Date issued: September 19, 2008

CERTIFICATE No.: F690501/SP-SAF000191

CERTIFICATE OF LVD COMPLIANCE

Product submitted ..... :	Bidet Models HDB-330, HDB-310, HB-08 Rated input: 230 V~, 50 Hz, 1650 W
Applicant (Manufacturer)... :	HYUNDAI Wacor tec. Co., Ltd. 684-49, Gongreung-Dong, Nowon-Ku, Seoul, Korea
Testing Laboratory ..... :	SGS Testing Korea Co., Ltd.
Test Report Number(s) ..... :	F690501/RF-SAF002144
Specification Requested ... :	EN 60335-2-84:2003 used in conjunction with EN 60335-1:2002 + A1:2004 + A11:2004 + A12:2004 + A2:2006 and EN 50366:2003 + A1:2006
Order Number(s) ..... :	G-44-2008-02393

Remark

For model difference, see test report, F690501/RF-SAF00xxxx

Conclusion

Based on a review of the test report, this apparatus meets the requirements of the above standards and hence fulfills the requirements of Directive 2006/95/EC

This certificate is only valid for the equipment submitted and configuration described, in conjunction with the test data detailed above. It does not permit the use of the SGS PRODUCT CERTIFICATION MARK.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

CE

WonWoo Lee
Manager

Eric Lee
General Manager

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F690501

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SGSPAPER
06400225

TEST REPORT
EN 60335-2-84
Safety of household and similar electrical appliances
Part 2: Particular requirements for toilets

Report Reference No.	:	F690501/RF-SAF002144
Order No.	:	G-44-2008-02393
Tested by (+ signature)	:	Yuta Kim
Approved by (+ signature)	:	Tony Woo
Date of issue	:	September 19, 2008
Total number of pages	:	77 pages
Testing Laboratory	:	SGS Testing Korea Co., Ltd.
Address	:	# 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, 435-041, KOREA
Applicant's name	:	HYUNDAI Wacor tec. Co., Ltd.
Address	:	684-49, Gongreung-Dong, Nowon-Ku, Seoul, Korea
Test specification:		
Standard	:	EN 60335-2-84:2003 used in conjunction with EN 60335-1:2002 + A1:2004 + A11:2004 + A12:2004 + A2:2006 and EN 50366:2003 + A1:2006
Test procedure	:	
Non-standard test method	:	N/A
Test Report Form No.	:	IECEN60335_2_84B
Test Report Form(s) Originator	:	LCIE
Master TRF	:	Dated 2006-11

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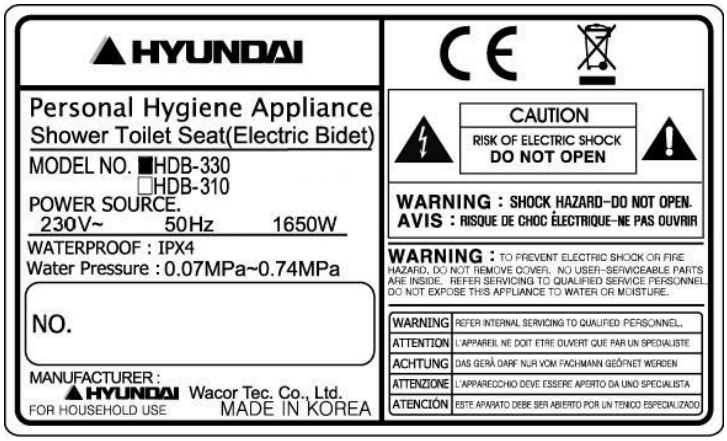
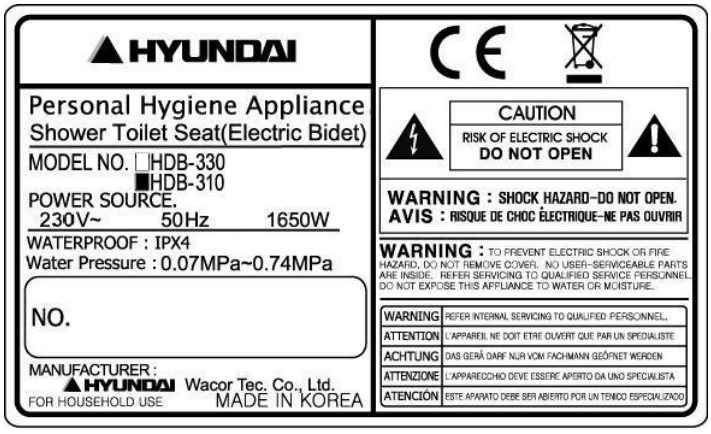
Test item description	:	Bidet
Trade Mark	:	HYUNDAI
Manufacturer	:	Same as applicant
Model/Type reference	:	HDB-330, HDB-310, HB-08
Ratings	:	230 V~, 50 Hz, 1650 W

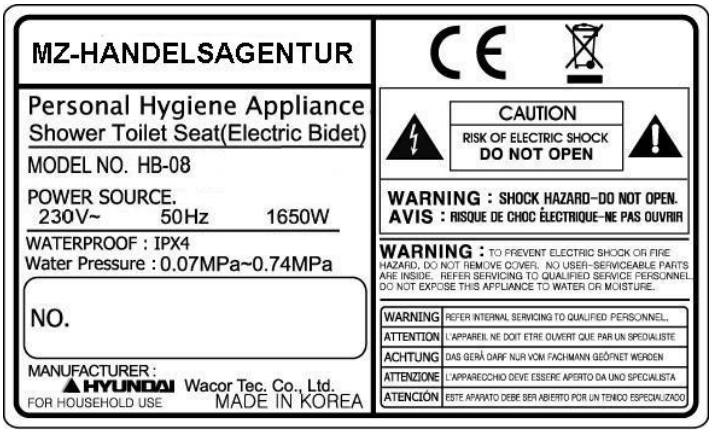
Summary of testing:

- The presented units was found to be in compliance with the test standard of EN 60335-2-84:2003, EN 60335-1:2002 + A1:2004 + A11:2004 + A12:2004 + A2:2006 and EN 50366:2003 + A1:2006

Copy of marking plate







Test item particulars ..... :	
Class ..... :	Class I
IP number ..... :	IPX4
Switch ..... :	No
Electronic circuit ..... :	Yes
Oscillating mechanism	Yes
Accessories	No
Type of supply cord attachment	Type Y
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N (N/A)
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	August 12, 2008
Date (s) of performance of tests ..... :	August 13, 2008 – September 19, 2008

General remarks:

The test results presented in this report relate only to the object tested.
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"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

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Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for three months. This document cannot be reproduced except in full, without prior approval of the company.

General product information:

1. Model differences:

- **HDB-330** is the basic model tested in this application.
- Models **HDB-310** and **HB-08** are identical to the basic model **HDB-330** except for the model name and following descriptions.

Model	Dry module	Brand Name
HDB-330	Yes	HYUNDAI Wacor Tec
HDB-310	No	HYUNDAI Wacor Tec
HB-08	Yes	MZ-HANDELSAGENTUR

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
5	**GENERAL CONDITIONS FOR THE TESTS**		
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
5.7	The temperature of the water used for the tests is 15 °C ± 5 °C(IEC 60335-2-84 : 2002)		P
6	**CLASSIFICATION**		
6.1	Protection against electric shock: Class 0, 0I, I, II, III .....:	Class I	P
	Appliances incorporating water heaters having bare heating elements: Class I or Class III (IEC 60335-2-84 : 2002)	No such heater	P
6.2	Protection against harmful ingress of water		P
	Toilets and heated seats shall be IPX4(IEC 60335-2-84 : 2002)	IPX4	P
7	**MARKING AND INSTRUCTIONS**		
7.1	Rated voltage or voltage range (V) .....:	230 V~	P
	Nature of supply.....:	~	P
	Rated frequency (Hz).....:	50 Hz	P
	Rated power input (W):.....:	1650 W	P
	Rated current (A) .....:		N
	Manufacturer's or responsible vendor's name, trademark or identification mark .....:	HYUNDAI Wacor tec. Co., Ltd.	P
	Model or type reference.....:	HDB-330, HDB-310, HB-08	P
	Symbol 5172 of IEC 60417, for Class II appliances	Class I appliance	N
	IP number, other than IPX0 .....:	IPX4	P
	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		N
7.2	Warning for stationary appliances for multiple supply	Single-phase appliance	N
	Warning placed in vicinity of terminal cover		N
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N
	Different rated values marked with the values separated by an oblique stroke		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N
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		N
	the power input is related to the mean value of the rated voltage range		N
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N
7.6	Correct symbols used	V, ~, Hz, W, IPX4, 	P
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N
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 (N)		P
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		P
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means.....:	By letters and light etc	P
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N
7.11	Indication for direction of adjustment of controls		N
7.12	Instructions for safe use provided		P
	The instructions state that:		
	- the appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction		P
	- children being supervised not to play with the appliance		P

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
	The instructions for use shall state how to empty and clean the toilet safely(IEC 60335-2-84 : 2002),		P
	They shall include details about final disposal(IEC 60335-2-84 : 2002),		N
	Unless the toilet is connected to the sewage system (IEC 60335-2-84 : 2002)		N
7.12.1	Sufficient details for installation supplied	Provided in the manual	P
	The instructions for installation of class I appliances shall state they have to be earthed(IEC 60335-2-84 : 2002)		N
	Label concerning glowings cigarettes is to be fixed in a conspicuous place beside the toilet(IEC 60335-2-84 : 2002)		N
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	Fixed appliance	N
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		N
7.12.4	Instructions for built-in appliances:		
	- dimensions of space		N
	- dimensions and position of supporting means		N
	- distances between parts and surrounding structure		N
	- dimensions of ventilation openings and arrangement		N
	- connection to supply mains and interconnection of separate components		N
	- allow disconnection of the appliance after installation, by accessible plug or a switch in the fixed wiring, unless		N
	a switch complying with 24.3		N
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N
	Replacement cord instructions, type Y attachment	Provided in the manual	P
	Replacement cord instructions, type Z attachment		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.6	Caution in the instructions for heating appliances with a non-self-resetting thermal cut-out		P
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed		P
7.12.8	Instructions for appliances connected to the water mains:		P
	- max. inlet water pressure (Pa):	0,07 - 0,74 MPa	P
	- min. inlet water pressure, if necessary (Pa):		P
	Instructions concerning new and old hose-sets for appliances connected to the water mains by detachable hose-sets		P
7.13	Instructions and other texts in an official language	English	P
7.14	Marking clearly legible and durable		P
7.15	Marking on a main part		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
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions	HYUNDAI Wacor tec. Co., Ltd.	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		P
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N
7.101	Toilets shall be provided with a label stating that glowing cigarettes and other burning materials must not be thrown into the toilet (IEC 60335-2-84 : 2002)		N
8	**PROTECTION AGAINST ACCESS TO LIVE PARTS**		
8.1	Adequate protection against accidental contact with live parts		P

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Use of test probe B of IEC 61032: no contact with live parts		P
	Test probe 18 of IEC 61032 is also applied, as specified for test probe B (IEC 60335-2-84 : 2002)		P
8.1.2	Use of test probe 13 of IEC 61032 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		P
	Test probe 18 of IEC 61032 is also applied, as specified for test probe B (IEC 60335-2-84 : 2002)		P
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements	No visible glowing heating elements	N
8.1.4	Accessible part not considered live if:		
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N
	- or separated from live parts by protective impedance		N
	If protective impedance: d.c. current not exceeding 2 mA, and		N
	a.c. peak value not exceeding 0.7 mA		N
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N
	- for peak values over 15kV, the energy in the discharge not exceeding 350 mJ		N
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		
	- built-in appliances	No built-in appliances	N
	- fixed appliances		P
	- appliances delivered in separate units		N

EN 60335-2-84			
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
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 for an appliance with one or more rated voltage ranges		N
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N
	Test for an appliance with one or more rated voltage ranges		N
11	**HEATING**		
11.1	No excessive temperatures in normal use		P
11.2	Placing and mounting of appliance as described		P
11.3	Temperature rises, other than of windings, determined by thermocouples	By thermocouples method	P
	And thermocouples with small blackened disk for measuring the temperature rise of warm air (IEC 60335-2-84 : 2002)		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings makes it difficult to make the necessary connections		N
11.4	Heating appliances operated under normal operation at 1.15 times rated power input .....:		N

EN 60335-2-84			
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 .....:		N
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage .....:	244 V	P
11.7	Shower units are operated for 2 min unless the water flow stops automatically (IEC 60335-2-84 : 2002)		N
	Other appliances are operated until steady conditions are established(IEC 60335-2-84 : 2002)		P
11.8	Temperature rises not exceeding values in table 3 (IEC 60335-1 : 2001) and in table 101 (IEC 60335-2-84 : 2002)	(see appended tables)	P
	The temperature of the water supplied by shower units not exceeding 45 °C (IEC 60335-2-84 : 2002)		N
	Protective devices do not operate		P
	Sealing compound does not flow out		P
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N
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 rated power input.....:		N
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage.....:	244 V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements	(see appended table)	P
	Water heaters having bare heating elements are tested with water having the resistivity stated in the instructions (IEC 60335-2-84 : 2002)		N
	For water heaters of class I having bare heating elements, the leakage current is measured as specified (IEC 60335-2-84 : 2002)		N
	The leakage current not exceeding 0,25 mA (IEC 60335-2-84 : 2002)		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
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 overvoltages to which they may be subjected		N
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6		N
	No flashover during the test, unless of functional insulation		N
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N
15	**MOISTURE RESISTANCE**		
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX4	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 and creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529.....:	IPX4	P
	Spray nozzle described in subclause 14.2.4 of IEC 60 529 for testing the inside of the bowl (IEC 60335-2-84 : 2002)		N
	Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains tested as specified for IPX7 appliances		N
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N
	Built-in appliances installed according to the instructions		N
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N

EN 60335-2-84			
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		N
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		P
	However, 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
	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		N
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min		P
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Detachable parts tested as specified		N
15.2	Spillage of liquid does not affect the electrical insulation		N
	Appliances with type X attachment fitted with a flexible cord as described		N
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N
	Detachable parts removed		N
	Overfilling test with additional amount of water, over a period of 1 min (l).....:		N
	The appliance withstands the electric strength test of 16.3		N
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
15.3	Appliances proof against humid conditions	95 %, 30 °C	P
	Humidity test for 48 h in a humidity cabinet		P
	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		N
16.2	Single-phase appliances: test voltage 1.06 times rated voltage.....:	244 V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3.....:		N
	Leakage current measurements	(see appended table)	P
	Water heaters having bare heating elements are tested with water having the resistivity stated in the instructions (IEC 60335-2-84 : 2002)		N
16.3	Electric strength tests according to table 7	(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)	P
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied .....:	(see appended table)	P
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 8,		P
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N
18	**ENDURANCE**		
	Requirements and tests are specified in part 2 when necessary		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
19	**ABNORMAL OPERATION**		
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		P
	Appliances incorporating automatic controls are also subjected to the test of 19.101 (IEC 60335-2-84 : 2002)		P
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input .....:	208 V (1650 W x 0,85)	P
	Water heaters are tested with or without water, whichever is more unfavourable (IEC 60335-2-84 : 2002)	Without water conditions	P
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input .....:	255 V (1650 W 1,24)	P
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited		P
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 elements sheath		P
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		P
	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
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N
	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		N
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		P
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		N

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
	Locked rotor, capacitors open-circuited one at a time		N
	Test repeated with capacitors short-circuited one at a time, if required		N
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N
	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	Three-phase motors operated at rated voltage with one phase disconnected		N
19.9	Running overload test on appliances incorporating motors intended to be remotely or automatically controlled or liable to be operated continuously		N
	Winding temperatures not exceeding values as specified		N
19.10	Series motor operated at 1.3 times rated voltage for 1 min.....:		N
	During the test, parts not being ejected from the appliance		N
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		P
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.3 and 19.11.4		P
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch placing the appliance in a stand-by mode, subjected to the tests of 19.11.4		P
	Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly, subjected to the test of 19.11.4.8		N
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		
	- 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

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Clause	Requirement - Test	Result - Remark	Verdict
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N
	b) open circuit at the terminals of any component		N
	c) short circuit of capacitors, unless they comply with IEC 60384-14		P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		N
	e) failure of triacs in the diode mode		P
	f) failure of an integrated circuit		N
	g) failure of an electronic power switching device		N
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 f) of 19.11.2		P
	During and after each test the following is checked:		
	- the temperature rise 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
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		
	- the material of the printed circuit board withstands the burning test of annex E		N
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N

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Clause	Requirement - Test	Result - Remark	Verdict
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or		N
	a switch that can be placed in the stand-by mode,		N
	subjected to the tests of 19.11.4.1 to 19.11.4.7		N
	Appliances incorporating a protective electronic circuit subjected to the tests of 19.11.4.1 to 19.11.4.7, except that		N
	appliances operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena.		N
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4		P
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3		P
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		P
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		P
	Earthed heating elements in class I appliances disconnected		P
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3		P
19.11.4.6	The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11		P
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2		P
19.11.4.8	The appliance is supplied at rated voltage and operated under normal operation. After 60s the power supply is reduces to a level such that the appliance ceases to respond or a programmable component cease to operate.		N
	The appliance continues to operate normally or requires a manual operation to restart		N

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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
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 and table 102 (IEC 60335-2-84 : 2002)	(see appended table)	P
	Temperature of the water supplied by shower units not exceeding 65 °C (IEC 60335-2-84 : 2002)		N
	Cmpliance with cl. 8 is impaired		P
	If the appliance can still be operated it complies with 20.2		P
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		
	- basic insulation .....:	Between Live parts and earthed metallic parts	P
	- supplementary insulation.....:		N
	- reinforced insulation.....:	Between Live parts and non-metallic parts	P
	After operation or interruption of a control, clearances and creepage distances across the functional insulation withstanding the electric strength test of 16.3. the test voltage being twice the working voltage		N
	The appliance does not undergo a dangerous malfunction, and		P
	no failure of protective electronic circuits, if the appliance is still operable		P
	Appliances tested with an electronic switch in the off position, or in the stand-by mode:		
	- do not become operational, or		N
	- if they become operational, do not result in a dangerous malfunction during or after the tests of 19.11.4		N
19.14	Appliances operated under the conditions of Clause 11. Contactors or relays contacts operating under the conditions of clause 11 short-circuited		N

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Clause	Requirement - Test	Result - Remark	Verdict
19.101	The appliances is supplied at rated voltage and operated under normal operation. Any fault condition which can be expected in normal use is applied one at the time (IEC 60335-2-84 : 2002)		P
20	**STABILITY AND MECHANICAL HAZARDS**		
20.1	Adequate stability		N
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		N
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		P
	Protective enclosures, guards and similar parts are non-detachable		P
	Adequate mechanical strength and fixing of protective enclosures		P
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		P
	Not possible to touch dangerous moving parts with test probe		P
20.101	For appliances with a door opening dimension exceeding 200 mm and a drum volume exceeding 60 dm 3: no possible starting of the motor without operating a separate manual control (IEC 60335-2-11/A1 : 2003)		N
20.102	For appliance with a door opening greater than 200mm and a drum volume greater than 60dm[a], opening of the door from inside possible with force of 70N (IEC 60335-2-11/A1 : 2003)		N
21	**MECHANICAL STRENGTH**		
21.1	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P

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Clause	Requirement - Test	Result - Remark	Verdict
	Checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, spring hammer test, impact energy 0,5 J		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		P
	If necessary, repetition of groups of three blows on a new sample		N
	Compliance is also checked by the tests of 21.101 and 21.102 (IEC 60335-2-84)		P
21.2	Accessible parts of solid insulation having strength to prevent penetration by sharp implements		P
	The insulation is tested as specified, unless		N
	the thickness of supplementary insulation is at least 1 mm and reinforced insulation is at least 2 mm		P
	The insulation is raised to the temperature measured during the test of Clause 11.		N
	The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°. Its tip is rounded with a radius of 0,25 mm ± 0,02 mm.		N
	The pin is held at an angle of 80°- 85° to the horizontal and loaded so that the force exerted along its axis is 10 N ± 0,5 N.		N
	The scratches are made by drawing the pin along the surface of the insulation at a speed of approximately 20 mm/s. Two parallel scratches are made		N
	They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25 % of the length of the insulation.		N
	Two similar scratches are made at 90°to the first pair without crossing them.		N
	The test fingernail of Figure 7 is then applied to the scratched surface with a force of approximately 10 N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand the electric strength test of 16.3.		N

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Clause	Requirement - Test	Result - Remark	Verdict
	The hardened steel pin is then applied perpendicularly with a force of 30 N ± 0,5 N to an unscratched part of the surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and used as one of the electrodes.		N
21.101	1500 N applied perpendicularly to the seat, for 10 min, the bowl cover being open (IEC 60335-2-84)		P
	250 N applied to the front edge, parallel to the hinzes, the bowl cover or seat being slowly raised and lowered. Test is carried out five times (IEC 60335-2-84)		P
	On the bowl cover or seat raised, 250 N is applied for 1 min to its front edge in a direction perpendicular to its plane (IEC 60335-2-84)		P
	The appliance shall not be damaged to such an extent that compliance with 8.1, 15, 1, 16, 3 and 27,5 is impaired (IEC 60335-2-84)		P
21.102	Freese test of the excrement tank		N
	The appliance shall not be damaged to such an extent that compliance corth 8.1, 15. 1, 16.3 and 27.5 is impaired (IEC 60335-2-84)		N
22	**CONSTRUCTION**		
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	IPX4	N
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		
	- a supply cord fitted with a plug		P
	- a switch complying with 24.3		N
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N
	- an appliance inlet		N
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N
	Class I toilet appliances shall not incorporate an appliance inlet (IEC 60335-2-84 : 2002)		N

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Clause	Requirement - Test	Result - Remark	Verdict
22.3	Appliance provided with pins: no undue strain on socket-outlets		N
	Applied torque not exceeding 0.25 Nm		N
	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
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		P
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		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		P
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		P
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	No such compartments	N
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		N
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		N
	Non-self resetting thermal motor protectors have a trip-free action, unless		N
	they are voltage maintained		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Location or protection of reset buttons of non-self-resetting controls is so that accidental resetting is unlikely		P
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		P
	Obvious locked position of snap-in devices used for fixing such parts		N
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N
	Tests as described	Push: 50 N, Pull: 50 N	P
22.12	Handles, knobs etc. fixed in a reliable manner		N
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P
	No exposed pointed ends of self tapping screws etc., liable 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	No storage hooks and the like	N
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts	No automatic cord reels	N
	Cord reel tested with 6000 operations, as specified		N
	Electric strength test of 16.3, voltage of 1000 V applied		N
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner	No spacers	N

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Clause	Requirement - Test	Result - Remark	Verdict
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
22.19	Driving belts not used as electrical insulation	No driving belts	N
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N
	Compliance is checked by inspection and, if necessary, by appropriate test		N
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated	No such materials	N
	This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements		P
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Appliances shall not incorporate bare heating elements located in excrement tanks (IEC 60335-2-84 : 2002)		N
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation	No sagging heating conductors	N
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N
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
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
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N

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Clause	Requirement - Test	Result - Remark	Verdict
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		P
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose		P
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		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
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation	No ceramic materials	N
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N
	Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation		N
22.33	Liquids may be in direct contact with live parts of bare heating elements (IEC 60335-2-84 : 2002)		N
	Electrodes may be used for heating liquids (IEC 60335-2-84 : 2002)		N
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		P
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N
	Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation being fitted with a switch. The actuating member of the switch being easily visible and accessible.		N
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components	No protective impedance	N
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N

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Clause	Requirement - Test	Result - Remark	Verdict
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		N
22.46	Software used in protective electronic circuits is software class B or C .....:		N
22.47	Appliances connected to the water mains withstand the water pressure expected in normal use		P
	No leakage from any part, including any inlet water hose		P
22.48	Appliances connected to the water mains constructed to prevent backsiphonage of non-potable water		P
22.49	For remote operation, the duration of operation shall be set before the appliance can be started, unless		N
	the appliance switches off automatically or can operate continuously without hazard		N
22.50	Controls incorporated in the appliance take priority over controls actuated by remote operation		N
22.51	A control on the appliance being manually adjusted to the setting for remote operation before the appliance can be operated in this mode		N
	There is a visual indication showing that the appliance is adjusted for remote operation		N
	Manual setting and visual indication not necessary on appliances that can operate as follows, without giving rise to a hazard:		
	- operate continuously,		N
	- operate automatically, or		N
	- be operated remotely		N
22.101	Toilets shall be fixed appliances (IEC 60335-2-84 : 2002)		P
22.102	Metal parts in contact with the skin and which support the body in normal use shall not be earthed (IEC 60335-2-84 : 2002)		N

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Clause	Requirement - Test	Result - Remark	Verdict
22.103	Appliances shall be constructed so that live parts are protected from exposure to excrement (IEC 60335-2-84 : 2002)		N
	Test for rubber seals (IEC 60335-2-84 : 2002)		N
22.104	Vacuum toilets shall be constructed so that they cannot be flushed unless the bowl cover is closed (IEC 60335-2-84 : 2002)		N
22.105	Appliances shall withstand the water pressure expected in normal use (IEC 60335-2-84 : 2002)		P
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 wire holes in metal	N
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		P
	Beads inside flexible metal conduits contained within an insulating sleeve		N
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		P
	Flexible metallic tubes not causing damage to insulation of conductors		N
	Open-coil springs not used		N
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N
	No damage after 50 000 flexings for heated seats (IEC 60335-2-84 : 2002)		P
	Electric strength test, 1000 V between live parts and accessible metal parts		P
23.4	Bare internal wiring sufficiently rigid and fixed		N

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Clause	Requirement - Test	Result - Remark	Verdict
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
	Internal wiring supplying parts in the excrement tank at safety extra-low voltage shall not be lighter than ordinary polyvinyl chloride sheathed cord (code designation 60 227 IEC 53) (IEC 60335-2-84 : 2002)		N
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N
23.10	The insulation and sheath of internal wiring for the supply of magnetic valves and similar components incorporated in external hoses at least equivalent to light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52)		N
24	**COMPONENTS**		
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		P
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Lampholders and starterholders 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
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, or	Certified capacitors	N
	tested according to annex F		N
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N
	tested according to annex G		N
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or	Not employed switches in live circuits	N
	tested according to annex H		N
	If the switch operates a relay or contactor, the complete switching system is subjected to the test		N
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		
	- thermostats: 10 000		P
	- temperature limiters: 1 000		N
	- self-resetting thermal cut-outs: 300		N
	- other non-self-resetting thermal cut-outs: 30		N
	- timers: 3 000		N
	- energy regulators: 10 000		N
	- voltage maintained non-self-resetting thermal cut-outs 1 000		N
	- other non-self-resetting thermal cut-outs: 30		N
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		N
	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
24.1.5	Appliance couplers complying with IEC 60320-1		N

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Clause	Requirement - Test	Result - Remark	Verdict
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N
	Interconnection couplers complying with IEC 60320-2-2		N
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N
24.1.7	If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151		N
24.1.8	The relevant standard for thermal links is IEC 60691. Thermal links not complying with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19		P
24.1.9	Relays, other than motor starting relays, tested as part of the appliance		N
	They are also tested in accordance with Clause 17 of IEC 60730-1, the number of operations in 24.1.4 selected according to the relay function in the appliance .....:		N
24.2	No switches or automatic controls in flexible cords		P
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N

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Clause	Requirement - Test	Result - Remark	Verdict
	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		N
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 42V.		N
	In addition, the motors are complying with the requirements of Annex I		N
24.7	Hose-sets for connection of appliances to the water mains, complying with IEC 61770 and supplied with the appliance		P
24.101	Thermal cut-out incorporated in appliances in order to comply with 19.4 or 19.101 shall be non-self resetting (IEC 60335-2-84 : 2002)		P
24.Z.101	Components necessary for the connection of the tumble dryer to the water mains comply with IEC 61770 (EN 60335-2-11: 2003)		N
	Components supplied with the appliance (EN 60335-2-11: 2003)		N
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		P
	- an appliance inlet having at least the same degree of protection against moisture as required for the appliance		N
	- pins for insertion into socket-outlets		N
25.2	Appliance not provided with more than one means of connection to the supply mains	Supply cord with a plug only	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	Single supply	N
25.3	Connection of supply conductors for appliance intended to be permanently connected to fixed wiring possible after the appliance has been fixed to its support	Not intended to be permanently connected to fixed wiring	N

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Clause	Requirement - Test	Result - Remark	Verdict
	Appliance provided with a set of terminals for the connection of cables or fixed wiring, cross-sectional areas specified in 26.6		N
	Appliance provided with a set of terminals allowing the connection of a flexible cord		N
	Appliance provided with a set of supply leads accommodated in a suitable compartment		N
	Appliance provided with a set of terminals and cable entries, conduit entries, knock-outs or glands, allowing connection of appropriate type of cable or conduit		N
	Appliances incorporating water heaters having bare heating elements are only provided with means for connection to fixed wiring (IEC 60335-2-84 : 2002)		N
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29.1		N
25.5	Method for assemble supply cord with the appliance:		
	- type X attachment		N
	- type Y attachment		P
	- type Z attachment, if allowed in part 2		N
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cords being one of the following types:		
	- rubber sheathed (at least 60245 IEC 53)		N
	- polychloroprene sheathed (at least 60245 IEC 57)		N
	- cross-linked polyvinyl chloride sheathed (at least 60245 IEC 87)		N
	Polyvinyl chloride sheathed: Not used if they are likely to touch metal parts having a temperature rise exceeding 75K during the test of Clause 11.		
	- light polyvinyl chloride sheathed cord (60227 IEC 52), appliance not exceeding 3 kg		N

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Clause	Requirement - Test	Result - Remark	Verdict
	- ordinary polyvinyl chloride sheathed cord (60227 IEC 53), other appliances		P
	Heat resistant polyvinyl chloride sheathed: Not used for type X attachment other than specially prepared cords.		
	- rubber insulated and sheathed cord (60245 IEC 86)		N
	- Heat-resistant light polyvinyl chloride sheathed cord (at least 60227 IEC 56), appliances not exceeding 3 kg		N
	- heat-resistant polyvinyl chloride sheathed cord (60227 IEC 57), other appliances		N
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²).....:	< 10,0 A at rated voltage: 1,0 mm²	P
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		P
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		P
	the appliance is class 0		N
25.14	Supply cords adequately protected against excessive flexing		N
	Flexing test:		
	- applied force (N) .....:		N
	- number of flexings.....:		N
	The test does not result in:		

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Clause	Requirement - Test	Result - Remark	Verdict
	- short circuit between the conductors		N
	- breakage of more than 10% of the strands of any conductor		N
	- separation of the conductor from its terminal		N
	- loosening of any cord guard		N
	- damage, within the meaning of the standard, to the cord or the cord guard		N
	- broken strands piercing the insulation and becoming accessible		N
25.15	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 10: pull (N); torque (not on automatic cord reel) (Nm).....:	100 N, 0,35 Nm	P
	Max. 2 mm displacement of the cord		P
25.16	Cord anchorages for type X attachments constructed and located so that:		
	- replacement of the cord is easily possible		N
	- it is clear how the relief from strain and the prevention of twisting are obtained		N
	- they are suitable for different types of cord		N
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N
	- the cord is not clamped by a metal screw which bears directly on the cord		N
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N

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Clause	Requirement - Test	Result - Remark	Verdict
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N
	After the test of 25.15, under the conditions specified, the conductors have not moved by more than 1 mm in the terminals		N
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	so constructed 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	Type Y attachment	N
	Tying the cord into a knot or tying the cord with string not used		N
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated	No accessible metal parts	N
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, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.	Supply cord with a plug provided	N
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N
25.22	Appliance inlet:		
	- live parts not accessible during insertion or removal		N
	- connector can be inserted without difficulty		N
	- the appliance is not supported by the connector		N
	- is not for cold conditions if temp. rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N

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Clause	Requirement - Test	Result - Remark	Verdict
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N
	If necessary, electric strength test of 16.3		N
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		N
26	**TERMINALS FOR EXTERNAL CONDUCTORS**		
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		N
	Terminals only accessible after removal of a non-detachable cover		N
	However, 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		N
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N
	Screws and nuts serve only to clamp supply conductors, except		N
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		
	- the terminal does not loosen		N
	- internal wiring is not subjected to stress		N
	- clearances and creepage distances are not reduced below the values in 29		N
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm) .....:		N
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N
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
	Stranded conductor test, 8 mm insulation removed		N
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm²).....:		N
	Terminals only suitable for a specially prepared cord		N
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N
26.9	Terminals of the pillar type constructed and located as specified		N
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Pull test of 5 N to the connection		N
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N
27	**PROVISION FOR EARTHING**		
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		P
	For class I appliances incorporating water heaters having bare heating elements, the water shall enter and leave through metal pipes that are permanently and reliably connected to the earthing terminal or flow over metal parts that are similarly earthed (IEC 60335-2-84 : 2002)		N
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N
	do not provide earthing continuity between different parts of the appliance		N
	Conductors cannot be loosened without the aid of a tool		P
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P
	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N

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Clause	Requirement - Test	Result - Remark	Verdict
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		P
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		N
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N
	In case of aluminium alloys precautions taken to avoid risk of corrosion	Not employed aluminium alloys	N
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 that clearances of basic insulation are based on the rated voltage of the appliance		N
	Resistance not exceeding 0,1 Ω at the specified low-resistance test		P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N
	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
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
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		N
	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 can impair basic insulation		N
	For screws and nuts; test as specified	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together	Not employed such screws for electrical connection	N
	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
	Thread-cutting (self-tapping) screws not used if they are likely to be operated by the user or installer		N
	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:		
	- in normal use,		N
	- during user maintenance,		N
	- when replacing a supply cord having a type X attachment, or		N
	- during installation		N
	At least two screws being used for each connection providing earthing continuity, unless		N
	the screw forms a thread having a length of at least half the diameter of the screw		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N
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 or to provide basic insulation, annex J applies		N
	The microenvironment is pollution degree 1 under Type A coating		N
	No creepage distance or clearance requirements under Type B coating		P
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		P
	for basic insulation and functional insulation they comply with the implulse voltage test of clause 14		N
	However, if the construction is 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
	Impulse voltage test not applicable:		
	- when the microenvironment is pollution degree 3		N
	- for basic insulation of class 0 and class 01 appliances		N
	Appliances are in overvoltage category II		P

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Clause	Requirement - Test	Result - Remark	Verdict
	Clearances less than specified in table 16 not allowed for basic insulation of class 0 and class 0I appliances,		N
	or if pollution degree 3 is applicable		N
	Compliance is checked by inspection and measurements as specified		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N
	Lacquered conductors of windings assumed to be bare conductors		N
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		P
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		P
29.1.4	For functional insulation, the values of table 16 are applicable, unless		N
	the appliance complies with clause 19 with the functional insulation short-circuited		N
	Lacquered conductors of windings considered to be bare conductors		N
	However, clearances at crossover points are not measured		N
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N
	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

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Clause	Requirement - Test	Result - Remark	Verdict
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N
	insulation subjected to conductive pollution; pollution degree 3		N
	Pollution degree 3 applies, unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance (IEC 60335-2-84 : 2002)		N
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, 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
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		P
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		P
29.2.4	Creepage distances of functional insulation not less than specified in table 18		N
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		P
29.3	Supplementary and reinforced insulation having 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
	- an electric strength test in accordance with 29.3.2, or		N

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Clause	Requirement - Test	Result - Remark	Verdict
	- an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3		N
29.3.1	Supplementary insulation having a thickness of at least 1 mm		P
	Reinforced insulation having a thickness of at least 2 mm		P
29.3.2	Each layer of material withstand the electric strength test of 16.3 for supplementary insulation		N
	Supplementary insulation consisting of at least 2 layers		N
	Reinforced insulation consisting of at least 3 layers		N
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2, followed by		N
	the electric strength test of 16.3		N
	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
30	**RESISTANCE TO HEAT AND FIRE**		
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	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: 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) .....:		P
	Parts supporting live parts: 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) .....:		P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C) .....:		N

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Clause	Requirement - Test	Result - Remark	Verdict
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance		P
	Compliance checked by the test of 30.2.1. In addition:		P
	- attended appliances, 30.2.2 applies		P
	- unattended appliances, 30.2.3 applies		N
	Appliances for remote operation, 30.2.3 applies		N
	Base material of printed circuit board, 30.2.4 applies		N
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless	Enclosure	P
	the material is classified at least HB40 according to IEC 60695-11-10		N
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category FH3 material		N
30.2.2	Appliances operated while attended, parts of non-metallic material supporting current-carrying connections, and parts of non-metallic material within a distance of 3mm of such connections, are subjected to the glow-wire test of IEC 60695-2-11.		P
	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
	-650 °C, for other connections		N
	Test not applicable to conditions as specified		N
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		
	-750°C, for connections carrying a current exceeding 0,5A during normal operation		P
	-650°C, for other connections		P
	Test not applicable to conditions as specified		N
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		N
	Test not applicable to conditions as specified		N

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Clause	Requirement - Test	Result - Remark	Verdict
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		P
	parts of insulating material within a distance of 3mm,		P
	parts of non-metallic material within a distance of 3mm,		P
	subjected to the glow-wire test of IEC 60695-2-11 with a test severity of 850°C		P
	Glow-wire test not carried out on parts of material classified as having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		N
	Glow-wire test not carried out on small parts that comply with the needle-flame test of Annex E or on small parts of material classified as V-0 or V-1 according to IEC 60695-11-10		N
	Specified glow-wire flammability index not applicable to water heaters having bare heating elements (IEC 60335-2-84 : 2002)		N
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of least:		
	-775°C, for connections carrying a current exceeding 0,2A during normal operation		N
	-675°C, for other connections		N
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N
	When the glow-wire test of IEC 60695-2-11 is carried out, the temperatures are:		
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		N
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N

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Clause	Requirement - Test	Result - Remark	Verdict
	For water heaters having bare heating elements, glow-wire test carried out as specified for other connections (IEC 60335-2-84 : 2002)		N
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N
	Test not applicable to conditions as specified		P
30.101	The bowl shall not incorporate combustible material (IEC 60335-2-84 : 2002)		N
	Needle flame test applied to non metallic surfaces located within 75mm of the heating element (IEC 60335-2-11/A1 : 2003)		N
	Needle flame test applied to surfaces located directly below heating element (IEC 60335-2-11/A1 : 2003)		N
31	**RESISTANCE TO RUSTING**		
	Relevant ferrous parts adequately protected against rusting		N
	Salt mist test of IEC 60068-2-52 Severity 2 is applicable (IEC 60335-2-84 : 2002)		N
32	**RADIATION, TOXICITY AND SIMILAR HAZARDS**		
	Appliance does not emit harmful radiation	No harmful radiation source	P
	Appliance does not present a toxic or similar hazard	No toxic or similar hazard source	P

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Clause	Requirement - Test	Result - Remark	Verdict
A	**ANNEX A (INFORMATIVE)** **ROUTINE TESTS**		
	Description of routine tests to be carried out by the manufacturer		N
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
	This annex does not apply to battery chargers		N
3.1.9	Appliance operated under the following conditions:		N
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N
	-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
	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
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N
	Details about how to remove batteries containing materials hazardous to the environment given		N
7.15	Markings placed on the part of the appliance connected to the supply mains		N

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Clause	Requirement - Test	Result - Remark	Verdict
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N
	If the appliance can be operated without batteries, double or reinforced insulation required		N
11.7	The battery is charged for the period described		N
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N
19.103	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
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		N
	- 100, the mass of part does not exceed 250 g		N
	- 50, the mass of part exceeds 250 g		N
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N
	For other parts, 30.2.2 applies		N
C	**ANNEX C (NORMATIVE)** **AGEING TEST ON MOTORS**		

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS (IEC 60335-1/A1 : 2004)		
	Applicable to protected motors for unattended use, test of 19.7 carried out on a separate sample according to the specification		N
	Applicable to appliances having motors that incorporate thermal motor protectors		N
E	**ANNEX E (NORMATIVE)** **NEEDLE-FLAME TEST**		
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		N
5	Severities		N
	The duration of application of the test flame is 30 s ± 1 s		N
8	Test procedure		N
8.2	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
8.4	The first paragraph does not apply		N
	If possible, the flame is applied at least 10 mm from a corner		N
8.5	The test is carried out on one specimen		N
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N
10	Evaluation of test results		N
	The duration of burning not exceeding 30 s		N
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N
F	**ANNEX F (NORMATIVE)** **CAPACITORS**		

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Clause	Requirement - Test	Result - Remark	Verdict
	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:		N
1.5	Terminology		N
1.5.3	Class X capacitors tested according to subclass X2		N
1.5.4	This subclause is applicable		N
1.6	Marking		N
	Items a) and b) are applicable		N
3.4	Approval testing		N
3.4.3.2	Table II is applicable as described		N
4.1	Visual examination and check of dimensions		N
	This subclause is applicable		N
4.2	Electrical tests		N
4.2.1	This subclause is applicable		N
4.2.5	This subclause is applicable		N
4.2.5.2	Only table IX is applicable		N
	Values for test A apply		N
	However, for capacitors in heating appliances the values for test B or C apply		N
4.12	Damp heat, steady state		N
	This subclause is applicable		N
	Only insulation resistance and voltage proof are checked		N
4.13	Impulse voltage		N
	This subclause is applicable		N
4.14	Endurance		N
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N
4.14.7	Only insulation resistance and voltage proof are checked		N
	Visual examination, no visible damage		N
4.17	Passive flammability test		N

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Clause	Requirement - Test	Result - Remark	Verdict
	This subclause is applicable		N
4.18	Active flammability test		N
	This subclause is applicable		N
G	**ANNEX G (NORMATIVE)** **SAFETY ISOLATING TRANSFORMERS**		
	The following modifications to this standard are applicable for safety isolating transformers:		P
7	Marking and instructions		P
7.1	Transformers for specific use marked with:		P
	-name, trademark or identification mark of the manufacturer or responsible vendor		P
	-model or type reference		P
17	Overload protection of transformers and associated circuits		P
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		P
22	Construction		P
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		P
29	Clearances, creepage distances and solid insulation (EN 60335-1/A11)		P
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		N
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N
	-Before being tested, switches are operated 20 times without load		N
8	Marking and documentation		N
	Switches are not required to be marked		N
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N

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Clause	Requirement - Test	Result - Remark	Verdict
13	Mechanism		N
	The tests may be carried out on a separate sample		N
15	Insulation resistance and dielectric strength		N
15.1	Not applicable		N
15.2	Not applicable		N
15.3	Applicable for full disconnection and micro-disconnection		N
17	Endurance		N
	Compliance is checked on three separate appliances or switches		N
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N
	Subclauses 17.2.2 and 17.2.5.2 not applicable (IEC 60335-1/A1 : 2004)		N
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1 (IEC 60335-1/A1 : 2004)		N
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		N
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N
I	**ANNEX I (NORMATIVE)** **MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE**		N
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N

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Clause	Requirement - Test	Result - Remark	Verdict
8	Protection against access to live parts		N
8.1	Metal parts of the motor are considered to be bare live parts		N
11	Heating		N
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N
11.8	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
16	Leakage current and electric strength		N
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N
19	Abnormal operation		N
19.1	The tests of 19.7 to 19.9 not carried out		N
19.101	Appliance operated at rated voltage with each of the following fault conditions:		N
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N
	- short circuit of each diode of the rectifier		N
	- open circuit of the supply to the motor		N
	- open circuit of any parallel resistor, the motor being in operation		N
	Only one fault simulated at a time, the tests carried out consecutively		N
22	Construction		N
22.101	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
	Compliance checked by the tests specified for double and reinforced insulation		N
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
6.6	Climatic sequence		N

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Clause	Requirement - Test	Result - Remark	Verdict
	When production samples are used, three samples of the printed circuit board are tested		N
6.6.1	Cold		N
	The test is carried out at -25°C		N
6.6.3	Rapid change of temperature		N
	Severity 1 is specified		N
6.8.6	Partial discharge extinction voltage		N
	Type A coatings not subjected to a partial discharge test		N
6.9	Additional tests		N
	This subclause is not applicable		N
K	**ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES**		
	The information on overvoltage categories is extracted from IEC 60664-1		N
	Overvoltage category is a numeral defining a transient overvoltage condition		N
	Equipment of overvoltage category IV is for use at the origin of the installation		N
	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
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N
	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
L	**ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES**		

EN 60335-2-84			
Clause	Requirement - Test	Result - Remark	Verdict
	Sequences for the determination of clearances and creepage distances		N
M	**ANNEX M (NORMATIVE)** **POLLUTION DEGREE**		
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		P
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		N
	Minimum clearances specified where pollution may be present in the microenvironment		N
	Degrees of pollution in the microenvironment		P
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		N
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		P
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		N
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST (IEC 60335-1/A1 : 2004)		—
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N
7	Test apparatus		—
7.3	Test solutions		—

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Clause	Requirement - Test	Result - Remark	Verdict
	Test solution A is used		N
10	Determination of proof tracking index (PTI)		—
10.1	Procedure		N
	The proof voltage is 100V, 175V, 400V or 600V :		N
	The last paragraph of Clause 3 applies		N
	The test is carried out on five specimens		N
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		N
10.2	Report		N
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		N
O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		N
P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES (IEC 60335-1/A1 : 2004)		
	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
	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
5	General conditions for the tests		N
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}_{0}$ *C.*		N
7	Marking and instructions		N
7.1	The appliance marked with the letters WDaE		N

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Clause	Requirement - Test	Result - Remark	Verdict
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA		N
	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
11	Heating		N
11.8	The values of Table 3 are reduced by 15 K		N
13	Leakage current and electric strength at operating temperature		N
13.2	The leakage current for class I appliances not exceeding 0,5 mA		N
15	Moisture resistance		N
	The value of t is 37 °C		N
16	Leakage current and electric strength		N
16.2	The leakage current for class I appliances not exceeding 0,5 mA		N
19	Abnormal operation		N
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		N
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION (IEC 60335-1/A1 : 2004)		
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		N
H.2	Definitions		N
	Only definitions H.2.16 to H.2.20 applicable		N
H.7	Only definitions H.2.16 to H.2.20 applicable		N
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		N
H.11.12	Controls using software		N
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		N
H.11.12.7	Delete text		N

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Clause	Requirement - Test	Result - Remark	Verdict
1.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		N
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		N
H.11.12.81	Replace text		N
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		N
ZA	**ANNEX ZA to EN 60335-1:02SPECIAL NATIONAL CONDITIONS**		
7.12	DENMARK Requirements regarding marking tag of power supply cord and connection of earthing wire		N
19.5	NORWAY The test is also applicable to appliances intended to be permanently connected to fixed wiring		N
22.2	FRANCE and NORWAY The second para-graph of this subclause dealing with single-phase class I appliances with heating elements is not applicable due to the supply system .		N
25.6	Plugs according to standard sheet C 2b are not allowed in the following countries: Belgium, France, Spain and the United Kingdom		N
	Plugs according to standard sheet C 3b are not allowed in the following countries: Austria, Finland, Germany, Iceland, Ireland, Italy Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.		N
	DENMARK		N
	Supply cords of single-phase port-able appliances having a rated current not exceeding 13 A provided with a plug according to the following:		N
	Class I appliances: Section 107-2-D1 Standard Sheet DKA 2-1a		N
	For appliances covered by a part 2 of EN 60335, also plugs in accordance with section 107-2-D1, ed 3, 1998, Standard Sheet C 2b, C 3b or C 4		N
	Class II appliances: section 107-2-D1, ed 3, 1998, Standard Sheet C 5 or C 6, DKA 2-1a and DKA 2-1b		N

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Clause	Requirement - Test	Result - Remark	Verdict
	Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements above.		N
	Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements below:		N
	Class I appliances: Section 107-2-D1, Standard Sheet DK 6-1a / EN 60309-2, Standard Sheet 2-II, 2-IV		N
	Class II appliances: Section 107-2-D1, Standard Sheet DK 6-1a / 2-II, 2-IV		N
	Current not exceeding C5: 2,5A, DKA 2-1a and 1b: 10A, DK 2-1a: 13A, C 1b, C 6, C 2b, C 3b, C 4: 16A		N
	IRELAND Plug is in accordance with standard sheets B2 and C5		N
	IITALY only plug mentioned on the test report R0BT-005:2001 are allowed		N
	SPAIN Household appliance, only plug provided complying with standard UNE 20 315		N
	ESC 10-1b, C2b, C4, C6 or ESB 25-5b		N
	complying with standard UNE-EN 50075		N
	SWITZERLAND Supply cords of portable household and similar electrical appliances, rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:		N
	SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A		N
	SEV 6533-2.1991 Plug Type 11 L+N 250 V 10A		N
	SEV 6533-2.1991 Plug Type 12 L+N+PE 250 V, 10 A		N
	UNITED KINGDOM Plug according to standard sheet B2 or C5 used. Refer to annex ZB , ,		N
25.8	IRELAND and UNITED KINGDOM Replacement of figures (rated current/cross-sectional area) in the table.		N

ZB	**ANNEX ZB, A-DEVIATIONS** (EN 60335-1:2002)		——
4	SWITZERLAND: information about batteries		N

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Clause	Requirement - Test	Result - Remark	Verdict
7.1	ITALY: the voltage is 220 V/380 V		N
	SPAIN: the voltages are 127 V/220 V and 220 V/380 V		N
11.8	FRANCE: For fixed heaters, other than those for mounting at high level, the limit is 115 K for metallic air-outlet grilles and their immediate surrounds.		N
25.6	IRELAND / UNITED KINGDOM: regulations concerning plugs to be fitted to domestic appliances		N
29.3	GERMANY 29.3 not apply to appliances when insulation is accessible (EN 60335-1/A1 : 2004)		N

ANNEX EMF			
	The Tested product also complies to the requirements of EN 50366:2003		—
	Limit ……100%	Measured max. :…….7,1 %	P

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10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
230 V/ 50 Hz	1 650	1620	- 1,8 %	+ 5 %, - 10 %	1)
1) Wash Mode: Water Temperature and Seat Temperature are High					

10.2	TABLE: Current deviation				N
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark

11.8	TABLE: Heating test, thermocouples		P
	Test voltage (V).....:	244 V	—
	Ambient (°C).....:	Wash Mode: 23,9 °C	—
		Dry Mode: 23,8 °C	

Thermocouple locations	dT (K)		Max. dT (K)
	Wash Mode	Dry Mode	
Transformer core	22,7	13,4	65
AC Connector body on PCB	18,3	5,8	See clause 30.1
Line fiter (L1) coil	41,3	10,8	65
Line filter (L2) coil	40,2	14,5	65
Outer surface of capacitor (C11)	36,2	21,7	50
Dry motor body	12,0	17,1	-
Dry assembly housing body	14,8	13,2	60
Air pump motor body	27,2	9,8	-
Nozzle motor body	14,8	7,4	-
Pump motor body	13,5	2,5	-
Solenoid valve body	42,3	1,8	60
Water storage chamber body	24,4	2,8	See clause 30.1
Case of main PCB	17,6	11,1	See clause 30.1
External enclosure top	7,9	3,2	60
External enclosure side	4,8	1,0	60
External enclosure rear	6,8	2,8	60
Insulation of heater wiring	12,5	22,3	50

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Surface likely to be in contact with the skin outside	12,7	15,3	25
Warm air	-	19,8	40
Power cord sheath	1,7	1,4	35

11.8	TABLE: Heating test, resistance method					P
	Test voltage (V).....:		244 V			—
	Ambient, t_1 (°C).....:		23,2 °C			—
	Ambient, t_2 (°C).....:		23,9 °C			—
Temperature rise of winding		R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Transformer primary winding[1)]		216,7	248,6	37,2	75	A
[1)]Wash Mode: Water Temperature and Seat Temperature are High						

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input.....:		—
	Motor-operated and combined appliances: 1.06 x rated voltage .....:	244 V	—

Leakage current between	I (mA)	Max. allowed I (mA)
Any poles of the supply and accessible metal parts	0,08	3,5
Any poles of the supply and accessible insulating parts with metal foil	0,08	3,5

13.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
Any poles of the supply and accessible metal parts		1000 Va.c	No
Any poles of the supply and accessible insulating parts with metal foil		3000 Va.c	No

14	TABLE: Transient overvoltages					N
Clearance between:		Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)

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16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage .....:	244 V	—
	Three phase appliances 1.06 x rated voltage divided by √3:.....:		—

Leakage current between	I (mA)	Max. allowed I (mA)
Any poles of the supply and accessible metal parts	0,08	3,5
Any poles of the supply and accessible insulating parts with metal foil	0,08	3,5

16.3	TABLE: Electric strength		P

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Any poles of the supply and accessible metal parts	1250 Va.c	No
Any poles of the supply and accessible insulating parts with metal foil	3000 Va.c	No

17	TABLE: Overload protection, temperature rise		P

Temperature rise of part/at:	dT (K)	Max. dT (K)
Transformer core	21,7	65
Top enclosure	2,3	60
Cord sheath	0,8	35
After 8 min transformer damaged (thermal link opened)		

19.7	TABLE: Abnormal operation, locked rotor/moving parts		P
	Test voltage (V).....:	244 V	—
	Ambient, t_1 (°C).....:	23,7 °C	—
	Ambient, t_2 (°C).....:	23,4 °C	—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)
Solenoid valve	-	-	-	79,9	150

19.9	TABLE: Abnormal operation, running overload		N
	Test voltage (V).....:		—
	Ambient, t_1 (°C).....:		—

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	Ambient, t_2 (°C).....:		—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.13	TABLE: Abnormal operation, temperature rises	N

Thermocouple locations	dT (K)	Max. dT (K)

24.1	TABLE: Components	P

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Power plug and cord	KMH	KKP-4819R / H05VV-F,	250 V, 10 A, 3G x 1,0 mm^2	EN 60884-1	FIMKO/ FI 21618 A2
Enclosure	LG chemical	AF342F	V-0	-	UL/E67171
PCB	Various	Various	V-0, 105 °C	-	UL
Fuse (F1)	Dainfuse	50 CT	250 V, 10 A	EN 60127-1, EN 60127-2	VDE/ 40008066
Fuse (F2)	Dainfuse	50 CT	250 V, 3,15 A	EN 60127-1, EN 60127-2	VDE/ 40008066
X-capacitor (C16)	Pilkor	PCX2 337	275 V, 0,47 uF	EN 60384-14	SEMKO/ SE/0265-1E
Moulding Compound on PCB	Yoo Yang	700FA/700FB	V-0, 50 °C	-	UL/E236369
Varistor (RV1)	Centra Science	CNR-14D 561	560 Vpeak	IEC 61051-1, IEC 61051-2, IEC 61051-2-2	VDE/ 40008220
Varistor (RV2)		CNR-10D 561	560 Vpeak	IEC 61051-1, IEC 61051-2, IEC 61051-2-2	VDE/ 40008220
Thermostat (in dry heater)	SEKI Controls	ST-22	250 V, 1 A	EN 60730	VDE/ 40010189
Thermo link (in dry heater)	Dong Yang Electronics	DF series	250 V, 15 A	EN 60691	VDE/ 40017388
Thermostat in water tank	Kyung In Electronics	NT-102	250 V, 15 A	EN 60730	VDE/ 40008930

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Line filter (L1, L2)	I.D	100UH	Class A	EN60335-1, EN 60335-2-84	Tested in appliance
Transformer	Jae Yun	BD-707A	Class A	EN60335-1, EN 60335-2-84	Tested in appliance
Solenoid valve	Jeil electronics	JIE-497	240 V, 7 W	EN60335-1, EN 60335-2-84	Tested in appliance
Seat heater	Canaan Electronic Co Ltd	1137	300 V, 30 W	EN60335-1, EN 60335-2-84	Tested in appliance
Water heater	Canaan Electronic	GN-23-80W-C	230 V, 800 W	EN60335-1, EN 60335-2-84	Tested in appliance
Dry heater	Dae Won Bidet	BD-707	230 V, 220 W	EN60335-1, EN 60335-2-84	Tested in appliance
Stepping motor	Leili	35BY412M-146	12Vd.c.	EN60335-1, EN 60335-2-84	Tested in appliance
Air pump motor	Dae Han	DN-AP2	12 Vd.c., 270 mA	EN60335-1, EN 60335-2-84	Tested in appliance
Deodorization fan	Hengshan	FS75302H	12 Vd.c., 0,48 A	EN60335-1, EN 60335-2-84	Tested in appliance
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test			P
Threaded part identification		Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Connection providing earthing continuity		4,0	II	1,2
Cover fixing screw		3,8	II	1,2

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

4 000	3,5					
6 000	6,0					
8 000	8,5					
10 000	11,5					

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						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—	N
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	N
≤50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		N
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	N
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	N
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		N
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	>2,5	—	—	P
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—	>2,5	—	P
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—	>5,0	P
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N

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

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*), B=Basic, S=Supplementary and R=Reinforced

29.2	TABLE: Creepage distances, functional insulation							N
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
≤50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	
>500 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	

30.1	TABLE: Ball pressure			P
Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)	
Water storage chamber body	75	0,9	2,0	
Transformer bobbin	125	1,0	2,0	
Case for main board	125	1,0	2,0	
connector	125	1,1	2,0	

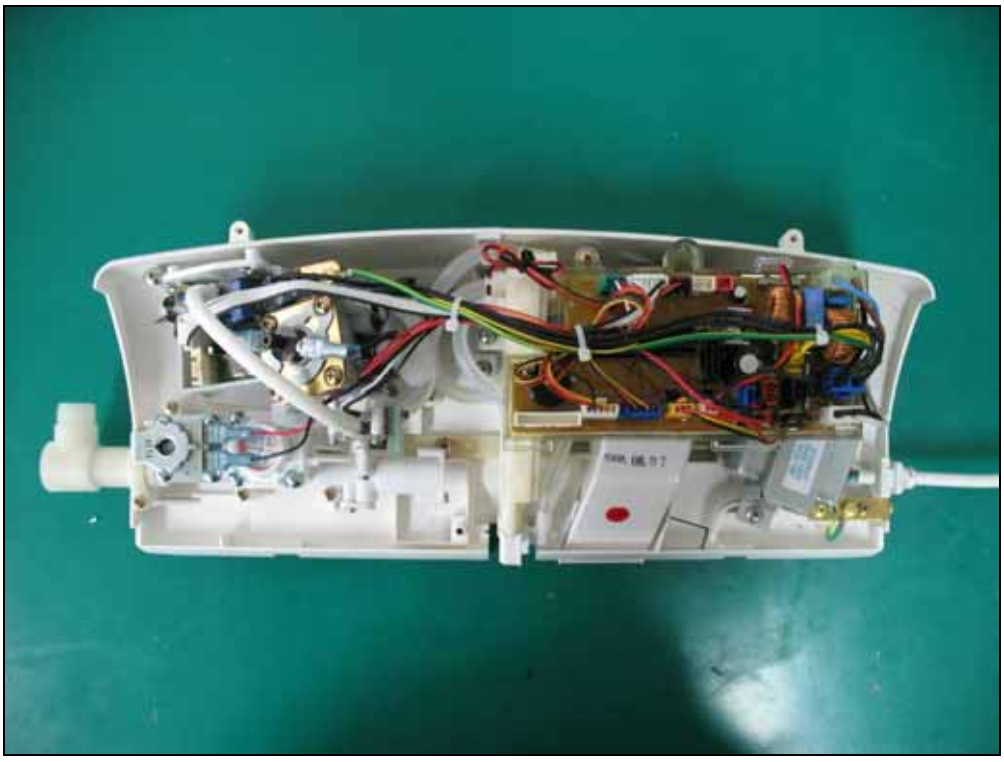
Photographs (Basic Model: HDB-330)

Top view

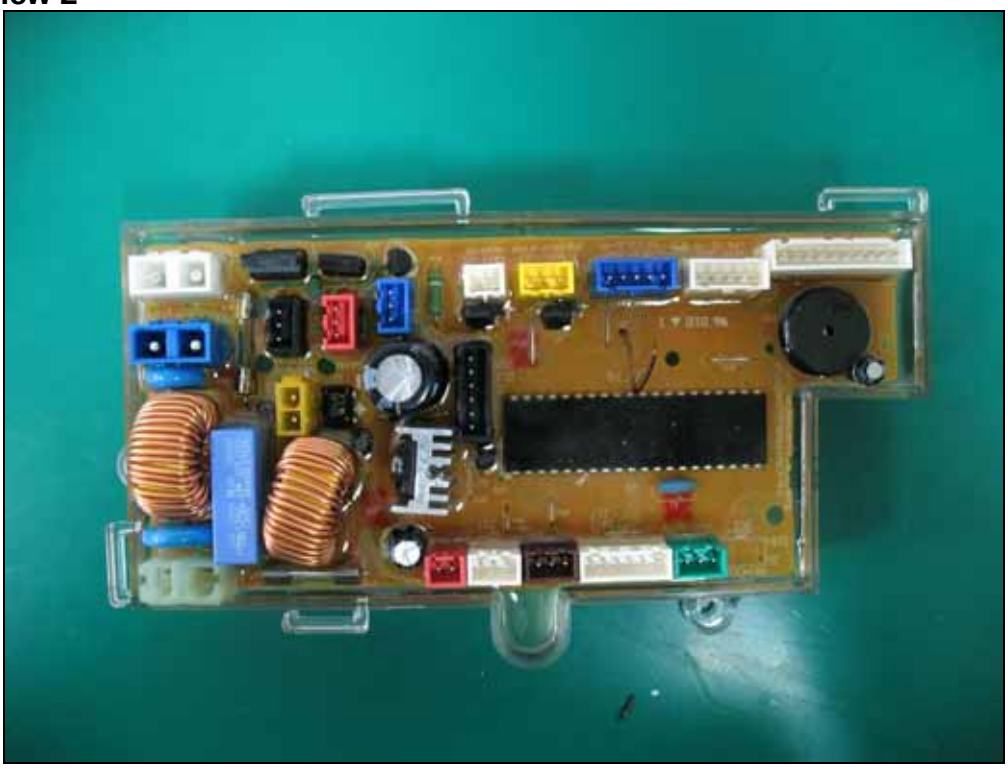
Bottom view

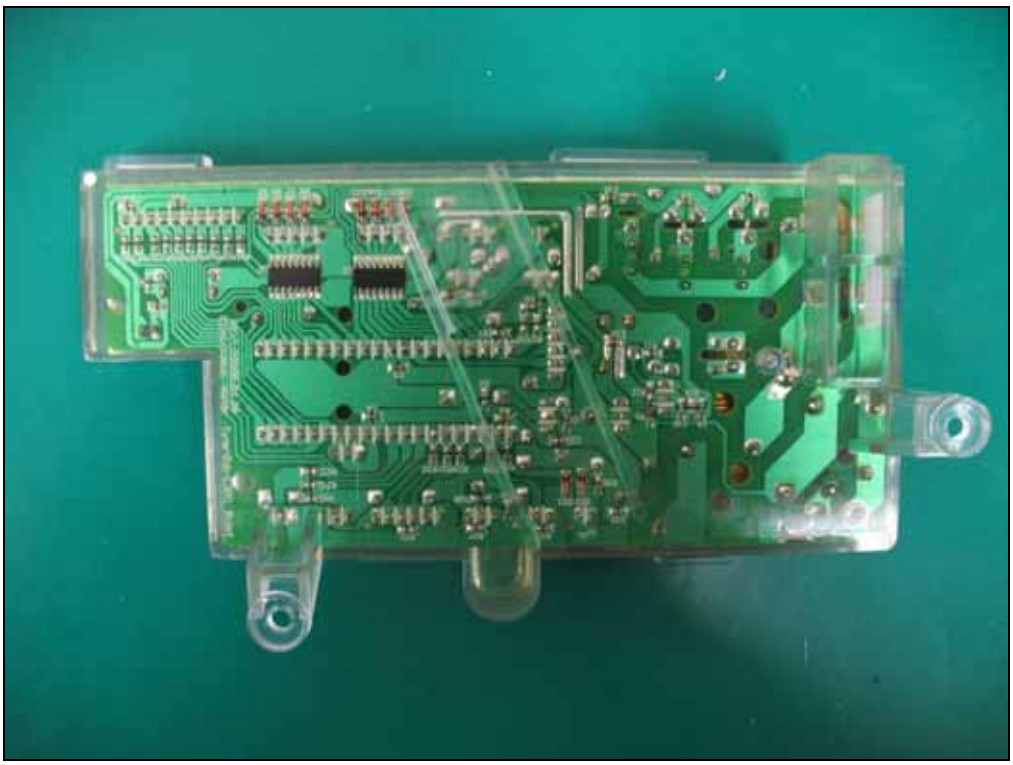
Without cover view

Internal view 1

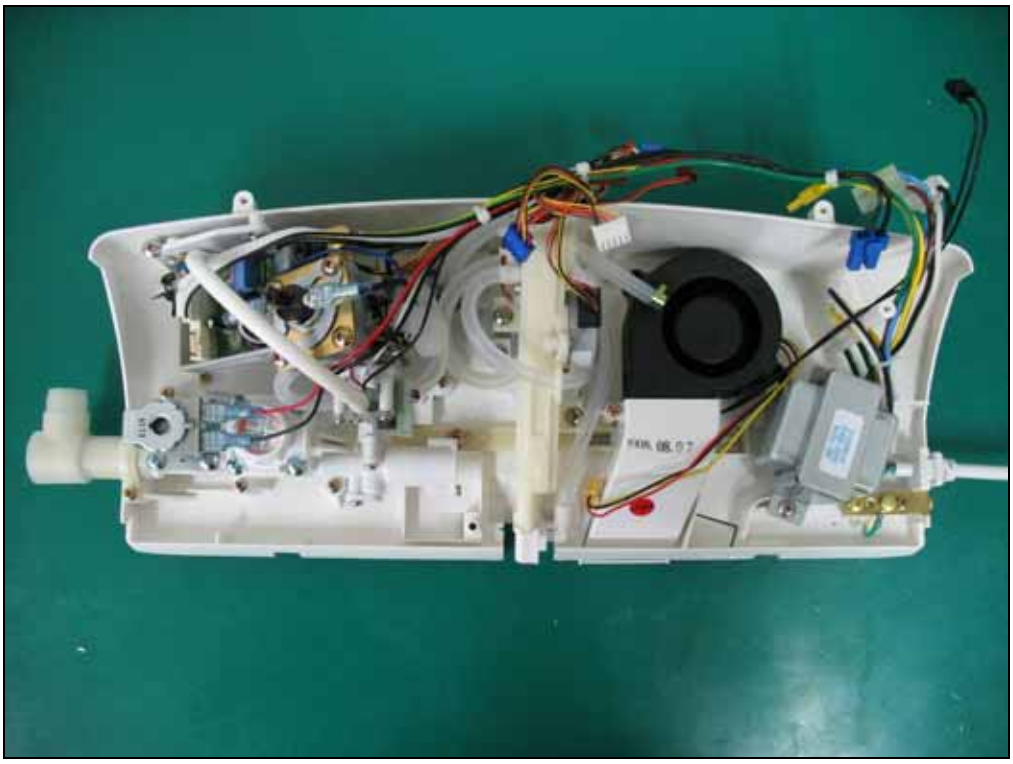


Internal view 2





Internal view 3



Schematic diagram