUTY CONDITIONS OF INSULATING MATERIAL WITH RESPECT TO THE RISK OF TRACKING		P
	Recognition of different duty conditions with respect to the risk of tracking		P
Q	ANNEX Q, CAPACITORS		N
	Section one – General		N
1.5	Terminology		N
1.5.3	Applicable		N
	Class X capacitors tested according to subclass X2		N
1.5.4	Applicable		N
1.6	Marking		N
	Items a) and b) are applicable		N
	Section three – Quality assessment procedures		N
3.4.3.2	Tests		N
	Table II is applicable as follows		N
	- Group 0: subclauses 4.1.,4.2.1 and 4.2.5		N
	- Group 1 A: subclause 4.1.1		N
	- Group 2: subclause 4.12		N
	- Group 3: subclause 4.13 and 4.14		N
	- Group 6: subclause 4.17		N
	- Group 7: subclause 4.18		N
	Section four – Test and measurement procedures		N
4.1	Visual examination and check the dimensions		N
4.2	Electrical tests		N
4.2.1	Applicable		N
4.2.5	Applicable		N
4.2.5.2	Only table IX is applicable		N
4.12	Only insulation resistance and voltage proof are checked		N
4.13	Applicable		N
4.14	Applicable with subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7		N

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Clause	Requirement - Test	Result - Remark	Verdict
4.14.7	Only insulation resistance and voltage proof are checked together with a visual examination to ensure that there is not visible damage		N
4.17	Applicable		N
4.18	Applicable		N
R	ANNEX R, SAFETY ISOLATING TRANSFORMER		N
	Safety isolation transformer tested with the appliance comply with this standard and the following requirements:		N
R.7	Marking and instruction		N
R.7.1	Transformer for specific use shall be marked with:		N
	- name, trade-mark or identification mark of the manufacturer or responsible vendor		N
	- model or type reference		N
R.17	Overload protection of transformers and associated circuits		N
	Fail-safe transformer shall comply with 15.5 of IEC 61558-1		N
R.22	Construction		N
	Subclauses 19.1. and 19.1.2. of IEC 61558-2-6 are applicable		N
R.29	Creepage distances, clearances and distances through insulation		N
	The distances specified in items 2 a, 2 b, and 3 in table 13 of IEC 61558-1 apply		N
S	ANNEX S – SWITCHES		P
	Switches tested with the appliance comply with this standard and with the following clauses of IEC 61058-1:		P
	Test of EN 61058-1 carry out under the conditions occurring in the appliance		P
	Before the test, switches are operated 20 times without load		P
8	Marking and documentation		P
	Switches are not required to be marked, except that incorporated switches shall be marked		P
13	Mechanism		N
	This clause is applicable		N
15	Insulation resistance and dielectric strength		N
	15.1 and 15.2 not applicable		N

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Clause	Requirement - Test	Result - Remark	Verdict
	15.3 is applicable for disconnection and micro-disconnection		N
17	Endurance		P
	Compliance is checked on three separate appliances or switches		P
	At the end of the tests, the temperature rise of terminals shall not have increased by more than 30 K above the temperature rise measured in clause 11		P
18	Clearances, creepage and distances through insulation		P
	Only applicable for live parts of different potential		P
	DIFFERENCES EXISTING IN SOME COUNTRIES (IEC 60335-1)		N
2.5.2	U.S.A.: safety extra-low voltage not exceeding 30 V (42,2 V peak)		N
2.8.5	AUSTRALIA, NEW ZEALAND: disconnection of supply not considered as a manual operation		N
3	AUSTRALIA: the d.c. component in appliance neutral is limited		N
4.7	CHINA, JAPAN AND U.S.A.: ambient testing temperature is 25 °C ± 10 °C		N
4.14	U.S.A.: accessible metal parts not liable to become energised do not need earthing; accessible non-metallic parts provide only basic insulation		N
6.1	AUSTRALIA, AUSTRIA, CZECH REPUBLIC, FINLAND, FRANCE, GERMANY, HUNGARY, IRELAND, ITALY, NETHERLANDS, NEW ZEALAND, POLAND, SINGAPORE, SWEDEN, UNITED KINGDOM AND YUGOSLAVIA: Class 0 and Class I appliances not allowed		N
6.2	U.S.A.: methods for protection against harmful ingress of water different from IEC 529		N
7.1	U.S.A.: IP number not required to be marked		N
7.6	U.S.A.: some of these symbols not used		N
7.8	U.S.A.: additional methods for identifying earthing terminals for neutral conductors		N
7.12.2	AUSTRALIA, JAPAN, NEW ZEALAND AND U.S.A.: the 3 mm contact separation not applicable		N
7.14	U.S.A.: different tests used		N
8.1.1	U.S.A.: test not necessarily repeated with the 20 N force		N

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Clause	Requirement - Test	Result - Remark	Verdict
	U.S.A.: protection against contact with live parts of the lamp cap not required		N
8.1.2	U.S.A.: test pin and test probe not used		N
8.1.3	U.S.A.: test pin and test probe not used		N
8.1.5	U.S.A.: built-in and fixed appliances and appliances in separate units not to be protected by at least basic insulation before installation		N
9	U.S.A.: motors required starting without blowing a quick-acting fuse		N
10.1	U.S.A.: positive limits of 5% for heating appliances and 10% for motor-operated appliances required; no negative deviations		N
10.2	U.S.A.: positive limits of 5% for heating appliances and 10% for motor-operated appliances required; no negative deviations		N
11.4	U.S.A.: heating appliances and heater circuits operated at rated power input or rated voltage (the more severe); the rest at rated voltage		N
11.5	U.S.A.: heating appliances and heater circuits operated at rated power input or rated voltage (the more severe); the rest at rated voltage		N
11.6	U.S.A.: heating appliances and heater circuits operated at rated power input or rated voltage (the more severe); the rest at rated voltage		N
11.8	U.S.A.: temperature rise limits different for certain materials (Table 3)		N
13.2	U.S.A.: test circuit and some leakage current limits different		N
13.3	U.S.A.: certain test voltages different		N
	U.S.A.: a 500 VA test transformer used		N
15.1.1	U.S.A.: IP system not used; tests different		N
15.1.2	U.S.A.: IP system not used; tests different		N
15.3	U.S.A.: relative humidity of $(88 \pm 2) \%$ and temperature of $32 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ during test		N
16.2	U.S.A.: test at nominal supply voltage; leakage current values different		N
16.3	U.S.A.: some test voltages and methods different		N
19.1	U.S.A.: circuit protection device permitted		N
19.2 19.4	U.S.A.: tests normally at nominal supply voltage or rated power input		N

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Clause	Requirement - Test	Result - Remark	Verdict
19.13	U.S.A.: temperature rise limits of Table 7 not applicable		N
20.1	U.S.A.: stability test at 15 degrees not conducted; test in overturned position judged under abnormal test criteria		N
21	U.S.A.: impact force applied with a falling steel ball		N
22.1	U.S.A.: IP system not used; tests not the same as in IEC 529		N
22.2	FRANCE AND NORWAY: single-phase Class I appliances with heating elements not complying because of the supply system		N
	NORWAY: double-pole switches or protective devices required		N
	U.S.A.: set of terminals for connection of a flexible cord generally not permitted		N
	U.S.A.: disconnection of the neutral not necessary for all stationary appliances		N
	IRELAND AND UNITED KINGDOM.: plug not required in supply cord		N
22.6	U.S.A.: test not conducted		N
22.11	U.S.A.: different criteria for snap-on constructions required		N
22.12	U.S.A.: positive forms of securement required		N
22.14	U.S.A.: sharp edges testing device used to evaluate sharp edges		N
22.35	U.S.A.: double or reinforced insulation not required on metal parts		N
22.36	U.S.A.: double or reinforced insulation not required on metal parts		N
23.5	U.S.A.: different requirements for insulated internal wiring		N
23.7	NEW ZEALAND AND U.S.A.: green wiring used instead of green/yellow wiring		N
	U.S.A.: requirement applies to accessible wiring during supply connections		N
24.1.3	U.S.A.: different number of cycles required; note 2 not applicable		N
	U.S.A.: note not applicable		N
24.3	U.S.A.: requirement for 3 mm contact separation not applicable		N

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Clause	Requirement - Test	Result - Remark	Verdict
25.1	IRELAND AND UNITED KINGDOM: plug not required in supply cord		N
25.3	DENMARK, FINLAND, NETHERLANDS, NORWAY AND SWEDEN: set of supply leads not permitted		N
	U.S.A.: set of terminals for connection of a flexible cord generally not permitted		N
25.8	AUSTRALIA, NEW ZEALAND AND U.S.A.: different conductor cross-sectional areas		N
	AUSTRALIA, NEW ZEALAND: 0,5 mm ² supply cords not allowed for Class I appliances		N
25.10	U.S.A.: green insulation also permitted		N
25.14.2	U.S.A.: only one separate insulation required		N
25.16	AUSTRALIA: fully removable cord anchorages allowed		N
	U.S.A.: pull of 35 lbs applied; torque test not used		N
26.2	U.S.A.: cross-sectional areas according to AWG		N
26.4	U.S.A.: tests only apply to terminals for connection to fixed wiring		N
26.5	U.S.A.: tests only apply to terminals for connection to fixed wiring		N
27.2	U.S.A.: different requirements for screwless terminals (IEC 685-2-1 not used)		N
28.1	U.S.A.: this type of tests not required		N
29.1	U.S.A.: different creepage distances and clearances may be applicable		N
30.1	U.S.A.: minimum value for ball-pressure test for parts retaining live parts is 95 °C or 40 K higher than Cl. 11 temperature rise; for enclosures, 75 °C is the minimum value or mould-stress test conducted at 10 K above Cl. 11 temperatures		N
30.2.1	U.S.A.: ignition test not used to assure a slow burning rate		N
30.2.4	AUSTRALIA: printed circuit boards at mains voltage shall be FV-0 or FV-1 or meet needle-flame test		N
B.7.12	SWEDEN AND SWITZERLAND: appliances with non-replaceable batteries with a content of mercury or cadmium exceeding 0,025% by weight adequately marked		N
B.21.101	U.S.A.: different requirement		N
F.1.1	U.S.A.: annex applies to motors with a working voltage ≤ 30 V		N

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Clause	Requirement - Test	Result - Remark	Verdict
	DIFFERENCES EXISTING IN SOME COUNTRIES (IEC 60335-2-40)		N
3	AUSTRALIA: the D.C. component in appliance neutral is limited		N
6.1	JAPAN: Class 0I appliances allowed		N
11.8	SWEDEN: temperature of the wooden walls in test casing limited to 85 °C		N

10	TABLE: input power and current					P
	Operation mode:.....	Cooling and heating				P
	Test voltage (V):	230				—
Model	Rated cooling (W)	Rated heating (W)	Measured cooling (W)	Measured heating (W)	Deviation cooling (%)	Deviation heating (%)
DNG50 DCI	167	167	170	171	1,8%	2,4%
DNG60 DCI	195	195	201	202	3,1%	3,6%
DNG80 DCI	260	260	271	271	4,2%	4,2%

11.8	TABLE: TEMPERATURE RISE MEASUREMENTS					P
DNG60 DCI	Operation mode.....	Cooling and heating				P
	t1 (°C)	23				—
	t2 (°C)	Heating: 27/--°C Cooling: 32/23°C				—
	Test voltage (V)	254V				—
Temperature T of part:		Measured temperature (°C)		Limit temperature (°C)		
Fan motor enclosure		42,4		150		
Transformer winding		58,5		110		
Fan motor capacitor enclosure		35,0		T70		
Ambient of fan motor replay (5mm)		41,9		T55		
Ambient of compressor replay (5mm)		40,1		T55		
Terminal block		36,2		Material test		
Main PCB		37,3		Material test		
	Winding temperature rise measurements:					P
	K = 234,5 for copper windings	Copper winding			-	
	K = 225 for aluminum windings	N/A			-	
	Insulation class	See below			-	
Model	R1	R2	T(°C)	Limited T(°C)	Class	
ELEI-126G	63,2/43,1	74,6/51,1	69,4/70,1	120	B	

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Clause	Requirement - Test	Result - Remark	Verdict

Remark 1: The heating test was performed at the high speed and low speed of fan motor, the highest value was listed.
 Remark 2: The test was performed on heating and cooling mode, the highest value was listed.

11.8	TABLE: temperature rise measurements				P
DNG80 DCI	Operation mode.....		Cooling and heating		P
	t1 (°C)		25		—
	t2 (°C)		Heating: 27/--°C Cooling: 32/23°C		—
	Test voltage (V)		254V		—
Temperature T of part:			Measured temperature (°C)	Limit temperature (°C)	
Fan motor enclosure			29,4	150	
Transformer winding			49,5	110	
Fan motor capacitor enclosure			32,7	T70	
Ambient of fan motor replay (5mm)			41,9	T55	
Terminal block			32,9	Material test	
Main PCB			36,2	Material test	
Winding temperature rise measurements:					P
K = 234,5 for copper windings			Copper winding		-
K = 225 for aluminum windings			N/A		-
Insulation class			See below		-
Model	R1	R2	T(°C)	Limited T(°C)	Class
ELEI-158G	43,3/45,6	49,5/51,4	59,8/55,7	120	B
Remark 1: The heating test was performed at the high speed and low speed of fan motor, the highest value was listed. Remark 2: The test was performed on heating and cooling mode, the highest value was listed.					

13.2	TABLE: leakage current measurements at operating temperature				P
Heating appliances: at 1.15 times rated input (W) :		N/A		—	
Motor-operated and combined appliances: at 1.06 times rated voltage (V)		254V		—	
Leakage current I between:			I (mA)	Required I (mA)	
L/N-enclosure			0,063	0,25	
L/N-earthing part			0,88	3,5	

Remark: the test was performed on all models and highest value was listed.

13.3	TABLE: electric strength measurements at operating temperature				P
Test voltage applied between:			Test voltage (V)	Breakdown	

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Clause	Requirement - Test	Result - Remark	Verdict
L/N – GND		1000	No
L/N – enclosure of indoor unit (aluminium foil)		3750	No
Remark: the test was performed on all models.			

16.2	TABLE: LEAKAGE CURRENT MEASUREMENTS		P
	At 1,06 times rated voltage (V)	254V	-
Measured between:		Measured (mA)	Limit (mA)
L/N –GND		0,54	3,5
L/N – non-conductive enclosure		0,023	0,25
Remark: the test was performed on all models and highest value was listed.			

16.3	TABLE: electric strength measurements		P
Test voltage applied between:		Test voltage (V)	Breakdown
L/N – GND		1250	No
L/N - enclosure of indoor unit (aluminium foil)		3750	No
Point where motor winding connected with capacitor-protective earth		1900	No
Point where compressor winding connected with capacitor-protective earth		1900	No
Remark: the test was performed on all models.			

17.1	TABLE: OVERLOAD PROTECTION		P
	at 1,06 - 0,94 times rated voltage (V).....	254V	-
	Test model:	PE41230A006Ga	-
Short-circuit of:		Measured temperature (°C)	Limit temperature (°C)
SC secondary winding (pri/sec):		120/121	225
Result			
P			
Remark: 5 minutes later, overload protector of the transformer operated.			

19.2	TABLE: lock motor test, temperature rise measurements				P
Test procedure	Supplied with rated voltage (240V)				-
Duration	15 days, after 3 days HV test performed				-
Ambient temperature [°C]	21				-
Measured samples	Insulation Class	Enclosure temperature [°C]	Winding temperature [°C]	HV test performed with 1250V	Leakage current [mA]

IEC 60 335-2-40					
Clause	Requirement - Test			Result - Remark	Verdict
ELEI-126G	B	123	168 (Protector operated within 1 h)	P	0,009
ELEI-158G	B	145	199 (Protector operated within 1 h)	P	0,009

19.11.2	TABLE: fault condition tests:			P
	Ambient temperature (°C):		Cooling: 32/23(IU), 43/26(OU) Heating: 27/-(IU), 24/18(OU)	-
	Test voltage (V):		240	-
Fault condition	Phenomenon			Hazard
1. SC indoor fan motor capacitor (cooling)	The indoor fan motor stopped. a few minutes later, appliance stopped.			No
2. SC indoor fan motor capacitor (heating)	The appliance stopped.			No
3. OC indoor fan motor capacitor (cooling)	The indoor fan motor stopped. a few minutes later, appliance stopped.			No
4. OC indoor fan motor capacitor (heating)	The fan operated slowly. The appliance worked normally with input increased and a few minutes later the compressor stopped.			No
Remark: the "SC" means short-circuited, "OC" means open-circuited;				

24.1	TABLE: COMPONENTS				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity
Remark 1: For thermal cut-outs, thermal links of compressors, fan motors and transformers which have been approved according to relevant IEC standards, the manufacturer, types and characters not listed in the GDF but should be in this scope authorized by original certification bodies.					
Built-in components with windings: (motors, transformers, magnetic coils etc.)					
Fan motor for DNG 50* DNG 60*	Lan Chang	ELEI-126G	230V, Class B Main: 68.51±10%Ω Aux.: 43.43±10%Ω (at 20°C)	IEC 60335-2-40	Tested with appliance
Fan motor for DNG 72* DNG 80*	Lan Chang	ELEI-158G	230V, Class B Main: 81.09±10%Ω Aux.: 42.71±10%Ω (at 20°C)	IEC 60335-2-40	Tested with appliance
Transformer in controller	Helms-Man	PE41230A006Ga	Pri.:230V;50/60Hz Sec.: 12.5V; 500mA Class B	IEC 60335-2-40	Tested with appliance
Built-in components : (switches, thermostats, plugs, wires, capacitors, sockets, RFI-filters etc.)					
Terminal (IU)	Ronen Wolf	RW-52 P6/90	400V,25A	IEC 60335-2-40	Tested with appliance
Safety components in controller					

IEC 60 335-2-40					
Clause	Requirement - Test		Result - Remark	Verdict	
Controller	EHK	DCI-STORM	--	IEC 60335-2-40	Tested with appliance
Fuse in controller	Optional	T type	T 3.15A/250VAC	IEC 60127	TUV oy any CENELEC
Protector in fan motor	Texas Instrument	8CM	250V 6A, 135°C	IEC 60730	KEMA 2014531.02
Thermal link in transformer	Joint Force Metal Research & Co.	M30	OperationTemp.: 125°C AC250V 16A	IEC 60691	TUV 50034789
Fan motor Capacitor	Optional	Optional	8µF/450V, P2	IEC 60252	TUV or any CENELEC
Terminal block in controller	DECA	T36-EM11-08	450 VAC, 4mm ²	EN 60998-1	VDE: 126315
Varistor	WELKIN	TVR14561KS42D	AC350V T85°C	IEC 61051	VDE: 005944 UG
Alternate	Nippon Chemicon	TNR14V561K	AC350V T85°C	IEC 61051	VDE: 118623 UG
Alternate	Harris	V350LA20	AC350V T85°C	IEC 61051	UL: E75961
Relay (K3, K5, K6, K7, K8, K9)	Matsushita	ALD112	250VAC 3A Temp 55°C or above	IEC 60730	VDE: 117344UG
Alternate	HongFa	JZC-43F/012HS	250VAC 3A Temp 55°C or above	IEC 60730	VDE: 40002220
Alternate	OMRON	G5NB-1A-12VDC	250VAC 3A Temp 55°C or above	IEC 60730	VDE: 137575
Relay (K2)	Matsushita	JQ1AP-12V	250VAC 10A Temp 55°C or above	IEC 60730	VDE: 005336UG
Alternate	HongFa	JZC-33F-012HS	250VAC 10A Temp 55°C or above	IEC 60730	VDE:125611
Alternate	OMRON	G5Q-1A-12VDC	250VAC 10A Temp 55°C or above	IEC 60730	VDE: 4009467
Filter capacitor X2 (C46)	Iskra	KNB1530 series	0.1µF/275VAC Temp 85°C or above	IEC 60384-14	VDE: 139447 L

IEC 60 335-2-40					
Clause	Requirement - Test			Result - Remark	Verdict
Alternate	Tenta	MEX series	0.1µF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 119119
Alternate	Iskra	KNB1560 series	0.1µF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 139106
Alternate	Evox Rifa	PHE840M series	0.1µF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 122222
Alternate	Okaya	RE series	0.1µF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 94750
Filter capacitor X2 (C20)	Iskra	KNB1530 series	10nF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 139447 L
Alternate	Tenta	MEX series	10nF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 119119
Alternate	Iskra	KNB1560 series	10nF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 139106
Alternate	Evox Rifa	PHE840M series	10nF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 122222
Alternate	Okaya	RE series	10nF/275VAC Temp 85°C or above	IEC 60384- 14	VDE: 94750
PCB	KINWONG	FR4	94V0	--	UL: E243951
Alternate	SHENZHEN HENGBAOSHI	FR4	94V0	--	UL: E200704

29.1	TABLE: MINIMUM CREEPAGE DISTANCES AND CLEARANCES								P	
creepage (cr) and clearance (cl) distance (mm):	Class III appliances		Other appliances, working voltage:						Remark	
	cr	cl	< 130 V		130-250 V		250-440 V			
cr			cl	cr	cl	cr	cl	cr	cl	
Between live parts of different potential										
-if protected against deposition of dirt	1,0	1,0	1,0	1,0	<u>3,1</u>	<u>3,1</u>	2,0	2,0		P
-if not protected against deposition of dirt	2,0	1,5	2,0	1,5	<u>4,0</u>	<u>4,0</u>	<u>4,0</u>	<u>3,0</u>		P
-if lacquered or enameled windings	1,0	1,0	1,5	1,5	<u>4,0</u>	<u>4,0</u>	3,0	3,0		P
- for positive temperature coefficient (PTC) resistors including their connecting wires, if protected against deposition of moisture or dirt	—	—	1,0	1,0	1,0	1,0	—	—		N

IEC 60 335-2-40									
Clause	Requirement - Test				Result - Remark				Verdict

CI and Cr measured between:									
<ol style="list-style-type: none"> 1. L and N on PCB; 2. L and N on terminal block; 3. Input of transformer; 4. Winding of fan motor. 									
The shortest value is considered.									
Between live parts and other metal parts over basic insulation:									
- if protected against deposition of dirt:									N
- if of ceramic material, pure mica and similar material	1,0	1,0	1,0	1,0	2,5	2,5	—	—	N
- if of other material	1,5	1,0	1,5	1,0	3,0	2,5	—	—	N
- if not protected against deposition of dirt	2,0	1,5	2,0	1,5	4,0	4,0	—	—	P
- if the live parts are lacquered or enamelled windings	1,0	1,0	1,5	1,5	4,0	4,0	—	—	P
- at the end of tubular sheathed-type heating elements	—	—	1,0	1,0	1,0	1,0	—	—	N
CI and Cr measured between:									
<ol style="list-style-type: none"> 1. Live part on PCB and earthing metal part; 2. Live part on terminal and earthing metal part; 3. Winding of transformer/fan motor and enclosure/body; 4. Live part on PCB and lower voltage parts; 									
The shortest value is considered.									
Between live parts and other metal parts over reinforced insulation									
- if the live parts are lacquered or enamelled windings	—	—	6,0	6,0	6,0	6,0	—	—	N
- for other live parts	—	—	8,0	8,0	10,0	10,0	—	—	P
CI and Cr measured between:									
1. Test finger and internal live part through the gap of enclosure.									
The shortest value is considered.									
between metal parts separated by supplementary insulation	—	—	4,0	4,0	4,0	4,0	—	—	N
between live parts in recesses in the mounting face of the appliance and the surface to which it is fixed	2,0	2,0	6,0	6,0	6,0	6,0	—	—	N

30. 1	TABLE: material test				P			
Part name/No.	Ball-pressure test		Glow-wire test		Tracking test (V)			
	Temp.(°C)	Diameter (mm)	Temp. (°C)	Burning time(s)				
Enclosure	75	1,3	550	0	/			
Terminal block	125	1,2	850	0	175			

IEC 60 335-2-40						
Clause	Requirement - Test			Result - Remark		Verdict
Transformer bobbin	125	1,8	850	0		175
PCB	125	0,8	850	0		175
Remark: the test was performed on all materials and highest value was listed.						

--End of report--

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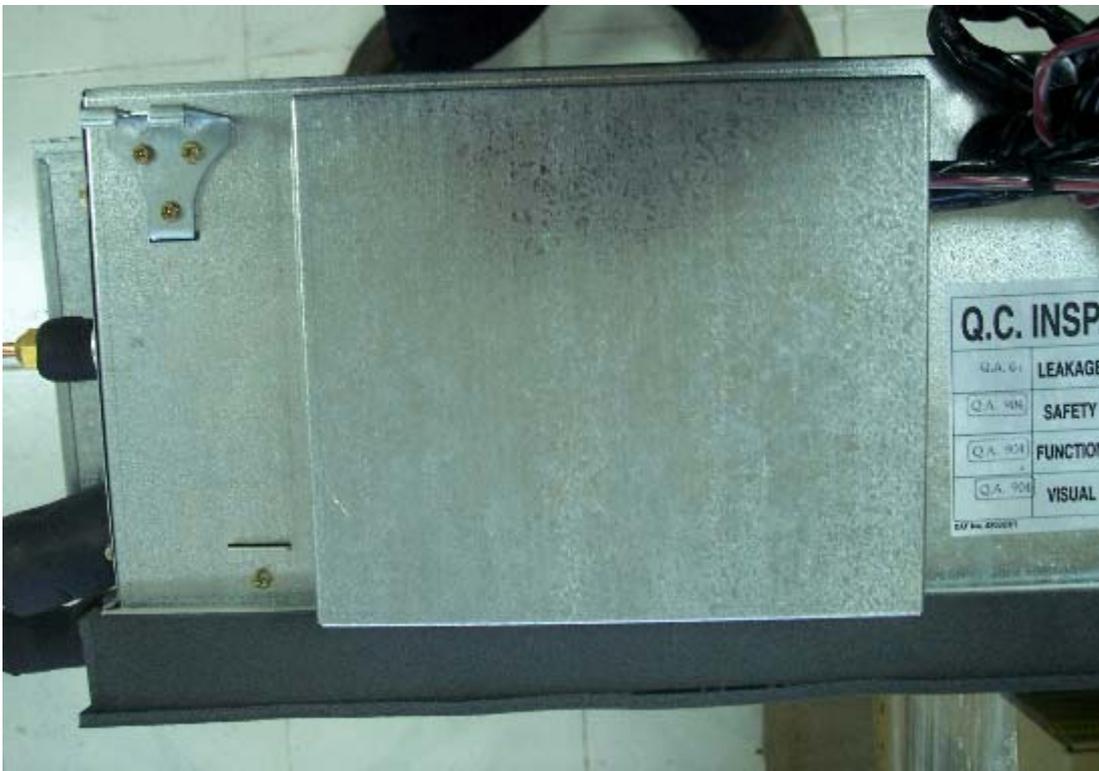
Model: DNG series



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Picture 1



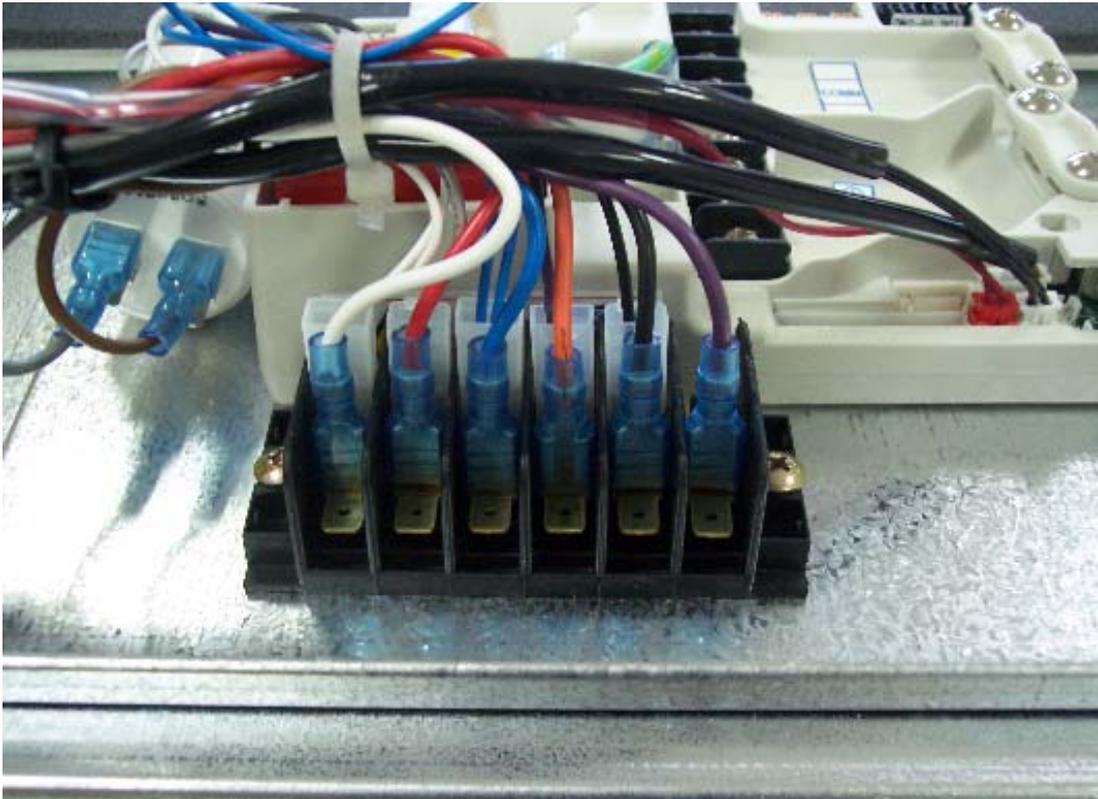
Picture 2



Picture 3



Picture 4



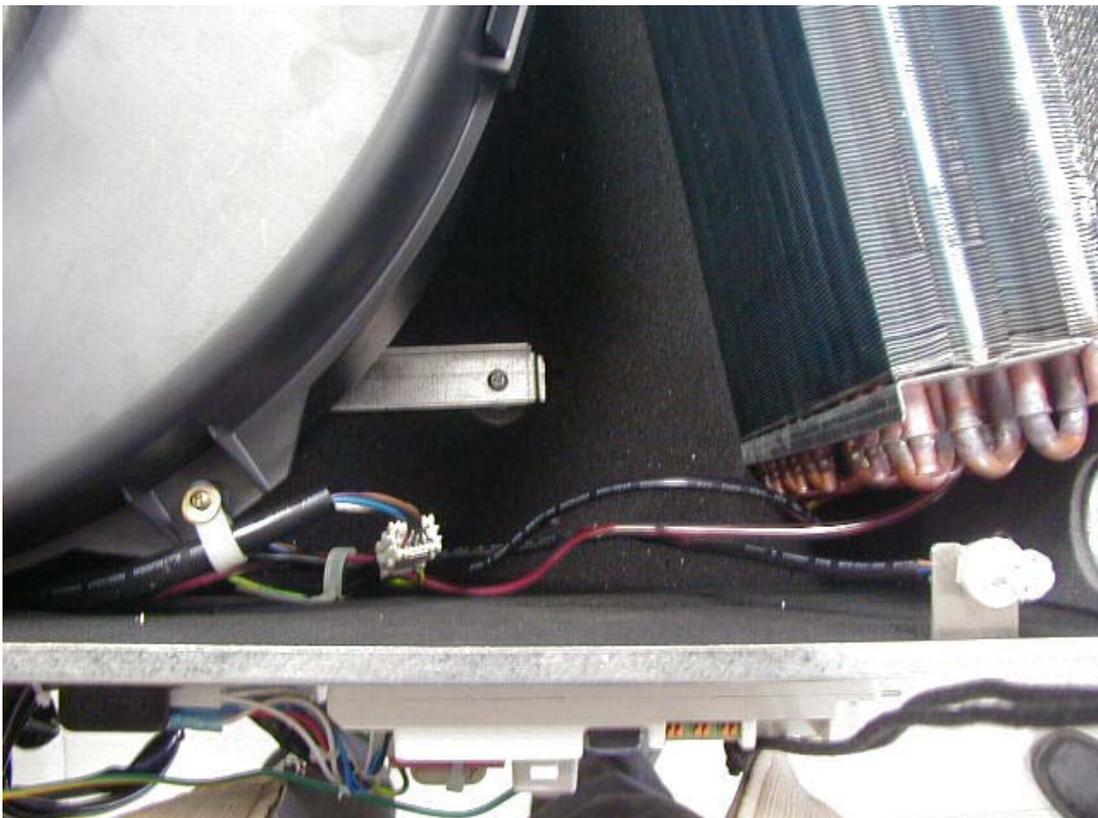
Picture 5



Picture 6



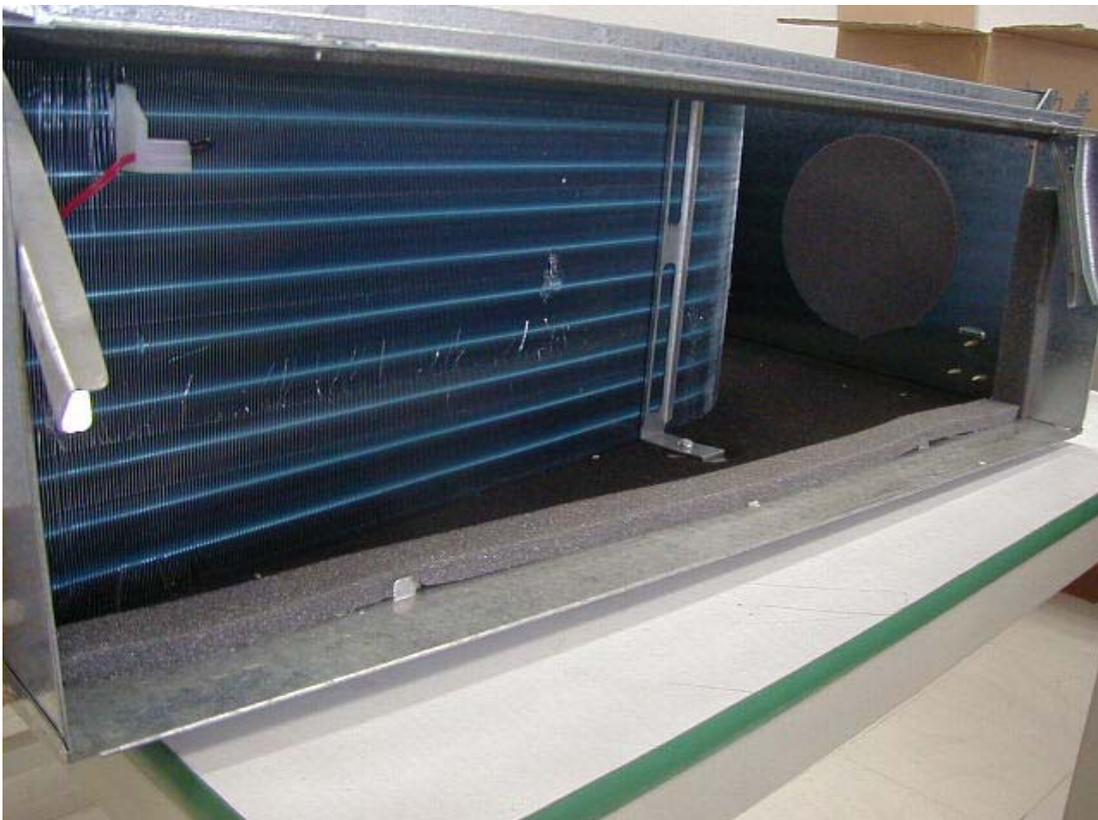
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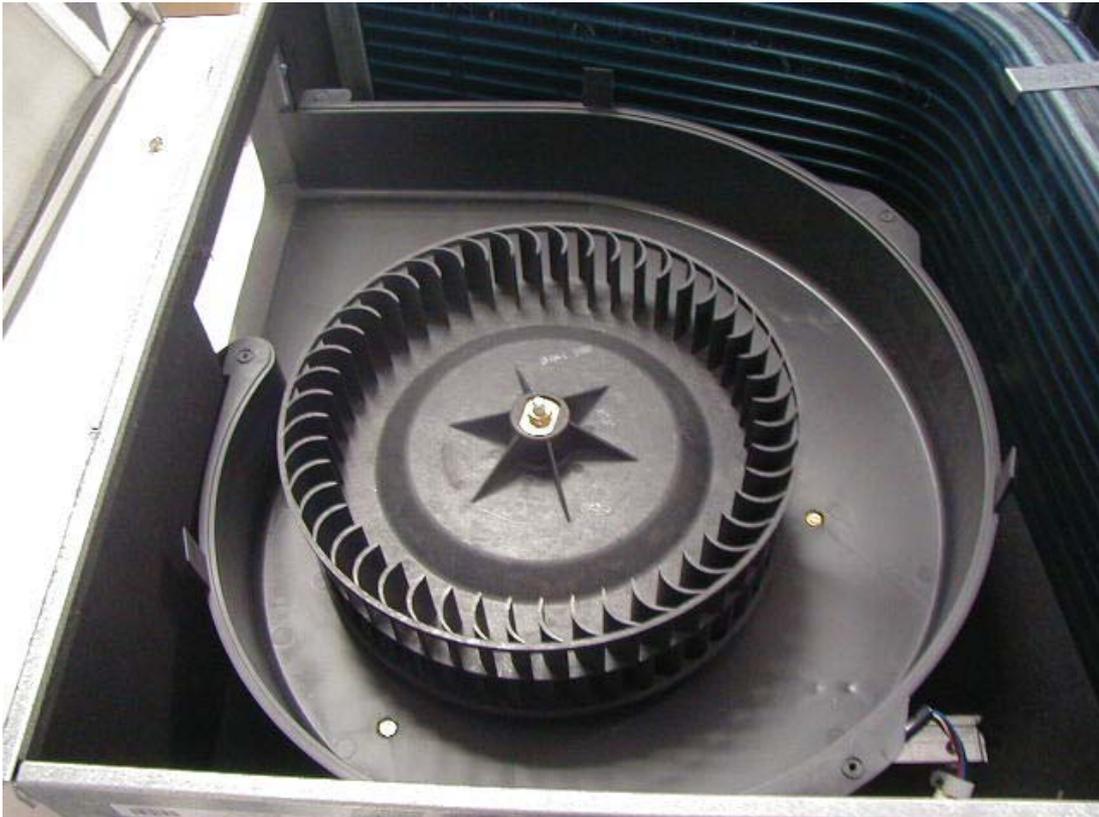
Picture 8



Picture 9



Picture 10



Picture 11



Picture 12

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Model: DNG series



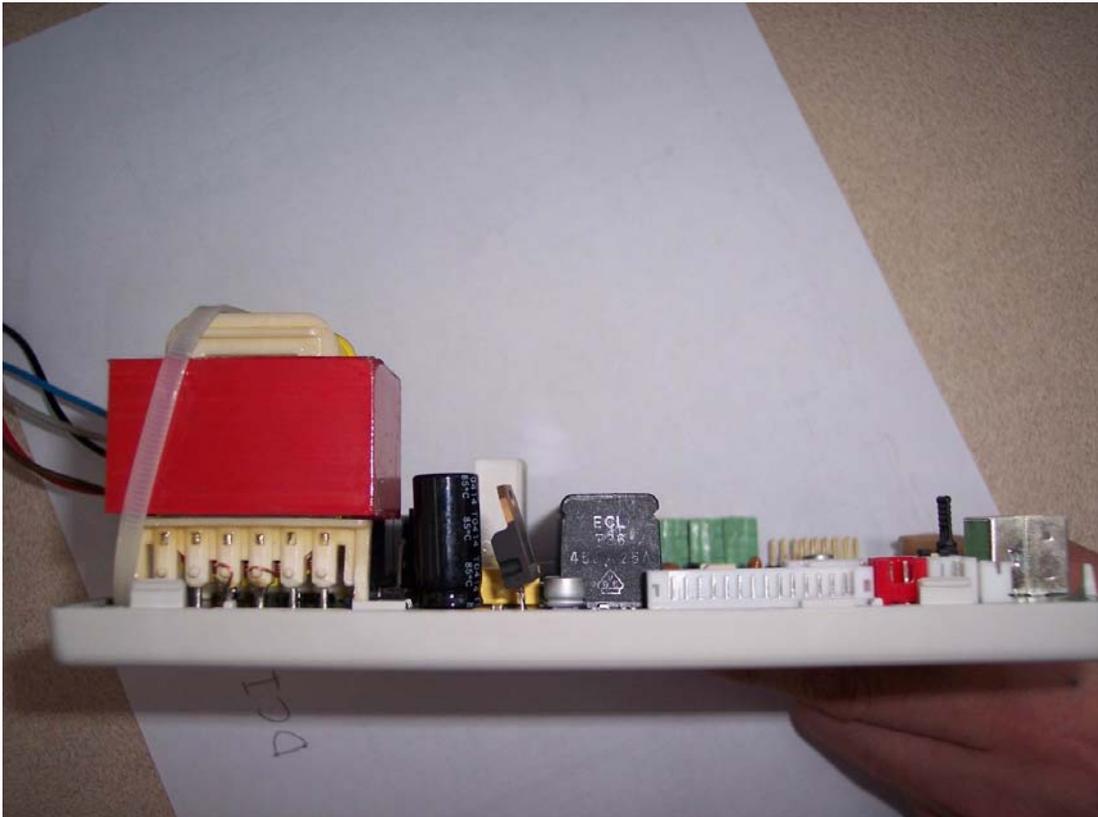
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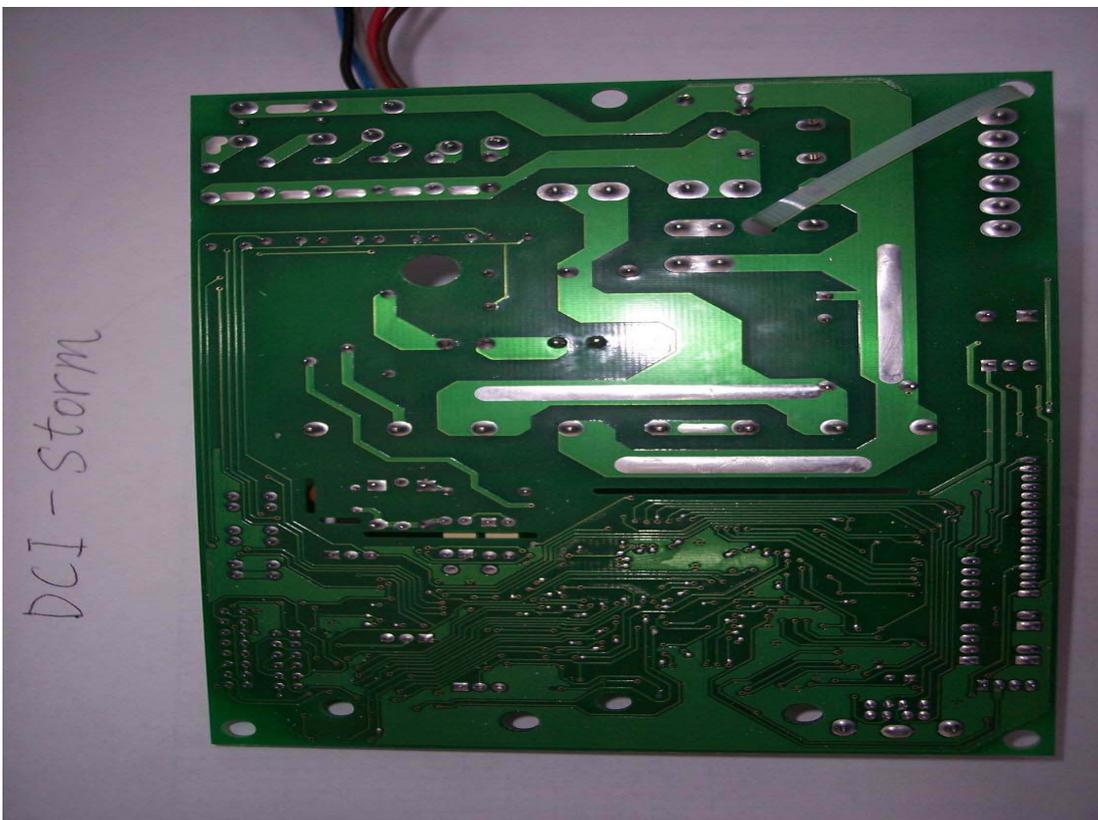
Picture 13



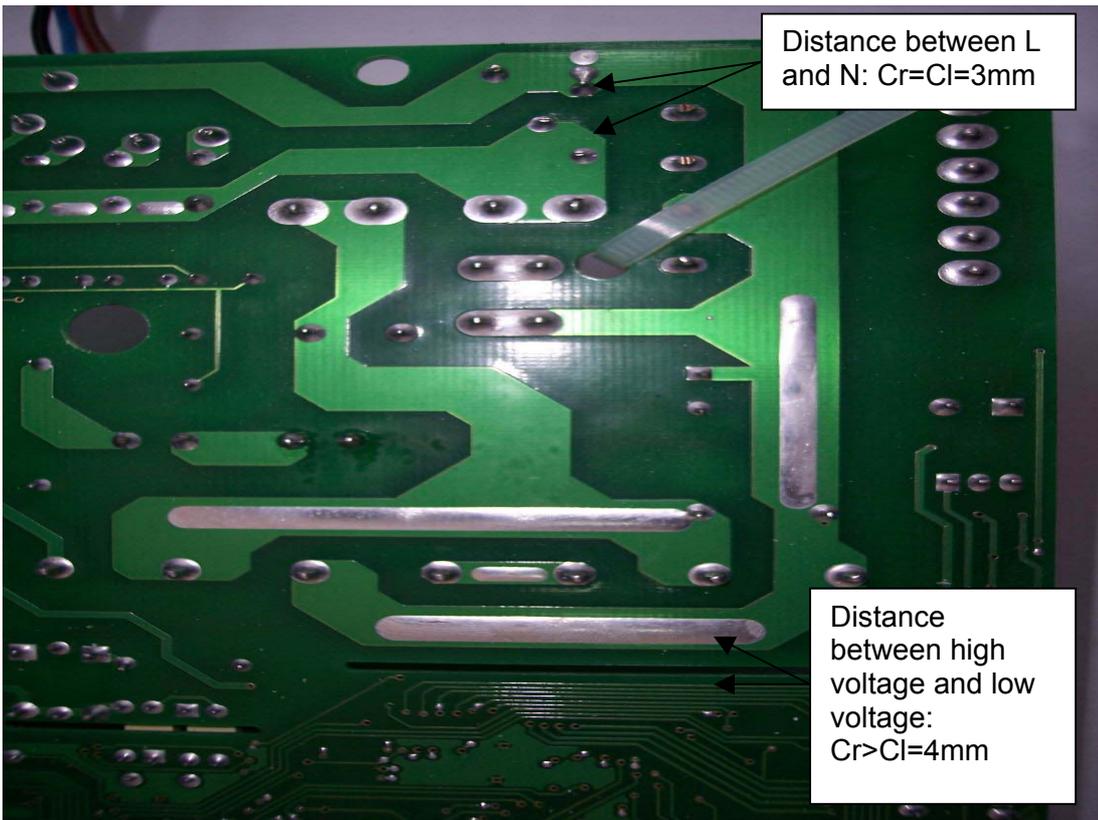
Picture 14



Picture 15



Picture 16



Picture 17



Picture 18