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LAB N° 1347

REPORT

EN 60335-2-103

Safety of household and similar electrical appliances
Safety - Part 2-103: Particular requirements for drives for gates, doors and windows

Reference No.	SAFTR_174014-0	
Tested by (Test Engineer)	Dario MALBERTI	Firmato da:Dario Malberti Data: 07/06/2018 17:54:25
Approved by (Labs Manager)	Riccardo PFEIFFER	Firmato da:RICCARDO PFEIFFER Data: 07/06/2018 18:38:13
Date of issue.....	2018-06-07	

Testing laboratory

Name	PRS LAB S.r.l.
Address	Via Campagna, 92- 22020 Faloppio Fraz. Gaggino (CO) - Italy
Testing location	as above

Client

Name	APRIMATIC S.r.l.
Address	Via Emilia, 147 – 40064 OZZANO DELL'EMILIA (BO)
.....	Tel. +39 366 5680700

Test specification

Standard	EN 60335-2-103:2015
	used in conjunction with EN 60335-1:2012/A11:2014
Non-standard test method	N.A.

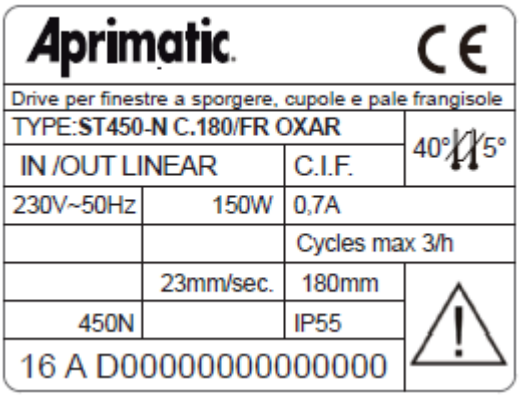
Test item

Description.....	Drives for windows, domes and shading blades
Trademark	APRIMATIC
Model and/or type reference.....	ST450-N C.180/FR OXAR (Basic model)
	ST450-N C.180/SP OXAR (Derived model – see page 3)
	ST450-N C.300/SP OXAR (Derived model – see page 3)
Manufacturer	APRIMATIC S.r.l.
Rating(s)	230 V~ 50 Hz 0,7 A 150 W IP55

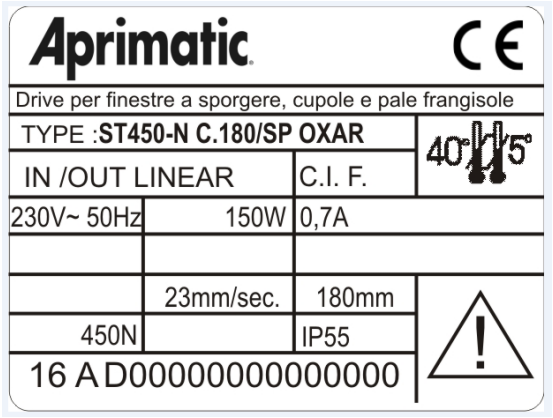
Release Control Record		
Test report Number	**Reason of change**	**Date of Issue**
SAFTR_174014-0	Original Release	2018-06-07

Marking:

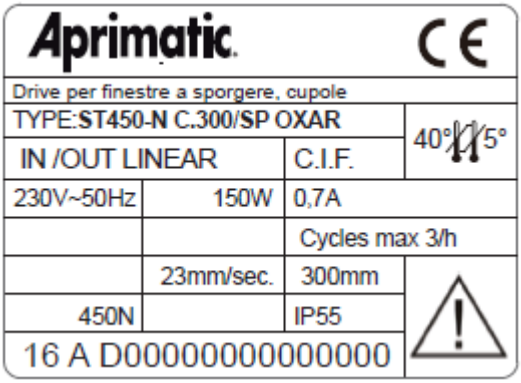
Basic/Tested Model



Derived Model



Derived Model



Marking of mailing address customer:

Possible test case verdicts:

- test case does not apply to the test object..... N/A (Not Applicable)

- test object does not investigate.....: N/I (Not Investigate)

- test object does meet the requirement .....: P (Pass)

- test object does not meet the requirement .....: F (Fail)

Testing.....:

Date of receipt of test item.....: May , 2018 (sampled by customer)

Date (s) of performance of tests .....: 06-06-2018 to 07-06-2018

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

NOTE:

EUT shall be installed and maintained by technical personnel only, according to the manufacturer's instructions.

*According to **specific formal request** by the manufacturer the following clauses has not been investigated by PRS LAB Safety Lab:*

-Cl. 19.11.3
-Cl. 19.11.4
-Cl. 20.101 to 109
-Cl. 22.101 to 107
-Cl. 22.46

Compliance with test requirements recorded in this technical report does not give presumption of compliance to all requirements by reference standard.
The compliance to the whole standard is referred to the manufacturer because clauses reported above have not been investigated

Max operating temperature declared by manufacturer 40°C

EN 60335-2-103			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		
	Tests performed according to clause 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	The driven part is adjusted in accordance with the instructions (IEC 60335-2-103)	Driven parts not available	N/A
	The driven part may be simulated by an artificial load. (IEC 60335-2-103)	Not possible	N/A
5.5	A wicket door is kept close during the tests (IEC 60335-2-103)		N/A
5.7	If the drive is marked with an ambient temperature beyond the range of +5 °C to +40 °C, the tests of Clauses 11, 13, 20.105 to 20.109 and 21 are carried out at the most unfavourable marked temperature. (IEC 60335-2-103)	+5°C – + 40°C	P
5.10	The drive is adjusted to provide the most unfavourable conditions consistent with the instructions. (IEC 60335-2-103)	According to **specific formal request** by the manufacturer with motor but without driven parts	P
6	CLASSIFICATION		
6.1	Protection against electric shock: Class 0, 0I, I, II, III..... ..... :	Class I	P
	Drives shall be class I, class II or class III. (IEC 60335-2-103)	Class I	P
6.2	Protection against harmful ingress of water	Declaration Manufacturer IP55	P
	Drives, or parts of drives, that are intended for exposure to outdoor conditions shall be at least IPX4. (IEC 60335-2-103)	Appliance for indoor unit	N/A
7	MARKING AND INSTRUCTIONS		
7.1	Rated voltage or voltage range (V)..... ..... :	Only 230	P
	Symbol for nature of supply, or..... ..... :	~	P
	Rated frequency (Hz)..... ..... :	50	P
	Rated power input (W), or .... :	150	P
	Drives shall be marked with the rated power input. (IEC 60335-2-103)	150 W	P
	Rated current (A) .... :	0,7	P

EN 60335-2-103			
Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturer's or responsible vendor's name, trademark or identification mark..... ..... :	APRIMATIC s.r.l.	P
	Model or type reference..... ..... :	Tested/basic model ST450-N C.180/FR OXAR For derived model see page 3	P
	Symbol IEC 60417-5172, for class II appliances	Class I	N/A
	IP number, other than IPX0..... ..... :	Declaration Manufacturer IP55	P
	Ambient temperature range (IEC 60335-2-103)	+5°C – +40°C	P
	Symbol IEC 60417-5180, for class III appliances, unless		N/A
	the appliance is operated by batteries only		N/A
	Symbol IEC 60417-5036, for the enclosure of electrically-operated water valves in external hose-sets for connection of an appliance to the water mains, if the working voltage exceeds extra-low voltage		N/A
	Drives supplied without a driven part shall be marked with: (IEC 60335-2-103)		-
	- Rated load (N or Nm)	450N	P
	- Rated operating time (min.) unless:	Max cycles 3/h (see marking)	P
	- The drive is intended for continuous operation.	No continuous operation	N/A
	Drives supplied with a driven part shall be marked with the rated number of operating cycles, unless: (IEC 60335-2-103)		N/A
	The drive is intended for continuous operation. (IEC 60335-2-103)		N/A
7.2	Warning for stationary appliances for multiple supply	Only single supply	N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
	Requirement met if frequent changes are not required and the rated voltage to which the appliance is to be adjusted is determined from a wiring diagram		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless	Only 230 V	N/A
	the power input is related to the arithmetic mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used	IEC 60417	P
	Symbol for nature of supply placed next to rated voltage		P
	Symbol for class II appliances placed unlikely to be confused with other marking	Class I	N/A
	Units of physical quantities and their symbols according to international standardized system		P
	Symbol 0533 of ISO 7000 (IEC 60335-2-103)	See marking	P
	Symbol 0534 of ISO 7000 (IEC 60335-2-103)	See marking	P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply, unless		N/A
	correct mode of connection is obvious		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		-
	- marking of terminals exclusively for the neutral conductor (letter N)	Reference on PCB. Letter N on Instruction manual	N/A
	- marking of protective earthing terminals (symbol IEC 60417-5019)		N/A
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard	No switch	N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means .... :		N/A
	This applies also to switches which are part of a control		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If figures are used, the off position indicated by the figure 0		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided		P
	Details concerning precautions during user maintenance		P
	The instructions state that:		-
	- the appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction	See European Group Difference	N/A
	- children being supervised not to play with the appliance	See European Group Difference	N/A
	For a part of class III construction supplied from a detachable power supply unit, the instructions state that the appliance is only to be used with the unit provided		N/A
	Instructions for class III appliances state that it must only be supplied at SELV, unless		N/A
	it is a battery-operated appliance, the battery being charged outside the appliance	Not present	N/A
	The instructions shall include the substance of the following: (IEC 60335-2-103)		-
	- do not allow children to play with fixed controls. Keep remote controls away from children; (IEC 60335-2-103)		P
	- explanation of mode indicators (IEC 60335-2-103)		P
	- details on how to use any manual release, or reversible drive used as a manual release; (IEC 60335-2-103)	Not present	N/A
	- when operating a biased-off switch, make sure that other persons are kept away; (IEC 60335-2-103)		P
	- when closing a window that has been opened by a smoke control system, make sure that other persons are kept away; (IEC 60335-2-103/A1)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- details on how to re-adjust controls (IEC 60335-2-103)		N/A
	- frequently examine the installation for imbalance and signs of wear or damage to cables, springs and mounting. Do not use if repair or adjustment is necessary (IEC 60335-2-103)	On Instruction	P
	- disconnect the supply when cleaning or other maintenance. (IEC 60335-2-103)		P
7.12.1	Sufficient details for installation supplied	On Instruction manual	P
	For an appliance intended to be permanently connected to the water mains and not connected by a hose-set, this is stated		N/A
	WARNING: Important safety instructions. Follow all instructions since incorrect installation can lead to severe injury. (IEC 60335-2-103)		P
	The installation instructions shall specify the type, size and mass of the driven part, and locations where the drive can be installed. (IEC 60335-2-103)		P
	They shall state that the installer is to check that the temperature range marked on the drive is suitable for the location. (IEC 60335-2-103)		P
	The installation instructions shall include the substance of the following: (IEC 60335-2-103)		-
	- the necessary information for safe handling of a drive weighing more than 20 kg;	Appliance examined: < 20 kg (2 kg)	N/A
	- before installing the drive, check the driven part is in good mechanical condition, correctly balanced and opens and closes properly		P
	- information if the drive is intended to be installed at a height of at least 2,5 m above floor level or other access level;		N/A
	- the drive cannot be used with a driven part incorporating a wicket door (unless the drive cannot be operated with the wicket door open);		N/A
	- except for horizontally moving pedestrian doors, ensure that entrapment due to the opening movement of the driven part is avoided		P
	- for horizontally moving pedestrian doors, ensure that entrapment due to the movement of the driven part is avoided. The distance is required as specified;		N/A
	- details of the maximum allowed distance;		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- details for the installation of the drive and its associated components;		P
	- a biased-off switch is to be located within direct sight of the driven part but away from moving parts, unless it is key operated		P
	- details on how to set controls		P
	- after installation, ensure that the mechanism is properly adjusted;		P
	- permanently fix the label concerning the manual release, adjacent to its actuating member.		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules	On Instruction manual	P
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions state that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		-
	- dimensions of space	Fixed appliance	N/A
	- dimensions and position of supporting and fixing		N/A
	- minimum distances between parts and surrounding structure		N/A
	- minimum dimensions of ventilating openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N/A
	a switch complying with 24.3		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		P
	Replacement cord instructions, type Z attachment		N/A
7.12.6	Caution in the instructions for appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains, if this cut-out is required to comply with the standard		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed	On Instruction manual	P
7.12.8	Instructions for appliances connected to the water mains:		-
	- max. inlet water pressure (Pa) .... :		N/A
	- min. inlet water pressure, if necessary (Pa) ..... :		N/A
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		N/A
7.13	Instructions and other texts in an official language	I-GB-F-D-E	P
7.14	Marking clearly legible and durable, rubbing test as specified		P
7.15	Markings on a main part	On enclosure	P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		P
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A
7.101	Drives having a manual release shall be supplied with a label describing how to use the release unless the information is already marked on the appliance. (IEC 60335-2-103)		N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed	No detachable parts	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Lamps behind a detachable cover not removed, if conditions met	No lamps	N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032, with a force not exceeding 1 N: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032, with a force not exceeding 1 N, through openings in class 0 appliances and class II appliances/constructions: no contact with live parts		P
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032, with a force not exceeding 1 N: no contact with live parts of visible glowing heating elements		P
8.1.4	Accessible part not considered live if:		-
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		-
	- built-in appliances		N/A
	- fixed appliances		P
	- appliances delivered in separate units		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		P
	Only possible to touch parts separated from live parts by double or reinforced insulation		P
9	STARTING OF MOTOR-OPERATED APPLIANCES		
	Requirements and tests are specified in part 2 when necessary		N/A
10	POWER INPUT AND CURRENT		
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1 . :	(see appended table)	P
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless	Only 230 V	N/A
	the rated power input is related to the arithmetic mean value		N/A
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 ..... :	(see appended table)	N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
11	HEATING		
11.1	No excessive temperatures in normal use		P
11.2	The appliance is held, placed or fixed in position as described ..... :		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings are non-uniform or it is difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input (W) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V) ..... :	Vn x 1,06= 243,8 V worst condition	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage (V) ..... :		N/A
11.7	Drives for continuous operation are operated for consecutive cycles until steady conditions are established. (IEC 60335-2-103)	No continuous operation	N/A
	Other drives are operated as follows: (IEC 60335-2-103)		-
	– drives supplied without a driven part are operated without rest periods for the rated operating time but for not less than five cycles of operation or 4 min, whichever is longer; (IEC 60335-2-103)		P
	– drives supplied with a driven part are operated without rest periods for the rated number of operating cycles but for not less than five cycles of operation. (IEC 60335-2-103)		N/A
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 ..... :	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,	No doubt	N/A
	tests of Annex C are carried out		N/A
	Sealing compound does not flow out		P
	Protective devices do not operate, except		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times the rated power input (W) ..... :		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times the rated voltage (V) ..... :	Vn x 1,06= 243,8 V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests	Not used	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
13.2	For class 0, class II and class III appliances, leakage current measured by means of the circuit described in figure 4 of IEC 60990		N/A
	For other appliances, a low impedance ammeter may be used		P
	Leakage current measurements..... :	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4..... :	(see appended table)	P
	No breakdown during the tests		P
14	TRANSIENT OVERVOLTAGES		
	Appliances withstand the transient over-voltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6 ..... :	(see appended table)	N/A
	No flashover during the test, unless		N/A
	of functional insulation if the appliance complies with clause 19 with the clearance short-circuited		N/A
15	MOISTURE RESISTANCE		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	Declaration Manufacturer IP55	P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances or creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529..... :	Declaration Manufacturer IP55	P
	Water valves containing live parts in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		P
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube, and		N/A
	for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support, the pivot axis of the oscillating tube located at the level of the underside of the support, and		N/A
	for IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts subjected to the relevant treatment with the main part		N/A
	However, if a part has to be removed for user maintenance and a tool is needed, this part is not removed		N/A
	IPX4 tubular drives are installed in a tube, the support is rotated at a speed of 1 r/min. (IEC 60335-2-103)		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts are removed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Overfilling test with additional amount of water, over a period of 1 min (l)..... :		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances or creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Checked by test Cab: Damp heat steady state in IEC 60068-2-78		P
	Detachable parts removed and subjected, if necessary, to the humidity test with the main part	Not used	N/A
	Humidity test for 48 h in a humidity cabinet	25°C – 93% U.R.	P
	Reassembly of those parts that may have been removed		N/A
	The appliance withstands the tests of clause 16		P
16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests	Not used	N/A
	Tests carried out at room temperature and not connected to the supply		P
16.2	Single-phase appliances: test voltage 1.06 times rated voltage (V) ..... :	Vn x 1,06= 243,8	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3 (V) ..... :		N/A
	Leakage current measurements..... :	(see appended table)	P
	Limit values doubled if:		-
	- all controls have an off position in all poles, or		N/A
	- the appliance has no control other than a thermal cut-out, or		N/A
	- all thermostats, temperature limiters and energy regulators do not have an off position, or		N/A
	- the appliance has radio interference filters		N/A
	With the radio interference filters disconnected, the leakage current do not exceed limits specified..... :	(see appended table)	N/A

EN 60335-2-103			
Clause	Requirement + Test	Result - Remark	Verdict
16.3	Electric strength tests according to table 7..... :	(see appended table)	P
	Test voltage applied between the supply cord and inlet bushing and cord guard and cord anchorage as specified ..... :	(see appended table)	P
	No breakdown during the tests		P
17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use ..... :	(see appended table) Transformer not used	N/A
	Appliance supplied with 1.06 or 0.94 times rated voltage under the most unfavourable short-circuit or overload likely to occur in normal use (V)..... :		N/A
	Basic insulation is not short-circuited		N/A
	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/A
	Temperature of the winding not exceeding the value specified in table 8		N/A
	However, limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A
18	ENDURANCE		
	Requirements and tests are specified in part 2 when necessary		N/A
19	ABNORMAL OPERATION		
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe ..... :	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		N/A
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		N/A
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		N/A
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		P
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		P
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample	No heating element	N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0.85 times rated power input (W) ..... :		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1.24 times rated power input (W) ..... :		N/A
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions	PTC heating elements not present	N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures (V)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque, or		N/A
	locking moving parts of other appliances		P
	Locked rotor, capacitors open-circuited one at a time		P
	Test repeated with capacitors short-circuited one at a time, unless		N/A
	capacitor is of class P2 of IEC 60252-1	Capacitor separately certified	P
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed..... :		N/A
	Other appliances supplied with rated voltage for a period as specified..... :		P
	Winding temperatures not exceeding values specified in table 8..... :	(see appended table)	P
19.8	Multi-phase motors operated at rated voltage with one phase disconnected		N/A
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N/A
	Motor-operated and combined appliances for which 30.2.3 is applicable and that use overload protective devices relying on electronic circuits to protect the motor windings, are also subjected to the test		N/A
	Winding temperatures not exceeding values as specified ..... :	(see appended table)	N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min (V) ..... :		N/A
	During the test, parts not being ejected from the appliance		N/A
	Drive having a manual release, the test is made with the driven part disconnected (IEC 60335-2-103)		N/A
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		P
	they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8, unless	As customer's request, cl. 19.11.4 has not been investigated	N/I

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Clause	Requirement + Test	Result - Remark	Verdict
	restarting does not result in a hazard		N/I
	Appliances having a device with an off position obtained by electronic disconnection, or a device placing the appliance in a stand-by mode, subjected to the tests of 19.11.4	As customer's request, cl. 19.11.4 has not been investigated	N/I
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IEC 60127, the test of 19.12 is carried out		N/A
	During and after each test the following is checked:		-
	- the temperature of the windings do not exceed the values specified in table 8		P
	- the appliance complies with the conditions specified in 19.13		P
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met:		-
	- the base material of the printed circuit board withstands the test of Annex E		N/A
	- any loosened conductor does not reduce clearance or creepage distances between live parts and accessible metal parts below the values specified in clause 29		N/A
19.11.1	Fault conditions a) to g) in 19.11.2 are not applied to circuits or parts of circuits meeting both of the following conditions:		-
	- 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/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operating under conditions specified in clause 11, but supplied at rated voltage, duration of the tests as specified:		-
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) open circuit at the terminals of any component		P
	c) short circuit of capacitors, unless		P
	they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits		P
	This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of microprocessors and integrated circuits		N/A
	g) failure of an electronic power switching device		N/A
	Each low power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		N/A
	If the drive can be operated when any of the fault conditions are simulated, the tests of 20.104, 20.107 and 20.108 are carried at rated voltage (IEC 60335-2-103)	As customer's request, cl. 20.101 to 20.109 have not been investigated	N/I
	Either the drive continues to fulfil the requirements, or (IEC 60335-2-103)		N/I
	- after a maximum of one cycle of operation, it must stop with the driven part in a safe position, or (IEC 60335-2-103)		N/I
	- the drive must change to a biased-off switch mode of operation. (IEC 60335-2-103)		N/I
	When the drive is controlled by a single button control, the biased-off switch shall not override the fault on its first activation unless the driven part is at either end position of travel. (IEC 60335-2-103)		N/I
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to g) of 19.11.2	As customer's request, cl. 19.11.4 has not been investigated	N/I
19.11.4	Appliances having a device with an off position obtained by electronic disconnection, or	As customer's request, cl. 19.11.4 has not been investigated	N/I
	a device that can be placed in the stand-by mode,		N/I
	subjected to the tests of 19.11.4.1 to 19.11.4.7, the device being set in the off position or in the stand-by mode		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, the tests being carried out after the protective electronic circuit has operated, except that		N/I
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N/I
	Surge protective devices disconnected, unless		N/I
	They incorporate spark gaps		N/I
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		N/I
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		N/I
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4, test level 3 or 4 as specified		N/I
19.11.4.4	The power supply terminals of the appliance subjected to voltage surges in accordance with IEC 61000-4-5, test level 3 or 4 as specified		N/I
	Earthed heating elements in class I appliances disconnected		N/I
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		N/I
19.11.4.6	Appliances having a rated current not exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		N/I
	Appliances having a rated current exceeding 16 A are subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-34		N/I
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		N/I
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduced to a level such that the appliance ceases to respond or parts controlled by the programmable component cease to operate		N/I
	The appliance continues to operate normally, or		N/I
	requires a manual operation to restart		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)..... :		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9 ..... :	(see appended table)	P
	Compliance with clause 8 not impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliances or class III constructions that do not contain live parts, withstands the electric strength test of 16.3, the test voltage as specified in table 4:		-
	- basic insulation (V) ..... :	1000	P
	- supplementary insulation (V) ..... :	1750	N/A
	- reinforced insulation (V) ..... :	3000	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstand the electric strength test of 16.3, the test voltage being twice the working voltage		P
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		-
	- do not become operational, or	As customer's request, cl. 19.11.4 has not been investigated	N/I
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N/I
	If the appliance contains lids or doors that are controlled by one or more interlocks, one of the interlocks may be released provided that:		-

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Clause	Requirement + Test	Result - Remark	Verdict
	- the lid or door does not move automatically to an open position when the interlock is released, and		N/A
	- the appliance does not start after the cycle in which the interlock was released		N/A
	During the test of 19.101 the winding temperatures shall not exceed the values specified in 19.9 (IEC 60335-2-103)		P
19.14	Appliances operated under the conditions of clause 11, any contactor or relay contact operating under the conditions of clause 11 being short-circuited		P
	For a relay or contactor with more than one contact, all contacts are short-circuited at the same time		N/A
	A relay or contactor operating only to ensure the appliance is energized for normal use is not short-circuited		N/A
	If more than one relay or contactor operates in clause 11, they are short-circuited in turn		P
19.15	For appliances with a mains voltage selector switch, the switch is set to the lowest rated voltage position and the highest value of rated voltage is applied		N/A
19.101	Drives, other than those for continuous operation, are operated continuously under normal operation and at rated voltage (IEC 60335-2-103)		P
20	STABILITY AND MECHANICAL HAZARDS		
20.1	Appliances having adequate stability	Fixed appliance	N/A
	Tilting test through an angle of 10°, appliance placed on an inclined plane/horizontal support, not connected to the supply mains; appliance does not overturn		N/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury	Motor enclosed. Full protection of moving parts is not possible for performing their intended use	P
	Protective enclosures, guards and similar parts are non-detachable, and		P

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Clause	Requirement + Test	Result - Remark	Verdict
	have adequate mechanical strength		P
	Enclosures that can be opened by overriding an interlock are considered to be detachable parts		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard by unexpected closure		N/A
	Not possible to touch dangerous moving parts with the test probe described	Motor enclosed. Full protection of moving parts is not possible for performing their intended use	P
	Moving parts of drives intended to be installed at a height of at least 2,5 m above the ground or other access level are considered to be positioned so to provide adequate protection against personal injury in normal use. (IEC 60335-2-103/A1)		N/A
	NOTE 101 Stairs and terraces are examples of access levels. Surfaces not normally used for standing on, such as window-sills, and movable equipment such as ladders, are not considered to be access levels. (IEC 60335-2-103/A1)		N/A
	NOTE 102 For horizontally moving pedestrian doors, moving parts including interconnecting parts of their drives need not be guarded if the gap between fixed and moving parts is below 8 mm, or above 25 mm, or it is at least 2 m above the ground. This also applies to the gap between parts that may move at different speeds.. (IEC 60335-2-103)		N/A
20.101	Drives shall prevent vertically moving driven parts from closing unexpectedly (IEC 60335-2-103)	As customer's request, cl. 20.101 has not been investigated	N/I
20.102	A manual release or reversible drive shall be easy to operate. (IEC 60335-2-103)	As customer's request, cl. 20.102 has not been investigated	N/I
	Operation of the release shall not give rise to a hazard such as kickback or unexpected operation of the drive. (IEC 60335-2-103)		N/I
	The drive shall not create any hazard when the manual release is activated. (IEC 60335-2-103)		N/I
	Operation of a reversible drive used as a means for a manual release shall not give rise to a hazard. (IEC 60335-2-103)		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
20.103	A mechanical fault in the drive shall not result in a hazardous operation (IEC 60335-2-103)	As customer's request, cl. 20.103 has not been investigated	N/I
20.104	Drives controlled by a biased-switch shall stop when the actuating member of the switch is released (IEC 60335-2-103)	As customer's request, cl. 20.104 has not been investigated	N/I
20.105	During the movement of the drive in either direction, the actuation of a manual control shall stop the movement if there is no separate button for the stop function. (IEC 60335-2-103)	As customer's request, cl. 20.105 has not been investigated	N/I
20.106	Drives shall not restart automatically after the movement has stopped unintentionally (IEC 60335-2-103)	As customer's request, cl. 20.106 has not been investigated	N/I
20.107	Drives not controlled by a biased off switch shall incorporate an entrapment protection system that reduces the risk of injury when the driven part moves. (IEC 60335-2-103)	As customer's request, cl. 20.107 has not been investigated	N/I
	For drives, other than drives for windows, incorporating an entrapment protection system that allows the driven part to contact a person, compliance is checked by the relevant tests specified in 20.107.2 (IEC 60335-2-103/A1)		N/I
	For drives for windows incorporating an entrapment protection system that allows the driven part to contact a person, compliance is checked by the relevant tests specified in 20.107.2 except 20.107.2.3. (IEC 60335-2-103/A1)		N/I
20.107.1	The drive is installed with a driven part, the force is adjusted to its highest value. The drive is supplied at the most unfavourable voltage between 0,94 and 1,06 times rated voltage. (IEC 60335-2-103)		N/I
	If the sensing devices are other than pressure sensitive pads, the tests specified in 20.107.1.1 to 20.107.1.3 are applied. (IEC 60335-2-103)		N/I
	If the sensing devices are pressure sensitive pads, the test specified in 20.107.1.4 is applied. (IEC 60335-2-103)		N/I
	For pedestrian doors, an entrapment protection system shall detect a stationary obstacle for at least 30 s. (IEC 60335-2-103)		N/I
20.107.1.1	An obstacle having dimensions of approximately 200 mm × 300 mm × 700 mm is performed the specified test. (IEC 60335-2-103)		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
20.107.1.2	An obstacle having dimensions of approximately 80 mm × 300 mm and a height of 100 mm is performed the specified test. (IEC 60335-2-103)		N/I
20.107.1.3	The obstacle used in 20.107.1.1 is located with the 700 mm dimension positioned vertically and is moved at a speed of 3 m/s ± 0,6 m/s. For both horizontally and vertically moving driven parts, the obstacle is moved in a straight line through the plane of the driven part opening at the most unfavourable angle. For pedestrian doors, the obstacle is placed initially at 5 m away from the opening and then moved in a straight line through the centre of the opening plane and also at each 45° angle on each side of the door. The drive is operated to close the driven part. The driven part shall stop or reverse its movement without contacting the obstacle. (IEC 60335-2-103/A1)		N/I
20.107.1.4	If the entrapment protection system incorporates a pressure-sensitive floor pad, a mass of 15 kg ± 0,5 kg having a diameter of approximately 60 mm is used instead of the wooden obstacle. (IEC 60335-2-103)		N/I
	The following inactive floor pad areas are specified the dimensions. (IEC 60335-2-103)		N/I
20.107.2	The drive is installed with a driven part. The force exerted by the drive is adjusted to the highest value if the force can be adjusted by the user during use or user maintenance. Otherwise, the force is adjusted according to the installation instructions. The drive is supplied at the most unfavourable voltage between 0,94 and 1,06 times rated voltage. (IEC 60335-2-103/A1)		N/I
	The test of 20.107.2.1 is applied and (IEC 60335-2-103)		N/I
	- if the drive is intended to be used with vertically moving driven parts having openings in which a 50 mm tube can be inserted, the test of 20.107.2.2 is applied for an opening movement; (IEC 60335-2-103)		N/I
	- if the drive is an automatic drive for other than pedestrian doors or is for driven parts used other than pedestrian doors where the closing force exceeds 400 N for 0,75 s, the test of 20.107.2.3 is applied. (IEC 60335-2-103/A1)		N/I
20.107.2.1	The drive is operated to the fully open and fully closed positions. The forces shall not exceed: (IEC 60335-2-103)		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
	-150 N during the first 5 s after the force has exceeded 25 N; 25 N thereafter; Or (IEC 60335-2-103)		N/I
	- 400 N during the first 0,75 s after the force has exceeded 150 N; 150 N during a further period of 4,25 s; 25 N thereafter; Or (IEC 60335-2-103)		N/I
	- for vertically moving driven parts used as a door with specified N (IEC 60335-2-103/A1)		N/I
	Measure points are specified. (IEC 60335-2-103)		N/I
20.107.2.2	Drives having openings are subjected to an opening test with the driven part loaded with a mass of 20 kg ± 0,5 kg. (IEC 60335-2-103)		N/I
20.107.2.3	An obstacle having dimensions are perform the specified tests. The drive is operated to close the door from opening gaps of 100 mm, 1 000 mm and the fully open position of the door. The door shall not move or only move in the opening direction. (IEC 60335-2-103)		N/I
	The test is repeated from the fully open position. (IEC 60335-2-103)		N/I
	A cylindrical obstacle, having a diameter of 50 mm and a length of 850 mm, is suspended. (IEC 60335-2-103)		N/I
	The drive is operated to close the door and the cylinder is swung across the door opening from an angle of 45°. The entrapment protection system shall cause the door to reverse its movement. (IEC 60335-2-103)		N/I
20.108	Entrapment protection systems shall provide an adequate level of protection in the event of a failure within the system. (IEC 60335-2-103)	As customer's request, cl. 20.108 has not been investigated	N/I
20.109	Drives for windows shall operate so that the movement of the window is not likely to cause an injury. (IEC 60335-2-103/A1)	As customer's request, cl. 20.109 has not been investigated	N/I
21	MECHANICAL STRENGTH		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Checked by applying 3 blows to every point of the enclosure like to be weak, in accordance with test Ehb of IEC 60068-2-75, spring hammer test, with an impact energy of 0,5 J		P
	The appliance shows no damage impairing compliance with this standard, and		P

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Clause	Requirement + Test	Result - Remark	Verdict
	compliance with 8.1, 15.1 and clause 29 not impaired		P
	If doubt, supplementary or reinforced insulation subjected to the electric strength test of 16.3	No doubt	N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	Test not applicable if the thickness of supplementary insulation is at least 1 mm and reinforced insulation at least 2 mm		P
	The insulation is tested as specified, and does withstand the electric strength test of 16.3		P
22	CONSTRUCTION		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	Declaration Manufacturer IP55	P
22.2	Stationary appliance: means to ensure all-pole disconnection from the supply being provided:		-
	- a supply cord fitted with a plug, or		N/A
	- a switch complying with 24.3, or		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided, or		P
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase, permanently connected class 01 and class I appliances, connected to the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a torque of 0.4Nm; the pins are not rotating, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	rotating does not impair compliance with this standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching the pins of the plug, for appliances having a capacitor with rated capacitance exceeding 0,1μF, the appliance being disconnected from the supply at the instant of voltage peak	No plug	N/A
	Voltage not exceeding 34 V (V) ..... :		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected if a hose ruptures or seal leaks		N/A
	In case of doubt, test as described		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances containing liquid or gases or having steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		P
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances, unless	Not exposed	P
	the substance has adequate insulating properties		N/A
22.10	Not possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance, if:		N/A
	- a non-self-resetting thermal cut-out is required by the standard, and		N/A
	- a voltage maintained non-self-resetting thermal cut-out is used to meet it		N/A
	Non-self-resetting thermal motor protectors have a trip-free action, unless		N/A
	they are voltage maintained		N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
22.18	Current-carrying parts and other metal parts resistant to corrosion	Terminals separately certified	P
22.19	Driving belts not relied upon to provide the required level of insulation, unless		N/A
	constructed to prevent inappropriate replacement		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless	Thermal insulation not used	N/A
	material used is non-corrosive, non-hygroscopic and non-combustible		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless		N/A
	impregnated		N/A
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		N/A
22.22	Appliances not containing asbestos	Not used	P
22.23	Oils containing polychlorinated biphenyl (PCB) not used	Not used	P
22.24	Bare heating elements, except in class III appliances or class III constructions that do not contain live parts, adequately supported	Not used	N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors, except in class III appliances or class III constructions that do not contain live parts, cannot come into contact with accessible metal parts		N/A
22.26	For class III constructions the insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
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		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	Cannot be replaced in an incorrect position and appliance is manifestly incomplete if the enclosure is missing	P
22.31	Neither clearances nor creepage distances over supplementary and reinforced insulation reduced below values specified in clause 29 as a result of wear		P
	Neither clearances nor creepage distances between live parts and accessible parts reduced below values for supplementary insulation if wires, screws etc. become loose		P
22.32	Supplementary and reinforced insulation constructed or protected against pollution so that clearances or creepage distances are not reduced below the values in clause 29		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 29.2		N/A
	Ceramic material not tightly sintered, similar materials or beads alone not used as supplementary or reinforced insulation		N/A
	Insulating material in which heating conductors are embedded is considered to be basic insulation, not reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts are not in direct contact with live parts		N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use and conductive liquids that are in contact with unearthed accessible metal parts, not in direct contact with basic or reinforced insulation, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the reinforced insulation consists of at least 3 layers		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation, unless		N/A
	the reinforced insulation consists of at least 3 layers		N/A
	An air layer not used as basic or supplementary insulation in a double insulation system if likely to be bridged by leaking liquid		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless	Not present	N/A
	the shaft is not accessible when the part is removed		N/A
22.35	For other than class III constructions, handles, levers and knobs, held or actuated in normal use, not becoming live in the event of a failure of basic insulation		N/A
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of a failure of basic insulation, are either adequately covered by insulation material or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances, other than those of electrical components, provided they are reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
	Insulating material covering metal handles, levers and knobs withstand the electric strength test of 16.3 for supplementary insulation		N/A
22.36	For appliances other than class III, handles continuously held in the hand in normal use so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless		N/A
	they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts and their casings, if of metal, separated from accessible metal parts by supplementary insulation, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	the capacitors comply with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		N/A
22.39	Lamp holders used only for the connection of lamps	Not used	N/A
22.40	Not applicable. (IEC 60335-2-103)		N/A
22.41	No components, other than lamps, containing mercury	No lamps	P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
	Resistors checked by the test of 14.1 a) in IEC 60065		N/A
	Capacitors checked by the tests for class Y capacitors in IEC 60384-14		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances not having an enclosure that is shaped or decorated like a toy		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.3 due to deformation as a result of an external force applied to the enclosure		P
22.46	For programmable protective electronic circuits used to ensure compliance with the standard, the software contains measures to control the fault/error conditions in table R.1	As customer's request, cl. 22.46 has not been investigated	N/I
	Software that contains measures to control the fault/error conditions specified in table R.2 is to be specified in parts 2 for particular constructions or to address specific hazards		N/I
	These requirements are not applicable to software used for functional purpose or compliance with clause 11		N/I
	If compliance with the requirements in Clause 20 relies on the operation of a programmable electronic circuit, the software shall contain measures to control the fault/error conditions specified in Table R.1. (IEC 60335-2-103/A1)		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		N/A
	No leakage from any part, including any inlet water hose		N/A
22.48	Appliances connected to the water mains constructed to prevent back siphonage of non-potable water		N/A
22.49	For remote operation, the duration of operation is to be set before the appliance can be started, unless		N/A
	the appliance switches off automatically or can operate continuously without hazard		N/A
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N/A
22.51	There is a control on the appliance manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N/A
	There is a visual indication showing that the appliance is adjusted for remote operation		N/A
	These requirements not necessary on appliances that can operate as follows, without giving rise to a hazard:		-
	- continuously, or		N/A
	- automatically, or		N/A
	- remotely		N/A
22.52	Socket-outlets on appliances accessible to the user in accordance with the socket-outlet system used in the country in which the appliance is sold		N/A
22.101	Drives weighing more than 20 kg shall incorporate suitable means for handling, such as hooks. (IEC 60335-2-103)	As customer's request, cl. 22.101 has not been investigated	N/I
22.102	All controls supplied with the drive shall be marked to indicate the functions in the same way. (IEC 60335-2-103)	As customer's request, cl. 22.102 has not been investigated	N/I
22.103	Any indication showing the selected mode of operation shall not be misleading. (IEC 60335-2-103)	As customer's request, cl. 22.103 has not been investigated	N/I
22.104	It shall only be possible to make adjustments that could affect compliance with this standard by means of a tool or by use of a code. (IEC 60335-2-103)	As customer's request, cl. 22.104 has not been investigated	N/I

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Clause	Requirement + Test	Result - Remark	Verdict
22.105	A drive for a door or gate incorporating a wicket door shall be constructed so that the drive cannot be operated when the wicket door is open. (IEC 60335-2-103)	As customer's request, cl. 22.105 has not been investigated	N/I
22.106	Drives shall be supplied with all associated components necessary for compliance with this standard for the defined mode of operation. (IEC 60335-2-103)	As customer's request, cl. 22.106 has not been investigated	N/I
	Components required for alternative modes of operation may be delivered separately provided they are listed in the instructions. (IEC 60335-2-103)		N/I
22.107	Controls shall not be capable of overriding an entrapment protection system unless they can only activate the drive in sight of the driven part. (IEC 60335-2-103)	As customer's request, cl. 22.107 has not been investigated	N/I
23	INTERNAL WIRING		
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well-rounded or provided with bushings	No holes in metal parts	N/A
	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	Not used	N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress	Electrical connections and internal conductors not movable relatively to each other	N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used	Not used	P
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use, or		N/A
	100 flexings for conductors flexed during user maintenance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test of 16.3, 1000 V between live parts and accessible metal parts		N/A
	Not more than 10% of the strands of any conductor broken, and		N/A
	not more than 30% for wiring supplying circuits that consume no more than 15W		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		P
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N/A
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by clamping at both ends, or	Not used	N/A
	be such that it can only be removed by breaking or cutting		N/A
23.7	The colour combination green/yellow only used for earthing conductors		P
23.8	Aluminium wires not used for internal wiring	Not used	P
23.9	Stranded conductors not consolidated by soldering where they are subjected to contact pressure, unless	Not used	N/A
	the contact pressure is provided by spring terminals		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, at least equivalent to that of light polyvinyl chloride sheathed flexible cord (60227 IEC 52)		N/A
24	COMPONENTS		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components ..... :	(see appended table)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	If components have not been tested and found to comply with relevant IEC standard for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.9		P
	For components mentioned in 24.1.1 to 24.1.9 no additional tests specified in the relevant component standard are necessary other than those specified in 24.1.1 to 24.1.9		P
	Components not tested and found to comply with relevant IEC standard and components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		P
	Lampholders and starterholders that have not being tested and found to comply with the relevant IEC standard, tested as a part of the appliance and additionally according to the gauging and interchangeability requirements of the relevant IEC standard		N/A
	No additional tests specified for nationally standardized plugs such as those detailed in IEC/TR 60083 or connectors complying with the standard sheets of IEC 60320-1 and IEC 60309		N/A
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14		N/A
	If the capacitors have to be tested, they are tested according to Annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6		N/A
	If they have to be tested, they are tested according to Annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000		N/A
	If a switch is used to disconnect the drive when the manual release is operated, the switch is tested for 300 cycles of operation. (IEC 60335-2-103)		N/A
	If they have to be tested, they are tested according to Annex H		N/A
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If the switch only operates a motor staring relay complying with IEC 60730-2-10 with the number of cycles of a least 10 000 as specified, the complete switching system need not be tested		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with the relevant part 2. The number of cycles of operation being at least:		-
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 300		N/A
	- voltage maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: 30		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	The number of cycles for controls operating during clause 11 need not be declared, if the appliance meets the requirements of this standard when they are short-circuited		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		P
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection declared for subclause 6.5.2 of IEC 60730-2-8 is IPX7		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, for appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	Interconnection couplers complying with IEC 60320-2-2		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.1.7	For remote operation of the appliance via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N/A
24.1.8	The relevant standard for thermal links is IEC 60691		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		N/A
24.1.9	Contactors and relays, other than motor starting relays, tested as part of the appliance		N/A
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of cycles of operations in 24.1.4 selected according to the contactor or relay function in the appliance..... :		N/A
24.2	Appliances not fitted with:		-
	- switches or automatic controls in flexible cords		N/A
	- devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		N/A
	- thermal cut-outs that can be reset by soldering, unless		N/A
	the solder has a melding point of at least 230 ˚C		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and have a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC/TR 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance, and used accordingly		P
	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	EUT supply 253 V Voltage across capacitors < 450 V	P
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42 V		N/A
	In addition, the motors comply with the requirements of Annex I		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
24.7	Detachable hose-sets for connection of appliances to the water mains comply with IEC 61770		N/A
	They are supplied with the appliance		N/A
	Appliances intended to be permanently connected to the water mains not connected by a detachable hose-set		N/A
24.8	Motor running capacitors in appliances for which 30.2.3 is applicable and that are permanently connected in series with a motor winding, not causing a hazard in event of a failure		P
	One or more of the following conditions are to be met:		-
	- the capacitors are of class P2 according to IEC 60252-1		P
	- the capacitors are housed within a metallic or ceramic enclosure		N/A
	- the distance of separation of the outer surface to adjacent non-metallic parts exceeds 50 mm		N/A
	- adjacent non-metallic parts within 50 mm withstand the needle-flame test of Annex E		N/A
	- adjacent non-metallic parts within 50 mm classified as at least V-1 according to IEC 60695-11-10		N/A
25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		
25.1	Appliance not intended for permanent connection to fixed wiring, means for connection to the supply:		-
	- supply cord fitted with a plug,		N/A
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance, or		N/A
	- pins for insertion into socket-outlets		N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		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/A
25.3	Appliance intended to be permanently connected to fixed wiring provided with one of the following means for connection to the supply mains:		-

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Clause	Requirement + Test	Result - Remark	Verdict
	- a set of terminals allowing the connection of a flexible cord		N/A
	- a fitted supply cord		P
	- a set of supply leads accommodated in a suitable compartment		N/A
	- a set of terminals for the connection of cables of fixed wiring, cross-sectional areas specified in 26.6, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	- a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate types of cable or conduit, and the appliance allows the connection of the supply conductors after the appliance has been fixed to its support		N/A
	For a fixed appliance constructed so that parts can be removed to facilitate easy installation, this requirement is met if it is possible to connect the fixed wiring without difficulty after a part of the appliance has been fixed to its support		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimension according to table 10 (mm) ..... :	Appliance supplied with the cable	P
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in clause 29		P
25.5	Method for assembling the supply cord to the appliance:		-
	- type X attachment		N/A
	- type Y attachment	Type Y	P
	- type Z attachment, is allowed for drives not exceeding 100 W and for separate power supplies for indoor use (IEC 60335-2-103)		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
	For multi-phase appliances supplied with a supply cord and that are intended to be permanently connected to fixed wiring, the supply cord is assembled to the appliance by type Y attachment		N/A
25.6	Plugs fitted with only one flexible cord	No plug	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
25.7	Supply cords, other than for class III appliances, being one of the following types:		-
	- rubber sheathed (at least 60245 IEC 53)	H05RR-F	P
	- polychloroprene sheathed (at least 60245 IEC 57)		N/A
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 88)		N/A
	- polyvinyl chloride sheathed. Not used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of clause 11		N/A
	• light polyvinyl chloride sheathed cord (60227 IEC 52), for appliances not exceeding 3 kg		N/A
	• ordinary polyvinyl chloride sheathed cord (60227 IEC 53), for other appliances		N/A
	- heat resistant polyvinyl chloride sheathed. Not used for type X attachment other than specially prepared cords		N/A
	• heat-resistant light polyvinyl chloride sheathed cord (60227 IEC 56), for appliances not exceeding 3 kg		N/A
	• heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), for other appliances		N/A
	Supply cords for class III appliances adequately insulated		N/A
	Test with 500 V for 2 min for supply cords of class III appliances that contain live parts		N/A
	The supply cord of drives for outdoor use shall be polychloroprene sheathed and not be lighter than ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57). (IEC 60335-2-103)		N/A
25.8	Nominal cross-sectional area of supply cords not less than table 11; rated current (A); cross-sectional area (mm^2)..... :	0,75 mm^2 Current 3 to 6 A	P
25.9	Supply cords not in contact with sharp points or edges		P
25.10	Supply cord of class I appliances have a green/yellow core for earthing		P
25.11	Conductors of supply cords not consolidated by soldering where they are subject to contact pressure, unless		N/A
	the contact pressure is provided by spring terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
25.12	Insulation of the supply cord not damaged when moulding the cord to part of the enclosure		P
25.13	Inlet openings so constructed as to prevent damage to the supply cord		P
	If the enclosure at the inlet opening is not of insulating material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided	Insulating material	N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless the appliance is		N/A
	class 0, or		N/A
	a class III appliance not containing live parts		N/A
25.14	Supply cords moved while in operation adequately protected against excessive flexing		N/A
	Flexing test, as described:		-
	- applied force (N)..... :		N/A
	- number of flexings..... :		N/A
	The test does not result in:		-
	- short-circuit between the conductors, such that the current exceeds a value of twice the rated current		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	For appliances with supply cord and appliances to be permanently connected to fixed wiring by a flexible cord, conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		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 12: mass (kg); pull (N); torque (not on automatic cord reel) (Nm)..... :	Mass 2 kg 60 N 0,25 Nm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Cord not damaged and max. 2 mm displacement of the cord	Displacement of the cord: < 2 mm	P
25.16	Cord anchorages for type X attachments constructed and located so that:		-
	- replacement of the cord is easily possible		
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of supply cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless		N/A
	they are separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless		N/A
	it is part of a specially prepared cord		N/A
	- screws which have to be operated when replacing the cord do not fix any other component, unless		N/A
	the appliance becomes inoperative or incomplete or the parts cannot be removed without a tool		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for class 0, 0I and I appliances they are of insulating material or are provided with an insulating lining, unless		N/A
	failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for class II appliances they are of insulating material, or		N/A
	if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment, test with the cord supplied with the appliance		P

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Clause	Requirement + Test	Result - Remark	Verdict
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	Constructed so that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	The insulated conductors of the supply cord for type Y and Z attachment additionally insulated from accessible metal parts		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed:		-
	- to permit checking of conductors with respect to correct positioning and connection before fitting any cover		N/A
	- so there is no risk of damage to the conductors or their insulation when fitting the cover		N/A
	- for portable appliances, so that the uninsulated end of a conductor, if it becomes free from the terminal, prevented from contact with accessible metal parts		N/A
	2 N test to the conductor for portable appliances; no contact with accessible metal parts		N/A
25.22	Appliance inlets:		-
	- live parts not accessible during insertion or removal		N/A
	Requirement not applicable to appliance inlets complying with IEC 60320-1		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- not for cold conditions if temp. rise of external metal parts exceeds 75 K during clause 11, unless		N/A
	the supply cord is unlikely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except that:	Not present	N/A
	- the cross-sectional area of the conductors is determined on the basis of the maximum current during clause 11		N/A
	- the thickness of the insulation may be reduced		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If necessary, electric strength test of 16.3		N/A
	Type Z attachment is allowed for separate controls. (IEC 60335-2-103)		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with this standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins that are inserted into socket-outlets compatible with the dimensions of the relevant socket-outlet.		N/A
	Dimensions of pins and engagement face in accordance with the dimensions of the relevant plug in IEC/TR 60083		N/A
26	TERMINALS FOR EXTERNAL CONDUCTORS		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	Terminals only accessible after removal of a non-detachable cover, except		P
	for class III appliances that do not contain live parts		N/A
	Earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection		P
26.2	Appliances with type X attachment and appliances for the connection of cables to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless	By screw	P
	the connections are soldered		N/A
	Screws and nuts not used to fix any other component, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone, unless		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	barriers provided so that neither clearances nor creepage distances between live parts and other metal parts reduced below the values for supplementary insulation if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection of cables of fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure but without damaging the conductor		P
	Terminals fixed so that when the clamping means is tightened or loosened:		-
	- the terminal does not become loose		P
	- internal wiring is not subjected to stress		P
	- neither clearances nor creepage distances are reduced below the values in clause 29		P
	Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified (Nm) ..... :	By inspection	P
	No deep or sharp indentations of the conductors		P
26.4	Terminals for type X attachment, except those having a specially prepared cord and those for the connection of cables of fixed wiring, no special preparation of conductors such as by soldering, use of cable lugs, eyelets or similar, and		N/A
	so constructed or placed that conductors prevented from slipping out when clamping screws or nuts are tightened		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and,		N/A
	for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
26.6	Terminals for type X attachment and for connection of cables of fixed wiring suitable for connection of conductors with cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²)..... :	≤3 A 1,0 - 2,5 mm²	P
	If a specially prepared cord is used, terminals need only be suitable for that cord		N/A
26.7	Terminals for type X attachment, except in class III appliances not containing live parts, accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, located close to each other		P
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless	Not used	N/A
	conductors ends fitted with means suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment, soldered, welded, crimped or similar connections may be used		N/A
	For Class II appliances, the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	If soldering, welding or crimping alone used, barriers provided so that clearances and creepage distances between live parts and other metal parts are not reduced below the values for supplementary insulation if the conductor becomes free		N/A
27	PROVISION FOR EARTHING		
27.1	Accessible metal parts of Class 0I and I appliances permanently and reliably connected to an earthing terminal or earthing contact of the appliance inlet		P
	Earthing terminals and earthing contacts not connected to the neutral terminal		P
	Class 0, II and III appliances have no provision for earthing	Class I	N/A
	Safety extra-low voltage circuits not earthed, unless		N/A
	protective extra-low voltage circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
27.2	Clamping means of earthing terminals adequately secured against accidental loosening	By screw	P
	Terminals for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	do not provide earthing continuity between different parts of the appliance, and		N/A
	conductors cannot be loosened without the aid of a tool		N/A
27.3	For a detachable part having an earth connection and being plugged into another part of the appliance, the earth connection is made before and separated after current-carrying connections when removing the part	No detachable part	N/A
	For appliances with supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
27.4	No risk of corrosion resulting from contact between parts of the earthing terminal and the copper of the earthing conductor or other metal		P
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, have adequate resistance to corrosion	Terminals separately certified	P
	If of steel, these parts provided with an electroplated coating with a thickness at least 5 µm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In the body of the earthing terminal is a part of a frame or enclosure of aluminium or aluminium alloys, precautions taken to avoid risk of corrosion		P
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided the clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test (Ω) ..... :	0,050 Ω	P

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Clause	Requirement + Test	Result - Remark	Verdict
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand-held appliances.		N/A
	They may be used to provide earthing continuity in other appliances if at least two tracks are used with independent soldering points and the appliance complies with 27.5 for each circuit		N/A
28	SCREWS AND CONNECTIONS		
28.1	Fixings, electrical connections and connections providing earthing continuity 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/A
	Screws of insulating material not used for any electrical connections or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screwed into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N/A
	For type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw impairs basic insulation		N/A
	For screws and nuts; torque-test as specified in table 14 ..... :	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure is not transmitted through non-ceramic insulating material liable to shrink or distort, unless		P
	there is resiliency in the metallic parts to compensate for shrinkage or distortion of the insulating material		N/A
	This requirement does not apply to electrical connections in circuits of appliances for which:		-
	• 30.2.2 is applicable and that carry a current not exceeding 0,5 A		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	• 30.2.3 is applicable and that carry a current not exceeding 0,2 A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws and thread rolling screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N/A
	Thread-cutting, thread rolling and space threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection:		N/A
	- in normal use,		N/A
	- during user maintenance,		N/A
	- when replacing a supply cord having a type X attachment, or		N/A
	- during installation		N/A
	At least two screws being used for each connection providing earthing continuity, unless		N/A
	the screw forms a thread having a length of at least half the diameter of the screw		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	This requirement does not apply to screws in the earthing circuit if at least two screws are used, or		N/A
	if an alternative earthing circuit is provided		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if the connections are subjected to torsion		N/A
29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	For coatings used on printed circuits boards to protect the microenvironment (Type 1) or to provide basic insulation (Type 2), Annex J applies ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The microenvironment is pollution degree 1 under type 1 protection		N/A
	For type 2 protection, the spacing between the conductors before the protection is applied is not less than the values specified in Table 1 of IEC 60664-3		N/A
	These values apply to functional, basic, supplementary and reinforced insulation..... :		N/A
29.1	Clearances not less than the values specified in table 16, taking into account the rated impulse voltage for the overvoltage categories of table 15, unless ..... :	(see appended table)	P
	for basic insulation and functional insulation they comply with the impulse voltage test of clause 14		N/A
	However, if the distances are affected by wear, distortion, movement of the parts or during assembly, the clearances for rated impulse voltages of 1500V and above are increased by 0,5 mm and the impulse voltage test is not applicable		N/A
	Impulse voltage test is not applicable:		-
	- when the microenvironment is pollution degree 3, or		N/A
	- for basic insulation of class 0 and class 01 appliances		N/A
	Appliances are in overvoltage category II		P
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	The values of table 16 or the impulse voltage test of clause 14 are applicable..... :	(see appended table) Table 16	P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1,0 mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings considered to be bare conductors		N/A
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16 ..... :	(see appended table)	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
	If clearances for basic insulation are selected from Table F.7a of IEC 60664-1, the clearances of reinforced insulation dimensioned as specified in Table F.7a are to withstand 160% of the withstand voltage required for basic insulation		N/A
	If clearances for basic insulation are selected from Clause 4 of IEC 60664-4, the clearances of reinforced insulation are twice the value required for basic insulation		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation are based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree ..... :	(see appended table) Material Group IIIa/IIIb	P
	Pollution degree 2 applies, unless		P
	- precautions taken to protect the insulation; pollution degree 1		N/A
	- insulation subjected to conductive pollution; pollution degree 3		N/A
	A force of 2 N is applied to bare conductors, other than heating elements		N/A
	A force of 30 N is applied to accessible surfaces		P
	In a double insulation system, the working voltage for both the basic and supplementary insulation is taken as the working voltage across the complete double insulation system		N/A
29.2.1	Creepage distances of basic insulation not less than specified in table 17 ..... :	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 17 ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Except for pollution degree 1, corresponding creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14 ..... :		N/A
29.2.2	Creepage distances of supplementary insulation at least those specified for basic insulation in table 17, or..... :	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable ..... :		N/A
29.2.3	Creepage distances of reinforced insulation at least double those specified for basic insulation in table 17, or..... :	(see appended table)	N/A
	Table 2 of IEC 60664-4, as applicable ..... :		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18..... :	(see appended table)	P
	However, if the working voltage is periodic and has a frequency exceeding 30 kHz, the creepage distances are also determined from table 2 of IEC 60664-4, these values being used if exceeding the values in table 18..... :		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary and reinforced insulation have adequate thickness, or a sufficient number of layers, to withstand the electrical stresses		P
	Compliance checked:		-
	- by measurement, in accordance with 29.3.1, or		P
	- by an electric strength test in accordance with 29.3.2, or		N/A
	- by an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3, and		N/A
	for accessible parts of reinforced insulation consisting of a single layer, by measurement in accordance with 29.3.4, or		N/A
	- as specified in subclause 6.3 of IEC 60664-4 for insulation that is subjected to any periodic voltage having a frequency exceeding 30 kHz		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
29.3.1	Supplementary insulation have a thickness of at least 1 mm		N/A
	Reinforced insulation have a thickness of at least 2 mm	Thickness > 1 mm	P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N/A
	Supplementary insulation consist of at least 2 layers		N/A
	Reinforced insulation consist of at least 3 layers		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N/A
	the electric strength test of 16.3		N/A
	If the temperature rise during the tests of clause 19 does not exceed the value specified in table 3, the test of IEC 60068-2-2 is not carried out		N/A
29.3.4	Thickness of accessible parts of reinforced insulation consisting of a single layer not less than specified in table 19 ..... :		N/A
30	RESISTANCE TO HEAT AND FIRE		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and	Terminals separately certified	P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C) ..... :	(see appended table) 75°C	P
	Parts supporting live parts tested at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)..... :	(see appended table) Terminals separately certified	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) ..... :	(see appended table)	P
30.2	Parts of non-metallic material resistant to ignition and spread of fire		P

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Clause	Requirement + Test	Result - Remark	Verdict
	This requirement does not apply to:		-
	parts having a mass not exceeding 0,5 g, provided the cumulative effect is unlikely to propagate flames that originate inside the appliance by propagating flames from one part to another, or		N/A
	decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		N/A
	Compliance checked by the test of 30.2.1, and in addition:		-
	- for attended appliances, 30.2.2 applies	See EN 60335-2-103	P
	- for unattended appliances, 30.2.3 applies		N/A
	For appliances for remote operation, 30.2.3 applies		N/A
	For base material of printed circuit boards, 30.2.4 applies	PCB material certified UL94 Class Flame V-0	N/A
	For drives operated by a biased-off switch, 30.2.2 is applicable. (IEC 60335-2-103)		P
	For other drives, 30.2.3 is applicable. (IEC 60335-2-103)		N/A
30.2.1	Parts of non-metallic material subjected to the glow-wire test of IEC 60695-2-11 at 550 °C		P
	However, test not carried out if the material is classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 550 °C, or		N/A
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out need to meet the requirements in ISO 9772 for material classified HBF		N/A
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and	Terminal separately certified	P
	parts of non-metallic material within a distance of 3mm of such connections,		P
	subjected to the glow-wire test of IEC 60695-2-11		P
	The test severity is:		-
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least:		-
	- 750 °C, for connections carrying a current exceeding 0,5 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		-
	- comprise material having a glow-wire flammability index of at least 750 °C, or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10..... :		N/A
	Glow-wire test not applicable to conditions as specified ..... :		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		N/A
	The tests are not applicable to conditions as specified ..... :		N/A
30.2.3.1	Parts of non-metallic material supporting connections carrying a current exceeding 0,2 A during normal operation, and		N/A
	parts of non-metallic material, other than small parts, within a distance of 3 mm,		N/A
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850 °C		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	The glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index according to IEC 60695-2-12 of at least 850 °C		N/A
30.2.3.2	Parts of non-metallic material supporting connections, and		N/A
	parts of non-metallic material within a distance of 3mm,		N/A
	subjected to glow-wire test of IEC 60695-2-11		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The test severity is:		-
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	Glow-wire applied to an interposed shielding material, if relevant		N/A
	However, the glow-wire test of 750 °C or 650 °C as appropriate, is not carried out on parts of material fulfilling both or either of the following classifications:		-
	- a glow-wire ignition temperature according to IEC 60695-2-13 of at least:		.
	• 775 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	• 675 °C, for other connections		N/A
	- a glow-wire flammability index according to IEC 60695-2-12 of at least:		-
	- 750 °C, for connections carrying a current exceeding 0,2 A during normal operation		N/A
	- 650 °C, for other connections		N/A
	The glow-wire test is also not carried out on small parts. These parts are to:		-
	- comprise material having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- comprise material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- comply with the needle-flame test of Annex E, or		N/A
	- comprise material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
	The consequential needle-flame test of Annex E applied to non-metallic parts that encroach within the vertical cylinder placed above the centre of the connection zone and on top of the non-metallic parts supporting current-carrying connections, and parts of non-metallic material within a distance of 3 mm of such connections if these parts are those:		-
	- parts that withstood the glow-wire test of IEC 60695-2-11 of 750 °C or 650 °C as appropriate, but produce a flame that persist longer than 2 s, or		N/A
	- parts that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- small parts, that comprised material having a glow-wire flammability index of at least 750 °C or 650 °C as appropriate, or		N/A
	- small parts for which the needle-flame test of Annex E was applied, or		N/A
	- small parts for which a material classification of V-0 or V-1 was applied		N/A
	However, the consequential needle-flame test is not carried out on non-metallic parts, including small parts, within the cylinder that are:		-
	- parts having a glow-wire ignition temperature of at least 775 °C or 675 °C as appropriate, or		N/A
	- parts comprising material classified as V-0 or V-1 according to IEC 60695-11-10, or		N/A
	- parts shielded by a flame barrier that meets the needle-flame test of Annex E or that comprises material classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to the needle-flame test of Annex E		N/A
	Test not applicable to conditions as specified ..... :	PCB material separately certified UL94 Class Flame V-0	P
31	RESISTANCE TO RUSTING		
	Relevant ferrous parts adequately protected against rusting		P
	For parts intended to be installed outdoors, compliance is checked by the salt mist test of IEC 60068-2-52, severity 2 being applicable (IEC 60335-2-103)	No outdoor use	N/A
	Before the test, coatings are scratched by the specified tests. (IEC 60335-2-103)		N/A
	After the test, the drive shall not have deteriorated to such an extent that compliance with this standard. (IEC 60335-2-103)		N/A
	The coating shall not be broken and shall not have loosened from the metal surface. (IEC 60335-2-103)		N/A
32	RADIATION, TOXICITY AND SIMILAR HAZARDS		
	Appliance does not emit harmful radiation or present a toxic or similar hazard due to their operation in normal use		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by the limits or tests specified in part 2, if relevant		P
32.101	Appliances incorporating a laser shall be constructed so that they provide adequate protection from laser radiation. (IEC 60335-2-103)	Not used	N/A
	The accessible emission level shall not exceed five times the limits specified for Class I for wavelengths of 400 nm to 700 nm. (IEC 60335-2-103)		N/A
	For other wavelengths, it shall not exceed the limits for Class 3R as specified in Table 3 of IEC 60825-1. (IEC 60335-2-103)		N/A
	If compliance with IEC 60825-1 relies on the operation of an interlock, this interlock shall be of the fail-safe type or be tested for 30 000 cycles of operation under the conditions of 24.1.4. (IEC 60335-2-103)		N/A
A	ANNEX A (INFORMATIVE) ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer	Considered	P
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	This annex does not apply to battery chargers		N/A
3.1.9	Appliance operated under the following conditions:		N/A
	- the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	- the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	- if the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.B.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
	The positive terminal indicated by symbol IEC 60417-5005 and the negative terminal by symbol IEC 60417-5006		N/A
7.6	Symbols 60417-5005 and IEC 60417-5006		N/A
7.12	The instructions give information regarding charging		N/A
	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period stated in the instructions or 24 h ..... :		N/A
19.1	Appliances subjected to tests of 19.B.101, 19.B.102 and 19.B.103		N/A
19.10	Not applicable		N/A
19.B.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.B.102	For appliances having batteries that can be removed without the aid of a tool, short-circuit of the terminals of the battery, the battery being fully charged,		N/A
19.B.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
21.B.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-31, the number of falls being:		N/A
	- 100, if the mass of the part does not exceed 250 g (g) ..... :		N/A
	- 50, if the mass of the part exceeds 250 g ..... :		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords in class III appliances or class III constructions operating at safety extra-low voltage not containing live parts		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
	Test conditions as specified		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		
	Applicable to appliances having motors that incorporate thermal motor protectors necessary for compliance with the standard		P
	Test conditions as specified		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		N/A
7	Severities		N/A
	The duration of application of the test flame is 30 s ± 1 s		N/A
9	Test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.1	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1		N/A
9.2	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A
9.3	The test is carried out on one specimen		N/A
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		N/A
11	Evaluation of test results		N/A
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A
F	ANNEX F (NORMATIVE) CAPACITORS		
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		-
1.5	Terms and definitions		N/A
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		N/A
	Items a) and b) are applicable		N/A
3.4	Approval testing		N/A
3.4.3.2	Table 3 is applicable as described		N/A
4.1	Visual examination and check of dimensions		N/A
	This subclause is applicable		N/A
4.2	Electrical tests		N/A
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table 11 is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.12	Damp heat, steady state		N/A
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		N/A
	This subclause is applicable		N/A
4.14	Endurance		N/A
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 are applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	No visible damage		N/A
4.17	Passive flammability test		N/A
	This subclause is applicable		N/A
4.18	Active flammability test		N/A
	This subclause is applicable		N/A
G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		
	The following modifications to this standard are applicable for safety isolating transformers:		-
7	Marking and instructions		N/A
7.1	Transformers for specific use marked with:		N/A
	-name, trademark or identification mark of the manufacturer or responsible vendor..... :		N/A
	-model or type reference ..... :		N/A
17	Overload protection of transformers and associated circuits		N/A
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		N/A
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		N/A
29.1, 29.2, 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For insulated winding wires complying with subclause 19.12.3 of IEC 61558-1 there are no requirements for clearances or creepage distances		N/A
	For windings providing reinforced insulation, the distance specified in item 2c of table 13 of IEC 61558-1 is not assessed		N/A
	For safety isolating transformers subjected to periodic voltages with a frequency exceeding 30 kHz, the clearances, creepage distances and solid insulation values specified in IEC 60664-4 are applicable, if greater than the values specified in items 2a, 2c and 3 in table 13 of IEC 61558-1		N/A
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified below:		-
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		N/A
	Switches are not required to be marked		N/A
	However, a switch that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		N/A
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		N/A
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		N/A
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles declared according to 7.1.4 is 10 000, unless		N/A
	otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Switches for operation under no load and which can be operated only by a tool, and		N/A
	switches operated by hand that are interlocked so that they cannot be operated under load,		N/A
	are not subjected to the tests		N/A
	However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation		N/A
	Subclauses 17.2.2 and 17.2.5.2 not applicable		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1		N/A
	The temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1 (K)..... :		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N/A
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N/A
I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N/A
8	Protection against access to live parts		N/A
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		N/A
11.3	The temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	The temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		N/A
16.3	Insulation between live parts of the motor and its other metal parts is not subjected to the test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19	Abnormal operation		N/A
19.1	The tests of 19.7 to 19.9 are not carried out		N/A
19.I.101	Appliance operated at rated voltage with each of the following fault conditions:		N/A
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		N/A
22.I.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		-
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
5.7	Conditioning of the test specimens		N/A
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		N/A
	The test is carried out at -25 °C		N/A
5.7.3	Rapid change of temperature		N/A
	Severity 1 is specified		N/A
5.9	Additional tests		N/A
	This subclause is not applicable		N/A
K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		-
	The information on overvoltage categories is extracted from IEC 60664-1		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A
L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		
	Information for the determination of clearances and creepage distances	Considered	P
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		
	The information on pollution degrees is extracted from IEC 60664-1		-
	Pollution		-
	The microenvironment determines the effect of pollution on the insulation, taking into account the macroenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		-
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		-

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

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Clause	Requirement + Test	Result - Remark	Verdict
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		N/A
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor		N/A
5.7	The ambient temperature for the tests of clauses 11 and 13 is 40 +3/0 °C		N/A
7.1	The appliance marked with the letters WDaE		N/A
7.12	The instructions state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries		N/A
11.8	The values of Table 3 are reduced by 15 K		N/A
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N/A
15.3	The value of t is 37 °C		N/A
16.2	The leakage current for class I appliances not exceeding 0,5 mA (mA):		N/A
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N/A
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
	Description of tests for appliances incorporating electronic circuits		P
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		
	Programmable electronic circuits requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2 validated in accordance with the requirements of this annex	As customer's request, this "ANNEX R" has not been investigated	N/I
R.1	Programmable electronic circuits using software		N/I

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

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Clause	Requirement + Test	Result - Remark	Verdict
R.2.2.4	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the programmable electronic circuits incorporate measures to address the fault/errors in safety-related segments and data indicated in table R.1 and R.2 as appropriate		N/I
R.2.2.5	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, detection of a fault/error occur before compliance with clause 19 is impaired		N/I
R.2.2.6	The software is referenced to relevant parts of the operating sequence and the associated hardware functions		N/I
R.2.2.7	Labels used for memory locations are unique		N/I
R.2.2.8	The software is protected from user alteration of safety-related segments and data		N/I
R.2.2.9	Software and safety-related hardware under its control is initialized and terminates before compliance with clause 19 is impaired		N/I
R.3	Measures to avoid errors		N/I
R.3.1	General		N/I
	For programmable electronic circuits with functions requiring software incorporating measures to control the fault/error conditions specified in table R.1 or R.2, the following measures to avoid systematic fault in the software are applied		N/I
	Software that incorporates measures used to control the fault/error conditions specified in table R.2 is inherently acceptable for software required to control the fault/error conditions specified in table R.1		N/I
R.3.2	Specification		N/I
R.3.2.1	Software safety requirements:	Software Id:	N/I
	The specification of the software safety requirements includes the descriptions listed		N/I
R.3.2.2	Software architecture		N/I

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Clause	Requirement + Test	Result - Remark	Verdict
R.3.2.2.1	The specification of the software architecture includes the aspects listed - techniques and measures to control software faults/errors (refer to R.2.2); - interactions between hardware and software; - partitioning into modules and their allocation to the specified safety functions; - hierarchy and call structure of the modules (control flow); - interrupt handling; - data flow and restrictions on data access; - architecture and storage of data; - time-based dependencies of sequences and data	Document ref. No:	N/I
R.3.2.2.2	The architecture specification is validated against the specification of the software safety requirements by static analysis		N/I
R.3.2.3	Module design and coding		N/I
R.3.2.3.1	Based on the architecture design, software is suitably refined into modules		N/I
	Software module design and coding is implemented in a way that is traceable to the software architecture and requirements		N/I
R.3.2.3.2	Software code is structured		N/I
R.3.2.3.3	Coded software is validated against the module specification by static analysis		N/I
	The module specification is validated against the architecture specification by static analysis		N/I
R.3.3.3	Software validation		N/I
	The software is validated with reference to the requirements of the software safety requirements specification		N/I
	Compliance is checked by simulation of:		N/I
	- input signals present during normal operation		N/I
	- anticipated occurrences		N/I
	- undesired conditions requiring system action		N/I

TABLE R.1 – GENERAL FAULT/ERROR CONDITIONS						
Component [1]	Fault/error	Acceptable measures [2] [3]	Definitions	Document reference for applied measure	Document reference for applied test	Ver-dict
1 CPU 1.1 Registers	Stuck at	Functional test, or periodic self-test using either: - static memory test, or - word protection with single bit redundancy	H.2.16.5 H.2.16.6 H.2.19.6 H.2.19.8.2			
1.2 VOID						
1.3 Programme counter	Stuck at	Functional test, or Periodic self-test, or Independent time-slot monitoring, or Logical monitoring of the programme sequence	H.2.16.5 H.2.16.6 H.2.18.10.4 H.2.18.10.2			
2 Interrupt handling and execution	No interrupt or too frequent interrupt	Functional test, or time-slot monitoring	H.2.16.5 H.2.18.10.4			
3 Clock	Wrong frequency (for quartz synchronized clock: harmonics/ sub-harmonics only)	Frequency monitoring, or time slot monitoring	H.2.18.10.1 H.2.18.10.4			
4. Memory 4.1 Invariable memory	All single bit faults	Periodic modified checksum, or multiple checksum, or word protection with single bit redundancy	H.2.19.3.1 H.2.19.3.2 H.2.19.8.2			

4.2 Variable memory	DC fault	Periodic static memory test, or word protection with single bit redundancy	H.2.19.6 H.2.19.8.2			
4.3 Addressing (relevant to variable and invariable memory)	Stuck at	Word protection with single bit redundancy including the address	H.2.19.8.2			
5 Internal data path	Stuck at DC fault	Word protection with single bit redundancy Comparison of redundant CPUs by either: - reciprocal comparison - independent hardware comparator	H.2.19.8.2 H.2.18.15 H.2.18.3			
5.1 VOID						
5.2 Addressing	Wrong address	Word protection with single bit redundancy including the address	H.2.19.8.2			
6 External communication	Hamming distance 3	Word protection with multi-bit redundancy, or CRC – single work, or Transfer redundancy, or Protocol test	H.2.19.8.1 H.2.19.4.1 H.2.18.2.2 H.2.18.14			
6.1 VOID						
6.2 VOID						

6.3 Timing	Wrong point in time Wrong sequence	Time-slot monitoring, or scheduled transmission Time-slot and logical monitoring, or Comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator Logical monitoring, or time-slot monitoring, or Scheduled transmission (same options as for wrong point in time)	H.2.18.10.4 H.2.18.18 H.2.18.10.3 H.2.18.15 H.2.18.3 H.2.18.10.2 H.2.18.10.4 H.2.18.18			
7 Input/output periphery	Fault conditions specified in 19.11.2	Plausibility check Comparison of redundant communication channels by either: - reciprocal comparison - independent hardware comparator	H.2.18.13 H.2.18.15 H.2.18.3			
7.1 VOID						
7.2 Analog I/O 7.2.1 A/D and D/A-converter	Fault conditions specified in 19.11.2	Plausibility check	H.2.18.13			
7.2.2 Analog multiplexer	Wrong addressing	Plausibility check	H.2.18.13			
8 VOID						
9 Custom chips [4)] e.g. ASIC, GAL, Gate array	Any output outside the static and dynamic functional specification	Periodic self-test	H.2.16.6			

NOTE A Stuck-at fault model denotes a fault model representing an open circuit or a non-varying signal level. A DC fault model denotes a stuck-at fault model incorporating short circuit between signal lines.
[1] For fault/error assessment, some components are divided into their sub-functions.
[2] For each sub-function in the table, the Table R.2 measure will cover the software fault/error.
[3] Where more than one measure is given for a sub-function, these are alternatives.
[4] To be divided as necessary by the manufacturer into sub-functions.

10.1	TABLE: Power input deviation				P
Input deviation of/at:	**P rated (W)**	**P measured (W)**	**Δ P**	**Required Δ P**	**Remark**
230 V 50 Hz	150	165	+ 10 %	+ 20 %	P
Supplementary information: Test condition: appliance with motor but, as request by the manufacturer, without driven parts					

10.2	TABLE: Current deviation				N/A
Current deviation of/at:	**I rated (A)**	**I measured (A)**	**Δ I**	**Required Δ I**	**Remark**
Supplementary information:					

11.8	TABLE: Heating test		P
	Test voltage (V) ..... :	230 x 1,06=243,8	—
	Ambient (°C) ..... :	25,0	—

Thermocouple locations:	**Max. temperature rise measured, Δ T (K)**	**Max. temperature rise limit, Δ T (K)**
Connector M1	10,4	65
Connector M2	11,5	65
Relay K1	12,0	45
Switch SW1	10,1	50
Motor Capacitor	13,4	30
PCB plastic insulation	5,0	90
Supply cord	2,4	20

Supplementary information:

Test condition: appliance with motor but, as request by the manufacturer, without driven parts

Temperature limits calculated on the basis of the maximum functional temperature declared by the customer (40°C)

11.8	**TABLE: Heating test, resistance method**					P
	Test voltage (V) ..... :		230 x 1,06=243,8			—
	Ambient, t1 (°C) ..... :		25,0			—
	Ambient, t2 (°C) ..... :		25,0			—
Temperature rise of winding:		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**Max. Δ T (K)**	**Insulation class**
Motor Blu / Black		112,7	125,2	28,8	60	Considered in Class A
Motor Blu / Brown		112,1	126,8	34,0	60	Considered in Class A

Supplementary information:

Test condition: appliance with motor but, as request by the manufacturer, without driven parts

Temperature limits calculated on the basis of the maximum functional temperature declared by the customer (40°C)

13.2	**TABLE: Leakage current**			P
	Heating appliances: 1.15 x rated input (W) .. :		-	—
	Motor-operated and combined appliances: 1.06 x rated voltage (V) ..... :		230 x 1,06=243,8	—
Leakage current between:		**I (mA)**	**Max. allowed I (mA)**	
Between Live parts and Earth		0,07	3,5	
Between Live parts and accessible plastic parts		0,04	0,35 (peak)	

Supplementary information:

13.3	TABLE: Dielectric strength	P

Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Between Live parts and Earth	1000	No
Between Live parts and accessible plastic parts	3000	No

Supplementary information:

14	TABLE: Transient overvoltages	N/A

Clearance between:	Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)

Supplementary information:

16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage (V)..... :	230 x 1,06=243,8	—
	Three phase appliances 1.06 x rated voltage divided by √3 (V)..... :	-	—

Leakage current between:	I (mA)	Max. allowed I (mA)
Between Live parts and Earth	0,8	3,5
Between Live parts and accessible plastic parts	0,060	0,25

Supplementary information:

16.3	TABLE: Dielectric strength	P

Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Between Live parts and Earth	1250	No
Between Live parts and accessible plastic parts	3000	No

Supplementary information:

17	TABLE: Overload protection	N/A

Thermocouple locations:	Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)

Supplementary information:

17	TABLE: Overload protection, resistance method		N/A
	Test voltage (V) ..... :		—
	Ambient, t1 (°C) ..... :		—
	Ambient, t2 (°C) ..... :		—

Temperature of winding:	R1 (Ω)	R2 (Ω)	Δ T (K)	T (°C)	Max. T (°C)

Supplementary information:

19	Abnormal operation conditions						P
Operational characteristics			**YES/NO**	**Operational conditions**			
Are there electronic circuits to control the appliance operation?			Yes				
Are there "off" or "stand-by" position?			Yes				
The unintended operation of the appliance results in dangerous malfunction?			N/I	As customer's request, this cl. has not been investigated			
Sub-clause	**Operating conditions description**	**Test results description**	**PEC description**	**EMP 19.11.4**	**Software type required**	**19.11.3 PEC**	**Final result**
19.2							N/A
19.3							N/A
19.4							N/A
19.5							N/A
19.6							N/A
19.7	Mechanical lock of motor	Thermal motor protector tripping No hazard					P
19.7	Open capacitor motor	Thermal motor protector tripping No hazard					P
19.8							N/A
19.9							N/A
19.10							N/A
19.11.2	Items: b/c/d	No hazard					P
19.11.4.8							N/I
19.14	s.c. all the contact relay	No hazard					P
19.101 EN 60335-2-103	Continuos operation	T within limits No hazard					P
Supplementary information:							

19.7	TABLE: Abnormal operation, locked rotor/moving parts					P
	Test voltage (V) ..... :			230		—
	Ambient, t1 (°C) ..... :			25,0		—
	Ambient, t2 (°C) ..... :			25,0		—
Temperature of winding:		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**
Motor Blu / Black		112,7	-	-	< 150	200 – Class A
Motor Blu / Brown		112,1	-	-	< 150	200 – Class A
Supplementary information: Thermal motor protector tripping during the first hour						

19.9	TABLE: Abnormal operation, running overload					N/A
	Test voltage (V) ..... :					—
	Ambient, t1 (°C) ..... :					—
	Ambient, t2 (°C) ..... :					—
Temperature of winding:		**R1 (Ω)**	**R2 (Ω)**	**Δ T (K)**	**T (°C)**	**Max. T (°C)**
Supplementary information:						

19.13	TABLE: Abnormal operation, temperature rises	N/A

Thermocouple locations:	Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Supplementary information:		

21.1	TABLE: Impact resistance	P

Impacts per surface	Surface tested	Impact energy (Nm)	Comments
3	All surface	0,5	No damage
Supplementary information:			

24.1	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Supply cord	FDK Ningdo LTD	H05RR-F 60245 IEC 53	4G 0,75mm² T 60°C	HD 21/22	VDE
Terminal M1	KAIFENG Electronic LTD	KF 126	300 V 10 A -40 +105°C	EN 60998-2-1	CE Mark cURus
Terminal M2	KAIFENG Electronic LTD	KF 126	300 V 10 A -40 +105°C	EN 60998-2-1	CE Mark cURus
Relay K1	HONGFA	HF115F	250 V 8 A Coil 24 V -40 +855°C	EN 60335-2-103	Checked in the appliance
Switch SW1	DONGNAN	KW04A	250 V 8 A	EN 61058-1	VDE TUV
Motor	NINGBO DOOYA LTD	QZY 180	230 V 50 Hz	EN 60335-2-103	Checked in the appliance
Motor motor protector	BAOXHU	TB02-8880	Open 140°C	EN 60730-2-2	VDE cURus
Motor capacitor (n°2)	CHINA NINGBO HAILIDA	CBB60	450 V 50/60 Hz 3 µF T 70°C	EN 60252-1	TUV R
Internal wiring	ELECTRICA EQUIPMENT	-	500 V 105°C	EN 60335-2-103	Checked in the appliance
PCB material	DONGGUAN GANGXIANG ELECTRONIC TECHNOLOGY CO LTD	-	FR4 130°C UL 94 Class Flame V-0 T 130°C	EN 60335-2-103	Checked in the appliance File UL E466794
Plastic internal appliance (white)	NINGBO DOOYA LTD	ABS	UL94 Class Flame V-0	EN 60335-2-103	Checked in the appliance
Plastic internal appliance (white)	NINGBO DOOYA LTD	ABS	UL94 Class Flame V-0	EN 60335-2-103	Checked in the appliance

Plastic enclosure (black)	NINGBO DOOYA LTD	PA66 30 %	-	EN 60335-2-103	Checked in the appliance
Plastic internal appliance (Grey)	NINGBO DOOYA LTD	PA66 15 %	-	EN 60335-2-103	Checked in the appliance
Supplementary information: [1]) Provided evidence ensures the agreed level of compliance. See OD-2039.					

28.1	**TABLE: Threaded part torque test**		P
Threaded part identification:	**Diameter of thread (mm)**	**Column number (I, II, or III)**	**Applied torque (Nm)**
Screw	2,8	II	0,5
Supplementary information:			

29.1	**TABLE: Clearances**					P
	Overvoltage category .... :		II			—
		Type of insulation:				
Rated impulse voltage (V):	**Min. cl (mm)**	**Basic (mm)**	**Supplementary (mm)**	**Reinforced (mm)**	**Functional (mm)**	**Verdict / Remark**
330	0,2* / 0,5 / 0,8**					
500	0,2* / 0,5 / 0,8**					
800	0,2* / 0,5 / 0,8**					
1 500	0,5 / 0,8** / 1,0***					
2 500	**1,5** / 2,0***	> 5,0			2,0	P
4 000	3,0 / 3,5***					
6 000	5,5 / 6,0***					
8 000	8,0 / 8,5***					
10 000	11,0 / 11,5***					

Supplementary information:

*) For tracks on printed circuit boards if pollution degree 1 and 2
**) For pollution degree 3
***) If the construction is affected by wear, distortion, movement of the parts or during assembly

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation	P

Working voltage (V):	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group			mm			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb*	B**	S**	R**	Verdict
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9		—	—	
≤50	0,18	0,6	0,85	1,2	1,5	1,7	1,9	—		—	
≤50	0,36	1,2	1,7	2,4	3,0	3,4	3,8	—	—		
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4		—	—	
125	0,28	0,75	1,05	1,5	1,9	2,1	2,4	—		—	
125	0,56	1,5	2,1	3,0	3,8	4,2	4,8	—	—		
250	0,56	1,25	1,8	**2,5**	3,2	3,6	4,0	> 5,0	—	—	P
250	0,56	1,25	1,8	2,5	3,2	3,6	4,0	—	-	—	-
250	1,12	2,5	3,6	5,0	6,4	7,2	8,0	—	—	-	-
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	
400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	
400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	
500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	
500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	
>630 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	

>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0		—	—	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	—		—	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—		—	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		

Supplementary information:

*) Material group IIIb is allowed if the working voltage does not exceed 50 V
**) B = Basic insulation, S = Supplementary insulation, R = Reinforced insulation

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V):	**Creepage distance (mm) Pollution degree**							
	1	**2**			**3**			
		Material group			**Material group**			
		I	**II**	**IIIa/IIIb**	**I**	**II**	**IIIa/IIIb***	**Verdict / Remark**
≤10	0,08	0,4	0,4	0,4	1,0	1,0	1,0	
50	0,16	0,56	0,8	1,1	1,4	1,6	1,8	
125	0,25	0,71	1,0	1,4	1,8	2,0	2,2	
250	0,42	1,0	1,4	**2,0**	2,5	2,8	3,2	2,0 mm - P
400	0,75	1,6	2,2	3,2	4,0	4,5	5,0	
500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	
>630 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	

Supplementary information:

*) Material group IIIb is allowed if the working voltage does not exceed 50 V

30.1	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm) .....:			—
Object/ Part No./ Material	**Manufacturer/ trademark**	**Test temperature (°C)**	**Impression diameter (mm)**
Plastic enclosure	See Table 24.1	75	< 2 mm
Plastic internal appliance (White)	See Table 24.1	75	< 2 mm
Plastic internal appliance (Grey)	See Table 24.1	75	< 2 mm
Supplementary information:			

30.2	TABLE: Resistance to heat and fire - Glow wire tests								P
Object/ Part No./ Material	**Manufacturer / trademark**	**Glow wire test (GWT); (°C)**							**Verdict**
		550	**650**		**750**		**850**		
			te	**ti**	**te**	**ti**			
Plastic enclosure	See Table 24.1	X							P
Plastic internal appliance (Grey)	See Table 24.1	X							P
Plastic internal appliance (White)	See Table 24.1	X							P
Object/ Part No./ Material	**Manufacturer / trademark**	**Glow-wire flammability index (GWFI), °C**				**GW ignition temp. (GWIT), °C**			**Verdict**
		550	**650**	**750**	**850**	**675**	**775**		
The test specimen passed the glow wire test (GWT) with no ignition [(t_e – t_i) ≤ 2s] (Yes/No) :									

If no, then surrounding parts passed the needle-flame test of annex E (Yes/No) ..... :	
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)? .....:	
Ignition of the specified layer placed underneath the test specimen (Yes/No) .....:	
Supplementary information: - 550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF - The GWIT pre-selection option, the 850 °C GWFI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances	

30.2/30.4	**TABLE: Needle- flame test (NFT)**				N/A
Object/ Part No./ Material	**Manufacturer/ trademark**	**Duration of application of test flame (ta); (s)**	**Ignition of specified layer Yes/No**	**Duration of burning (tb) (s)**	**Verdict**
Supplementary information: - NFT not relevant (or applicable) for Parts of material classified as V-0 or V-1 - NFT not relevant (or applicable) for Base material of PCBs classified as V-0 or if relevant VTM-0					

ATTACHMENT TO TEST REPORT IEC 60335-2-103 **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY Part 2-103: Particular requirements for Drives for gates, doors and windows			
Differences according to .....:	EN 60335-2-103: 2015 used in conjunction with EN 60335-1:2012/A11:2014 EN 62233:2008		
	CENELEC COMMON MODIFICATIONS		
6.1	Delete “class 0” and “class 01”		P
7.1	Single-phase appliances to be connected to the supply mains: 230 V covered		P
	Multi-phase appliances to be connected to the supply mains: 400 V covered		N/A
7.12	The instructions include the substance of the following:		-
	- this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved		P
	- children shall not play with the appliance		P
	- cleaning and user maintenance shall not be made by children without supervision		P
7.12.Z1	The specific instructions related to the safe operation of this appliance is collated together in the front section of the user instructions		P
	The height of the characters, measured on the capital letters, is at least 3 mm		P
	These instructions are also available in an alternative format, e.g. on a website		P
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standards for the telecommunication interface circuitry in the appliance are EN 41003 and EN 60950-1:2006, Subclause 6.3.		N/A
25.6	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A, fitted with a plug complying with the following standard sheets of IEC 60083:1975:		-
	- for Class I appliances: standard sheet C2b, C3b or C4 .....:	Not plug	N/A
	- for Class II appliances: standard sheet C5 or C6..:		N/A
25.7	Additional type of supply cord:		-

	- ordinary polychloroprene sheathed flexible cord (60245 IEC 57)		N/A
25.7	Supply cords having high flexibility, not lighter than:		-
	- rubber insulated and sheathed cord (60245 IEC 86)		N/A
	- rubber insulated, crosslinked PVC sheathed cord (60245 IEC 87)		N/A
	- crosslinked PVC insulated and sheathed cord (60245 IEC 88)		N/A
29.3.Z1	Appliance constructed so that if there is a possibility of damaging the insulation during installation, the insulation withstands the scratch and penetration test of 21.2		N/A
32	Compliance regarding electromagnetic fields is checked according to EN 62233		P

Annex EN 62233:2008			
EMF- ELECTROMAGNETICS FIELDS			
	The tested product also complies with the requirements of EN 62233:2008		
	Limit ……100%	Measured max. :…1,6…….%	P

Standard for which a new application or extension of the scope is required: IEC 60335-1

Clause	Measurement / testing	item	Manufacturer	Model	serial number	PRS rif.	USED
7.14	Piece of cloth	-	-	-	-	-	X
	Water	-	-	-	-	-	X
	Petroleum spirit	ALIPHATIC SOLVENT HEXANE	ATS FARR	cod.9446907	-	-	X
8	Test probe B of IEC61032	ARTICULATE TEST FINGER test probe B	A.T.S. GALBUSERA	01.01	-	SAF.001	X
	Test probe 13 of IEC61032	TEST PROBE 13	A.T.S. GALBUSERA	01.03	169/99	SAF.011	X
	Test probe 41 of IEC61032	TEST PROBE 41	A.T.S. GALBUSERA	01.05	171/99	SAF.026	
	Test probe 18 (small finger probe)	SMALL TEST FINGER	A.T.S. GALBUSERA	art.01.14	055/11	SAF.271	X
	voltmeter mill ammeter	DIGITAL MULTIMETER	FLUKE	287	96270113	SAF.253	
	force gauges	DIGITAL DYNANOMETER	SALTEC	500 N	9695	SAF.168	
	2000ohm non-inductive resister	2K NON INDUCTIVE RESISTOR	PRS	-	-	-	
10	wattmeter	SINGLE-PHASE DIGITAL WATTMETER	YOKOGAWA	WT210	91J730823	SAF.257	
		SINGLE-PHASE DIGITAL WATTMETER	YOKOGAWA	WT110	27BV0607 F	SAF.188	X
		THREE-PHASE DIGITAL WATTMETER	YOKOGAWA	WT130	12B115654	SAF.193	
11	Temperature controlled room	HEATING ROOM	PRS	-	-	SAF.302	X
	Temperature Recorder	TEMPERATURE RECORDER	YOKOGAWA	DR 130	47JE0365	SAF.190	X
	fine wire thermocouples	TYPE K TERMOCOUPLER	TERSID	K/K-28-KK	-	-	X
	test corners	TEST CORNER	PRS	-	-	-	X
	Winding resistance measurement system	MICROHMMETER	AOIP	OM 21	515273G7	SAF.078	X
	Voltage stabilizer	VOLTAGE EQUILIZER	SHANDY	RTG 30	30242	SAF.174	X
	-	SINGLE PHASE VARIABLE AUTOTRANSFORMER	BELOTTI VARIATORI	V 20NC/2	244301/302	SAF.086	X
	-	THREE PHASE VARIABLE AUTOTRANSFORMER	BELOTTI VARIATORI	T 70NC/3	244303/305	SAF.088	
	Frequency Converter	50HZ to 60HZ	ELECTRO ADDA	CF C1 60M	9903429	SAF.100	

		CONVERTER P.S.					
13	Leakage current and at operating temperature	Line Leakage Tester 40A	ASSOCIATED RESEARCH	620L	9610437	SAF.357	
		Isolation transformer	OHMICRON	TT262	-	-	
		SINGLE PHASE VARIABLE AUTOTRANSFORMER	BELOTTI VARIATORI	V 20NC/2	244301/302	SAF.086	
		Three phase insulation transformer	BBR	9301222	-	-	
		THREE PHASE VARIABLE AUTOTRANSFORMER	BELOTTI VARIATORI	T 70NC/3	244303/305	SAF.088	
		CE MULTITESTER	ELDES ELETTRONICA DESSY	ELD 9900	697027	SAF.099	X
14	Transient overvoltage	Impulse voltage test generator and monitor	See EMC testing equipment				
15	Oscillating hoop IP test equipment, measurement beaker, spray nozzle	IPX3 - IPX4 TEST EQUIPMENT	A.T.S. GALBUSERA	03-30C	001746/97	SAF.005	
		IPX5 NOZZLE	A.T.S. GALBUSERA	03.22	001750/97	SAF.006	
		IPX6 NOZZLE	A.T.S. GALBUSERA	03.23	001750/97	SAF.007	
		IPX5 - IPX6 NOZZLE SUPPORT	A.T.S. GALBUSERA	—	001750/97	SAF.017	
		IPX5 - IPX6 TEST PRESSURE GAUGE	A.T.S. GALBUSERA	DN 80	EL 57/99	SAF.019	
		IPX2 INCLINED SURFACE	A.T.S. GALBUSERA	—	—	SAF.033	
		TEST LANCE FOR WATERING	A.T.S. GALBUSERA	03.20	001914/99	SAF.035	
		SPRAY TESTS EQUIPMENT	A.T.S. GALBUSERA	03.21	153/99	SAF.036	
		IPX7 TEST EQUIPMENT	A.T.S. GALBUSERA	—	—	SAF.050	
		IPX3 - IPX4 MANOMETER	A.T.S. GALBUSERA	DN 80	—	SAF.066	
		IPX1 - IPX2 TEST EQUIPMENT	A.T.S. GALBUSERA	—	—	SAF.067	
		IPX5 FLOW METER	CRIOTEK	D 4	97022424	SAF.094	
		MISURATORE PORTATA ACQUA IP X 3 - IP X 4	CRYOTEK	D 2	1109221	SAF.296	
		IPX6 FLOW METER	CRIOTEK	D 7	97022423	SAF.096	
		IP TEST CHAMBER	PRS	—	—	SAF.112	
		IPX3- IPX4 MANOMETER	WIKA	DN 80	EL 58/99	SAF.186	

		IPX8	A.T.S. GALBUSERA	art.03.28-C	002464/10	SAF.269	
16	Environmental chamber capable of 93%RH at selected temp. with HV test facilities	CLIMATIC CHAMBER	ANGELANTONI	HYGROS 1200	6327	SAF.076	
		HUMIDITY TEST CHAMBER	CRIOCABIN	GENESIS	-	SAF.084	X
		Iserver Temperature/umidity recorder	OMEGA	ITHX-SD	17150241	SAF.356	
17	Overload protection of transformers and associated circuits	Included above	-	-	-	-	
18	-	-	-	-	-	-	
19	As above with suitable protection against damage to equipment, personnel and property in event of abnormal failure	-	-	-	-		
19.11.4.8	IEC 61000-4-2/3/4/5/6/11/13 testing equipment	See EMC testing equipment					
20	Inclined plains	STABILITY TEST EQUIPMENT	A.T.S. GALBUSERA	02.12	00-1922/99	SAF.048	
		GONIOMETER	GONIOLEVEL	33226	-	SAF.279	
	Circular stop device 50 mm	CIRCULAR STOP DEVICE 50 MM	PRS	-	-	-	
21	Impact hammer	NORMALIZED TEST HAMMER	PTL	F 22.50	9706232	SAF.159	X
	Test finger nail	TEST FINGER NAIL	GM & C	-	-	SAF.122	
	Hardened steel pin	Abrasion resistance test (IEC 60950-1)	A.T.S. GALBUSERA	02.17	-	SAF.249	
	Force gauges	DIGITAL DYNANOMETER	SALTEC	500 N	9695	SAF.168	
22	Test rig for torque on pin supported appliance,	PIN TORQUE TEST APPARATUS	A.T.S. GALBUSERA	05-ott	001753/97	SAF.021	
	Heating cabinet (70 ±2°C)	OVEN	HERAEUS	UT 6200 ST.	97105114	SAF.077	
	Test probe 11 of IEC61032,	TEST PROBE 11 with force gauge	A.T.S. GALBUSERA	N.01.02	0024/97	SAF.003	
	Test fingernail	TEST FINGER NAIL	GM & C	-	-	SAF.122	
	Force gauge	DIGITAL DYNANOMETER	SALTEC	500 N	9695	SAF.168	

	Oxygen bomb	Subcontracted					
	Methylated spirits and Pressure apparatus	Subcontracted					
	Water pressure test apparatus	OVERPRESSURE PUMP	MANDELLI	-	-	SAF.137	
		PRESSURE GAUGE	MANDELLI	DN 50	EL 59/99	SAF.138	
23	Flexing test apparatus	FLEXING TEST APPARATUS	A.T.S. GALBUSERA	20-09-A	001928/99	SAF.056	
24	Components	Laboratory may or may not have facilities for testing to component standards.	-	-	-	-	
		Certification by specialist laboratories is accepted for compliance					
25	Flexing test apparatus,	FLEXING TEST APPARATUS	A.T.S. GALBUSERA	20-09-A	001928/99	SAF.056	
	torque tester	TORQUE WRENCH	HAZET-WERK	6280-1CT/6260420018	7465037	SAF.124	
		TORQUE WRENCH	TOHNICHI	900QL-N	003948J	SAF.266	
		TORQUE WRENCH	HAZET-WERK	6291-1CT/6260420002	8452011	SAF.125	
	Cord anchorage force	DIGITAL DYNANOMETER	SALTEC	500 N	9695	SAF.168	
		CABLE TRACTION TESTS EQUIPMENT	A.T.S. GALBUSERA	05-ago	001752/97	SAF.020	
26		DYNAMOMETRIC QUADRANT SCREWDRIVER	TORQUELEADER	TT100 FH	7GV030855	SAF.183	
		DYNAMOMETRIC QUADRANT SCREWDRIVER	TORQUELEADER	TT250 FH	7GV033803	SAF.184	
27	Earth continuity tester	CE MULTITESTER	ELDES ELETTRONICA DESSY	ELD 9900	697027	SAF.099	X
28	Torque gauge	DYNAMOMETRIC QUADRANT SCREWDRIVER	TORQUELEADER	TT100 FH	7GV030855	SAF.183	X
		DYNAMOMETRIC QUADRANT SCREWDRIVER	TORQUELEADER	TT250 FH	7GV033803	SAF.184	X
29	Mechanical measurement tools	EYEGLASS	SCALE LOUPE	M-1210	ASL12-2	SAF.170	
		DIGITAL CALIPER	MITUTOYO CORPORATION	500-181U/CD-15CP	282113	SAF.140	X
		DIGITAL MICROMETER	MITUTOYO CORPORATION	293-561-30	9053255	SAF.141	

	Rod and ball gauges	GAUGES	FACOM	-	-	SAF.104	
						SAF.105	
	Proof tracking test apparatus	TRACKING TEST	A.T.S. GALBUSERA	02-ott	001947/97	SAF.018	
30		BALL PRESSURE TEST EQUIPMENT	A.T.S. GALBUSERA	-	0030/97	SAF.009	X
		OVEN	ARIETE	-	-	SAF.080	X
		GLOW WIRE TEST	A.T.S. GALBUSERA	02-giu	001748/97	SAF.008	X
		NEEDLE FLAME TEST EQUIPMENT	A.T.S. GALBUSERA	02-lug	088/09	SAF.258	
		BURNER	A.T.S. GALBUSERA	-	-	SAF.034	
Annex B	Free fall test apparatus (IEC60068-2-32)	FREE FALL APPARATUS	PRS	-	-	-	
Annex E	Needle flame test apparatus (IEC 60695-2-2)	NEEDLE FLAME TEST EQUIPMENT	A.T.S. GALBUSERA	02-lug	088/09	SAF.258	
Annex F	Impulse voltage test apparatus, Endurance test apparatus (IEC 60384-14)	Subcontracted					
Annex H	Endurance test apparatus (61058-1)	Subcontracted					
Annex J	Coated printed circuit boards test apparatus (IEC60664-3)	COATED PRINTED CIRCUIT BOARDS TEST APPARATUS	A.T.S. GALBUSERA	02.17	-	-	
Annex N	Proof tracking test apparatus (IEC 60112)	TRACKING TEST	A.T.S. GALBUSERA	02-ott	001947/97	SAF.018	
Annex R	Capability for Software evaluation (IEC 60730-1)	Subcontracted					

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PRSLAB
SCEGLI BENE, SCEGLI PRIMA

TEST	EXTENDED UNCERTAINTY Coverage factor (K=2) normal distribution – confidence level 95%
01.Input power (100W div.1)	0,359 W
01.Input power (100W div. 0,4)	0,340 W
01.Input power (5kW div. 1)	8,7378 W
01.Input power (5kW div. 0,4)	7,9156 W
02.Residual energy (voltage)	1,628 V
02.Residual energy (charge)	1,569 µF
03.Mechanical resistance (enclosure - hammer)	0,080 J
03.Mechanical resistance (enclosure - sphere)	6,13 g
03.Mechanical resistance (cable anchorage)	26,144 µm
03.Mechanical resistance (stability)	1,946 °
04.Leakage	2,419 %
05.Dielectric strength (ac)	0,152 kV
05.Dielectric strength (dc)	0,099 kV
06.Resistance to heat (ball pressure)	2,989 %
06.Resistance to heat (oven)	2,217 °C
07.Glow wire	16,83 °C
08.Clearances, creepage distances (monocle)	7,69 µm
08.Clearances, creepage distances (gauge meter)	23,9 µm
08.Clearances, creepage distances (micrometer)	1,89 µm
09.Heating (thermocouple)	3,309 °C
09.Heating (resistance)	16,907 µΩ
10. Climatic Chamber (Temperature)	2,246 °C
11. Climatic Chamber (Humidity)	3,673 %

Figure 1

Figure 2

Figure 3

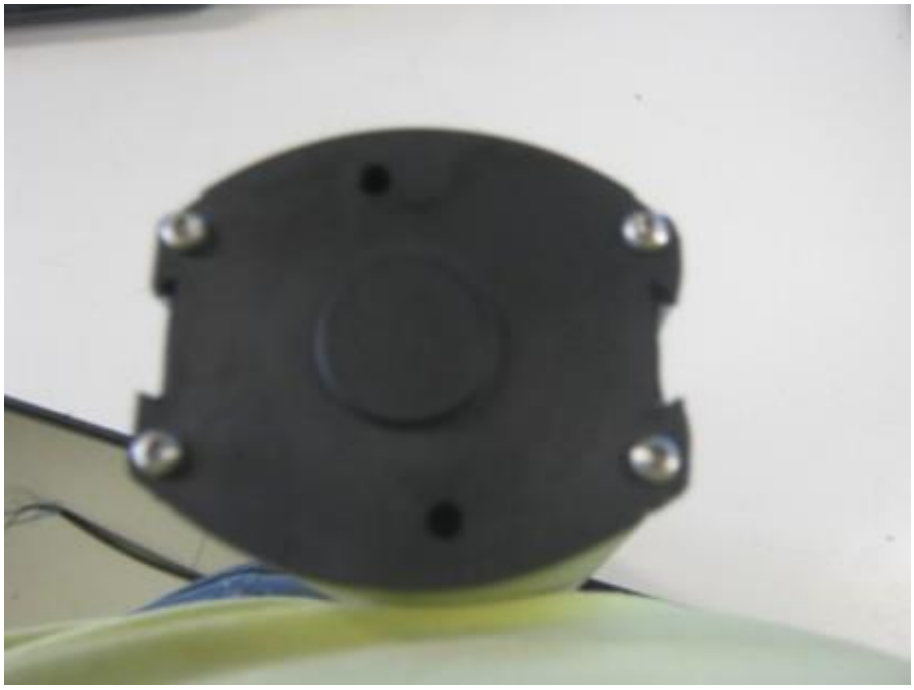

Figure 4

Figure 5

Figure 6

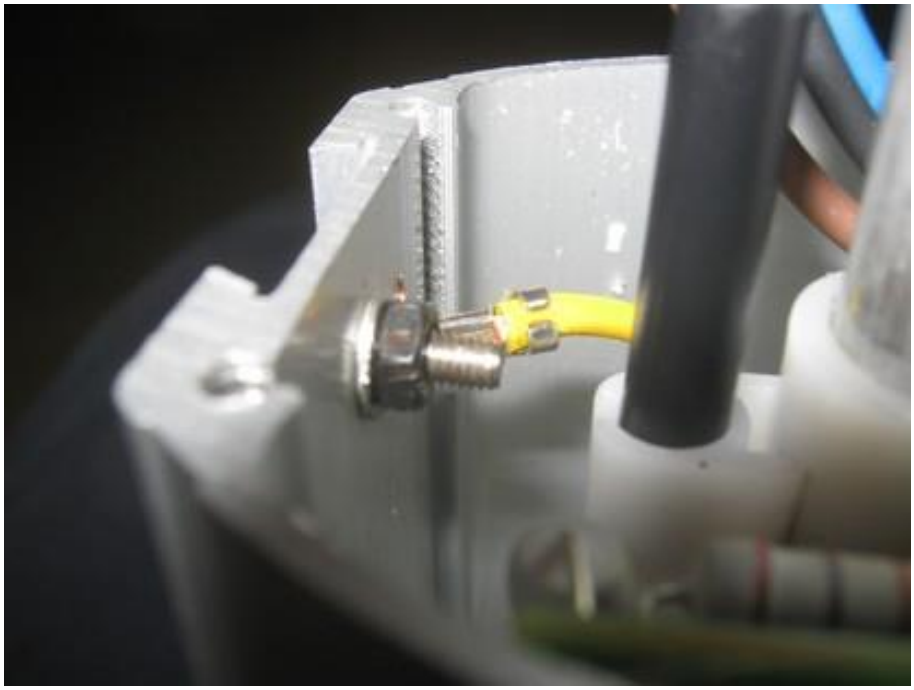

Figure 7

Figure 8

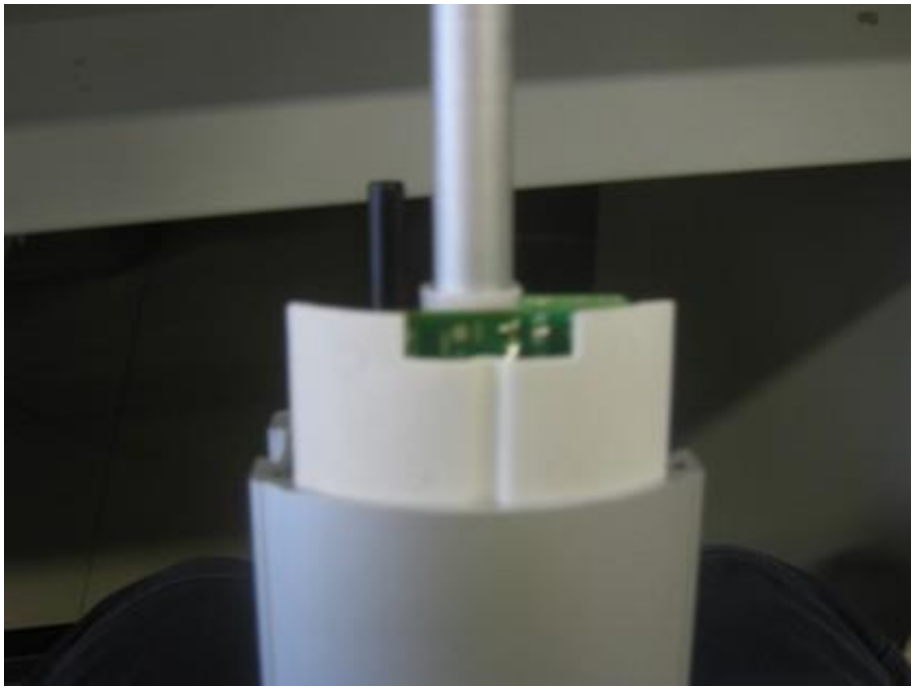

Figure 9

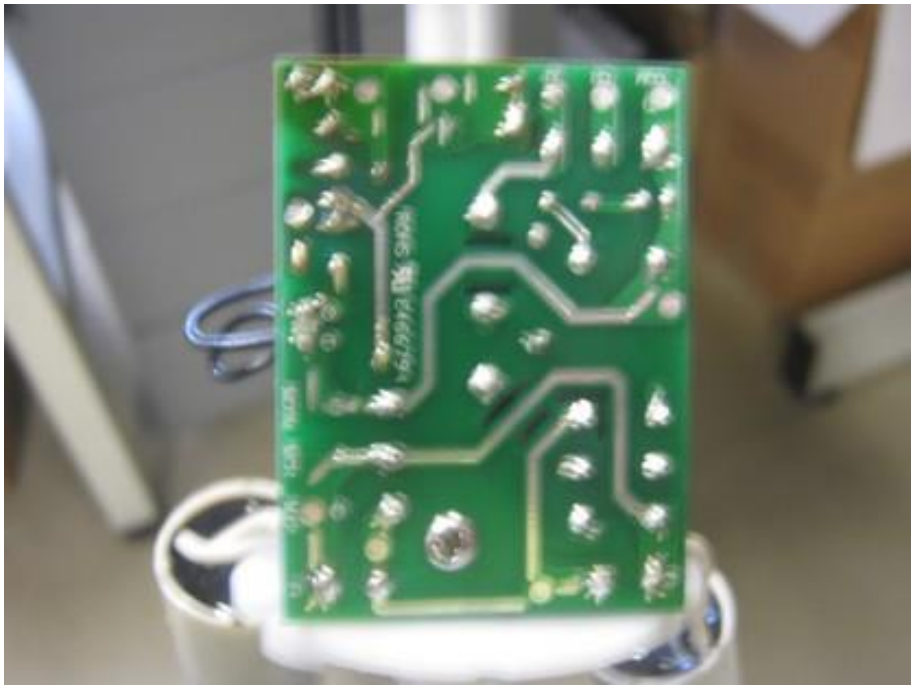

Figure 10

Figure 11

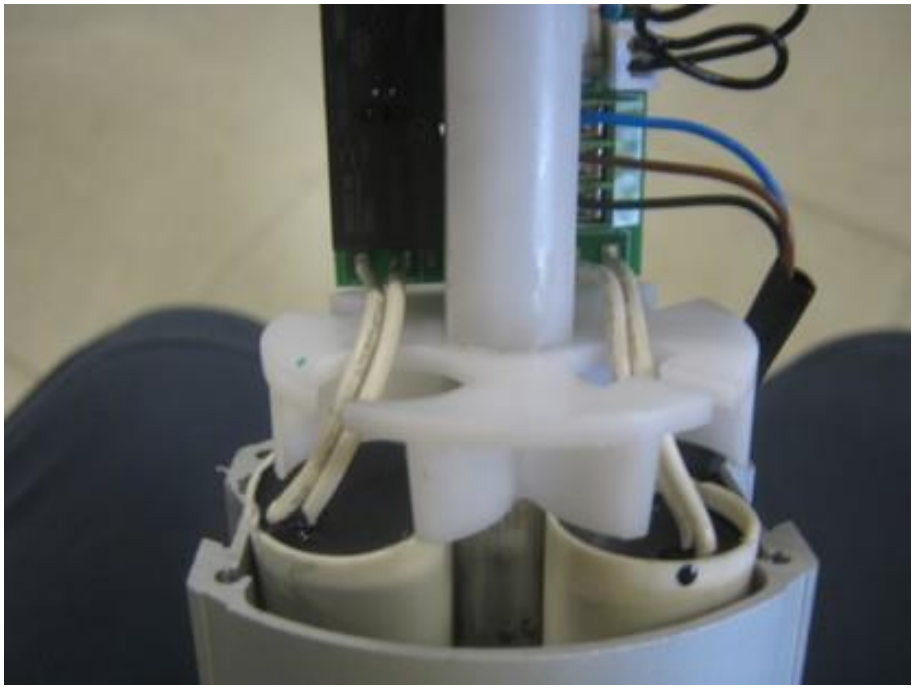

Figure 12

Figure 13

Figure 14

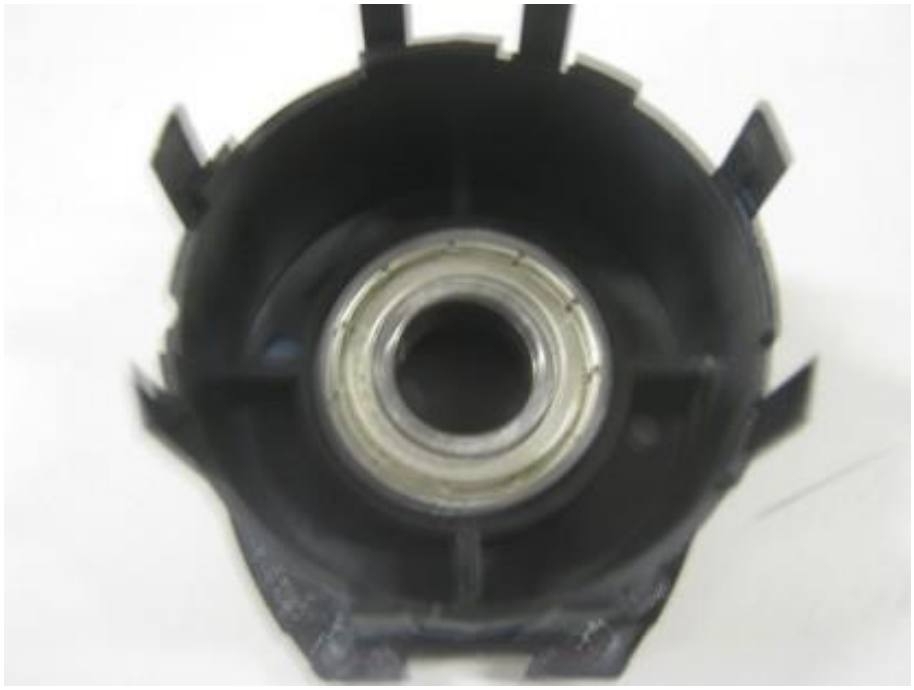

Figure 15

Figure 16

Figure 17

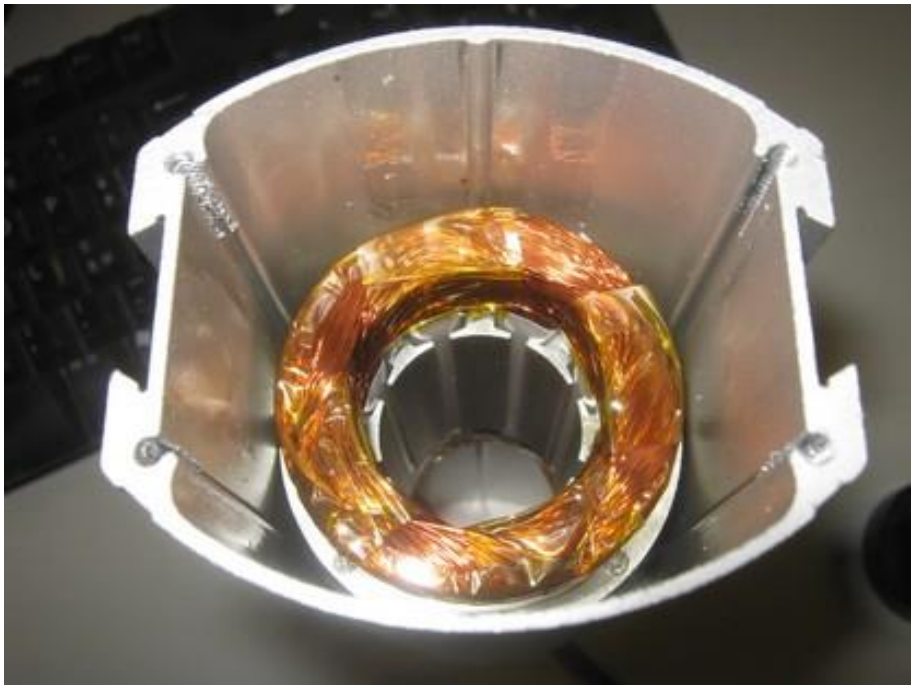

Figure 18

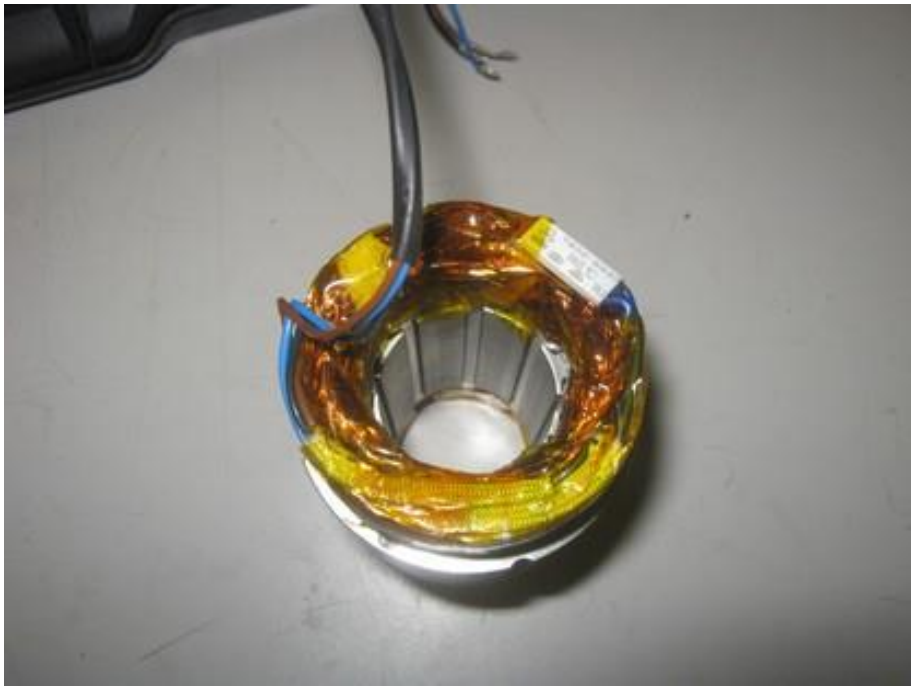

Figure 19

Figure 20